Multi-Agency Information Sharing in the Public Sector

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Acknowledgements

Abstract

Background

The need for public sector agencies to work together to deal with complex issues which overlap agencies spheres of work has been well established. Cases such as the Soham murders in 2002 (BBC News, 2003), the Climbie child abuse case in 2003 (Health Committee, 2003) and the Pilkington Anti-social Behaviour case in 2007 (Telegraph, 2009) each highlighted the need for public sector agencies to work more closely and share information with each other to more effectively serve their public.

Methodology

A three year period of participant observation in the implementation of a real time information sharing system used by multiple agencies to jointly manage anti-social behaviour was undertaken. An information sharing framework was produced detailing the factors which impact an information sharing project, classified into six categories; External Environment, Organisation, Process, Project, Technology and Individual.

Findings

Firstly bureaucracy is not always a barrier to information sharing. At times bureaucracy was found to enable information sharing by providing documentary evidence to decisions made throughout the system implementation. Secondly an agency's level of buy in and involvement with the information sharing project was shown to be a key indicator of their motivation to share information, correlating with the level of case recording on the system. Thirdly whilst technology enables the process of information sharing the research showed people had a much greater impact on whether information sharing took place. Finally whilst the UK public sector encourages public sector agencies to share information a wide scale review and approach to IT infrastructure would better enable future information sharing projects.

Conclusions

The research identified there are many factors which impact an agency's ability/motivation to share information. It is the level of motivation an agency has minus the cost of sharing which ultimately determines whether information sharing occurs. In order to further encourage information sharing there is a recommendation that the UK government look at ways to make integrating the disparate data sources easier to decrease the cost of sharing and thus improve the likelihood information sharing will occur.

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Nomenclature

A	Attitude
ABC	Acceptable Behaviour Contract
ACC	Assistant Chief Constable
ACPO	Association of Chief Police Officers
AR	Action Research
ASBO	Anti-Social Behaviour Order
BC	Borough Council
BI	Behavioural Intention
CBC	Charnwood Borough Council
CC	County Council
CIA	Central Intelligence Agency
CoCo	Code of Connection

COG	Chief Operating Group
CrASBO	Criminal Anti-Social Behaviour Order
CRB	Criminal Records Bureau
CRM	Customer Relationship Management
CSR	Comprehensive Spending Review
CSPB	Community Safety Partnership Board
C-TAM-TPB	Combined Technology Acceptance Model and Theory of Planned Behaviour
DC	District Council
DCC	Deputy Chief Constable
DPA	Data Protection Act
EHRC	Equality and Human Rights Commission
EM	Extrinsic Motivation
FBI	Federal Bureau of Investigation

GPMS	Government Protective Marking Scheme
HMIC	Her Majesties Inspectorate of Constabulary
ICO	Information Commissioners Office
ICSB	Integrated Community Safety Bureau
IDT	Innovation Diffusion Theory
IM	Intrinsic Motivation
INI	IMPACT Nominal Index
IPCC	Independent Police Complaints Commissioner
ISA	Information Sharing Agreement
JAG	Joint Action Group
LA	Leicester Police Harborough Police Unit
LB	Leicester Police Blaby Police Unit
LC	Leicester Police Charnwood Police Unit
LM	Leicester Police Melton Police Unit
LN	Leicester Police North Police Unit
LO	Leicester Police Oadby & Wigston Police Unit

LR	Leicester Police Rutland Police Unit
LPO	Local Police Officer
LPU	Local Policing Unit
LSCB	Local Safeguarding Children Board
LSTO	Local Support Team Officer
MoPI	Management of Police Information
MPCU	Model of PC Utilisation
NCISP	National Criminal Intelligence Sharing Plan
NHS	National Health Service
NPfIT	National Program for IT
NPIA	National Policing Improvement Agency
NSIR	National Standard for Incident Recording
NSPCC	National Society for Prevention of Cruelty to Children
PBO	Police Beat Officer
PCSO	Police Community Support Officer

PIA	Privacy Impact Assessment
PID	Project Initiation Document
PND	Police National Database
POST	Parliamentary Office of Science and Technology
PSN	Public Services Network
RCGP	Royal College of General Practitioners
RMADS	Risk Management Accreditation Document Set
SCCB	Safer and Confident Communities Board
SCR	Serious Case Review
SCT	Social Cognitive Theory
SIO	Senior Investigating Officer
SN	Subjective Norm
SNEN	Single Non-Emergency Number

SyOps	System Operating Procedures
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology
YOS	Youth Offending Service

1. Introduction

1. 0 Overview

This research investigates interagency information sharing; focusing on sharing information between public sector agencies such as the Police Force and Local Authorities. As part of this research, the researcher participated in the implementation of a county wide anti-social behaviour (ASB) case management system across Leicester, Leicestershire and Rutland for use by the Police and Local Authorities. This chapter begins by providing details on the background to the project (Section 1.1) providing context to the research by describing the countrywide environment in which the project is being conducted. Covering key government initiatives and relevant legislation along, with examples of cases where information sharing between agencies has failed and thus prompted a need for greater focus on information sharing. Section 1.2 gives an introduction to the Sentinel project and introduces the key partners involved with the research. Section 1.3 then identifies the purpose of the research with the aims and objectives identified in section 1.4. The chapter concludes with an overview of the thesis in section 1.5.

1.1 Background

To understand the driving forces behind the countywide implementation of an ASB case management system for use by multiple public sector agencies, a background must be provided which contextualises the main elements of the project. This is given in the following sections; firstly section 1.1.1 gives an overview of Anti-Social Behaviour, relevant legislation and government schemes to address the issue. Secondly the requirement for a multi-agency system is explained using examples of cases where information sharing has been highlighted as a key problem for the public sector in section 1.1.2.

1.1.1 Anti-Social Behaviour

Anti-social behaviour (ASB) is "acting in a manner that caused or was likely to cause harassment, alarm or distress to one or more persons not of the same household" (Crime and Disorder Act, 1998). It is behaviour which is considered outside of socially accepted norms. Behaviours range from low level incidents such as one off inconsiderate noise e.g. a loud party, to more serious incidents such as prostitution, hate incidents and damage verging on criminal proceedings e.g. graffiti and broken windows. The public sector and third sector work to deal with the causes and outcomes of ASB, with most responsibility falling to the police, local council and housing associations.

"Around 2.7 million incidents of anti-social behaviour (ASB) were recorded by the police in 2011/12" (Office of National Statistics, 2012, p5). This only takes into account incidents reported to the police as currently there is no official collection of figures from other agencies such as the local authority who receive a large volume of calls reporting incidents of ASB. This figure must also be viewed in line with the 2007/2008 British Crime Survey (Home Office, 2008) which states less than a third of ASB incidents are reported; adjusting the 2011/12 ASB incident figures with the crime survey in mind there were approximately 8.1 million incidents of ASB in 2011/2012. This figure has steadily been reducing since 2009, but ASB incidents still represents a problem for the UK to tackle.

Anti-social behaviour although unpleasant is not criminal and as such before the introduction of the first Anti-Social Behaviour Act (2003) there were very few courses of action the police or local authorities could take to punish perpetrators. Where a perpetrator was a tenant of a housing association action could be taken to evict the perpetrators but this was only suitable in a limited number of cases. The Anti-Social Behaviour Act (2003) was introduced to give local authorities and the police powers which could be used to tackle ASB including Anti-Social Behaviour Orders (ASBOs) and fixed penalty notices for small breaches of social order such as littering. This allowed local authorities and the Police to bring punitive action on perpetrators of anti-social behaviour and thus provide some form of deterrent for such behaviours. Whilst anti-social behaviour is not criminal it can be difficult to separate criminal behaviour from anti-social e.g. graffiti is criminal damage but will often be dealt with as anti-social behaviour e.g. written warnings, ASBOs rising to CrASBO (Criminal Anti-Social Behaviour Order) rather than through criminal proceedings i.e. arrest and either a caution or charging the perpetrator.

There are many reasons the public sector focuses on reducing and identifying the root causes of anti-social behaviours which are summarised as (adapted from Jacobson, Millie and Hough, 2008, p38):

- "quality of life rationale" – ASB makes people unhappy and produces a fearful environment;

- "broken windows rationale - ASB should be tackled because, left unattended, it leads to serious crime";

- "crime-fighting or zero tolerance rationale" – strategies aimed at reducing ASB are useful and practical for crime fighting as well;

- "regeneration rationale – action on ASB should contribute to the social and economic regeneration of local areas".

Both the previous labour government who introduced the first ASB legal powers and the current coalition government have put significant efforts into reducing levels of ASB in the country; including two full HMIC

(Her Majesty's Inspectorate of Constabulary) inspections in 2010 and 2012 "to look at how well police forces in England and Wales understand and respond to their local anti-social behaviour (ASB) problems" (HMIC, 2012a). The HMIC inspections involved the inspectors visiting all 43 forces in England and Wales to review practices and policies in place and their effectiveness at dealing with ASB; this included reviewing the forces effectiveness at engaging with partners such as councils and youth offending services. To complement the visits inspectors reviewed "recordings of more than 4,400 calls made to the police by victims of ASB, in order to assess whether they received the right response" (HMIC, 2012, p.3). The 2010 inspection provided a baseline which the 2012 inspection used to identify whether the forces had improved in terms of understanding and responding to ASB. In particular the 2010 report identified under what didn't work —lengthy partnership processes which have distinctive significant negative consequences for victim (HMIC, 2010, p.9). The 2012 inspection found —there is no doubt that the Police Service has improved its responsiveness to victims of ASB since HMIC last reported on this issue in2010, with progress made in every force" (HMIC, 2012, p.8). Partnership working was identified as having improved; "31 forces share ASB information with appropriate partner agencies in an effective way" (HMIC, 2012, p.27). Nevertheless the report identified that although improvements had been made in the way forces handle ASB further work was still required. Issues remain in particular around the identification of repeat and vulnerable victims and continuing improvement with partnership working.

1.1.1.1 Recording ASB

In 2004 the Home Office issued a report (Home Office Development and Practice, 2004) to ASB practitioners, categorising ASB into four high level categories:

- Misuse of public space

- Disregard for community/personal wellbeing

- Acts directed at people

- Environmental Damage

These high level categories were further broken down into 69 subcategories. The 2004 report was not mandatory and was issued only as an example of how ASB could be broken down for statistical purposes. Statistics were gathered from police forces who had applied the categorisation to their incident recording to measure levels and breakdowns of ASB incidents to allow comparisons across regions and to measure effectiveness of policies put in place to reduce ASB.

As the categorisation (Home Office Development and Practice, 2004) was not mandatory, reporting between agencies and counties varied significantly making it hard to make any realistic comparisons in how agencies were dealing with ASB and what strategies were effective. "These systems allowed huge amounts of valuable information to be lost and were not sufficiently robust to ensure that the data produced was sound." (NPIA, 2008, p.1). In April 2006 the Home Office introduced NSIR (National Standard for Incident Recording) to Police forces to classify a reported ASB incident; unlike the original classification NSIR was mandatory for all police forces.

1) Abandoned vehicles	8) Prostitution related activity
2) Animal problems	9) Littering/drugs paraphernalia
3) Begging	10) Nuisance neighbours
4) Hoax calls to the emergency services	11) Rowdy nuisance behaviour
5) Inappropriate use of fireworks	12) Street drinking
6) Malicious communications	13) Trespass
7) Noise	14) Vehicle nuisance

Figure 1-1 NSIR Categories 2006

NSIR provided fourteen categories of ASB shown in figure 1-1, providing a consistent approach to reporting of ASB across all forty-three police forces in the UK. As in the 2004 categorisation (Home

Office Development and Practice Report, 2004) these fourteen categories were further broken down into more detailed descriptors of the incident. The NSIR also introduced qualifiers which could be recorded on a reported incident. These qualifiers act as flags to identify whether an ASB incident is motivated by alcohol, race, gender, sexuality etc. The qualifiers can be used when deciding on appropriate responses to the ASB incident e.g. an incident which is qualified with alcohol may include referrals to alcohol abuse support groups and third sector organisations.

NSIR became a legal requirement for Police incident recording but not for other agencies such as local authorities who were dealing with the same types of ASB and often the same victims and perpetrators. Some local authorities such as Charnwood Borough Council who were already working closely with their coterminous police units chose to adopt the NSIR to better facilitate partnership working.

A review of NSIR in 2009 by ACPO (Association of Chief Police Officers) found NSIR needed to be "rationalised and simplified" (NPIA, 2011, p.2). The new NSIR introduced in April 2011 changed the focus from "incident recording to risk assessment at the front end of service delivery" (NPIA, 2011, p.2). The reporting system changed to three main categories instead of fourteen:

- Personal

- Community

- Environmental

The simplified NSIR "aims to support improved identification and management of risks, threats to safety, vulnerability and repeat victims, particularly in relation to anti-social behaviour (ASB)" (NPIA, 2011, p.2). The idea of the simplified NSIR is to move from a system of mere categorisation and reporting of incidents to a system which more clearly allows police officers to "ascertain the threat, risk and potential harm to the caller" (Leicestershire Police, 2011).

The Home Office report introducing the 2011 NSIR (NPIA, 2011) also suggests that the simplified NSIR will improve interoperability between agencies, highlighting the increasing priority being placed on partnership working.

1.1.1.2 Big Society

One initiative launched by the government in July 2010 (Watt, 2010) in part to deal with ASB was The Big Society. "The Big Society is about helping people to come together to improve their own lives. It's about putting more power in people's hands – a massive transfer of power from Whitehall to local communities" (Cabinet Office, 2011). Although not solely aimed at reducing ASB the general ethos is bringing a community spirit back to regions across the UK. Encouraging people to be a part of their local community, taking time and effort to improve the area, the idea being that this will improve social cohesion. A lack of social cohesion is cited as one cause of ASB (Prior and Paris, 2005, p.26).

The Big Society has three main components (adapted from cabinet office website (Cabinet Office, 2011)):

- Community Empowerment – more power for locals to make decisions and shape their local areas.

- Opening up Public Services – reforms on public services to enable competing organisations to offer people high quality services.

- Social Action –encouraging people to be more active in their local communities.

The third component Social Action is aimed at improving social cohesion. The ethos behind Social Action is that by involving people more in their local community they will be more invested in it, care more and this will lead to greater social cohesion and reduce anti-social behaviour levels.

1.1.2 The Need to Share Information

Unfortunately the need to share information is generally identified once there has been an incident or case where not sharing information has had negative consequences. This was highlighted on a global scale with the September 11th terrorist attacks in New York, US 2001 which led to numerous reviews and changes in the way American federal, local policing and intelligence agencies share information. "The 9/11 attacks exposed the fact that our nation's local, state, and federal emergency preparedness, response, and coordinations, capabilities, as well as our intelligence production and sharing efficacy, were deficient, incompatible, and outdated" (Joyal, 2012, p.1). One significant change in America has been the implementation of 77 (taken from Homeland Security, n.d.) fusion centers. "A fusion center is an effective and efficient mechanism to exchange information and intelligence, maximize resources, streamline operations, and improve the ability to fight crime and terrorism by merging data from a variety of sources." (U.S. Dept. of Justice, n.d.). The fusion center is a co-located arena where members of CIA (Central Intelligence Agency), FBI (Federal Bureau of Investigation), US Justice department, state and local policing departments and others agencies related to criminal or terrorist activities come together to share information on potential threats.

Effectively a fusion center is a conduit for relevant agencies to share information in a single place; it is one example of information sharing by co-location.

Closer to this research are three high profile cases in the UK where information sharing was identified as having failed leading to tragic consequences. The three cases are the Soham case in 2002, the Climbie case in 2003 and the Pilkington case in 2007: each of these is reviewed briefly in sections 1.1.2.2, 1.1.2.3 and 1.1.2.4 respectively after a brief overview of the process of a Major Crime Investigation Review in section 1.1.2.1.

1.1.2.1 Major Crime Investigation and Serious Case Reviews

In the light of a major crime (a crime involving actual or suspected murder, manslaughter, blackmail, terrorism, rape or armed robbery (adapted from Leicestershire Constabulary, 2011)) a Major Crime Investigation Review may be carried out. A Major Crime Review is an investigative review process whereby the Assistant Chief Constable (ACC) commissions a review of the case. The steps involved in a major crime review are shown in figure 1-2.

- Major Crime Incident

- Review commissioned by the ACC

- Terms of reference set

- Briefing by SIO (Senior Investigating Officer)

- Review conducted

- Draft report prepared and supplied to the SIO for agreement of factual content.

- Final report prepared and submitted to the ACC

- Review Panel considers findings of review and implements changes where required

Figure 1-2 Methodology of a Major Crime Review (taken from Leicestershire Police, n.d.)

The aim of these reviews is to "ensure that an investigation has complied with nationally approved standards, is thorough, conducted with integrity, objectivity and investigative opportunities have not been overlooked" (Leicestershire Police, n.d.). Another reason these reviews are carried out is to "identify areas of good practice, areas for development" (Leicestershire Police, n.d.). Overall the Major Crime Investigation review looks back at the incident and its investigation to identify anything which could have been carried out differently and thus result in a more positive outcome or more thorough investigation. The outcomes are used to inform future policies and procedures.

Major Crime Investigation Reviews are carried out within a Force. In even more serious cases a Serious Case Review may be carried out at a national police force level. Table 1-1 describes conditions which will result in a serious case review, to summarise a Serious Case Review (SCR) is carried out generally where a case involved abuse of a child or vulnerable adult or where a case had generated significant public interest/media coverage. A serious case review follows a similar process to that of a Major Crime Investigation but is carried out by an independent reviewer and is not solely for police organisations, SCR can include councils and other public sector organisations. The purpose of a SCR is to be a review independent from an organisation involved in the case, "in order to identify where there are lessons that can be learned about the way that organisations worked, both individually and together" (LSCB Haringley, n.d.).

SCR for incidents involving children (taken from NSPCC 2010):	SCR for vulnerable adults (taken from Cumbria County Council n.d.):
"a child sustains a potentially life-threatening injury or serious and permanent" "a child has been seriously harmed as a result of being subjected to sexual abuse; or" "a parent has been murdered and a domestic homicide review is being initiated" "a child has been seriously harmed following a violent assault perpetrated by another child or an adult"	"abuse or neglect is known or suspected to be a factor in their death" "potentially life threatening injury through abuse or neglect" "Serious abuse takes place in an institution or when multiple abusers are involved" "actual abuse or mistreatment of sufficient complexity or significant public interest" "There is a "near miss"" Other requests made by interested parties.

Table 1-1 Conditions which may results in a SCR

1.1.2.2 Soham Case, Bichard Review and IMPACT program

The Soham case in 2002 (BBC News, 2003) was the murder of two school girls in Cambridgeshire. The murderer Huntley had come to the attention of Humberside Police and Humberside County Council Social Services on multiple occasions but was never convicted.

The Bichard inquiry (Bichard, 2004), a serious case, review carried out following the Soham case showed that actions and decisions taken prior to the murders were made on the basis that those acting had all available information and were working to the best of their knowledge. Without access to other sources they simply did not know that there was other information they should be considering before acting. From the Serious Case Review carried out post trial it became evident that, although not the fault of the Police Forces, "better use of information might have prevented the Soham murders" (Thomas and Walport, 2008, p.2). Another key message of the Bichard Inquiry was the finding that "an IT system capable of allowing police intelligence to be shared nationally is a priority." (Bichard, 2004, p.129).

As a direct result of the Bichard Inquiry the NPIA (National Policing Improvement Agency) set up the

IMPACT programme with the aim "to improve intelligence and information sharing amongst police

Forces" (NPIA, 2011a). The IMPACT programme aimed to rectify the problems identified by the Bichard Inquiry and to improve inter-force information sharing by ultimately delivering a single IT system all Forces had access to (Police National Database (PND)). The programme had three deliverables to reach the goal of the PND:

- Impact Nominal Index (INI)

- Management of Police Information (MOPI)

- Police National Database (PND)

The INI was an interim solution implemented in 2005 (NPIA, 2011a) to minimise risk until the PND was fully implemented; it allowed police Forces to identify if other Forces had intelligence which may be of relevance to their investigation. INI was a database which allowed a force to search details of a person and return hits of Forces which may hold relevant intelligence. Once the police officer searching the database knew which forces held the relevant information they then made direct contact with the police force for further details.

The implementation of a single system accessible by all the police forces brought with it the issue of differences in data recording and data quality. The second stage of the IMPACT program was to introduce MOPI a Statutory Code of Practice issued in 2005, which applies to all police information and acts as a guide to "information collection, recording, evaluation and actioning, sharing, reviewing, retention, and disposal" (NPIA, 2011a). MOPI was fully implemented by all police forces by 2011 (NPIA, 2011a). MOPI helps to ensure a more standardised approach to police information than previously existed, though issues around data quality still exist. The PND was the overall aim of the IMPACT program aiming to be a "one stop shop for intelligence" (NPIA 2011a). Phase one was implemented in June 2011 in business areas carrying significant risk e.g. protecting vulnerable children and adults, with Phase 2 of full implementation and decommissioning of existing legacy systems i.e. the Police National Computer post Olympics in 2012. The PND "provides forces with immediate access to up-to-date information drawn from local crime, custody, intelligence, child abuse and domestic abuse systems" (NPIA, 2011, p.1). The system enables authorised users to (taken from NPIA, 2011a):

- '"identify new links and patterns in offending at a local, regional and national level;
- make more informed decisions and risk assessments;
- save time though having direct access to information."

The PND provides a single place for forces to share and access information and thus hopes to rectify the failings found by the Bichard Inquiry.

1.1.2.3 Climbie Case and Laming Review

The Climbie case (Health Committee, 2003) was a child abuse case that led to the death of a child in 2002. Prior to the death of the child the Police, four different local authority Social Services departments, the NHS and the NSPCC (National Society for Prevention of Cruelty to Children) had all come into contact with the family and noted abuse. All agencies involved were found to have acted inadequately and as a direct result

of this case changes were made to the legal system with the introduction of the Childrens' Act (2004) and the formation of the Every Child Matters initiative (Department of Education, 2006). The Every Child Matters "policy demands that all organisations that provide services to children work together in more integrated and effective ways through the development of Integrated Children's Services" (Engage in the Visual Arts, n.d., p.1).

Where Bichards' Review (Bichard, 2004) concentrated on sharing information between police forces, Lord Lamings' (Lord Laming, 2009) review highlighted the need for information sharing between agencies such as the social services and the police. "Undermining many attempts to protect children and young people and improve their well-being effectively is the low quality of training and support given to often over-stretched frontline staff across social care, health and police" (Lord Laming, 2009, p.11). The Laming review has led to a greater focus on agencies working together to pool their information and improve their responses to individuals who may require a multi-agency approach. The Children's Act (2004) requires each local authority to set up a Local Safeguarding Children Board (LSCB) where key partners involved in Safeguarding children must all be represented. "The overall aim is to encourage integrated planning, commissioning and delivery of services as well as improve multi-disciplinary working, remove duplication, increase accountability and improve the coordination of individual and joint inspections in local authorities." (RCGP, 2007, p.9). The LSCBs allow agencies to co-ordinate their work and actions by clarifying what each agency is responsible for. Collaboration is easier as LCSB have put a basis for information sharing in place.

1.1.2.4 Pilkington Case and Review

The Pilkington case (Telegraph, 2009) is a further example of a break down in information sharing between agencies in October 2007. The case involved the suicide of a mother and daughter as a result of repeated targeted anti-social behaviour towards the family in Leicestershire. The family had come into contact with the Police and local services on multiple occasions, with the Police "contacted on 33 separate occasions by Fiona herself, her mother Pam Cassell and her neighbours" (Equality and Human Rights Commission, 2012, p.10). Each individual contact was considered in isolation and identified as low level and thus did not constitute more serious responses from the agencies involved. Had other systems been in place to allow agencies to share information they may have been able to identify the repeat and vulnerable nature of the family, thus taking joint action to work with the family and improve their quality of life.

The case resulted in both a serious case review in 2007 looking at all agencies involvement with the family and an investigation by the IPCC (Independent Police Complaints Commissioner) which was published in May 2011 (IPCC, 2011). This specifically investigated if the police officers involved had acted appropriately. This resulted in four officers facing internal disciplinary hearings at Leicestershire Police. The findings of both the investigations concentrated on a lack of understanding of vulnerability and an inability to identify repeat

victims both within a single agency and between partnership agencies. The IPCC investigation identified "incidents were too often dealt with by police officers in isolation and with an unstructured approach" (IPCC, 2011).

As a result of this case ASB management is a top priority for forces nationwide and other Public Agencies such as local councils. These agencies are working hard to try to find a solution to enable them to identify vulnerable and repeat callers at point of contact in a bid to ensure no further incidents of this kind.

1.1.2.5 Summarising the Need to Share

These high profile cases highlighted the need for a more integrated approach to partnership agencies data. There have been local and national, single and multi-agency failings with regards to information sharing. These three cases in particular have focused agencies on the need to review their information sharing practices with a view to greater partnership working.

1.2 Sentinel Project

This section provides a high level overview of the Sentinel project and the partners involved in the project, further discussion around the project and partners is discussed in chapter four Partnership Context. The Sentinel Project is an IT implementation for approximately 2000 users (across the partnership) project to introduce to the councils and police in Leicester, Leicestershire and Rutland a single system to record and manage all ASB incidents. The project involves eight borough/district councils, one city council, one county council and their coterminous police force, covering the counties of Leicester, Leicestershire and Rutland. Sentinel's implementation began in 2010.
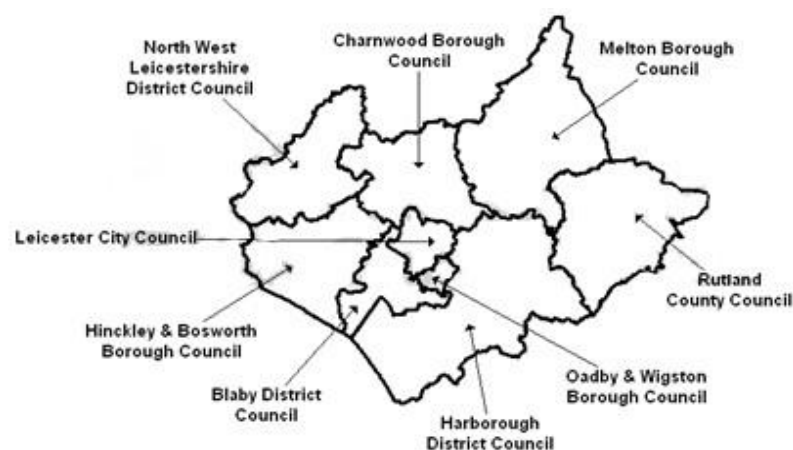
Figure 1-3 Leicestershire and Rutland Councils (Taken From Leicestershire County Council, 2010)

The Sentinel project looks to introduce a single information sharing repository, similar to the police national system PND but on a local scale for ASB data with multiple agencies. The project will introduce a real time information sharing system for the eleven partners involved, to record the same level of ASB information on. A high level overview of timelines is provided below in Figure 1-4.

High Level Overview of Key Sentinel Project Dates

2006	**Jun-06** Sentinel v.1 (Charnwood and LO/LC LPUs only)
	Oct-07 Pilkington Case
	Dec-10 CSPB Agree Sentinel as County Wide Solution
Nov-11 Sentinel Phase 2 Go Live	**Oct-11** Sentinel Phase 1 Go Live
	Dec-11 Sentinel Phase 3 Go Live
Mar-12 Sentinel Phase 4 Go Live	**May-12** City Council Begin Reviewing Cases on Sentinel
Aug-12 Sentinel v.2.5 Releases	**Aug-12** City Council Begin Inputting ASB Cases on to Sentinel
2013	**25/06/2013** Project Phase Completes

Figure 1-4 High Level Overview of Key Dates from Sentinel Project (Created by Researcher)

1.3 Purpose of the Research

IT implementations in particular large public sector IT systems have a documented high failure rate. The Standish Group produce a regular report called the CHAOS report which was introduced in 1994 to investigate software project failure rates in the USA. These figures are widely reported in government reports (POST, 2003), media reports (Levinson, 2009 and Rubinstein, 2007) and scientific articles (Narciso and Verner, 2009 and Kaplan and Harris-Salamone, 2009). There are authors such as Glass (2006) and Jørgensen et al (2006) who question the validity of comparing project success against potentially politically motivated forecasts; however they have been unable to refute the credibility of the Standish Groups findings entirely. The CHAOS report (Standish Group, 2009, p.2) breaks the outcome of projects into three categories; successful (completed on time and on budget), challenged (completed and operational but over budget, over time or with less functionality than forecasted) or impaired/failed (cancelled during development cycle). The results of the CHAOS report are summarised in table 1-2.

Year	Successful	Challenged	Failed
1994	16%	53%	31%
1996	27%	33%	40%
1998	26%	46%	28%
2000	28%	49%	23%
2002	34%	51%	15%
2004	29%	53%	18%
2006	35%	46%	19%
2009	32%	44%	24%

Table 1-2 Summary of Chaos Report Figures 1994-2009 (1994-1998 figures taken from Eveleens and Verhoef, 2010. p.31, 2000 onwards figures taken from Standish Group, 2009, p.1)

Whilst the CHAOS report represents software project success rates in the USA focusing on the UK public sector projects (not just IT projects) success rates are a serious problem with many high profile failures covering infrastructure and IT projects, examples include the "Channel Tunnel costs underestimated by £5.2bn" (Lowe, 2010), "Jubilee Line extension costs underestimated by £1.4bn and duration understated by 2 years" (Lowe, 2010) and the National Program for IT (NPfIT) which was originally estimated to cost £2.3bn and last 3 years, which ultimately cost over £20 billion and lasted over 10 years. The chairman of the Public Accounts Committee who reviewed the NPfIT project claimed "this is the biggest IT project in the world and it is turning into the biggest disaster" (Daily Mail, 2010). Specifically looking at government IT projects a

report by the Parliamentary Office of Science and Technology (POST) identified at the point of writing the report in 2003 there were "100 major IT projects underway with a total value of £10 billion." (POST, 2003, s. Summary) As the governments Comprehensive Spending Review (CSR) (HM Treasury, 2012) is focusing on reducing public sector spending, the public sector can no longer afford such high profile IT failures.

Project	Failure
Channel Tunnel build	£5.2bn overspend
Jubilee Line extension	£1.4 bn overspend 2 year delay
National Program for IT	Cancelled due to overspend and delays

Table 1-3 Summary of UK Public Sector Project Failures

Public sector partnerships are increasing, partly as a result of a push from the UK government for agencies to work closer together to minimise the risk of people failing through the gaps in agency spheres of work. Evidenced in projects such as the Public Services Network (PSN), "an assured network over which Government can safely share services, including many GCloud services, to collaborate in new ways, more effectively and efficiently than ever before." (Cabinet Office, 2012). As well as direct recommendations from public enquires including Climbie (Lord Laming, 2009) and Bichard (2004), which have both identified a need to share information between agencies to provide wider access to information, thus providing a fuller picture allowing an agency to respond in the most appropriate manner.

The purpose of this research is to provide guidance for partnerships, in particular public sector partnerships looking to implement an IT information sharing system. This research will contribute to the evolving academic literature on information sharing between partners, producing a classification of tactics used to influence partnership decisions and a framework modelling the factors of a multiagency information sharing project. The guidance produced from this research is aimed to increase the likelihood of success when implementing a partnership information sharing system and has been produced through the implementation of such a project within Leicestershire Police and its council partners.

1.4 Aims and Objectives

The overall aim of the research is to investigate the implementation and use of a single IT system to share information between public sector agencies. To achieve this overall aim three specific aims have been identified to allow thorough investigation of the different stages of the information sharing system implementation and use; aim 1 focuses on the pre-implementation environment at the agencies, aim 2

focuses on the implementation and aim 3 focuses on the evaluation of the implementation and recommendations for future projects.

Aim 1 (Pre-Implementation Environment)

To understand the current information sharing environment between Leicestershire Police and the local authorities with regards to Anti-Social Behaviour.

OBJECTIVES:

1. Review existing literature.

2. To identify relevant partner agencies.

3. To explore the current processes in place to share anti-social behaviour information with partners.

4. To explore to what extent the police and relevant partners share anti-social information.

5. To identify how the anti-social behaviour information currently being shared is used to address ASB.

Aim 2 (System Implementation)

To understand how a partnership develops and implements an information sharing system to share anti-social behaviour information.

OBJECTIVES

1. To analyse the governance in place for the development project.

2. To investigate how the governance in place for the project effects the development.

3. To analyse how partners reach decisions related to developing the system.

4. To map the impact of decisions made in the development stages.

5. To evaluate the processes in place, post system implementation to share anti-social behaviour information and how they have changed since the system implementation.

Aim 3 (Post Implementation Evaluation)

To identify the learning from the project to provide recommendations for future information sharing projects between partners.

1. To recommend essential features and processes for an information sharing system.

2. To recommend factors for consideration at different stages of project implementation.

3. To identify barriers to successful implementation of an information sharing system.

4. To produce a framework of factors which impact an information sharing project.

1.5 Thesis Overview

This thesis is constructed of nine chapters. Chapter one provides an introduction to the research by providing an overview of the need to share information in the public sector. Chapter two reviews the relevant literature; covering the barriers and benefits of information sharing and existing models and frameworks related to the process of information sharing.

Chapter three details the methodological framework and rationale used to gather and analyse data for this research. Chapter four provides the context for the study detailing the history behind the IT implementation project at the centre of this research.

Chapter five presents the overall themes identified from the data gathering. Chapter six introduces the framework for information sharing analysis in relation to implementing an information sharing project in a partnership. Chapter seven refines   the model introduced in chapter six after further analysis and discussion with the studies subjects.

Chapter eight discusses the results from the data analysis and its potential impact. The thesis is concluded in chapter nine which summarises how the research aims and objectives were achieved and limitations experienced.

2. Literature Review

2.0 Overview

The literature review begins by defining the essential terms relevant to this research in section 2.1. Section 2.2 identifies and reviews the process of information sharing. Section 2.3 reviews the literature identifying barriers and section 2.4 enablers to information sharing pertinent to this research. Section 2.5 looks at interventions organisations can make to improve information sharing and the benefits gained from sharing information. Section 2.6 reviews relevant frameworks and models to information sharing. The chapter then concludes with section 2.7 which identifies existing gaps in the literature where this research fits within and expands upon.
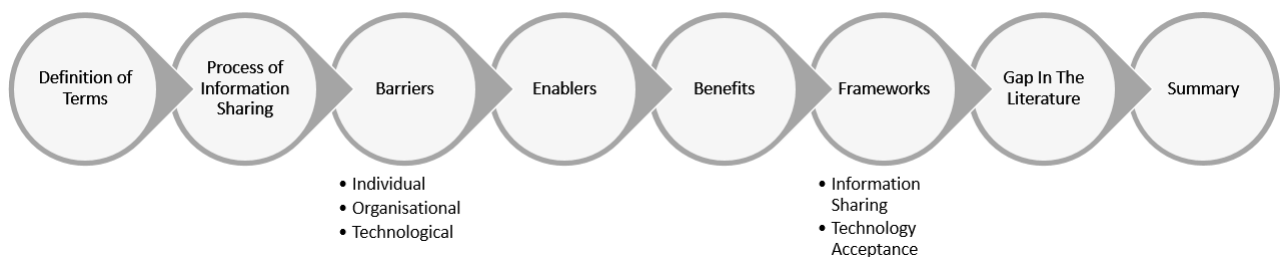
Figure 2-1 Literature Review Road Map (Created by Researcher)

2.1 Data – Information – Knowledge – Understanding - Wisdom

Prior to reviewing the literature the essential terms need to be defined to clarify the concepts being used within the literature. This need comes from the interchangeable use of terms, in particular the terms data and information; the definitions for understanding, knowledge and wisdom are provided to show the transformation of data through the cognitive stages into wisdom. The terms are hierarchical with each building on the cognitive stage below e.g. knowledge can only be used when applied to information which itself is built from data. Figure 2-2 summarises the hierarchy of the modes of data taken from Bellinger et al (2004).
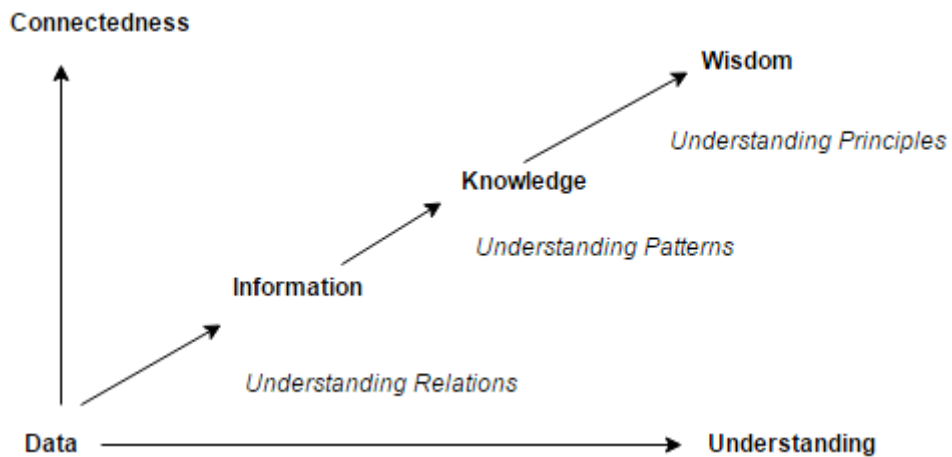
Figure 2-2 Modes of Data (Adapted from Bellinger et al (2004), online)

 The definitions used for this research are representative of various definitions across the literature. The definitions are adapted from Drake et al (2004) and Ackoff (1989) and provide a clear way to distinguish between the modes of data.

- Data – raw numbers/facts e.g. 40. In a computer system this is simply the binary coding.

- Information – Data provided with some context and/or relevance e.g. 40 ASB incidents.

- Knowledge – Appropriate collection and assimilation of information i.e. the ability to use the information to take some action and make sense of it e.g. 40 ASB incidents in a month is higher than average.

- Understanding – Ability to synthesise new knowledge from existing knowledge and information. Understanding differs from knowledge as it shows an ability to learn rather than simply memorise e.g. 40 is higher than average incidents for the area but a local event took place and adverse weather conditions (snow) will have increased ASB for the area this month.

- Wisdom – awareness of deeper knowledge and understanding of principles behind knowledge e.g. In future when it is known similar events are going to take place preventative actions such as an increased police presence and additional street lighting can minimise the impact of ad hoc events on ASB levels.

This research focuses on sharing information. From the definitions of modes of data it can be hypothesized that approaches to sharing different modes of data will differ e.g. to share data we could simply provide a person with a spreadsheet of facts, sharing a higher mode such as wisdom becomes more complicated and requires numerous discussions and exposure to data, information and knowledge which will take time. Of the modes of data, data is theoretically the most easily shared; data is explicit and known making it easier to

share than knowledge which is implicit and unknown to the person whose knowledge it is (Spender, 1996, p.7). As the mode of data moves from known to unknown and implicit to explicit the mode of data becomes more complicated to share. Sharing the higher modes of data requires time and exposure to the required information and knowledge. For example when you begin a new job you may be provided with data such as phone numbers for colleagues, understanding which colleague to phone takes experience of the colleagues and understanding of colleagues roles.

In technical terms data is the easiest to share, particularly with the continually increasing use of computers and technology such as networks and cloud computing. It is this ease of transfer which led to the introduction of the Data Protection Act (1998) and the growth of the Information Security Profession. Any sharing project needs to understand relevant legislation particularly the Data Protection Act (1998) and the Freedom of Information Act (2000).

Defining the concept of multi-agency information sharing is important as it "means different things to different people in different contexts" (Harris, 2000, p7). Barki and Pinsonneault (2002, 2005) confirm the concept of information sharing remains poorly conceptualised. Many terms such as interoperability (Landsbergen and Wolken, 2001), interorganisational information sharing (Williams, 2009), interagency collaboration (Richardson et al, 2006), inter-agency information sharing (Slayton, 2000) and organizational integration (Barki and Pinsonneault, 2002, 2005). The term used in this research is multi-agency information sharing. Agency has been used in place of organisation as the research deals with public sector organisations commonly referred to as agencies. Multi-agency information sharing is defined by the researcher as the provision of information to external agencies whom would not otherwise have access to the information.

2.2 Process of Information Sharing

Weiss (1987, p.110) identified three precursors to information sharing. The absence of these precursors means information sharing is unlikely to occur unless there is some form of external crisis or change agent. Weiss's precursors highlight that simply sharing information for the sake of sharing information is unlikely to be successful for those involved. The identified precursors are:

1. Presence of a problem that would benefit from a cooperative solution

2. Existence of resources to address the common problem

3. An institutional capacity to carry out a cooperative program.

For two parties to share any mode of data the literature suggests various considerations prior to commencing the project. Widn-Wulff (2007) identifies four important questions that should be considered when attempting to implement an information sharing project:

- Why are people sharing?

- Why are they using a particular information source?

- When are they sharing?

- Who is sharing?

These questions look to identify what is to be shared, when and by whom and can inform the information sharing process. Hatala and Lutta (2009) identified a three step process for sharing information, the process identifies the stages required for two parties to successfully share information (shown in figure 2-3).
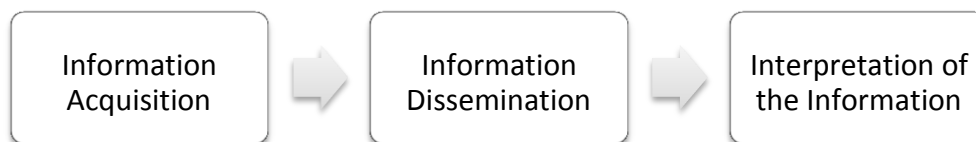
Figure 2-3 Three Step Process for Sharing Information (Adapted from Hataland Lutta, 2009, p.12)

To explain the information sharing process a simple manual information sharing situation is used. Joe wishes to know monthly sales figures from Sally regarding how many computers she sells daily. The first stage is for Sally to acquire the information. She reviews the sales figures for the month and identifies computer sales per day recording this in a spreadsheet. Sally then needs to disseminate the information to Joe; Sally emails a copy of the spreadsheet to Joe. The final step is for Joe to interpret the information by reviewing the sales figure spreadsheet from Sally.

It is important that each stage of the sharing process is considered with all stakeholders needs when implementing a sharing program. Each stage and stakeholder presents barriers which will need to be overcome before sharing can take place.

To successfully share information between the parties the information sharing process should be considered alongside both the precursors to information sharing and the user requirements for the sharing process. If considered when planning the information sharing project potential problems can be identified early. Those designing the process can ensure the minimum needs of the parties sharing and receiving information are met e.g. if resources at the organisation receiving the information only allow information to be interpreted

once a week there would be advantage in designing a process where the party sending the information acquires and disseminates the information daily.

2.3 Barriers to information sharing

Information sharing is a complex process and "factors such as culture, identity, networks, trust and timing are important to consider in the context of information sharing organisations."(Widn-Wulff, 2007, p.23). A review of the literature identifies numerous categorisations of barriers related to sharing modes of data between parties, Table 2-1 summarises three categorisations; Riege's (2005), Dawes (1996) and Landsbergen and Wolken (2001). Riege's (2005) categorisation of barriers relate to the knowledge mode of data. The categorisation was developed from a study of senior managers' knowledge sharing practices. It is one of the most cited categorisations of barriers to sharing within the information science field in studies related to knowledge and information sharing. The second categorisation is Dawes' (1996) which was created from a study of government managers sharing the data mode of information about state programs within a single organisation. The categorisation is less widely used but was developed in the most similar situation to the current research i.e. public sector information sharing, though only within a single organisation. The final categorisation is Landsbergen and Wolkens' (2001) this was developed through deep case studies of information sharing between US government state agencies, a similar setting to this research.

Rieges' (2005) Categories of Barriers to Knowledge Sharing	Dawes (1996) Categories of Barriers to Interagency Information Sharing	Landsbergen and Wolken (2001) Categories of Barriers to Interoperability
Individual	Political	Political
Organisational	Organisational	Organisational
Technology	Technical	Technical
		Economic

Table 2-1 Categories of Barriers to Sharing

An alternative to the classifications shown in table 2-1 is Jing and Pengzhu's (2009) layered behavioural model of government to government information sharing. Jing and Pengzhu categorise challenges to information sharing in five hierarchical layers from individual to the external environment. The model was developed in China through two in depth studies of government to government information sharing. The model was

dismissed for this research as the Chinese information sharing environment was considered too different from that in the UK public sector for useful comparison.

Lack of experience (Van Eyk and Baum, 2002, Landsbergen, Jr and Wolken, Jr, 2001)	Credibility/Trust (Riege, 2005, Van Eyk and Baum, 2002)	Incompatible Technologies and/or Data Structures (Dawes, 1996)
Context (Drake et al, 2004)	External Influence and Loss of Organisational Control (Dawes, 1996)	Security Constraints (Oliva, 2005)
Lack of Awareness of Opportunity to Share (Landsbergen, Jr and Wolken, Jr, 2001)	Lack of Resources and Economic Issues (Olivia, 2005, Landsbergen, Jr and Wolken, Jr, 2001)	Information Obsolescence (Oliva, 2005)
Loss of Exclusivity (Hatala and Lutta, 2009)	Openness to Public Scrutiny (Landsbergen, Jr and Wolken, Jr, 2001)	Form of information (Bhoolpalam et al, 2007, Constant et al, 1994)
Level of Knowledge (Hatala and Lutta, 2009)	Leadership (Rad, 2006, Maddock and Morgan, 1999)	Infrastructure (Pan and Scarbrough, 1998)
Individuals Attitude to Sharing (Bock et al, 2005)	Privacy (Thomas and Walport, 2008, Landsbergen, Jr and Wolken, Jr, 2001)	
Perception of Data Ownership (Constant et al, 1994)	Ambiguity about Statutory Authority (Landsbergen, Jr and Wolken, Jr, 2001)	
Professional Ethos **(Richardson and Asthana, 2006)**	Infoculture and Infostructure (Pan and Scarbrough, 1998)	
Motivation **(Hatala and Lutta, 2009, Riege**, 2005)	Demographic Factors (Drake et al, 2004)	
	Legal Constraints (Oliva, 2005)	
	Culture (Drake et al, 2004, Shein, 1996)	

Table 2-2 Summary of Barriers to Information Sharing

All three categorisations in table 2-1identify organisational and technological as categories of barriers to sharing. Political appears in both Dawes (1996) and Landsbergens (2001) categories, but Reige (2005) is the only one to identify the individual as a category of barrier. Individual barriers to sharing can be extremely influential in the information sharing process. To allow their inclusion in the literature review, barriers to sharing information are categorised using Riege's (2005) categorisation. Whilst this appears to reject the

political category of barrier the relevant barriers falling in this area such as bureaucracy are included under the organisation category, which the researcher feels is more appropriate for this study.

Many of the identified barriers summarised in Table 2-2 could be placed in multiple categories, particularly those identified from sources other than Rieges' original barriers. For simplicity the barriers have been placed in what the researcher feels is the most appropriate category for this research based on where the barrier was evidenced throughout the study. The barriers found in the research are summarised in table 2-2 and are discussed in sections 2.3.1 Individual, 2.3.2 Organisation and 2.3.3 Technical. This review does not detail in what stage of the information sharing the process is found. This is because in most cases the barrier could impact any stage of the sharing process.

2.3.1 Individual

"Barriers originating from individual behaviour or people's perceptions and actions" (Riege, 2005, p.23).

2.3.1.1 Lack of Experience

Previous experience of an information sharing project has been identified as an enabler to information sharing (Van Eyk and Baum, 2002, p.267). No previous experience reduces the chances of an information sharing; "when faced with the unknown, agencies prefer to attend to problems where there are relatively well known ways of solving them and a relatively clear understanding of the trade-offs involved" (Landsbergen, Jr. and Wolken, Jr., 2001, p.209). This is both an individual and an organisational problem. Embedded processes mean people approach the same task the same way; this is how an organisation can ensure standardised results from a task. This is the ethos behind Lean methodology (Emiliani, 2007); removal of variance from a process so inputs, processes and outputs are known and can be used to schedule work. Lean is very effective for standardising a process, but results in people approaching tasks in the same way. To encourage information sharing people should be encouraged to approach tasks in new ways and/or employees should be exposed to information sharing to increase the likelihood of them utilising it in future working practices.

2.3.1.2 Context

 "Information gains its value from its context and relevance." (Drake, Steckler et al, 2004, p.79)

Unlike data sharing, when sharing information the context in which the information is found needs to be communicated. Data is a unit, a number, a fact, to which no meaning is attached and which can be interpreted in different ways. For example 55 is data; this is simply a string of characters with no meaning attached. By adding context e.g. number of ASB incidents in February 2011 the data now becomes

information. If this is to be shared as information not data the fact that this is registration number related to number of ASB incidents must also be shared otherwise this data item could be misinterpreted.

Context can be a significant barrier to information sharing as often it is not considered when organisations decide to share information. The final stage in Drake et als (2004) information sharing process is interpretation. To minimise the chance of misinterpretation the information being shared needs clear context to be provided alongside the data/information. The need to provide context alongside the information can be time consuming and onerous, increasing the cost of sharing and thus acts as a barrier. Early consideration of context can reduce the cost of sharing if this can be automated in the process.

2.3.1.3 Lack of Awareness of Opportunity to Share

If there is no knowledge of opportunities to share then organisations are unable to exploit sharing opportunities. Lack of awareness of opportunities to share (Landsbergen, Jr. and Wolken, Jr., 2001) could be due to perceptions that other organisations would be unwilling to share e.g. organisations wishing to share information with the police may think the police would be unwilling to share police information with them. Alternatively there may be a perception organisations are not allowed to share e.g. for legal reasons. Or could stem simply from not knowing another organisation would be able to utilise the information or vice versa not knowing that an organisation has information which you require.

Organisations wanting to work in partnership with other organisations need to promote information sharing opportunities within their own organisations to ensure employees are able to exploit information sharing opportunities. In early discussions it could be useful for organisations to state explicitly to each other what information they have which they would be willing to share so both organisations can be aware of any potential opportunities to share information.

2.3.1.4 Loss of Exclusivity

Private sector organisations in general exploit information to make money. Organisations go to great expense to protect their information in terms of buying Intellectual Property and in securing networked systems with encryption and firewalls. Private sector organisations make money by utilising information in a way that others cannot or do not. For example car companies are extremely secretive when it comes to developing new cars as by bringing a car to market with a new development first gives the company an edge on the market allowing them to charge a premium.

Public sector organisations do not utilise information to make a profit but instead are utilising information to improve the service they provide to the public. Loss of exclusivity (Hatala and Lutta, 2009) of information can be categorised as individual or organisational barrier as this research is primarily concerned with the

public sector so this barrier is categorised at an individual level than at an organisational level. This is due to individual concerns surrounding job security rather than the value of the information to the organisation.

Exclusive access to information ensures that the individual is required; if the individual was not there who else could provide this information? In a cost saving climate such as in the UK public sector currently due to the comprehensive spending review (HM Treasury, 2012) the individual needs to be able to validate their worth to the organisation. One way an individual can do this is by providing information no one else is able to supply from exclusive information.

2.3.1.5 Level of Knowledge

A problem identified in Constant et al's (1994, p.419) study was that "eventually the most useful sharers will become inundated with requests and as such stop sharing meaning only those with nothing better to do end up sharing." Level of knowledge is a barrier to information sharing as those considered experts in the field become inundated with requests eventually becoming unable to share the required information. Leaving those who are less knowledgeable but that have the time to share information to share suboptimum information. This is exacerbated as information seekers are generally less knowledgeable (Hatala and Luttas, 2009) and less able to screen this suboptimum information for quality. Where resources and access to highly knowledgeable sources is scarce it is important information sharing becomes as automated as possible to maximise the quality of the information being shared and minimise the expert's involvement.

2.3.1.6 Individuals Attitude to Sharing

"Knowledge sharing concerns the willingness of individuals in an organization to share with others the knowledge they have acquired or created" (Gibbert, 2002, p.29). Gibbert refers to knowledge sharing within an organisation a similar approach is found with information; individuals tend to withhold information for a variety of reasons such as "they perceive that sharing such information will lead to their loss of power, position of influence, or promotion" (Hatala and Lutta, 2009, p.12).

In Bock et al's (2005) study of Korean organisations they surveyed employees on their attitudes to knowledge sharing. They found a more favourable attitude to sharing resulted in a greater intention to share. As part of measuring favourability of attitude they studied some elements which affect attitude, identifying two factors which improved attitude to sharing:

1. Greater anticipated reciprocal relationship i.e. there is future reward.

2. Greater subjective norm i.e. it is normal within the organisation to share information.

Bock et al's (2005) study highlights the importance of understanding an individual's attitude to sharing when considering an information sharing project. If the individuals planned to be involved in the project are anti-information sharing, this attitude will directly affect their behaviour towards the project. It may be worth considering different individuals to be involved in the project or make an effort to alter the individual's attitudes prior to project implementation. Whilst Bock et al's (2005) study was conducted in Korea which has significant cultural differences to the UK, the findings of the research identified two elements to improve an individuals' attitude to information sharing which may still be applicable to the UK Public Sector. The suggestions were to make sharing a more normalised activity within an organisation and thus increase the subjective norm to share and to work on a reciprocal relationship for those involved in information.

Organisations wishing to participate in information sharing should look to promote the benefits of information sharing and minimise associated costs of information sharing to the individual. This will improve the individuals' attitude and increase the chances of sharing occurring. Attitudes to sharing can be affected by the form of the information being shared which is discussed in the technology barriers section 2.3.3 Technology.

2.3.1.7 Perception of Data Ownership

"It has been well established that perceptions drive behaviour" (Brown and Brudney, 2003, p.36) an individuals' perception of who owns the data they are using will affect their attitude towards sharing. An attitude that information is owned by an organisation and not an individual increases information sharing. It is important when two organisations are looking to share information they understand the perceptions of data ownership within their organisations. There is unlikely to be one perception to ownership as perception of ownership can be influenced by many things such as organisational culture, demographic factors and level of work experience. It has been shown that "work experience is positively correlated with the attitude that the company owned the information" (Constant et al, 1994, p.410). In Constant et al's study (1994) it was found individuals with longer work experience had a higher perception of information being owned by the organisation in comparison to individuals with less work experience. To increase the chances of a successful information sharing project the organisations should attempt to nurture a culture where the data is owned jointly by all organisations involved. For example storing the organisations sets of data on a shared server helps to generate the perception that the data is jointly owned.

2.3.1.8 Professional Ethos

Richardson and Asthana (2006) work in health and social care in the UK and Australia identified an individual's professional ethos to be a possible barrier to information sharing. Rawson (1994) identified the choice to join a profession is individual and to some extent it can be assumed similar people will be drawn to the same

profession. Each agency has its own culture, social norms, habits and language (Dawes, 1996, p.381). Richardson and Asthana (2006, p.663) work identified that "health professionals attached the least importance to information sharing for the public interest". Whilst "the UK social services professional expected there to be inter-agency information sharing, particularly in cases involving children where the risk of harm would be seen to take priority over confidentiality" (Richardson and Asthana, 2006, p.657). "Of the professionals interviewed, then, only the police in both countries declared information sharing in the public interest to be of high importance." (Richardson and Asthana, 2006, p.663). Both health and social service expressed concerns over sharing with police agencies (Richardson and Asthana, 2006, p.663). The work helps to show that with regards to information sharing the profession sharing will have differing reasons to do so; for health services the primary concern is confidentiality, for social services it is the protection of a vulnerable person who could be at risk. Whereas the police share when it is in the public interest. The research also showed that both health and social services experienced concern when they believed the information could be used by the police. This could be due to the way in which they believe the police will use the information provided i.e. to arrest people. "It has long been acknowledged that one of the barriers to successful collaboration is the extent to which different professions distrust one another" (Richardson and Asthana, 2006, p.664). For agencies to share information with the police they must feel in control of what the police will use the information for. The differing attitudes to sharing information between the professions can act as a barrier to multi-agency information sharing and must be overcome to produce an effective information sharing partnership.

2.3.1.9 Motivation

The subject of motivation is heavily studied in a wide range of fields such as sociology, psychology, biology and marketing. Motivation is covered in detail in the motivational model under technology acceptance models section 2.7.3.3. Motivation impacts nearly every task/decision a person makes every day and as such can act as an enabler or barrier to information sharing. The Oxford Dictionary (2012a, online) defines motivation as "a reason or reasons for acting or behaving in a particular way".

Any information sharing project requires the individuals involved to be motivated to carry out the information sharing. Prior research has shown that "Personal norms, organizational structure, and individual motivation were shown to result in more stable information sharing than sharing induced by organization culture" (Hatala and Lutta, 2009, p.14). This has ramifications for initiating information sharing as we must ensure that the organisational structure is set up to share information and that people are motivated at an individual level. "Motivation, encouragement, and stimulation of individual employees" were the three factors identified by Riege (2005, p.31) for creating a successful knowledge sharing culture. If we can

understand a person's motivation for acting in a particular way, designing systems and projects is simpler as the task of motivating people to use them becomes easier.

2.3.2 Organisational

These are barriers originating from within the organisations wishing to share information.

2.3.2.1 Credibility/Trust

Credibility is defined as "the quality of being believed in and trusted" (Oxford Dictionary, 2012, online). It has been identified as one of the most important factors of multi-agency collaboration (Van Eyk and Baum, 2002). When two agencies are sharing information if either of the organisations lacks credibility, the other agency is unable to trust the information being provided to them. If this situation occurs the agency is unlikely to use the information therefore both organisation will be wasting resources by assimilating and interpreting the information and the sharing project is likely to be a failure. A lack of credibility is representative of the absence of trust in the relationship between two parties. Trust is defined as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or confront that other party" (Mayer et al, 1995, p712). If there is absence of trust either by the information provider that the receiver will use the information correctly or by the information receiver that the provider is a trustworthy source of information, successful information sharing cannot occur.

"Before agencies can share information, they must develop mutual trust" (Landsbergen and Wolken, 2001, p209). Trust can be considered on an individual level or organisational. This research is primarily concerned with multi-agency information sharing, trust has been categorised as an organisational barrier. If trust is not present at an organisational level the project will not take place. "Trust is both a prerequisite for collaboration, and is further reinforced and confirmed as staff collaborate across agencies and disciplines" (Van Eyk and Baum, 2002, p.266). This can make agencies wary when they first work together but as the project progresses relationships of trust should build on the "basis of effective collaboration" (Van Eyk and Baum, 2002, p.266). If two agencies have an existing relationship previous breaks of trust whether real or perceived will need to be managed to ensure a successful sharing process.

Trust is positively associated with a user's intention to share information. Building trust should be a priority in the early stages of a multi-agency information sharing project to improve the intention of users and organisations to share.

2.3.2.2 External Influence and Loss of Organisational Control

"Agencies resist sharing information because information is a source of power and a symbol of their authority to make and implement decisions" (Dawes, 1996, p.381). The discretionary power of an agency to do as they will is potentially limited by sharing information with another agency. The literature identifies three specific barriers which relate to the loss of self-sufficiency of an organisation and the need to allow external controls to influence decisions within the agency. These are:

- Organisational Self-Interest

- External Influences over Decision Making

- Power of Agency Discretion

Self-interest is natural in organisations; an organisation will not carry out a task if it is going to be detrimental to its survival. This is a problem in multi-agency information sharing programs where the benefits to the organisation are often indirect and difficult to measure. Generally organisations will engage in partnership work "only when there is also some reasonable expectation of achieving a self-interest goal" (Dawes, 1996, p.380). Self-interest highlights the need for a reciprocal relationship between parties who wish to share information. Prior to initiating a sharing program many organisations will require some reassurance that they will get benefits from the resources they are putting in. This reassurance can be difficult to provide where tangible benefits cannot be identified.

Decision making in a public agency is a "complex web of influence over the decisions and decision making processes" (Dawes, 1996, p.381). Public agencies share decision making with a wide range of external groups e.g. interest groups, legislative committees, government officials etc. This range of influences over decision making can leave "little energy to devote to issues which transcend their boundaries or to build linkages with organizations outside the usual network" (Dawes, 1996, p.381). By carrying out a multi-agency information sharing project the agency is further reducing the amount of autonomy it has over its own destiny by adding further interdependency with another agency (Pfeffer, 1978). The bureaucracy required to initiate and agree with the numerous stakeholders can be an insurmountable barrier to sharing projects.

2.3.2.3 Lack of Resources and Economic Issues

"Given the ever-increasing accountability of agency action combined with less resources, most agencies are hard-pressed to pursue interoperability where the benefits are ill-defined and the costs are unclear and uncertain." (Landsbergen and Wolken, 2001, p.209). Lack of resources in general can be a barrier but specifically in a climate of reducing resources (as currently in the UK (HM Treasury, 2010) and many other

economies), economic issues can be a significant barrier to information sharing. Olivia (2005) identified economic issues as a non-technical barrier to information sharing in their "21st Century Challenges to Information Sharing". Economic issues to information sharing can be a barrier at various stages of an information sharing project. If in the project initiation stages there are insufficient resources available to implement the project it will never begin, but resources need to be in place to maintain practices put in place. This can be a barrier when organisations are downsizing to reduce costs as this may bring issues around who pays for the information sharing resources. For example organisation A and B share information. Due to the process in place organisation A pays for two full time employees to share information and B pays for one. If A is looking to reduce costs as part of a downsizing exercise and the two employees are solely dedicated to providing information to organisation B they may feel B should be paying for these resources.

2.3.2.4 Openness to Public Scrutiny

There is an increasing need as technology makes information more widely available to the public for organisations to be transparent to their customers about what they are doing and how. Through the Freedom of Information Act (2000) people are more aware of their ability to request data stored about them by an organisation. This need to be more open to public scrutiny can act as a barrier to information sharing as agencies can feel they are being watched and micromanaged by the public. This gives people a greater "opportunity to attack an agency for motives other than bona fide concern for the performance of the agency's mission" (Landsbergen and Wolken, 2001, p.209). Agencies may be less likely to share information with another agency as they are worried what external forces may think about their decision to share.

2.3.2.5 Leadership

Leadership is of critical importance when carrying out a multi-agency information sharing project. Bringing together two separate agencies to work on a project will have many challenges. "Key personalities can act as barriers to effective partnership working" (Maddock and Morgan, 1999, p.36); without effective leadership these personalities will cause problems for the information sharing project.

The study of leadership has yet to provide a definitive answer as to the best kind of leadership and the question itself would form a whole research project Different people want different styles of leadership; "no one leadership style is ideal for every situation" (Rad, 2006, p. xiii). An information sharing project requires a leader who is adaptable and able to handle different personalities and cultures and also a good negotiator; able to bring consensus when decisions need to be made. Another element of leadership which can be a barrier to information sharing is lack of support from senior leaders within the agencies; without support individuals trying to share information may not get the resources required to carry out the information sharing.

2.3.2.6 Privacy

Information sharing projects often involve sharing data about particular individuals. Knowing that data may be being passed to other organisations will discourage some individuals providing information to an organisation. "There needs to be much more—a genuine feeling of trust and control by citizens" (Landsbergen and Wolken, 2001, p.208). Thomas and Walport (2008) identified "loss of privacy" as one of the key risks of sharing information. The need to protect an individuals' private data acts as a barrier to information sharing. Protecting privacy to some extent is at odds with the desire to share information. In the UK sharing personal and sensitive data is governed by the Data Protection Act (1998). Releasing data to another organisation requires consent or a legal basis to do so e.g. police can share data to prevent crime and disorder (Crime and Disorder Act 1998). Concerns over an individual's privacy act as a significant barrier to organisations wishing to share information about individuals.

2.3.2.7 Ambiguity about Statutory Authority

"'Legally, agencies cannot act outside the power delegated to them under their authorizing statute." (Landsbergen and Wolken, 2001, p.208). For public agencies there is a question over what information under what circumstances they can share. Agencies would "prefer to have explicit statutory authority to share information" (Landsbergen and Wolken, 2001, p.208). Particularly under the current government regime in the UK organisations are encouraged to work as necessity dictates and the government will only intervene (HM Government, 2010) when they feel they have overstepped acceptable courses of action. In certain cases such as child protection in the UK there are relevant legal acts e.g. Childrens' Act (2004) which give explicit legal powers to share information. Legislation and government guidance can be vague and inconsistent. Agencies can be reluctant to act on vague powers in case they interpret the powers incorrectly and are subsequently punished.

2.3.2.8 Infoculture & Infostructure

The infoculture is "the stock of background knowledge which actors take for granted and which is embedded in the social relations surrounding work group processes" (Pan and Scarborough, 1998, p.57). It is built up over time and develops as a culture would in an organisation. The infostructure of the agencies are "the formal rules which govern the exchange between the actors on the network providing a set of cognitive resources (metaphors, common language) whereby people make sense of events on the network."(Pan and Scarbrough, 1998, p.57). The infoculture is the social norms and rules by which an organisation handles is information, the infostructure is the rules and regulations in which the information is exchanged. If the norms and language (infoculture) and the rules and regulations (inforstructure) between two organisations are

incompatible, difficulties will arise in the information sharing process particularly in the dissemination and interpretation phases.

2.3.2.9 Demographic Factors

Drake et al (2004) noted that differences in gender, age, ethnicity and other demographic factors can act as a barrier to multi-agency information sharing. This is caused by differences in social norms, habits and attitudes towards sharing. Age affects attitude towards ownership of data (as noted in section 2.3.1.7); it can be hypothesised that other demographic factors will also impact the ability for organisations to share information. Difference in demographic factors are likely to impact on a persons' understanding of the information i.e. the context of the information, particular when acronyms are being used as they may mean different things to demographic groups. For example people who regularly use mobile phones for texting will understand LOL to mean Laugh out loud other demographics could interpret LOL to mean lots of love, an older acronym from when letter writing was a chosen form of communication.

2.3.2.10 Legal constraints

Legal constraints (Oliva, 2005) are perhaps the most persistent barrier. Any information sharing project must comply with the legislation in place in the environment in which the organisations are acting. Legal issues may be only be a perceived barrier, if organisations do not fully understand the legislation in place they may perceive it prohibits information sharing which is in fact legal. Engaging legal experts with the sharing project is essential to minimise misinterpretation of legal acts surrounding information sharing.

In 2010 the first fines were issued by the ICO (Information Commissioners Office) to organisations for breaching the Data Protection Act (1998). It is expected that legal issues will become a more predominate barrier to information sharing as a result of these fines. The fines act as a prominent deterrent to information sharing in case of potential punishment and media coverage.

2.3.2.11 Culture

Culture "is a set of basic trait assumptions about how the world is and ought to be that a group of people share and that determines their perceptions, thoughts, feelings, and to some degree, their overt behaviour" (Schein, 1996, p.41). Culture is the overall ethos which exists in an organisation. "Traditional wisdom points to cultural differences between government agencies and a resulting lack of trust as key barriers to info sharing. A less well-understood barrier lies in the differences among subcultures within agencies." (Drake et al, 2004, p.67). A subculture is simply a culture that exists within a larger culture. Scheins' work on subcultures within an organisation with regards to information sharing can also be applied to sharing at the organisational level. Understanding different cultures can help an organisation frame requests for

information to receive the information in a way which is useable and understandable to the requester. Sheins (1996) work identified three subcultures which exist in private companies and three subcultures which exist in public sector organisations, summarised in table 2-3.

Private Sector	Public Sector
Operator	Bureaucrat
Engineer	Politician
Executive	Science

Table 2-3 – Sheins (1996) Types of Subculture in Private and Public Sector Organisations

Different cultures have different values, views and ways of thinking which can make information sharing extremely difficult as it can lead to misunderstandings. "These differing values, worldviews and mental models of each subculture can make information sharing across subcultures difficult because these differences shape the very language used to do so." (Drake et al, 2004, p.70). Where organisations use acronyms and languages the other organisations do not understand or worse believe they understand but do not a barrier to sharing is created.

Drake et als (2004) work highlighted three differences in the way Schein's (1996) identified subcultures approach to view data, use data and purpose of data (summarised in Table 2-4). These differences could be abstracted to the wider organisational context. Table 2-4 summarises the different approaches to data.

	Scientist	Politician	Bureaucrat
View of Info	Connectivity	Currency	Commodity
Use of Data	Analyse	Prioritise	Operationalise
Purpose of Data	Create and provide knowledge	Deliberate and justify decisions	Document and implement actions.

Table 2-4- Public Sector Subcultures Approach to Data

The subcultures have different priorities and contexts for data (adapted from Drake et al., 2004):

- Scientist focuses on science and the ability to create and utilise knowledge. Data exists to solve complex problems. The scientists focus is on knowledge creation and provision which can cause tensions with laws, agendas and politics.

- Politician focuses on the politics of an organisation; including setting visions, goals, deciding what and investment decisions.
- Bureaucrat focuses on managing the day to day operations of public agencies, tensions can occur when it is seen bureaucrats are holding up other subcultures with what is seen by the other subcultures as needless bureaucracy.

When working to share information Drake et al's (2004) work highlights the need to understand other people's relationship with the data being shared in order to optimise the process of sharing information and minimise any barriers.

2.3.3 Technology

Technology barriers refer to any information sharing barrier that is caused by technology this "cover problems associated with hardware, software and/or communications networks" (Gil-Garcia, 20007, p.123).

2.3.3.1 Incompatible Technology and/or Data Structures

Incompatible technology is one of the more explicit barriers to information sharing (Dawes, 1996) as it is visible to the project. Organisations evolve over time and as new technology becomes available they make decisions about what technologies to implement. It is extremely unlikely that two disparate organisations will make exactly the same decisions regarding technology. Even if they have the same products they are unlikely to be utilised them in the same way e.g. databases will be configured differently.

If the organisations who wish to share information have wholly incompatible technologies they will be unable to share information without a large amount of work (increasing the cost of sharing). If there are only minor incompatibilities the organisations may be able to implement an interface which will automate the process of translating the information from one to another (reducing the cost of sharing to the individual).

> *Example:*
>
> *A council shares information with a volunteer agency dealing with elderly members of the community.*
>
> *Case A:*
>
> *When the local council wishes to make a referral to the volunteer agency they look up the customer record in their database and press a button labelled "refer to volunteer agency". This automatically generates an email with an attachment containing customer details. This is sent to the agency who are able to open and read the email and action immediately.*
>
> *Case B:*
>
> *When the local council wishes to make a referral to the volunteer agency they look up the customer record in their database and press a button labelled "refer to volunteer agency". This automatically generates an email with an attachment containing customer details. This is sent to the agency who are using a different word processing package and they are unable to open the attachment. A conversion program is used to open. The conversion program does not always work and big portions of text are often missing. The volunteer agency has to go back to the council to get the correct information.*

Figure 2-4 Incompatible Technologies example *(created by Researcher)*

In the scenario detailed in figure 2-4 information sharing is much more likely to occur in situation A where the technology is compatible and the costs of sharing are lower. This simplified example illustrates the potential for incompatible technologies to act as a barrier to sharing.

Inconsistent data structures (Dawes, 1996) are similar to incompatible technologies. The data structure is the organisation of the data i.e. how the data is stored. When two organisations wish to share information they must understand the differences in their data structures e.g. field names and types, so differences can be managed. As long differences are managed the barrier to information sharing will be minimised. However if not managed, inconsistent information may be passed back and forth between the agencies. In the best case scenario nothing will be done with the information (the alternative being the information is used incorrectly). A bigger problem is if organisations use the information they have been passed without considering the data structures; this could result in misleading information which could have consequences for the organisation.

	Organisation A	Organisation B
Field	**Data contained infield**	**Data contained in field**
Name	Persons name	Persons name
Profit	Yearly profit	Monthly profit
Number	Reference number	Phone number

Table 2-5 Data Structure Example

Table 2-5 shows data structures from organisation A and organisation B. The two organisations wish to share data regarding profits. Both organisations have a profit and number field the fields refer to different data items. Profit in organisation A refers to the yearly profit whilst in B this refers to monthly profit. If the two databases were shared between the organisations without explanation of the differences any profit analysis of the organisations would be skewed. Table 2-5 simple example shows how inconsistent structures could impact and act as a barrier to information sharing.

2.3.3.2 Security constraints

Sharing information with another organisation brings an immediate problem with security (Oliva, 2005). When the information is solely within one organisations' domain they have complete control and oversight as to what is happening with it. By opening up information to another organisation a potential weakness is added in security which otherwise would not be there. The security aspects of the sharing process must be carefully considered. Security does not simply refer to technical security e.g. hardware and software but the processes surrounding the information e.g. people accessing the information having relevant security clearance.

If common security procedures cannot be agreed and put in place by all organisations sharing the information security constraints could act as a blocker to information sharing. For example police information requires a minimum security clearance of an enhanced Criminal Records Bureau (CRB) check to reduce the risk police information will be misused. Any proposed project requiring sharing of police information would require any people with access to it to have an enhanced CRB check. If this was not agreed or people did not pass this security test the information sharing could not go ahead.

2.4.3.3 Information Obsolescence

"Has the information been overtaken by events – has the information become incorrect due to new discoveries or information correction" (Oliva, 2005, p.2). Information obsolescence is the concept that each

piece of information has a limited useful life. The phenomenon of information obsolescence is a barrier to information sharing as depending on the information being shared its life cycle could be extremely short. The process of sharing the information needs to consider information obsolence. If the information cannot be shared and assimilated with the relevant organisations in a timely fashion there is no point in sharing the information once it has become obsolete. Keeping data up to date when it is replaced by newer information can be difficult to manage if information is being shared by replication rather than single copy approach (discussed in section 2.3.3.4).

2.4.3.4 Form of Information

Form of information is classified in two ways. Both classifications can act as a barrier to sharing:

- Copy or original?

- Product or expertise?

2.4.3.4.1 Copy v Original

According to Bhoolpalam et al (2007) there are two approaches to information sharing (whilst the Bhoolpalam et al (2007) use the term information they are in fact discussing data):

- Single copy – "remains at source, and access queries are moved to that source" (Bhoolpalam et al, 2007, p.935) e.g. there is a central database all users have access to and update. When information is altered it is altered at source and becomes the information.

- Replicated copy – "is moved to other organizations, replicated there and access queries are handled locally" (Bhoolpalam et al, 2007, p.935) e.g. there is a central database, but extracts are carried out regularly and passed to users who maintain their own database. Any change is only in the replicated database not the central database; original information remains intact.

Each approach to sharing information has advantages and disadvantages. In the single copy sharing approach there is less likely to be inconsistencies. Changes are made to the centrally stored single source. Everyone with access to the information has access to the same up to date information. A single copy of information minimises the chance of obsolete information stored in multiple copies of replicated data. The replicated sharing approach allows each party to make changes to the data without impacting on another party. For example merging fields into a more appropriate structure for a specific party's use will not affect another party's use of the information. Creators of information are more likely to share a replica of information as they are able to retain control of the original source information. For example market information is more suited to a single copy approach as multiple versions of market data could lead to poor decisions regarding

product releases etc. due to inconsistent data. Whereas designs for a new product are more suited to replicated copy; the original design stays intact and others can make changes to their copy, which can then be fed back to the lead designer to make changes where appropriate. The form of information is dependent on the information sharing situation. Using the incorrect form of information may act as a barrier.

2.4.3.4.2 Product v Expertise

Constant et al (1994) carried out a study where they gave respondents scenarios to examine how they would act in certain situations. The study looked to identify whether people shared information differently depending on the form the information took i.e. whether it was a tangible product a person had created or intangible expertise. The scenarios revolved around sharing information with a previously unhelpful colleague. The information they shared took the form of either a computer program (product) they had written or computer advice (expertise). The results showed "people would share a computer program because the work organisation has a right to it, they would share expertise because doing so has personal benefits." (Constant et al, 1994, p.418). The form of information being shared impacts a persons' attitude to the ownership of the information.

The study helps to show that if individuals are of the attitude that information is owned by the organisation they will share it. Effectively information constitutes an organisational resource. Sharing expertise brings personal rewards such as satisfaction and increased social status. The study suggests individuals will be more motivated to share expertise due to personal rewards though they will feel compelled to share a product. Depending on the information project either may be shared but different approaches will be required. For example sharing expertise would require greater promotion of the individual benefits i.e. intrinsic motivation, whilst sharing a product would require the creation/promotion of the products ownership by the organisation(s). The form of information therefore may be a barrier to information sharing dependent on the attitude of those sharing.

2.3.3.5 Infrastructure

Infrastructure refers to the hardware and software utilised by the organisation (Pan and Scarbrough, 1998). "A major obstacle to information sharing is the lack of a framework and an infrastructure that allows government organizations to share information" (Bhoopalam et al, 2007, p.1).

Although most organisations do have some network enabled systems in place the idea of giving another organisation access to their system can be an unfavourable one. Looking at the UK public sector where there is a push for organisations to share data and information there is a lack of infrastructure to facilitate information sharing. Programs of work such as e-government, the PSN (Public Sector Network) and the PND

(Police National Database) are looking to improve infrastructure to enable sharing but the process is slow and yet to reach suitable maturity to enable free sharing of information across government agencies.

2.3.4 Summary

Barriers to information sharing are numerous and varied with differing levels of impact at different stages of the information sharing process. The literature has identified these barriers from numerous studies covering both public and private sector studies, internal and external information sharing. All the barriers discussed in section 2.3 have been identified by the researcher from the literature as potentially impacting this research.

2.4 Enablers of information sharing

Section 2.3. Discussed the various barriers to information sharing found in the literature. In addition the literature also provides enablers to the information sharing process. These are:

- Intellectual Capital
- Relationship Factors
- Creating Standards
- Legal Protection
- Context Tagging

Enablers can be used in all staged of the information sharing process e.g. legal protection will enable both the provision of information and the use of information by a partner.

2.4.1 Intellectual Capital

Intellectual capital is the value associated with a person's knowledge/intelligence. Intellectual capital is created by combining knowledge and experience of different parties through the exchange and combination of information (Nahapiet and Ghoshal, 1998). Nahapiet and Dhoshal (1998) identified four conditions for the creation of intellectual capital:

1. Opportunity – accessibility to the knowledge.
2. Expectation – parties must believe the knowledge is worthwhile.

3. Motivation – there must be a reward for both the seeker and provider of knowledge i.e. a reciprocal relationship.

4. Combination capability – the parties must be able to combine the knowledge and experience.

These four conditions help to illustrate that although a person may be the most knowledgeable they may not necessarily have the highest intellectual capital. As they may not be able to combine their knowledge and experience with others. This can be a particular problem with information sharing where a single party may hold the information required by a large group of people. If the person holding the information is unable to transfer this information to others information sharing cannot happen.

The four conditions for creating intellectual capital can be viewed as conditions for information sharing (shown in figure 2-5). People must have the opportunity to share information, they must believe there is a reason to carry out information sharing and have a motivation to do so and finally they must be able to combine any information they share with other parties.
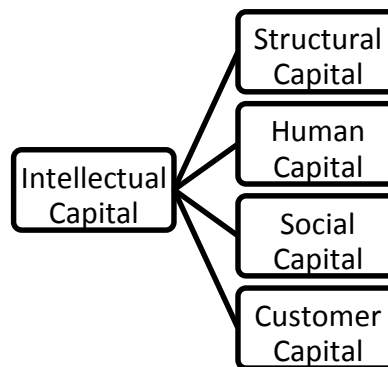
Figure 2-5 The Formation of Intellectual Capital (Adapted from Newell et al, 2002, p.76)

2.4.2 People Factors

The literature identifies numerous factors which can facilitate information sharing which are related to people and their relationships. These factors are trust, mutual respect, accessibility and personal contact. Trust is covered in more detail in section 2.3.2.1. but can be summarised by Drake et als (2004, p.69) comment "If individuals do not understand and trust one another, they are less inclined to freely share information, even information that may be relevant and necessary to the successful operation of the organization as a whole).

Mutual respect was found to be one of the most important factors in interagency collaboration (Van Eyk and Baum, 2002). If the agencies sharing information have a mutual respect for each other the agencies come to the project as equal. This creates a positive atmosphere for the project to develop where both agencies feel they are rewarded by sharing information.

Accessibility is important in an information sharing project (Van Eyk and Baum, 2002); people need to be able to access the information they are sharing. This can be in terms of accessing a system with the information or having access to the people you are sharing the information with. Accessibility can enable information sharing by increasing personal contact, network access, having sufficient licenses etc. "Research already has shown that communications and exchanges among people are heavily influenced by their friendships and personal contacts with others, and to their commitment to the organisation more generally" (Galegher et al, 1990). Having a relationship with the people you are sharing information with helps to build trust which in turn enables information sharing. Personal contact allows informal information sharing which helps create a culture of information sharing.

2.4.3 Create standards

As noted in section 2.3.3.1 incompatible technologies and/or data structures are barriers to an information sharing project. Oliva (2005) noted that the creation of standards would act as an enabler to information sharing as these barriers would be minimised. Oliva did not go into details as to what type of standards could enable information sharing but taking from other research these could include technical standards such as data structures and import/export specifications or information sharing standards such as the process for sharing. These standards could be at a national level, industry level or for the organisations involved in the information sharing project. National or industry level standards would be recommended as it increases the opportunity for future multi-agency information sharing.

2.4.4 Legal protection

Introducing legal protection for information sharing could be controversial as there are currently laws in place such as the Data Protection Act (1998) to reduce the chances of personal and sensitive information being shared incorrectly. These laws can dissuade organisations from legitimately sharing information. Oliva (2005) identified the provision of some form of legal protection for legitimate information sharing projects between organisations would act as an enabler to information sharing.

2.4.5 Context tagging

"Information without context has no value to users" (Oliva, 2005, p.2). Understanding information without context can be extremely difficult, Oliva suggests tagging the information with context to allow easier understanding of the information. An example is given in figure 2-6.

A - 450 million
A - 450 million
B – 450 million (context tags – profit, market data, pounds, agriculture, company)
From A all we know is 450 million, but what does this refer to? From the context tags provided in B we can see this refers to market data, profit and pounds. It would be reasonable to infer that this is the profit data in pounds for a company in the agricultural sector.

Figure 2-6 Example of Context Tagging

Context tagging helps combat the barriers to information sharing such as inconsistent data structures and culture which can lead to misinterpretation of shared data/information.

2.4.6 Summary

The enablers discussed in Section 2.4 have been identified from the literature as factors which will facilitate at information sharing process. When conducting an information sharing project the enablers of information sharing should be maximised to optimise as far as possible the information sharing process.

2.5 Benefits of Information Sharing

The literature identifies numerous benefits of information sharing. The benefits arise from increased access to information for each party and how this is assimilated into their daily business. Dawes (1996) categorised benefits to information sharing amongst government agencies as technical, organisational and political, the benefits are summarised in table 2-6.

Category	Benefit
Technical	Streamlines Data Management
	Contributes to Information Infrastructure
Organisational	Supports Problem Solving
	Expands Professional Networks
Political	Supports Domain-level Action
	Improves Public Accountability
	Fosters Program and Service Co-ordination

Table 2-6 Benefits of Information Sharing (Adapted from Dawes, 1996, p.378)

The technical benefits identified refer to improvements in the utilisation of information using technical systems. The implementation of a system accessible to more than one party streamlines the data management of those wishing to share information. It removes the need to prepare and disseminate information to the other party wishing access to the information "reducing the heavy paperwork and data

processing costs" (Dawes, 1996, p.378). This removes potential data duplication, ultimately improving productivity across the organisations sharing information.

Information sharing has the benefit of providing a stimulus for development of IT infrastructure. First the need to share with other organisations requires the development of technical standards to enable sharing. This could be as sophisticated as real time interfaces to a system resulting in a single consolidated data set or as simple as a list of guidelines provided to those collecting information e.g. a minimum standards guide. Secondly information infrastructure at a much higher level could develop if controlling bodies e.g. government are involved. This could lead to the creation of national infrastructure such as shared data centres (Dawes, p.378). In the UK the need to share information between public sector agencies has led to the development of the PSN (Public Services Network) (Cabinet Office, 2012) which is "creating one logical network, based on industry standards, and a more open and competitive ICT marketplace at the heart of the UK public sector". The idea behind the PSN is to create a fully interconnected network of infrastructure at all public services increasing the ability to sharing information between agencies and forms part of the wider UK governments ICT strategy (Cabinet Office, 2012a).

Weiss (1987) identified that information sharing allowed sharing parties to have more comprehensive and accurate information for problem solving. Dawes (1996) relates this benefit specifically to problem solving however more accurate and comprehensive information can be utilised by organisations in other ways for example in decision making. Comparing two organisations data or consolidating data sets results in a "more comprehensive picture of a problem" (Dawes,

p.379). "The agency is then in a better position to act effectively" (Dawes, p.379).

The second organisational benefit identified by Dawes (1996) is the broadened network of professional contacts. A broader network allows for greater interpersonal contact with others which in turn increases opportunity to share information and is likely to build trust which is essential for sharing information between two parties (Riege, 2005, p.25).

Dawes (1996) identified the category of political benefits covering three benefits. First the broader economic and demographic context for programs (domain level action). Refers to the ability to have a greater understanding of wider trends within the external environment by having access to trends from other agencies. The second identified benefit is higher public accountability due to higher transparency between agencies. For example the website police.uk shows crime and incident rates published by police forces across the UK. Sharing information with the public allows for greater accountability by making visible decisions made by the public sector organisation. The final political benefit identified by Dawes (1996) was the ability to integrate planning and service delivery. This research studies a project where multiple agencies are coming

together to work on one system. The agencies involved work towards the same goal and deal with the same victims and offenders of ASB often overlapping each other. Sharing existing information reduces "the information burden on program participants by cutting the number of times a person or organization must give the same information to different agencies and the number of times those agencies must reprocess duplicate information (Osborne and Gaebler, 1992). "Sharing can lead to more accurate needs analysis, service definitions and planning, better program evaluation, and better integrated public services" (Dawes, 1996, p.379).

"Cross-boundary information sharing and integration has long been recognized as a critical enabler for enhancing organizational effectiveness and efficiency" (Zheng, Yang, Pardo and Jiang, 2009, p.1). Landsbergen and Wolken (2001, p.208) identified benefits of improving interoperability between organisations as effectiveness, efficiency and responsiveness. Effectiveness is similar to Dawes' (1996) integrated planning and service delivery, referring to the need to leverage information from more than one agency to be able to solve complex social problems (Landsbergen and Wolken, 2001, p.208) such as anti-social behaviour. Efficiency is similar to Dawes (1996) streamlined data management as more "interoperable systems have the potential to reduce the paperwork burden on the public and private sectors" (Landsbergen and Wolken, 2001, p.208). The final benefit

Landsbergen and Wolken (2001) identified was improved responsiveness. Better and wider access to information enables agencies sharing information to more effectively make decisions and thus respond to situations more appropriately.

Specifically related to this research the Home Office (2010) identified benefits of local agencies including the police and council sharing anti-social behaviour information. The identified benefits were improved understanding of the problem due to access to a wider range of information e.g. crime, ASB, drugs use etc. Meaning the problem can be more fully investigated and a strategic response identified by all agencies involved. The sharing of information supports partnership working due to utilising all agencies data resulting in a joined up multi-agency response.

The benefits of information sharing can be summarised as the improved ability to act, based on a wider range of information whether at a local or national level.

2.6 Frameworks and Models

This section reviews models and frameworks found in the literature which relate to information sharing. Section 2.6.1 reviews information sharing models, section 2.6.2 reviews Technology Acceptance models and section 2.6.3 identifies other models which can be used to predict technology use or adoption.

2.6.1 Information Sharing Models

This section reviews models found in the literature which relate in some way to sharing information.

2.6.1.1 Theoretical Model of Interagency Information Sharing

Dawes's (1996) model of Interagency Information sharing was developed in the early 1990's with New York State agencies. The study looked at how separate agencies utilise program information for different state agencies (Dawes, 1996, p.382). It captures the experiential cycle by which agencies incrementally increase their knowledge about the benefits, costs and process of information sharing.
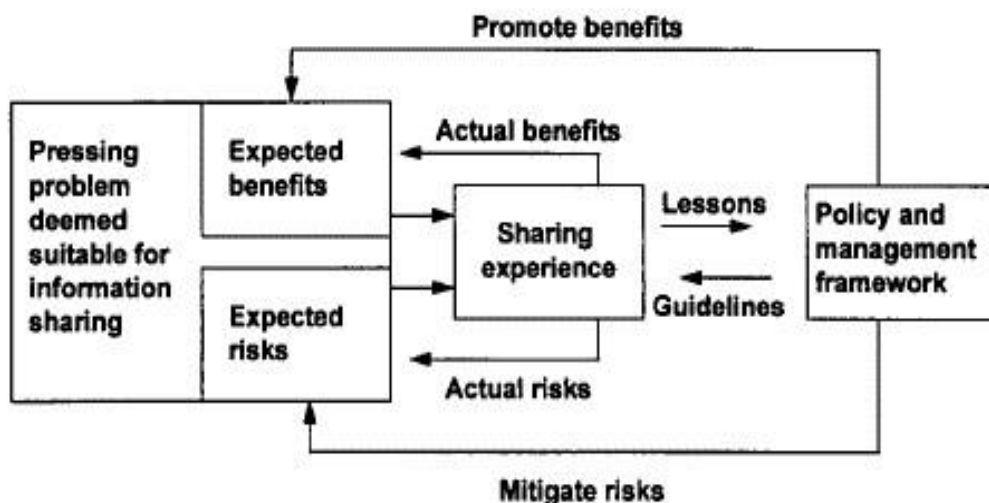
Figure 2-7– Dawes (1996, p.391) THEORETICAL MODEL OF INTERAGENCY INFORMATION SHARING

The experiential cycle is a feedback loop where once a problem has been deemed suitable for information sharing the expected benefits and risks are identified. The individuals carry out the information sharing and gain experience in the actual risks and benefits. Evaluation of the expected experience and actual experience brings lessons and guidelines which are fed back to inform policy and management for the next information sharing situation. On the completion of each cycle (information sharing project) the organisation is adjusted and becomes better placed to predict what will happen in the next information sharing project, allowing the organisation to adjust their approach accordingly.

The model is useful to illustrate how experience of interagency information sharing informs the next project. The continual adjustment to management and policy frameworks will mitigate the risks posed by the sharing project and thus make each successive project more likely to succeed.

2.6.1.2 Socio-technical Model

The socio-technical model was developed to analyse knowledge management systems. It was developed through a case study in the US reviewing a knowledge management system. The model has three layers (adapted from Pan and Scarbrough, 1998):

1. Infrastructure – comprises the hardware and software enabling contact between individuals.

2. Infostructure – the formal rules governing contacts and how sense is made of these contacts.

3. Infoculture – background knowledge embedded in social relations and work group process.
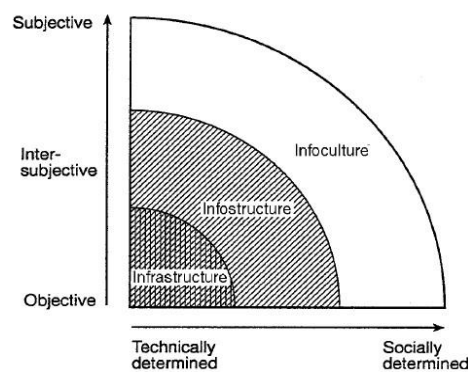
Figure 2-8 Pan and Scarborough (1999, p.363) Socio-technical Model

Although produced to analyse a knowledge management system, the approach is equally relevant to an interagency information sharing system. If all organisations wishing to share information are analysed on the three elements of the model an accurate picture of the organisations can be produced. From here appropriate decisions can be made about what and how the information the organisations wish to share is shared.

2.6.1.3 Domains of Connectivity

The Domains of Connectivity model can be used to analyse how well an organisation carries out information sharing within its own organisation. It was developed by Hatala and Lutta (2009) by reviewing existing literature. The four quadrants in which an organisation is found are:

1. Connected (Open) - ideal quadrant for an organization to be situated. High level of connectivity and information is exchanged freely.

2. Interconnected (Dysfunctional) – information is viewed as power, information flows between groups well but poorly within a group.

3. Intraconnected (Control) - information sharing between groups is minimal. Information flows within a group but not between groups, likely to get silos of information.

4. Disconnected (Entropy) - Information is not shared freely and is not easily accessible.

Organisation is drifting apart.
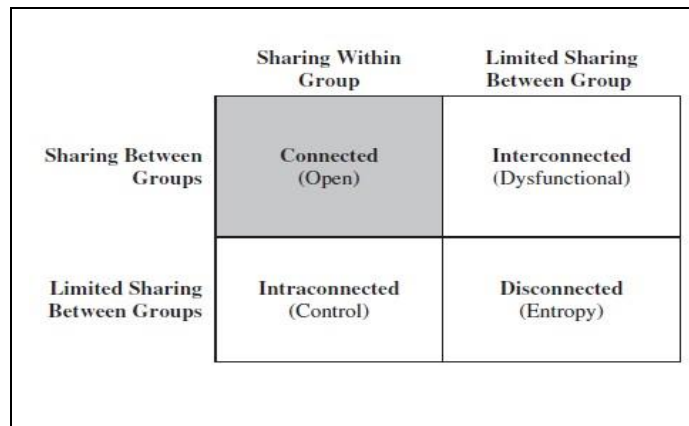
Based on the quadrant an organisation finds itself in "interventions can be developed and implemented to support the networked environment required for the free flow of information" (Hatala and Lutta, 2009, p.28). This model is used to analyse a single organisation's information sharing environment. It could be used to analyse multiple agencies involved in an information sharing program. Interventions could be made dependent on the quadrant the project finds itself in.

2.6.2 Technology Acceptance Models

"Some estimates indicate that, since the 1980s, about 50 percent of all new capital investment in organizations has been in information technology" (Venkatesh and Davis, 2000, p.426). Companies invest millions of pounds per year implementing and maintaining technology. As a result a great deal of research has been carried out to attempt to predict the likelihood a new technology will be used and the factors which affect its use. There are two key models commonly cited with reference to predicting use of a new technology; TAM (Technology Acceptance Model) section 2.6.2.1 and UTAUT (Unified Theory of Acceptance and Use of Technology) section 2.6.2.2. Other models predicting technology use are covered in section 2.6.2.3.

2.7.2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed by Davis in 1989 as a model to predict whether people would use a new technology which was being implemented. In Davis's opinion there were a lot of

measures being used to predict usage but "little attention is paid to the quality of the measures used or how well they correlate with usage behaviour" (Davis, 1989, p.320). TAM contained two variables used to predict the likeliness of a technology being utilised:

1. Perceived ease of use defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p.320).
2. Perceived usefulness defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p.320).

Scale items were produced to test these two variables to predict whether users would use the new technology. TAM surveys expected users (pre-implementation) or users (post-implementation) of a system and asks them to complete a likert scale rating items from 1-7. The scale is then used to produce a score for perceived usefulness and perceived ease of use which can predict acceptance of the technology. Both variables were found to correlate to current and predicted usage of a technology, although "usefulness had a significantly greater correlation with usage behaviour than did ease of use".

"Perceived usefulness has consistently been a strong determinant of usage intentions, with standardized regression co-efficient typically around 0.6" (Venkatesh and Davis, 2000, p.187) and perceived ease of use "exhibited a less consistent effect on intention across studies" (Venkatesh and Davis, 2000, p.187). Although TAM exhibited consistent results it was limited by its use of only two variables. Davis and Venkatesh (2000) extended the model to "include additional key determinants of TAM's perceived usefulness and usage intention constructs, and to understand how the effects of these determinants change with increasing user experience over time with the target system" (Venkatesh and Davis, 2000, p.187). TAM2 expanded on TAM by further investigating the perceived usefulness construct breaking it down to identify factors which increased or decreased perceived usefulness. TAM2 identified seven constructs impacting perceived usefulness spanning social influence processes (subjective norm, voluntariness and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability and perceived ease of use). Figure 2-10 summarises the constructs found in TAM2.
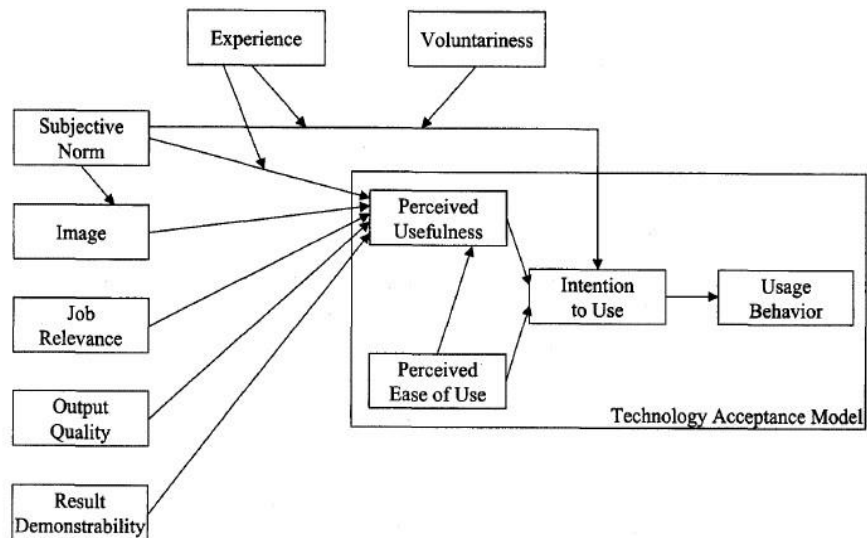
Figure 2-10 TAM 2 (Venkatesh and Davis, 2000, p.188)

- Subjective Norm - defined as a "person's perception that most people who are important to him think he should or should not perform the behaviour in question" (Fishbein and Ajzen, 1975, p.302). The inclusion of subjective norm came from the observation that although people may not find a technology useful they may still use it if they believe others feel it is. "People may choose to perform a behaviour, even if they are not themselves favourable toward the behaviour or its consequences, if they believe one or more important referents think they should, and they are sufficiently motivated to comply with the referents." (Venkatesh and Davis, 2000, p.187). The study identified that subjective norm itself was effected by voluntariness and experience:

  o Voluntariness - the extent to which potential adopters perceive the adoption decision to be non-mandatory. TAM2 suggests in mandatory settings there is a "compliance-based effect of subjective norm on intention over and above perceived usefulness and ease of use" (Venkatesh and Davis, 2000, p.188).

  o Experience –prior to experiencing the technology being implemented subjective norm will have an effect on intention of use and perceived usefulness. This effect will decrease over time as users get direct experience of the technology. Direct experience provides the intention of use as experience levels increase.

- Image - Moore and Benbasat (1991, p.195) define image as "the degree to which use of an innovation is perceived to enhance one's ... status in one's social system". TAM2 theorizes "that subjective norm will positively influence image because, if important members of a person's social group at work believe that he or she should perform a behaviour, then performing it will tend to elevate his or her standing within the group" (Venkatesh and Davis, 2000, p.189). An

individual may perceive that using a system will lead to improvements in his or her job performance indirectly due to image enhancement, over and above any performance benefits directly attributable to system use.

- Job Relevance – defined as "an individual's perception regarding the degree to which the target system is applicable to his or her job" (Venkatesh and Davis, 2000, p.191). Perceived usefulness will be affected by the level to which users feel the technology is relevant to their job. Job relevance relates to Beach et als Image Theory (1998) as "systems below a minimum threshold value of perceived job relevance would be screened from further adoption consideration." (Venkatesh and Davis, 2000, p.191).

- Output Quality – TAM2 brings into the model the relationship between output quality and perceived usefulness. When there are multiple technology options to choose between, the system providing the highest quality output would be expected to be chosen. Therefore output quality affects the perceived usefulness of a technology.

- Result Demonstrability - defined as the "tangibility of the results of using the innovation" (Moore and Benbasat 1991, p.203). In a previous study Agarwal and Prasad (1997) found significant correlation between usage intentions and result demonstrability. A technology which can clearly demonstrate its results will be rated more useful than a system where results are unclear.

These additional constructs were used to create a new likert scale which is distributed to users/ potential users to predict usage. The introduction of the new constructs meant that in the four studies carried out during the expansion of TAM to TAM2 "up to 60% of the variance in" perceived usefulness could now be explained (Venkatesh and Davis, 2000, p.196). TAM2 had practical implications; the study identified that over time a compliance based approach was much less effective than the "use of social influence to target positive changes in perceived usefulness" (Venkatesh and Davis, 2000, p.199). TAM2 suggests that whilst designing and implementing a technology it is important to consider job relevance, output quality and result demonstrability, improving a technology on these factors is likely to improve its usage. Whilst TAM2 expanded the construct of perceived usefulness of TAM it did not expand the second construct of perceived ease of use.

TAM3 (Venkatesh and Bala, 2008) expanded the original TAM to include the as yet unexplored construct of perceived ease of use. Four elements were identified these are labelled anchors in figure 2-11 (adapted from Venkatesh and Bala, 2008, p.278):

- Computer self-efficacy – an individuals' belief about their own ability to use a system.

- Perceptions of external control - the availability of organisational resources and support structures to facilitate an individuals' use of the system.
- Computer anxiety – the amount of apprehension an individual expects to feel when using the new system.
- Computer playfulness – the intrinsic motivation associated with the new system.

Two system characteristics are used to determine perceived ease of use after experience, labelled adjustments in figure 2-11:

1. Perceived enjoyment – the extent to which using the new system is deemed to be enjoyable in its own right.
2. Objective usability – comparison of the system based on actual level of effort required to achieve goals.
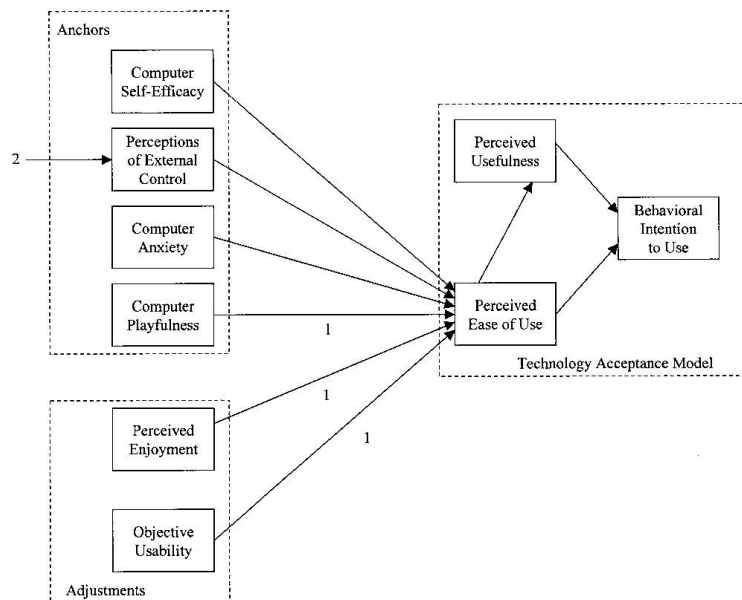
TAM3 (shown in figure 2-11) represents the most comprehensive model for predicting technology acceptance of a new system among individuals. The model is relatively new having been published in 2008 and early versions of the TAM or UTAUT are still more commonly used in studies.

2.6.2.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

"Researchers are confronted with a choice among a multitude of models and find that they must "pick and choose" constructs across the models, or choose a "favoured model" and largely ignore the contributions from alternative models" (Venkatesh et al, 2003, p.426). Unified Theory of Acceptance and Use of Technology

model aimed to combine the theory and constructs from all the main existing acceptance models into one all-encompassing model. The creation of the model began by identifying the basic concept underlying all usage models shown in figure 2-12.

Existing technology acceptance models were reviewed to identify core constructs, the role of moderators, context and any weaknesses. To develop the UTAUT model a longitudinal study was carried out which utilised eight identified prediction models. The study consisted of four organisations introducing new technology in the workplace across three time periods (post training, one month post implementation and three months post implementation) in both voluntary and mandatory settings. "All eight models explained individual acceptance, with variance in intention explained ranging from 17 to 42 percent" (Venkatesh et al, 2003, p.439). In mandatory settings "constructs related to social influence were significant" (Venkatesh et al, 2003, p.439). The review of the results from the eight models was then used to create the UTAUT. Figure 2-13 illustrates the UTAUT model. The four boxes on the left hand side show the constructs theorised to affect behavioural intention and use behaviour, the four boxes along the bottom show the moderators which have an effect on the constructs.
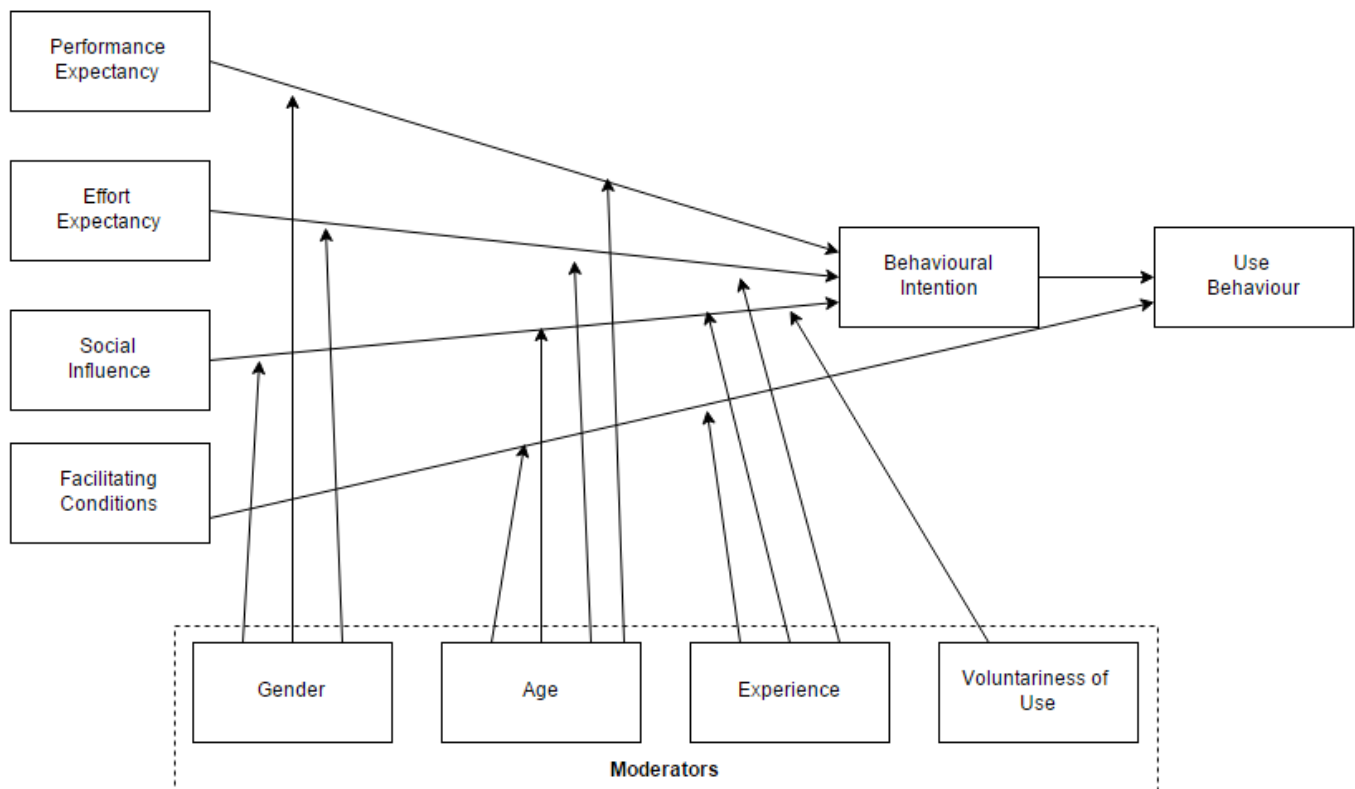
Figure 2-13 UTAUT Model (adapted from Venkatesh et al., 2003, p.477)

Constructs of UTAUT and effects of moderators (adapted from Vekatesh et al, 2003):

- Performance Expectancy – defined as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance." (Venkatesh et al, 2003, p.447). The longitudinal study found that in all the models this was the strongest predictor of intention to use at all time periods. Theory suggests that both gender and age will act as moderators for performance expectancy e.g. "younger workers may place more importance on extrinsic rewards" (Venkatesh et al, 2003, p.449).

- Effort Expectancy - defined as "the degree of ease associated with the use of the system" (Venkatesh et al, 2003, p.450). Constructs around effort are expected to be of greater influence in "early stages of a new behaviour, when process issues represent hurdles to be overcome and later become overshadowed by instrumentality concerns" (Venkatesh et al, 2003, p.450). Therefore age and experience will moderate the effect of effort expectancy both positively and negatively.

- Social Influence – defined as "the degree to which an individual perceives that important others believe he or she should use the new system." (Venkatesh et al, 2003, p.451). Voluntariness of

use was affected by the moderator social influence. In mandatory settings it was found "social influences have a direct effect on intention" (Venkatesh et al, 2003, p.450), but in voluntary settings social influence works by "influencing perceptions about the technology" (Venkatesh et al, 2003, p.452).

- Facilitating Conditions – defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system." (Venkatesh et al, 2003, p.453). This construct was found to be non-significant in predicting intention where performance expectancy and effort expectancy were present. "When moderated by *experience* and age, facilitating conditions will have a significant influence on usage behaviour" (Venkatesh et al, 2003, p.454).

The UTAUT represents a more comprehensive model than TAM and TAM2 and has had more time to become accepted than TAM3. Currently UTAUT is more widely used than TAM3 in studies to predict technology use.

2.6.4 Summary of Frameworks and Models

All the models discussed in section 2.6 are relevant to a research project implementing a new information sharing technology and will need to be borne in mind as the research progresses. The most comprehensive models are those of TAM3 and UTAUT. They include the key elements from all the reviewed technology acceptance models i.e. social factors, cognitive processes and moderators.

As such TAM3 and UTAUT will be the core focus in terms of technology acceptance models.

2.7 Gap in the Literature

The existing literature on information sharing and its related concepts such as technology acceptance, draws on work from many different fields; computer science, information science, psychology, human behaviour and many more. The review of the literature has established the importance of research into public sector information sharing specifically in the UK as gaps in the existent research have been identified:

1. There are no models specifically looking at the process of implementing an information sharing project. The literature related to information sharing models focuses on technology acceptance, predicting intended behaviour or being able to classify organisations ability to share information. There are no models, frameworks or guidance available to guide those wishing to implement a new technology to share information.

2. The existent literature focuses on improving acceptance where usage of the technology has an element of voluntariness. Central to this research is the implementation of a new technology in the police and

local authorities. The usage of the new technology is entirely mandatory with the removal of existing recording systems.

3. A review of the literature did not provide any studies where a public sector partnership is working from a single system to share information. The assumptions appear to be that organisations will take data from external organisations and assimilate this for their own needs. The implementation of one system to store multiple organisations data/information has not been studied. Particularly in a UK public sector setting.

4. A key theme from the literature review was that a lower cost of sharing increased the likelihood of sharing. Barriers to information sharing have been identified but there has been little link to how these barriers can be modelled and interventions put in place for organisations to overcome.

2.8 Summary

The literature review started by defining key terms in the world of information sharing and then discussed the process itself. The review then covered a great deal of literature discussing the barriers and enablers to information sharing to help identify areas of interest for this research. Much of the existing literature refers to intra-organisational information sharing but many of the ideas and concepts can be equally applied to multi-agency information sharing. The information sharing project at the centre of this research is utilising a new piece of technology for most of the agencies involved as such an overview of the major technology acceptance models and theories was covered. The chapter concluded by identifying existing gaps in the literature.

3. Methodology

3.0 Overview

This chapter will first discuss an overview of the research in section 3.1. Then detail what research is and its overall purpose in section 3.2; describe the philosophical approach (section 3.3); and research design (section 3.4) covering methodology (section 3.4.1) and methods (section 3.4.2) and provide justifications for the decisions made. The chapter concludes with a summary of the research design (section 3.6). A summary of the research decisions detailed in this chapter is shown in figure 3-1.
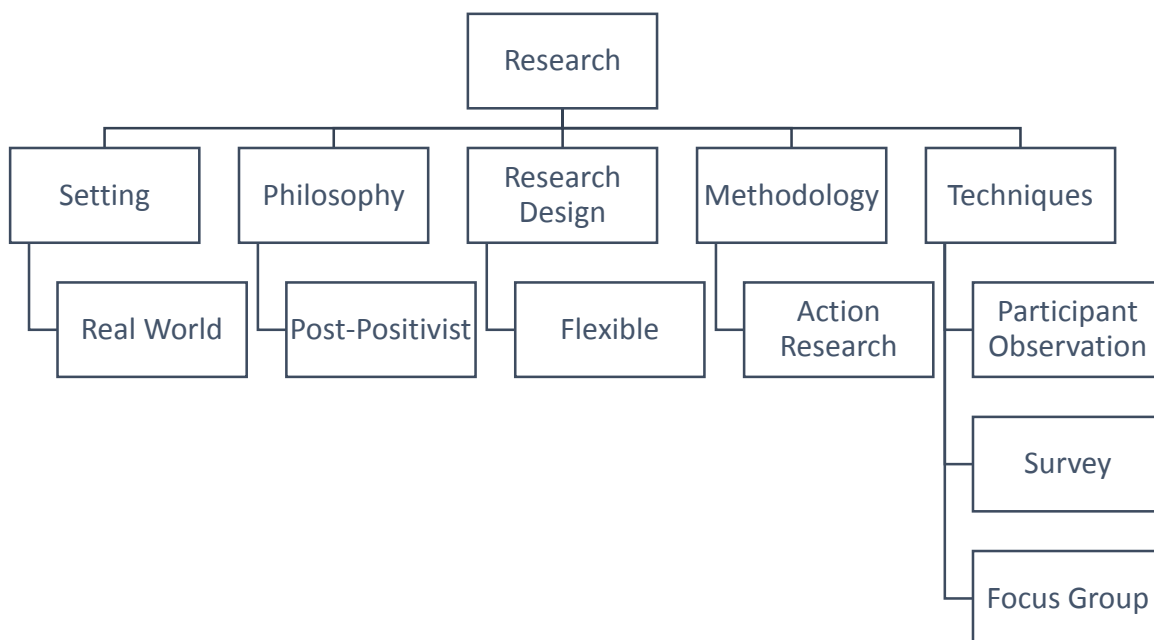
Figure 3-1 Overview of Research Decisions (Created by Researcher)

The purpose, method and result of research is specific to each research project and certain facets of how the research is to be undertaken must be understood before the research is carried out. Depending on the literature being read the elements of conducting research vary; Crotty (2005, p.4) suggests the four elements of epistemology, theoretical perspective, methodology and methods. Pickard (2007) identifies the research paradigm, research methodology, research methods and research techniques. Robson (2011) refers to a design, methodology and techniques. Thomas (2009, p.92) states a research design is made up of the purpose of research, the kind of question, paradigm of analysis, design frame and data gathering

techniques. To confuse matters researchers use the terms interchangeably e.g. interpretivism is referred to as an epistemology by Schwandt (2001, pxvii) and as a theoretical perspective by Crotty (2005). Robson (2011, p.20) considers paradigm to first refer to quantitative or qualitative which is then broken down into approaches such as positivist or post-positive. These approaches are epistemologies in Crottys world or paradigms in Pickards. Although researchers differ in terminology, hierarchy and order of the elements of a research design there are two common themes; first the researcher's philosophy followed by a structured research design.

3.1 Overview of Research Being Undertaken

The research being undertaken is based at Leicestershire Police. Evaluating their ability to share information both internally and externally with partners. There is a focus on ASB (Anti-Social Behaviour) data due to the involvement of the researcher in a project developing a single system for use by multiple partners to share ASB information in real time. The research aims to identify ways for public sector organisations to improve information sharing and how the implementation of a single system for use across multiple partner organizations affects information sharing. The lessons learnt from Sentinel's implementation have been used to create a framework for implementing an information sharing project.

3.2 What is Research?

Research is "the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions" (Oxford Dictionary, 2012b). It can be academic or real world/practical research and has "the aim of creating or discovering new knowledge" (Hernon, 1991, p. 3). Oates (2006) describes academic research as "the creation of new knowledge using an appropriate process to the satisfaction of the users of the research", where real world research "refers to applied research projects which are typically small in scale and modest in scope" (Robson, 2011, p.3). Academic research has a tendency to focus on developing a particular discipline where the researcher's/institution is able to choose the area of interest to them. Real world research searches for solutions to existing problems, it "focuses on problems and issues of direct relevance to people's lives, to help find ways of dealing with the problem or better understanding the issue" (Robson, 2011, p.3). Due to the limited ability to control real world situations researchers need to be adaptable and pragmatic in their approach to methods for research. For example in this research the researcher was unable to carry out pre and post interviews with all stakeholders in every partner organisation. Of the original eleven partners, top level management at director level in Leicestershire Police, Leicester City council and Leicestershire county council have changed. This has affected the organisational goals and commitment to the Sentinel project. In any organisation three years is likely to involve turnover of

employees. XPertHR (2011) survey of the average turnover rates for 2010 turnover rate for a public sector organisation was 12.6% and for a private sector organisation 17.4%. In addition at an operational level the attendees at the Sentinel user group has changed for six of the organisations; a result of either job role changes or the previous attendees leaving the organisation. There has been multiple changes in mid (managers) and bottom level (users) stakeholders.

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┌─────────────────────────────────┐
│        Identify Problem          │
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│          Gather Data             │
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│        Analyse New Data          │
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│      Interpret Data as a Whole   │
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│        Draw Conclusions          │
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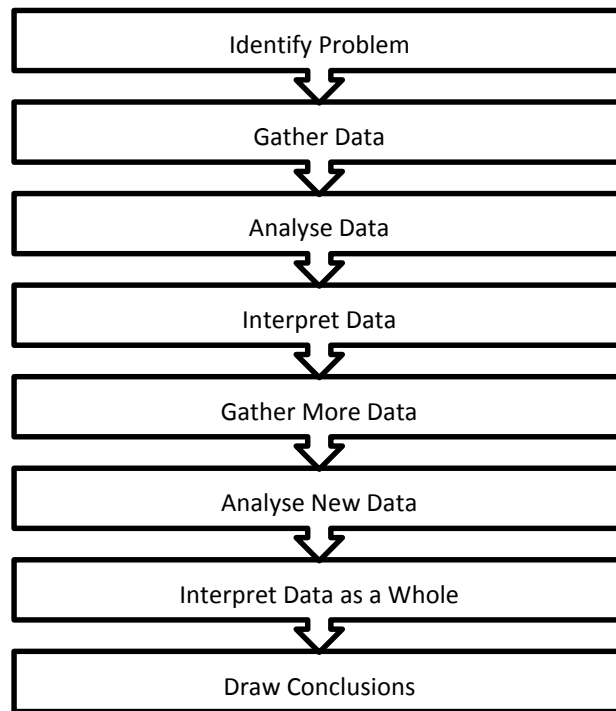
FIGURE 3-2 STAGES OF RESEARCH (ADAPTED FROM OATES (2006))

To complete a research project a number of stages must be completed to achieve the research goals. Oates (2006) identified eight stages of research, shown in figure 3.2. The process for 'real world' research is similar apart from the first step perhaps more appropriately described as scoping and redefining the problem. Unlike a purely academic project where the researcher must identify a problem to research, real world research begins with the presentation of a problem. The proceeding stages identified by Oates (2006) remain the same for real world research though the methods used may vary.

Research projects may fall at any point along the continuum where 'real world' research is at one extreme and academic research the other. This research falls within the area of 'real world' research where the police have identified information sharing as an area for improvement. This project is not fully 'real world' as academic elements remain with the need to follow academic methods to solve the problem and make use of lessons learnt from this study. These lessons can apply to a wider audience rather than simply finding a solution to Leicestershire Polices problem. The research must also contribute to the development of academic theory.

3.3 Research Philosophy

The researchers' philosophy relates to the researchers assumptions based on the most general elements of the world; aspects include the mind, reality, reason, truth and the nature of knowledge (Hughes, 1994). Research philosophy will "shape the approach to theory and methods" (Marsh et al, 2002, p.17) impacting the methodology and methods the researcher ultimately adopts (Denzin and Lincoln, 1998). Easterby-Smith et al (1997) identified three reasons to explore a researchers philosophical standing as it can help the researcher to (adapted from Easterby-Smith (1997)):

- Refine and specify the methods to use in the study and thus clarify the overall research strategy including how they will interpret data.
- Evaluate different methodologies and methods, avoiding at an early stage using inappropriate approaches.
- Be more creative in their selection and/or adaptation of methods previously outside the researchers' experience.

In addition to helping a researcher to plan the methods and methodologies of the research understanding their own philosophical stand point can help the researcher identify areas of potential bias. For example if a researcher is carrying out a participant observation study where the subjects all have a positivist view point and the researcher has a post-positivist philosophy, when interpreting the data the researcher will need to be aware of this bias to be able to attempt to interpret the reality the subjects are experiencing.

A research philosophy is "a loose collection of logically held together assumptions, concepts, and propositions that orientates thinking and research" (Bogdan & Biklen, 1982, p. 30). It is made up of two elements; the ontology ("the philosophy of reality" (Kraus, 2005, p.758)) and epistemology ("how we come to know that reality" (Kraus, 2005, p.758)). Ontology and epistemology are implicit to the researcher and come to view through the adoption of particular research techniques; as such the ontology and epistemology are shaped through the researcher's experiences and intrinsic beliefs. "They are like a skin not a sweater: they cannot be put on or taken off whenever the researcher sees fit" (Marsh et al, 2002, p.17).
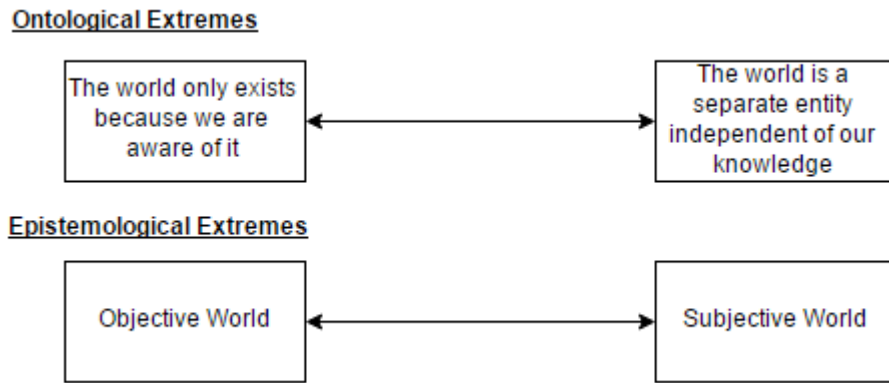
Figure 3-3 Extremes of Ontological and Epistemological Positions (created by Researcher)

Ontology and epistemology are continuums with extremes at either end. A researcher can be placed at any point along the continuum; these extremes are shown in figure 3-3. Traditionally researchers utilising a scientific approach have an ontological belief of the world being a separate entity and an epistemology of objectively acquiring knowledge. The social scientist is generally the opposite with an ontological belief of the world existing only because we are aware of it and an epistemological view point of a subjective world.

There are main two research philosophies which could related to this research; positivism (section 3.4.1) and post-positivism (section 3.4.2). These philosophies can be subdivided e.g. realism into critical realism, scientific realism, subtle realism and so on (Robson, 2011, p.30). A high level overview is sufficient to provide a justification of the research approach taken for this research.

3.3.1 Positivism

"Positivist approaches to the social sciences . . . assume things can be studied as hard facts and the relationship between these facts can be established as scientific laws" (Smith, 1998, p.77). Positivism also known as the scientific method is research that advocates the use of scientific methods used to study the natural sciences. When studying social reality (Bryman, 2004, p.11) it seeks to describe the phenomena we experience. The primary tenet of a positivist philosophy is that there is an "objective reality exists which is independent of human behaviour and is therefore not a creation of the human mind" (Crossan, 2003, p.50).

Kolakowski (1993, p.3-7) gives four principles of a positivist philosophy:

1. Phenomenalism - asserting there is only one experience, which all subjects experience in the same way.

2. Nominalism - words and abstractions are only linguistic phenomena which give no new insight into the world.

3. Facts and values are separate.

4. Scientific method is the only way to research a situation.

A study carried out with a positivist philosophy generates hypotheses proving or disproving them (Myers, 2007, online) as a result of objective knowledge. "Knowledge is discovered and verified through direct observations or measurements of phenomena" (Kraus, 2005, p.759) and tested using statistical tests (Robson, 2011, p.21). The philosophy lends itself to quantitative studies and there is general agreement that experiments are the ideal (if not only) way to carry out research (Neuman, 2007, p.43). Any experiments carried out must give results which are objective, discernible, measurable and easily repeated in order to be able to generate predictions and prove the theory. The data, subjects and researcher are not affected by the experiment and as such knowledge gained time independent.

The positivist's view has its critics such as Blaikie (2007, p.193) who rejects the view that science should only deal with situations and phenomena which are observable. People are not 'objects' and as such they are influenced by "behavior, feelings, perceptions, and attitudes that positivists would reject as irrelevant and belonging to the realms of metaphysics" (Crossan, 2003, p.51). Critics (Bond (1993), Moccia (1988) and Payle (1995)) argue large amounts of useful data is discarded and only a superficial view is provided. Ayer (2002) questions using scientific approaches to examine human behaviour suggesting that it may be the 'nature of men' that makes the establishment of laws and generalisations impossible. For example when an object is dropped the law of gravity (Newtons law of universal gravitation, 1846) dictates the object will fall to the ground; this is a fundamental law which can be proven with experiments and generalised to any object which is dropped. Human behaviour differs, the same event can result in different scenarios and fundamental laws are extremely difficult if not impossible to produce.

Element of Research	Implication for Social Research
Methodological	Research should be quantitative as this is the only basis for valid generalisations and laws.
Value-freedom	The choice of what and how to study should be determined by objective criteria rather than the researcher's beliefs or interests.
Aim	The aim should be to identify rules and laws to explain behaviour
Researcher's Role	Researcher should be independent from the subject being studied.
Reasoning	Deductive – a hypothesis is generated and then tested.

Table 3-1 Summary of Implications of Positivism for Social Research

The current research aimed to use lessons learnt from this study to produce guidance based on generalisations that other organisations implementing an information sharing system for use with multiple

partners could utilise. Producing generalised rules would suggest the research falls into a positivist research approach; however the project is not easily repeated producing measurable and repeatable data. The project cannot be repeated with the same parameters. There is a large element of human interaction and subjectivity in this research, which contradicts the central tenets of a positivist approach.

3.3.2 Post-positivism Realism

Post-positvism/realism evolved from the recognition by scholars such as Bronowski (1956) and Popper (1959) that modern science could not wholly be explained with positivist philosophy. Unlike the positivist philosophy where there is a single objective reality, post-positivism recognises the interactions between "individual behaviour, attitudes, external structures, and socio-cultural issues" (Crossan, 2003, p.52). These interactions shape the reality experienced, meaning there is no one single reality experienced by all. These multiple realities suggest only an imperfect knowledge of reality can be gained. The absence of a single objective reality means that post-positivist studies are impacted by a researcher's background, theory base and knowledge as it influences their observations (Reichardt and Rallis, 1994). Researchers must strive for objectivity by acknowledging these potential biases and attempting to negate their effect as "bias is a source of error" (Hammersly. 1997, online).

Walliman (2006, p.23) describes post-positivism as looking "at society as the focus for research, and through understanding its internal laws and establishing relevant facts" understand how and why the social actors behave the way they do. Socio-political factors particularly power and influence that occur in human groups, have an influence on how knowledge is shaped and what beliefs and values are accepted (Robson, 2011, p.22). The aim of post-positivism is "to discover the observable and non-observable structures and mechanisms, independent of the events they generate" (Kraus, 2005, p.762) to establish evidence that provides sound proof for the existence of the phenomena being studied (Philips, 1990).

Post-positivism utilises qualitative and quantitative methodologies (Letourneau and Allen, 1999). Using a "mixture of theoretical reasoning and experimentation" (Outhwaite, 1983, p.332), it overcomes the seeming dichotomy between quantitative and qualitative approaches by using the appropriate techniques given the research topic of interest and level of existing knowledge pertaining to it (Kraus, 2005, p.762).

Post-positivism has its limitations and critics; firstly the lack of independence of the researcher from the subject being studied (Prahoo, 1997) brings questions of bias to both the data gathered and subsequent observations. Secondly the use of qualitative methods has been criticised as "merely an assembly of anecdote and personal impressions, strongly subject to researcher bias" (Crossan, 2003, p.53). Qualitative research lacks the ability to definitively repeat and reproduce results. It is nigh on impossible to replicate the exact circumstances of a post-positivist study due to the complex web of interaction creating the realities

experienced. The intrinsic link of the researcher to the study means if another researcher carried out the different conclusions may be reached.

Element of Research	Implication for Social Research
Methodological	Research can be quantitative or qualitative
Value-freedom	The choice of what and how to study will be influenced by the researcher's beliefs or interests.
Aim	The aim should be to find evidence that provides sound proof for the existence of the phenomena being studied
Researchers Role	Researcher should be independent from the subject being studied.
Reasoning	Induction – observations are gathered and hypothesis are generated from the data observed.

Table 3-2 Summary of Implications of Post-Positivism for Social Research

Post-positivism was more appropriate than positivism for this research due to the researcher's involvement with the organisations involved in the study. Qualitative techniques such as participant observation were used to gain insight into the complex interactions present when implementing an information sharing project. The researcher took an active part in the implementation of Sentinel and as such will not be able to remain independent of the subject a requirement of a positivist study.

3.3.3 Researcher's Philosophy

There are distinctions between research philosophies, but these distinctions are thought by some (Webb, 1989) to be overstated and it is understood that "most researchers will not fit neatly into the categories of any given typology" (Hood, 2006, p.215). This research allowed the researcher to take an active part in the implementation of a new information sharing system. The researcher was unable to remain fully independent of the subject being studied which is a requirement of a positivist approach. Being based within the study aligns with a qualitative research philosophy where it is felt "the best way to understand what is going on is to become immersed in it and to move into the culture or organization being studied" (Krauss, 2005, p.760).

The paradigm used for this research was post-positivism as it allowed for the interactions and techniques which the researcher made use of whilst being immersed in the implementation of the information sharing system. The researcher historically held a positivist philosophy coming at the research with a scientific, pragmatic mind. The dichotomies of the philosophies may seem at odds with each other but carrying out a

post positivist study i.e. using more qualitative techniques and interpreting multiple realities with a historic belief of the existence of one truth and the proof of universal laws helped the researcher to overcome what can be seen as the less scientific approach by being slightly sceptical of the approach and attempting to apply what can considered more scientific rigor. Post-positivism allowed the researcher to produce theories from the data being observed which varied in ways which could not have been expected before exposure to the data. The post-positivist paradigm allowed the researcher to look at the situations being experienced and interpret it through the internal laws of the social actors' involved in the situation e.g. the ability to review a meeting from multiple points of view based on the discussions which took place.

3.4 Research Design

The research design is "an integrated statement of and justification for the more technical decisions involved in planning a research project" (Blaikie, 2007, p.21). The design can be fixed, flexible or multi-strategy. Although the decision of what type of research design to utilise does not decide completely the approaches and methods to be used throughout the research, certain designs align more neatly with methods than others.

A fixed design is non-flexible, with a tight specification prior to the commencement of the main data collection stage typically more focused on numerical data and as such is often referred to as a quantitative strategy, though Oakley (2000, p.306) points out this is not a necessity and qualitative data can be collected in a fixed design. Fixed designs generally focus on a theory which is proved or disproved through the completion of experiments and therefore it naturally aligns with scientific methods for example using grounded theory is effectively ruled out in a fixed design as you must enter the field without preconceptions. Examples of fixed designs include true experiments, single case experiments and measuring relationships.

Flexible designs evolve during the data collection phase; the collected data is more focused on non-numerical data and is often referred to as a qualitative strategy. Flexible designs allow more freedom in the research design to tailor the research methods to match the problem being investigated (Robson, 2011, p.131). Creswell (1998, p20-22) identified characteristics of a good flexible design:

- Multiple data collection techniques.

- Study is framed within assumptions and characteristics of flexible design e.g. an evolving design, presenting multiple realities, focus on participants view.

- No need to be 'pure' several different procedures can be brought together.

- Project begins with a single idea or problem the researcher seeks to understand.

- A rigorous approach to data collection, analysis and report writing.

- Data is analysed at multiple levels of abstraction.

- Writing engages reader with the experience of 'being there'.

The key to a flexible design is the ability to change approaches and methods as a result of involvement with the research. Examples of flexible designs include case study, ethnographic studies and grounded theory.

Multi-strategy design fits somewhere between fixed and flexible designs. It combines elements from both designs usually utilising a stage of flexible design followed by a fixed design though it is possible for the reverse to take place and is often referred to as mixed methods.

3.4.1 Selected Design

For this research project the researcher was based within Leicestershire Police. To maximise the potential for research a flexible research design was chosen. When working with an organisation the researcher does not have full control over the situations they are exposed to and the techniques they want to utilise. As such a flexible research design will allow the researcher to benefit from unexpected situations and present the multiple realities the researcher is expecting to discover.

3.5 Methodology

A methodology refers to the underlying rules and principles for a particular approach. For this research project there were four main methodologies under consideration. The next section gives an overview of the methodologies and concludes by detailing the chosen methodology:

- Ethnography

- Phenomenology

- Action Research

- Evaluation Research

3.5.1 Ethnography

Ethnography is the study of social situations, the interactions, behaviours and perceptions that occur within a group of people whilst the researcher is immersed within the situation. It is "research as investigation through involvement within a given field of inquiry" (Goodley, n.d.). The roots of ethnography are found in

anthropology and sociology as it is a holistic approach to studying a cultural system looking at the socio-cultural contexts, processes and meanings within a situation. As such ethnographic studies are utilised when the researcher is studying a phenomenon involving interactions with people or trying to understand people's actions e.g. ethnography is widely used when researching human computer interfaces (University of Maryland, 2001) or when researching how and why people act in certain situations e.g. Fuchs (1966) study on racial interactions within schools and Cusicks' (1963) study on student culture in Midwest America. Ethnography is also widely used in public sector research to inform policy and practice e.g. in 2003 a review of federal programs in the US (US GAO, 2003) identified that 10 federal departments ranging across drug, environmental and fishing agencies utilised ethnographic research to inform future policy. In the UK ethnography is also widely used in the NHS to research phenomena such as the effects of caring for a sick friend or relative on the carer (NHS, 2011).

The process of ethnography is of discovery; it is iterative and open-ended and cannot be controlled like an experiment (Whitehead, 2005). Methods such as observation, unstructured interviews are utilised as they allow deep data collection in an informal setting. Unexpected data may be collected to ensure thorough analysis of the data at later stages. Data should be recorded daily and continuous recording of field notes in a research diary or other similar format should be carried out. The collected data must be interpreted with an unbiased viewpoint (Whitehead, 2003, p.20) attempting to utilise the realities the subjects being studied use.

Hammersley (1990) identified a set of features found in an ethnographic method:

- Behaviour studied in situ, in natural not experimental conditions.

- Data is gathered from a range of sources concentrating on observation and informal conversations.

- Data collection is unstructured; it does not follow a detailed plan and is initially in a raw form with no fixed categorisation/coding scheme.

- Focus is on a single situation or group generally small scale.

- Analysis involves interpreting meanings of human actions quantitative measures are at most used in a supporting role.

Ethnographic research does have drawbacks, the first being the time commitment to complete the research both by the researcher and the subjects; for the researcher an ethnographic study represents a significant time commitment to gather the data with most studies collecting data over a number of years (Van Maanen, 1996). Not only is data collection time consuming but the large amounts of unstructured rich data results in considerably time to analyse post collection. The time commitment for those being studied can make it

difficult to secure the access to the situation being researched, particularly where there are concerns from those in control of the access that their organisation may be cast in a negative light (Reeves et al, 2008, p.514). A second drawback is the lack of control over the situation i.e. the research not being a controlled experiment. This can make it difficult to plan and carry out research particularly when unexpected data presents itself which may result in a change of direction for the research. Another drawback with ethnography is the personal relationship between the research and subjects being studied. This is twofold first the researcher must be wary of subjects misrepresenting themselves, particularly "during a short study" (Fidgeon, 2011, online), but secondly the researcher must be aware of bias which can occur when a researcher spends an extended time with the subjects causing bias over the observations/conclusions drawn from the research (Whitehead, 2005, p.7) which is a criticism of ethnography by researchers with a positivist philosophy.

The current research project involved immersion within the situation being studied, with the results being fed into future police and actions being carried out by the police.

3.5.2 Phenomenology

Phenomenology overlaps with the ethnographic approach as both are generally thought of as qualitative approaches studying human interactions, though ethnography has a stronger emphasis on the researcher having lived and experienced the situation (Richardson, 1999, p.58). The key difference between phenomenology and ethnography is that phenomenology seeks to "to identify phenomena through how they are perceived by the actors in a situation" (Lester, 1999, p.1) and then describes the phenomena rather than explain it. The methodology gathers deep information covering both the phenomena being studied and the perceptions of those experiencing it (van Manen, 1990, p.25) using similar methods to ethnography such as interviews, discussions and participant observation. Creswell (1998) proposed the following process for a phenomenogaphic study:

1. The researcher writes research questions that explore the meaning of the experience being studied for the individuals and asks individuals to describe their everyday lived experience.
2. The investigator collects data from individuals who have experienced the phenomenon under investigation.
3. Data analysis.
4. Report the results of the data analysis.

The key tenant of phenomenology is representing the phenomena being studied from the point of view of the research participant without preconceptions of bias (Husserl, 1970), therefore it has a subjective

epistemology. The methodology evolved in philosophy due to its ability to provide powerful understandings of personal motivation before gaining popularity in psychology. Phenomenology is a critical reflection on conscious experience rather than subconscious motivation; it is designed to uncover the differences in experiences (Goulding, 2004, p.302), rather than explain how the situation is constructed via the culture of the social actors' involved as in ethnography. As such the methodology is particularly effective at bringing to the fore the experiences and perceptions of individuals from their own perspectives, and therefore at challenging structural or normative assumptions. Phenomenological studies are useful for describing events for example how people interact with computers in educational settings (Cilesez, 2009) or looking at studies exploring consciousness and the mind (Chalmers, 2002).

Whilst phenomenology is useful for studying deep meanings behind the experience of the phenomena being studied, it does not delve deeper into the reasons why particular actions have taken place. This research project looks to provide guidance for organisations wishing to carry out an information sharing project. The data analysis must include the reasons behind actions rather than simply describing them. Whilst phenomenology would be useful in this research project for describing the interactions between people involved in the implementation of the project a deeper understanding is required.

3.5.3 Action Research

Action research (AR) also known as participatory research has its roots of in Lewin's work in the 1940's. His work "set the stage for knowledge production based on solving real-life problems" (Greenwood and Levin, 1998, p.19). The purpose of AR is to improve practice not to gather data and information, it is "learning by doing". First a problem is identified and defined by a team including professionals and researchers; action is taken to gain knowledge and resolve the problem and then the results of the actions are interpreted (Stringer, 2007). If the problem is not suitably resolved another attempt is made. "AR promotes broad participation in the research process and supports action leading to a more just or satisfying situation for the stakeholders" (Greenwood and Levin, 1998, p.4). The key belief in action research is that all people are accumulating and utilising knowledge in everyday life, this role is not simply reserved for professional researchers.

Three elements must be present for research to be classed as action research; action, research and participation (Greenwood and Levin, 1998, p.6). As such action research is not appropriate for theoretical developments as action research must take place in situ in real world research where the knowledge gained will be put into use. The methodology is mainly thought to be qualitative but quantitative techniques can also be used. AR has an objective ontology with a subjective epistemology allowing for the application of some scientific methods (Coghlan and Brannick, p.5, 2005).

"Action research aims to contribute to both the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually accepted ethical framework" (Rappoport, 1970, p.499). AR is particular suited to researching organisation and management problems due to its utilisation of skilled professionals who experience the problem and trained researchers with skills to understand and analyse the problem, as such it is commonly utilised by consultancy firms (University of Cambridge, n.d.). Examples of AR studies include fostering an internet based work group (Lau et al, 2001) and using technology to teach poetry (Koch and Feingold, 2006) the methodology due to its ethos of learning whilst doing lends itself to research projects implementing new processes or technologies.

AR has drawbacks, a key one being the dilemma between the dual role of researcher and consultant (Morton, 1999). The researcher must provide the organisation with a service which meets their needs which may conflict with the research needs of the project. Demands on time for the researcher carrying out AR can be difficult due to the conflicting needs of day to day tasks within the organisation and the conflicting needs of research (Waters-Adams, 2006). Critics question the validity of action research as a methodology. The researcher often needs to evaluate research methods whilst carrying out the research opening criticisms for lack of a planned and considered approach. Waters-Adams (2006) identified there is an "inevitable researcher bias in data gathering and analysis". The final criticism of AR points out that AR is a messy complex process with lines of enquiry only partially related to the main focus study, ultimately many lines of inquiry are later aborted and the main study is continually refocused (McNiff, 1998).

AR relates to this research project due to the researcher effectively taking a role within the police project team which aligns to the consultant researcher paradigm of AR. The situation being studied involves the implementation of a new information sharing system and represents a new way of working, this effectively results in learning whilst doing and requires solving a real world problem whilst generating research applicable to a wider audience.

3.5.4 Evaluation Research

Evaluation research is the systematic application of social research procedures for assessing the conceptualization, design, implementation, and utility of social intervention programs (Rossi and Freeman, 1993, p.5). Evaluation research is the formal measurement and evaluation of actions e.g. programmes or projects and the factors which influence performance. It can refer to completed or on-going activities to evaluate whether they are meeting goals as such evaluation research is best used in a real world setting (Childers, 1989, p.250). Weiss (1998, p20-28) identifies several reasons for carrying out evaluation research:

- Determining how clients are faring.

- Providing legitimacy for decisions.

- Fulfilling grant requirements.

- Making midcourse corrections in programs.

- Making decisions to continue or culminate programs.

- Testing new ideas.

- Choosing the best alternatives.

- Recording program history.

- Providing feedback to staff

- Highlighting goals.

The evaluation must be carefully planned with a clear purpose and not ad-hoc or sporadic (Wallace and Van Fleet, 2001). Griffiths and King (1991, p.3) identify principles for good evaluation:

1. Evaluation must have a purpose, without the potential for some action, there is no need to evaluate

2. Evaluation must be more than descriptive; it must take into account relationships among operational performance, users, and organizations

3. Evaluation should be a communication tool involving staff and users

4. Evaluation should not be sporadic but on-going and provide a means for continual monitoring, diagnosis, and change

5. On-going evaluation should provide a means for continual monitoring, diagnosis and change

6. On-going evaluation should be dynamic in nature, reflecting new knowledge and changes in the environment

Examples of studies using an evaluation research methodology are harder to find than studies with other methodologies due to the confidentiality of the contents of the reports; "those that are in the public domain are normally those submitted on major national or international initiatives" (Silver, 2004, online). Evaluation research studies work very well in large organisations where a program can be evaluated and the lessons learnt from the evaluation fed in to future projects. For example Russell and Gregory's (2003) study which was used to evaluate decisions made in nursing with regards end of life decisions; the lessons learnt from this study could be utilised across the nursing profession.

Subjects of the evaluation can feel pressured by a researcher evaluating their day to day activities (Web Centre for Social Research, 2006); they may not act as they normally would. Another potential problem with

evaluation research is the likelihood it will involve criticism and controversy, hence Berk and Rossi's (1990, p.14) advice that "evaluation research should not be undertaken by persons who prefer to avoid controversy, or who have difficulty facing criticism". Another identified failing of evaluation research is the potential for recommendations from the research not to be fed back into the system, making the research project pointless.

The current research project involves the implementation of a new system and as such evaluation research could be used to evaluate the success of the project. Evaluation research requires a carefully planned and adhered to research design, this would have limited the ability of the researcher to take opportunities to examine unexpected avenues of data and potentially miss vast amounts of valuable data. Evaluation research as methodology would limit the ability for the researcher to develop academic theory due to its focus on evaluating the implemented system.

3.5.5 Selected Methodology

The previous section detailed the four methodologies most closely linked to the research being undertaken in this project. Each of the methodologies ethnography, phenomenology, action research and evaluation research have elements which relate to this current research project. The methodology deemed to be most suited to this project was action research (AR). The reason AR has been selected for this project is primarily due to the dual role the researcher was taking whilst being based at the police. The researcher effectively acted as the consultant from an AR study being involved in the day to day activities of the project whilst carrying out academic research. The research involved the real life situation of the police and partners implementing a new information sharing system for use by all partners. This was a wholly new way of working for all involved and relied heavily on learning whilst doing.

3.6 Methods

A flexible research design has been utilised with an action research methodology. Therefore a variety of data collection methods both quantitative and qualitative could be utilised. To help confirm the validity of the methods being used, pilots were staged where relevant prior to collecting data. Pilots are discussed in section 3.6.1 with the methods utilised discussed in sections 3.6.2 Participant Observation, 3.6.3 Surveys and 3.6.4 Focus Groups.

3.6.1 Why Pilot?

A pilot is a "small study carried out before a large-scale study to try out a procedure or to test a principle" (University of Manchester, n.d.). There are many reasons for carrying out a pilot study; some example taken from van Teijlingen and Hundley (2001, p.2) are:

- Developing and testing adequacy of research instruments

- Assessing the feasibility of a (full-scale) study/survey

- Assessing whether the research protocol is realistic and workable

- Establishing whether the sampling frame and technique are effective

- Assessing the proposed data analysis techniques to uncover potential problems

- Developing a research question and research plan

The idea is that a researcher is able to test their method and ideas planned for data collection prior to actually collecting the main data. This means flaws in the method/theory can be identified and potentially rectified before the larger data collection is carried out. A pilot is useful in identifying whether there is any reason to carry out the main study. Using this research project if the researcher posited the hypothesis police officers on shift A, C and E are more accepting of the system than those on B and D at Melton police station, the researcher may want to spend time understanding why this difference exists. A pilot study may identify that shifts B and D would not use the system as they do not deal with cases which meet the criteria to be recorded on the new system. As such although data may be appearing to suggest that the B and D shifts do not use the system the pilot study has quickly identified that this is not a worthwhile research activity.

3.6.2 Participant observation

To fully understand the information sharing environment and practices within the police participant observation was an ideal technique. "The method of participant observation is exceptional for studying processes, relationships among people and events, the organization of people and events, continuities over time and patterns, as well as the immediate sociocultural contexts in which human existence unfolds" (Jorgensen, 1989, p.12). Participant observation is especially appropriate for "exploratory studies, descriptive studies, and studies aimed at generating theoretical interpretations" (Jorgensen, 1989, p.13). This suggested the technique would work well when exploring the information sharing environment and the implementation of the new information sharing system for use by the multi-agency partnership. This involved studying the personal relationships and interactions over the course of the systems implementation.

Participant observation can be covert (those being studied are unaware of the researchers role) or overt (those being studied are aware of the researchers role). There are advantages and disadvantages to both covert and overt participant observation (DeWalt and DeWalt, 1998). The role the researcher took within the police meant members would be aware that the researcher was a PhD student, as such the researcher would have been unable to hide their research role. In addition covert observation brings with it ethical questionability either due to the researcher being perceived as deceiving the subjects studied in able to access data otherwise inaccessible. For example Erhenrich's (2001) study investigating low-wage workers in America; the data collected for this study would unlikely have been provided if those being studied had known Erhenrich's role as a researcher, or the ethical issues regards the researcher partaking in questionable/illegal activities such as drug taking (Power, 1989) or prostitution (Magnanti's, 2005).

Overt participant observation was chosen and all members of the police and partners whom the researcher interacted with were made aware of the researchers' dual role of participant and observer at meetings/discussions. The researcher's role was discussed on first meeting any partnership member and the researcher gave an overview of the research project. The researcher took an active role in the project and project members quickly identified the researcher as a member of the project team rather than as a researcher. This helped to minimise "the extent to which the researcher disrupts and otherwise intrudes as an alien, or nonparticipant, in the situation studied" (Jorgensen, 1989, p.16) thus minimising reactivity (Robson, 2011, p.316). Being an official representative of the police reduced the researcher's ability to manipulate the group meetings to the researchers' goal which can be a concern with participant observation (Robson, 2011, p.322) as the researcher needed to ensure the police views and goals were achieved as well as their own.

The development of Sentinel began three months after the initiation of the research project, with the working groups and project teams initiating work in early 2011 (approximately 6 months after the initiation of the research project). The researcher was granted a position on the Sentinel
Multiagency Project Team to study the information sharing practices and the changes the Sentinel system will make to these. Being granted an active role in the project team meant the use of participant observation needed to form part of the data collection, to ensure maximum benefits could be gained from this privileged research position.

Participant observation was not only utilised in the multiagency project groups, it forms a major part of the data collection in this AR study. To act not only as an observer which can become the focus for participant observers and become an active participant the researcher spent a minimum of 4 days a week working at the police in the first year of the project, 3 days in the second year of the project and an average of 1 day a week in the first 6 months of the final year of the research project. Some roles the researcher partook

included ASB station visits pre HMIC inspection; training users; being a representative for the police on away days and being a part of the multiagency team who created the security documentation for the system. Participant observation over the duration of the research project has allowed for the collection of rich, informal data about how the project team, future users of sentinel and other departments who share other types of information such as the Safeguarding Vulnerable Adults department have interacted and experience information sharing and how the implementation of a new information sharing system has changed this.

The following reasons have been identified by authors to use participant observation as a method of data collection (adapted from Schensul et al, 1999, p.91 and Bernard, 1994):

- To help develop and guide relationships with the social actors involved in the research.

- Helps the researcher embed themselves in the situation and understand the cultural values and parameters of the group, potentially giving more credence to the researchers' interpretations.

- It is a valuable tool in allowing the researcher to become known to the social actors.

- Allows for various types of data to be collected.

- Reduces the incidence of "reactivity".

- Helps direct the researcher to questions that make sense in the culture being studied.

Participant observation over the course of the research project has helped redefine the project due to the unfettered access to the day to day interactions and actions of the police and multiagency members involved in the project with which the researcher has come into contact. This provided data which would never otherwise have been known to the researcher. The research has benefitted from relationships the researcher has made within the police and partner agencies which has on many occasions provided various viewpoints on a situation, for example when there have been differences in opinion between participating members the researcher due to relationships which have been built up over the project has been able to discuss these views in an informal setting with the different members. To record the data being collected from the participant observation a field diary/journal was kept by the researcher. The diary will be updated at least weekly and after important meetings/decisions on the project are made. The diary will record observations, decisions made and personal feelings about the situations being observed (Wolfinger, 2002). In an attempt to avoid bias in the research diary, entries will be reviewed a few days after being completed and notes added where any potential bias may have been recorded. Biases will not be removed from the entries as they may provide valuable insights into feelings and emotions being experienced at the time of writing.

There are of course potential dangers with the use of participant observation. The results gained from participant observation can be difficult to replicate as another researcher interpreting the same results may arrive at a different set of conclusions. This is also a problem where a researcher may incorrectly interpret events as the result of observing an atypical situation (DeMunck and Sobo, 1998). The researcher will put significant time into immersing herself within the situation in an attempt to observe a large range of activities to better enable identification of atypical situations. Another potential issue with participant observation is the potential for a researcher to only view situations/events which are of interest to the researcher. Johnsons and Sackett (1998) suggest using systematic observation to ensure this does not happen. The researcher being immersed in the situation and taking an active role in the police should mean the researcher will be exposed to the same activities any other project worker would. The role of researcher will granted privileged access to higher level meetings a project worker would not typically be exposed to, but this will provide greater context for the project. Dewalt & Dewalt (2002) highlight the inherent problem that the researcher themselves is a human and will have biases such as gender, sexuality, religious etc. It is therefore very important that the researcher understands their bias so they can attempt to negate them. Understanding the researcher's philosophical stand point as detailed in this chapter has helped to identify where potential biases may occur and the researcher has tried to identify throughout the project where areas of bias may occur.

3.6.3 Survey

A survey is "a method of gathering information from a group of individuals using identical procedures for each person" (Zimmermann et al, 2006, p.23). It is used "to answer questions that have been raised, to solve problems that have been posed or observed, to assess needs and set goals, to determine whether or not specific objectives have been met, to establish baselines against which future comparisons can be made, to analyse trends across time, and generally, to describe what exists, in what amount, and in what context." (Isaac & Michael, 1997, p. 136), due to the ability to use surveys to address these various issues they are widely used. There are two types of survey a cross-sectional (gathers data from a single point of time) and longitudinal (gathers data over a period of time) (University of Texas, n.d.), depending on the type of information the researcher wants to collect. In this research project a cross-sectional survey could have been used to gather user's feelings of the new information sharing system, a longitudinal survey could have surveyed officers' feelings regarding sharing ASB information pre-implementation and then repeated the survey post implementation. The decision was made by the researcher not to carry out a longitudinal survey for two main reasons. First police officers are regularly surveyed about numerous aspects of their working life from general working attitudes to surveys on newly implemented processes. Officers may feel over surveyed and unlikely to complete numerous surveys. The second reason longitudinal surveys were

discounted was the turnover rate found in the council (public sector average in XPertHR 2011 survey was 12.6% per year) and the regularity with which police officers change posts meaning the people being surveyed are unlikely to be the same and the experience levels of employees will vary meaning variations in results may be due to the sample being surveyed rather than the time differences. This is further exacerbated by continually changing police and council process regarding ASB.

A survey attempts to draw conclusions about a population based either on the population as a whole or a sample. The population is "any entire collection of people, animals, plants or things from which we may collect data. "It is the entire group we are interested in, which we wish to describe or draw conclusions about" (Easton and McCall, n.d.). The sample is "a group of units selected from a larger group (the population) (Easton and McCall, n.d.)." For this research the population is any user of an ASB incident recording system within the partnership. For the police this is potentially any officer but the higher volume users will be response officers and the neighbourhood teams and the associated supervisory structure. For the councils this will be the ASB/community safety teams and in a limited number of partners the environmental health and housing teams. The sample size when carrying out a survey must be considered, this is affected by (adapted from Glasgow, 2005, p.2) the desired degree of precision, statistical significance required and access to the population. Often the population researchers wish to survey is too large for the survey to be carried out on the whole population and as such a sample is used. For this research project the whole population is accessible to the researcher via intranet and email access and is sufficiently small approximately 2500 people that it is feasible to survey the whole population using electronic surveying systems available to the researcher via the police. Even though the whole population will be surveyed a 100% response rate did not occur, the number of responses will effectively still represent a sample which could contain bias. Response rates from a survey can be a drawback of the survey technique, a well designed and issued survey maximises response rates.

There are both advantages and disadvantages to the use of surveys. A major strength of the survey is the ability to gather data from a large number of respondents which would not be possible by interview (Glasgow, 2005, p.1).Other advantages of a survey include responses are gathered in a standardised and objective way (compared to other techniques such as interviews), the speed of data collection is comparatively quick and potentially information can be gathered from a large portion of a group compared with other techniques such as interviews (adapted from Milne, 1999). The main drawback of using surveys is the opportunity for bias either from the inaccuracy of respondent's replies (deliberately or not due to an inability to recall information) or participants not responding through choice (Bell, 1993). The standardisation of a questionnaire can make it difficult for participants to provide all the feedback they wish. Particularly in

long questionnaires respondents may answer superficially in an attempt to simply finish the questions or they may be unwilling to answer questions truthfully for fear of repercussion (adapted from Milne, 1999).

3.6.3.4 Research Survey

The researcher utilised a cross-sectional survey to gather an indication of the level of acceptance the users had of the newly implemented Sentinel system. For the project team the survey would allow them to gauge a level of acceptance to be fed into a larger evaluation for presentation to the governing boards and allow users to feel they have had an opportunity to shape the future of the system, whilst feeling their opinion is being heard. The acceptance survey collected data on the level of usage and acceptance of the Sentinel system in the police and partner agencies. The use of a survey provided a broader range of opinions than could be gathered from participant observation and day to day activities the researcher carried out. Unlike in many surveys where only a representative proportion of the population (a sample) can be targeted the sentinel survey will be sent to the whole population of users, this will then rely on self-selection for the users to complete the survey.

To maximise the response rate, the survey was emailed directly to the users with a link to the online survey. It was designed to take a maximum of 5-10 minutes to complete, reducing the chance of respondents beginning the survey but not submitting it due to the length of the survey. The survey was championed by members of the police hierarchy to encourage users to complete the survey. A full copy of the survey is provided in Appendix C. The survey consisted of:

- 3 initial demographic questions concerning department, role and training received.

- 4 multiple choice questions covering training and system usage with areas for free text comment.

- 8 scale questions on aspects of the system, which were rated on a scale of disagree fully, disagree slightly, agree slightly, agree fully or not applicable.

- 3 free text questions discussing Sentinel's positives, negatives and suggestions for improvement.

The researcher's contact details were provided with the survey with a comment encouraging anonymity if a respondent wished to provide further comments by email or phone, this was to address the potential lack of opportunity for respondents to provide all the comments they wished.

To pilot the user acceptance survey a pilot was carried out following guidelines taken from Peat et al (2002, p.123, Table 3.23):

- administer the questionnaire to pilot subjects in exactly the same way as it will be administered in the main study

- ask the subjects for feedback to identify ambiguities and difficult questions

- record the time taken to complete the questionnaire and decide whether it is reasonable

- discard all unnecessary, difficult or ambiguous questions

- assess whether each question gives an adequate range of responses

- establish that replies can be interpreted in terms of the information that is required

- check that all questions are answered

- re-word or re-scale any questions that are not answered as expected

- shorten, revise and, if possible, pilot again.

The user survey was piloted on 7 members of the internal police project team and was also made available to the multiagency project team, where the project manager acted as a representative for the multiagency members; it was requested that the pilot survey was shared with other members of the multiagency project team however the multiagency project manager who acts as a gatekeeper for the other members felt this was unnecessary and they would provide relevant feedback on behalf of the other members. The survey pilot had 2 purposes:

- To ensure the questions were suitable.

- To ensure the correct type of data was collected.

Feedback from the pilot was generally positive; the pilot members were happy with the ease of input for the questions and happy there were numerous comment sections where users who wanted to provide further detail could. The feedback regarding the length of time to complete the survey was satisfactory confirming the original estimation of 5-10 minutes to complete the survey. There was some negative feedback from the pilot. Firstly there was confusion over the role demographic question by the multiagency representation, on further investigation the multiagency representative had incorrectly completed the first question asking what organisation they had come from, as such they had been routed into the police questions and asked to choose their role which consisted only of police roles. To reduce the chances of other council members having a similar problem the organisations were re-ordered with council being placed at the top of the list. The second feedback regarded the wording of one scale item "Sentinel improves my ability to deal with threat, risk and harm" was felt by the multiagency project manager to be confusing. The terminology is a standard police performance requirement, as such the council member felt this was somewhat confusing. The decision was made to keep the question the same, as for the police (the majority of expected respondents with 1800 active users versus the 100 users across all councils) this is a key objective for evaluating their work and would be useful for the police project team and the researcher to gain an insight into how police officers felt

they were achieving their performance requirements through the use of the Sentinel system. The final negative comment received from the pilot suggested respondents would not complete the comment sections unless they were mandatory so we should make them mandatory, this was disregarded as the comment sections were never intended to be mandatory, rather an area for those who felt they would like to expand on their answers.

3.6.3 Focus Groups

A focus group is "a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research" (Powell et al, 1996, p.499). The main purpose of the group is "to draw upon respondents' attitudes, feelings, beliefs, experiences and reactions" (Gibbs, 1997). Essentially a focus group is an interview with a group of experts in the same room on a specific topic. They are particularly useful when a researcher is looking for a range of perspectives and/or trying to understand potential differences or factors that influence that perspective (Krueger and Casey, 2000). Due to the fact experts will interact naturally within the group commenting on and challenging others thoughts, actions and opinions. The group will naturally focus in on the important topics which are decided by them rather than the interviewer and can help weed out extreme views as other experts will comment on these views (Robson, 2003, p.294). The range of experts available in the same place at the same time makes focus groups useful for generating and piloting ideas or plans due to the differing backgrounds and challenges that will come from the group (Krueger and Casey, 2000). Due to the differences of opinion that may be presented a focus group is not practical when a consensus decision is required or emotional/sensitive topics are to be discussed (Krueger and Casey, 2000) as participants may not wish to discuss such topics in front of a group.

There are two key considerations when inviting attendees to a focus group; number of focus group members and whether the group should be heterogeneous or homogenous. There are many authors who provide guidelines for how to carry out focus groups for both academic researchers and consultancy firms, and these guidelines are often conflicting which is the case for focus group size. When planning a focus group depending which guidelines are followed the focus group will contain anything from 4 to 15 participants as summarised in table 3-3.

Author	Suggested Focus Group Size
Stewart and Shamdasani (1990)	8-12
Kitzinger (1995)	4
Goss and Leinbach (1996)	15
Krueger and Casey (2000)	10-12 for commercial market research 6-8 for non-commercial complex topics

Table 3-3 Focus Group Size

The second consideration is whether the focus group is homogeneous or heterogeneous; this will depend on the aims of the researcher carrying out the focus group and the topic for discussion at the focus group. The homogenous group is more likely to suffer from 'groupthink' where members of the group minimise conflict by expressing similar and accepted opinions (Robson, 2003, p.295) and thus negates the purpose of the focus group. Heterogeneous focus groups are better suited to topics where a range of opinions and challenges are sought for example if implementing a new system inviting experts from different fields to the project group allows challenges from different areas to be identified. However a homogenous focus group involving only operational project team members may be better suited if the project continuation is in doubt and the members wish to freely express concerns with the project as this is unlikely to happen if those not closely related to the project are involved.

For a researcher focus groups are relatively inexpensive and quick to set up and provide a highly efficient technique for data collection (Robson, 2003, p.294). Another advantage over individual interviews is participants may feel less pressure to provide answers they may not actually have as other members of the group are able to provide these or through discussion the participant may become involved in the conversation as ideas start to form from other member's opinions and thoughts. A focus group can be valuable for those taking part as well as the researcher. Those involved can feel empowered (Goss and Leinback, 1996) and the participants can feel that the focus group itself acts as a forum for change (Race et al 1994) both during the discussion and following. This makes focus groups useful in an action research study where the researcher needs to provide value for the organisations involved in addition to their research.

There are drawbacks to the use of focus groups; mainly it requires a well skilled facilitator who is able to keep the group on topic and involve all the members of the group. A focus group contains multiple personalities so there is potential for conflict and out spoken members to overtake the discussion (eVALUEd, 2006) meaning the facilitator must be able to keep the discussion on track and all involved. When the topics being discussed are of a controversial or private nature respondents may not want a group of people to know their views one-to-one interviews are more appropriate (Krueger and Casey, 2000). The results of a focus group are self-selecting as participants will only give their thoughts and views when they want to (eVALUEd, 2006).

3.6.3.1 Research Focus Group

A focus group was carried out at the police with the aim of understanding if there were differences in the level of acceptance of the new Sentinel information sharing system between users who had been live using the system for differing lengths of time; this was possible due to the phased implementation of the system. The focus group was planned to understand the level of acceptance for the system in the four focus groups covering the four 'go live' phases and the data from the four focus groups. Twelve participants were invited to the group with the expectation that at least two would not attend on the day. Twelve was chosen to

ensure that even if one in three of the invitees could not attend (which was the worst case scenario envisioned gauging from previous experience sought from police focus group facilitators) there would still be at least eight with a maximum of twelve participants which falls within suggested guidelines (table 3-6). The makeup of the group was heterogeneous; participants were selected by stratified random sampling covering 3 job roles within the police. No attempt was made to ensure differing genders, ethnicities or age ranges were represented, though it was expected the random sampling and the makeup of the police would provide some diversity in this respect.

Working with an organisation does remove the autonomy many researchers have. The original plan for the focus groups was to hold four focus groups one for each phase of 'go live'. The purpose of this was to identify if acceptance varied with the amount of time officers had been using the system. Officers were selected at random by the researcher for invitation. Additional invites were included to handle potential abstractions of police officers. These invites were provided to the resource planners to update the invited officer's duties. Unfortunately the resource planners did not adhere to the invites instead assigning any officer on duty to the focus group. Each focus group thus contained officers from multiple phases and some officers who were untrained in Sentinel. The late notice meant the attendees of the focus groups could not be altered. The aim of understanding acceptance of the different 'go live' phases had to be amended. Instead the focus group aimed to understand the acceptance Sentinel and to gauge the impact of decisions during development. There were now four focus groups with the same aim so the researcher decided that the first focus group would act as a pilot for the other three. The researcher had been involved in training some of the officers on the new system so to avoid any bias or potential for participants to feel that they could not talk openly facilitators were arranged to carry out the focus groups. The researcher was there only to observe.

Regrettably the morning of the first focus group the facilitator for that day had to pull out. At the last minute the researcher stood in for the facilitators to carry out the pilot focus group. The pilot focus group should have had ten attendees though only seven turned up (summarised in table 3-4).

Location	5 City	2 County
Role	6 PCSO	1 LPO
Gender	3 Female	4 Male
System User	4 Non-Users	3 Limited Users

Table 3-4 Summary of Focus Group Attendees

On completion of the pilot focus group the researcher felt that the attendees selected to attend the focus group were inappropriate. Of those attending only three had used the system and even then only once or twice. The pilot focus group gathered no data that was not already being collected from the user acceptance

survey. The original research design had the survey complete four weeks prior to the focus groups to allow early analysis of the survey to influence the discussion points for the focus group. Delays with the survey due to police resourcing meant it had only been issued one day prior to the pilot focus group. The researcher took the decision to cancel the further three planned focus groups until such time that the survey could be analysed and more appropriate attendees invited. Ultimately post analysis of the user acceptance survey it was felt focus groups would not be an appropriate technique for gathering the required data and no further focus groups were carried out. As an AR study it was expected that at times avenues of research would be carried out which would yield little useful data and would need to be curtailed, the plan to use focus groups is one example of this in this research project.

3.7 Data Analysis

A methodology chapter should not only consider the research methods being applied to the research but should discuss the analysis which will be carried out on the collected data. This section gives an overview of the techniques used to analyse the data. This project utilised participant observation and a user acceptance survey. The research collected large amounts of qualitative data.

Analysing qualitative data relies on three related processes or stages:

1. Describing phenomena

2. Classifying them

3. Connecting the concepts

Describing the phenomena requires 'thick' description; "a thick description includes information about the context of an act, the intentions and meaning that organize action and its subsequent evolution" (Denzin, 1978, p.33). Dey (1993, p.32) identified 3 aspects of description in qualitative analysis when describing an observation, shown in figure 3-4; to fully be able to analyse an observation the researcher must be able to describe the context in which the event took place, the intention of the people involved in the event and the processes the people involved in the event utilised. Utilising the three elements transforms the description from a thin description simply describing the event which occurred to a think description providing context and a degree of understanding on what happened and potential reasons as to why.
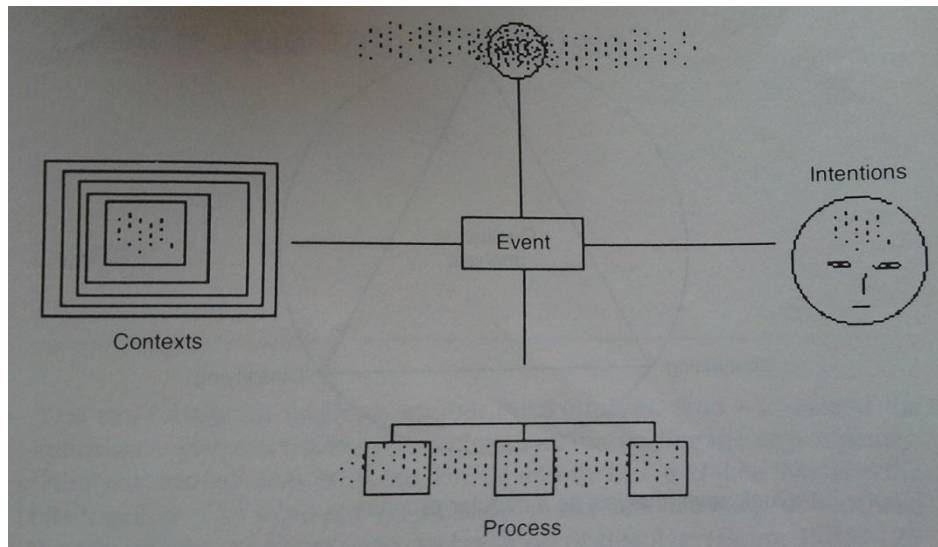
Figure 3-4 Three Aspects of description in qualitative analysis (Dey, 1993, P.32)

The central point of analysis in an action research study "is the story of what took place" (Coghlan and Brannick, 2005, p.128). The writing up of the story forms part of the analysis of the data. Initially the data was written up in a chronological way breaking down the project into a simple what happened and when.

The story was then written following the field diary and researchers' calendar describing the meetings which took place giving a logical structure to the story and providing a skeleton structure which could be built on. Through the writing of the chronological story themes began to emerge. Coghlan and Brannick (2005, p.128) state "the writing up period is a whole new learning experience. It is where synthesis and integration take place". The chronological story was then redrafted into relevant themes of factors which have influenced Sentinel's implementation. As Zuber-Skerritt and Perry (2002) identified the write up of the action research story itself becomes a project with the story being redrafted and edited through cycles of review conclusions emerge.

The narrative of an action research project must first contain an account of what happened, but secondly must include in some form the researchers' views of the events and conclusions from the data. Coghlan and Brannick (2005) highlight the importance of the separation of "the story from sense-making" in order to demonstrate "you are applying methodological rigour" (p.129).

A user acceptance survey was carried out as part of this project, meaning coding of the collected data was required. The collected data needed to be classified (coded), using a conceptual framework which would allow the actions and events to be understood by others. The first step was to take the data and analyse its characteristics. This allows the data to be classified into categories depending on characteristics found within the data itself (Bryman, 2008). Utilising themes from within the data itself rather than a predefined schema

stresses "the relationship between content and context" (Robson, 2002, p.350). The data can fall into multiple categories and categories may overlap. After the initial classification further high level classification may be appropriate where categories can be grouped together along themes or characteristics. One example of coding which was carried out in this research was the coding of the free text questions from the user acceptance survey. The results from the survey were exported into a spreadsheet and broken down into responses for each question. A quick review of the responses to all questions was carried out to get an overall feel for the data and to begin to form some initial themes across all the questions e.g. design issues, partnership issues, loss of functionality over previous system and lack of use. Each question was then reviewed individually, breaking down the responses by the preceding scale item e.g. responses were group into disagree fully, disagree slightly, agree slightly and agree fully, not applicable responses were disregarded as there was no occasion where a not applicable response was given and a comment provided. Each section of response was then initially coded using the characteristics found within the response e.g. Scale item - Sentinel improves the service a victim receives from the partnership produced 33 initial codings, an extract is shown in table 3-5. The extract shows the initial codings which on the second round of codings were re-coded into the same category →Service to victim no better than old system and processes.

ID	Disagree Fully	Count	Maps to
2	It doesn't	1	2
4	No different to old system	5	2
5	No change to process	4	2
6	No evidence it does	2	2
7	No benefits over what existed	2	2
8	Service to victim remains the same	2	2
23	Already good practice to share information	2	2

Table 3-5 Extract of Initial Coding of Scale Item 12 a Sentinel Improves the Service a Victim Receives from the partnership

After an initial coding of all questions was carried out the coding were revisited to first check the initial codings and secondly to identify if any of the codings could be amalgamated into higher level categories with similar characteristics. The initial coding of responses for disagree fully sentinel improves the service a victim receives from the partnership were reduced from the initial thirty three codes to twelve codes shown in table 3-6. This was repeated across all responses and free text questions on the user acceptance survey.

ID	Disagree Fully	Count
1	No partners live (city)	13
2	Service to victim no better than with old system and processes	18
3	System functionality issues	10
4	Takes longer so less time spent with victim	5
5	Cases see no partnership involvement	4
6	People affect service not computers	3
7	Reliance on police	2
8	Case load more difficult to manage (no queue/victim update package)	5
9	General moans e.g. it's not a police system	2
10	Officers reluctant to use	2
11	CIS was used in briefings this is not	1
12	Another system	1

Table 3-6 Revised Coding of Scale Item 12 a Sentinel Improves the Service a Victim Receives from the partnership

Once the data has been broken down into categories it needs to be put together in a sensible form for others to understand. Connecting the concepts its perhaps the most valuable stage where the researcher must identifying what associations exist between the concepts, where do the anomalies lie and why are they there (Richards and Richards, 1990). As the user acceptance questionnaire forms part of a larger action research project the themes from the survey were analysed as part of the wider analysis of the project and included in the thematic identification.

3.8 Summary of Research Design

The research was an action research project being undertaken by a researcher with a post-positivist philosophy. Utilising action research meant there was a need for a flexible design in order for the researcher to optimise research opportunities as they were presented. For example the ability to attend groups which were created post initiation of the research which allowed for a deeper exploration of the information sharing environment in the partnership. The methods utilised to collect the data were participant observation, surveys and focus groups which were analysed through the documentation of the action research study and the reflective cycles and immersion in data this involved.

4. Partnership Context

4.0 Overview

This chapter introduces the partnership involved in the Sentinel information sharing project central to this research. Section 4.1 provides a brief history of the partnership and previous experience with information sharing across the partnership. Section 4.2 provides background on the partners in the partnership and 4.3 gives an overview of the Sentinel project. The chapter concludes with a summary in section 4.4.

4.1 Brief History of Information Sharing in the Partnership

Figure 4-1 Leicestershire and Rutland Councils (Taken From Leicestershire County Council, 2010)

The area covered by the Sentinel project is the counties of Leicestershire and Rutland (shown in figure 4-1). This covers seven borough councils (Blaby, Charnwood, Harborough, Hinckley & Bosworth, North West Leicester, Oadby & Wigston and Melton Mowbray), two county councils (Leicestershire County and Rutland County Council) and a city council (Leicester City). Rutland is the smallest county in England and Wales and between 1974 and 1997 was amalgamated into Leicestershire before becoming independent again (Rutland County Council, 2011). Previous amalgamations means many services e.g. health services and the police are co-ordinated by Leicestershire county e.g. the Leicestershire NHS Partnership (Leicestershire NHS Partnership, 2012) covers the same area as Leicestershire Police that of the two counties of Leicestershire and Rutland.

Leicestershire and Rutland CSPB (Community Safety Partnership Board) is made up of representatives from various agencies involved in community safety. The key agencies are the county and district councils, police, fire service, youth offending services and probation services. The two lead agencies tackling ASB are the councils and police; these are the agencies who will implement Sentinel. Potentially in the future other agencies e.g. fire service will implement or interface with the system.

ASB has only in the last decade become an area of business for the council and police; with the first legal Act issued in 2003 (Anti-social Behaviour Act, 2003). Until recently ASB was an issue which was treated as low severity with each agency within the CSPB dealing with it in isolation. As the need developed for partners to record ASB data in the early 2000's (driven by the increasing importance and coverage of ASB at a national level) the partners (with the exception of Charnwood) took to utilising systems they already had in place e.g. housing systems, CRM systems, environmental health systems, bespoke department spreadsheets and in Leicestershire Polices case their crime system. Charnwood searched for a bespoke ASB system (in the interim utilising an internally developed database) to manage and record their ASB on. Charnwood led the way being the first to utilise a joint system with the launch of Sentinel in 2006 at the council and its corresponding LPUs. At this time the rest of Leicestershire Police recorded ASB only on their initial call taking system, recording basic details of the call. When an officer classified a call as a crime the call would be transferred onto the crime system; where ASB was identified officers would close the call. It was left to local knowledge to retain the history of an area and identify emerging patterns.
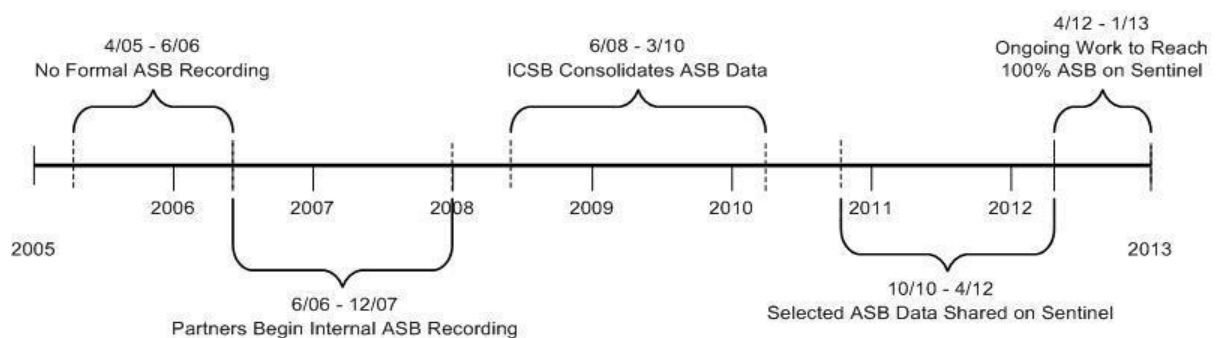
Figure 4-2 Overview of Recording ASB (created by researcher)

Following the Pilkington case (a case of targeted ASB against one family resulting in two deaths) in 2007 (IPCC, 2012) Leicestershire authorities were under intense scrutiny both from the media and government to ensure events were not repeated. From a government perspective an IPCC inquiry (2011) into the case was carried out to identify recommendations not just to be implemented in Leicestershire but across the whole of the UK. The main criticism from the report (IPCC, 2012) was the inability of the agencies involved to deal with the on-going incidents as a whole as opposed to each incident in isolation. This identified the need for the CSPB partners to work more closely together to identify patterns and threats. The CSPBs first step in achieving

this goal was to create the ICSB (Integrated Community Safety Bureau) and initiate JAGs (Joint Action Groups).

In 2008 the ICSB was set up to act as an analyst hub for the county and provide analysis of ASB issues. Each of the districts provided a monthly upload of their ASB data to the ICSB data warehouse. The central analysts would provide a tactical document to each area detailing emergent threats and hotspots. The ICSB was plagued with problems due to inconsistent data sets from numerous systems some of which were ill designed for exporting data. The analysts had to spend a lot of time chasing partners for their monthly exports and cleaning up the data before it could be analysed. This limited the benefits of the ICSB and meant data was often inconsistent and obsolete by the time it was presented to the agencies. The tactical documents contained hotspot analysis and emergent threats and were used as an agenda for the monthly JAG meetings.
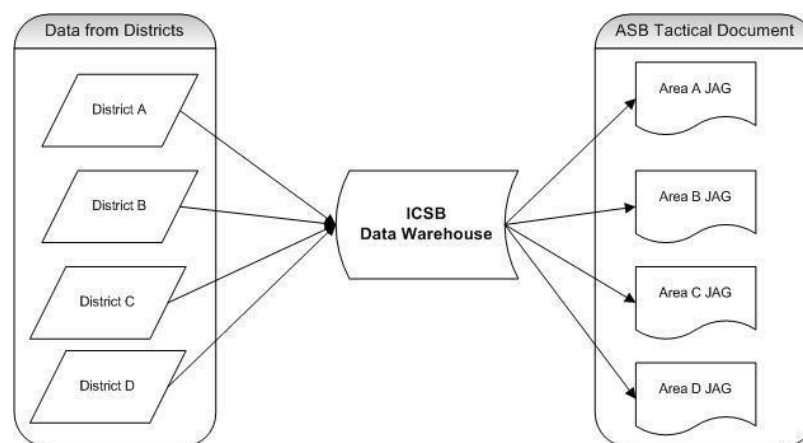
Figure 4-3 Simplified Diagram Detailing Where the Data is Gathered for the ASB Tactical Document (created by researcher)

The JAG (Joint Action Group) is a multi-agency working group. Each council area has its own local JAG with representation from the Police, Local council, Youth Offending Services, Education, Probation and others including local volunteer groups where relevant. The aim of the group is to bring together all the relevant parties to share information on identified high risk events and or people to work together to deal with the issue. The JAGs deal with ASB incidents which have an element of "High Risk" (as deemed by each agencies internal guidance whether this is location or person. Where time is available medium risk cases are dealt with. Each agency is expected to provide updates on all cases relevant to them and together the agencies create or update an action plan detailing actions each agency will take before the next meeting. Information is exchanged in an informal way i.e. through discussion rather than agencies providing copies of information to all agencies. There is an overriding confidentiality agreement which must be signed at the beginning of each meeting due to the nature of information being exchanged. In addition many members are enhanced CRB (Criminal Records Bureau) checked due to the nature of their roles within their agency. When necessary a JAG may operate an open and a closed session to allow members of the public to attend. The open session

would not discuss confidential information and the public would be asked to leave before the close session began. The JAG runs a rolling agenda meaning issues remain on the agenda until it is felt resolved or mitigated.

The ICSB and JAG represented a "person based" information sharing process. It was the first step to share information between the partners in a formalised way. The "person based" solution did have its problems with attendance, lack of updates, out of date information (ICSB analyst, JAG chair) etc. but it laid the foundations for the IT solution (Sentinel). Much like the PND project (NPIA, 2011a) where INI represented an intermediate step for information sharing between forces until the full PND was implemented.

4.2 The Partners

The following agencies have been identified as partners in the Sentinel project:

- Charnwood Borough Council (CBC)
- Charnwood Neighbourhood Housing (CNH)
- Blaby District Council (BDC)
- Hinckley and Bosworth Borough Council (HBBC)
- Melton Borough Council (MBC)
- Rutland County Council (RCC)
- Oadby and Wigston Borough Council (OWBC)
- Harborough District Council (HDC)
- North West Leicestershire District Council (NWLDC)
- Leicester City Council (LCC)
- Leicester County Council
- Leicestershire Police (LP)

Charnwood Borough Council (4.2.1), Leicestershire Police (4.2.2) and Leicester City Council (4.2.3) are discussed individually as they have been identified as the most influential partners, the rest of the partners (4.2.4) are discussed together.

4.2.1 Charnwood Borough Council

Charnwood initially recorded ASB incidents on a bespoke database created internally for use by the community safety team. Whilst effective for one department the database did not meet the needs of a council wide and ultimately multi-agency system. Sentinel (version 1.0) was implemented in 2006 after a long search for a suitable ASB case management system. Unable to find an existing system they commissioned the developers of Sentinel to modify an existing piece of software. Charnwood were highly involved with the suppliers to design and develop the system. When Sentinel launched in 2006 it was primarily focused on the community safety and housing teams who dealt with the highest volumes of ASB within the council. The system was further integrated in the following years with Charnwoods processes by interfacing Sentinel with their CRM system LAGAN; Appendix B shows the incident recording process on Sentinel prior to October 2011 (Sentinel's full multi-agency implementation (Sentinel version 2.0)). Prior to implementing Sentinel in 2006 Charnwood approached the coterminous police units (LO and LC) to record their ASB cases onto the system, with both recording cases from Sentinel's implementation in 2006 on a single system. Utilising a single system provided greater visibility for both agencies to the work of the other. The volume of ASB cases the police receive (approximately 25,000 a year based on 2012 ASB call figures from police call system) the police agreed only to input ASB categorised as high risk (roughly 20% based on 2011 conversion rates from call system to crime system). It is important to note when LO (Loughborough Policing Unit) and LC (Charnwood Policing Unit) began recording ASB incidents on the multi-agency system in 2006 the other LPUs were not recording ASB in a systematic way other than on the initial call logging system.

The implementation of a joint case management system for multi-agency use had not been carried out previously anywhere across the UK. The Sentinel system and working practices were held up as a model of good practice in July 2010. The Home Secretary's speech on ASB stated "We need to help agencies join up more effectively, spreading good ideas like the Case Management system in Charnwood, Leicestershire, which allows agencies to pool information on anti-social behaviour incidents and victims, and manage cases collectively online. This gives them a much more accurate local picture and allows agencies to quickly identify vulnerable victims." (May, 2010). This led to other councils wishing to implement Sentinel or similar systems. There were so many visits from other councils following the Home Office praise Charnwood held a seminar in March 2011 to present the work they were doing. The seminar focused on Sentinel but the council were keen to point out the surrounding practices and processes which supported its use. Highlighting the system was not a magic cure for ASB. The praise heaped on the system and Charnwood's approach led to discussions at a county level at the Community Safety Partnership Board (CSPB) about how this joined up approach could best be achieved across the counties of Leicestershire and Rutland.

Charnwood were central to the choice of the information sharing system when the CSPB decided to implement a county wide system. Sentinel had already been proven to work and been held up nationally as a model of good practice. The existing relationship between Charnwood and the developers was also seen as positive. Charnwood had unwittingly acted as a pilot providing proof of concept for multi-agency working from a single system.

4.2.2 Leicestershire Police

Leicestershire Police are one of forty three Police Forces in the UK. The first incarnation of the force formed in 1836 and was named Leicester Borough Police. Over the years the Force has gone through various incarnations, setups and structures until April 1974 when it became Leicestershire Constabulary (Leicestershire Police, 2011a) renamed Leicestershire Police in 2012.

County Policing Units	
Charnwood	LC
Loughborough	LO
Oadby & Wigston	LW
Blaby	LB
Harborough	LA
Melton Mowbray	LM
Hinkley & Bosworth	LH
Rutland	LR

Table 4-1 Leicester Police County Police Units

Leicestershire Police cover the counties of Leicestershire and Rutland; in the East Midlands with an area of approximately 2,500km with a population of approximately one million (Leicestershire Police, 2012). As of summer 2011 Leicester Police consisted of over 2300 police officers and 1200 police staff (Leicestershire Police 2011c) covering 15 LPUs (Local Policing Units) and a wide range of specialist departments such as forensics, dog units, IT and many others. Budget cut announcements made in 2010 as part of the government Comprehensive Spending Review (CSR) (HM Treasury, 2010) meant Leicestershire Police were required to achieve a saving of £34m between 2010/2011 and 2013/2014 (BBC News, 2010). In early 2013 Leicestershire police had saved £15m (Leicestershire Police Authority, 2012, p.10) with a further £20m to save by 2015 (Leicester Police, 2012). The structures and staff makeup of the force have been in a state of flux since the CSR announcement. The force has reduced the number of staff by 228 police staff and 107 officers (BBC News, 2012), which is expected to rise to 310 police officers and a total of 460 posts by 2015 (HMIC, 2012b, p.7).

Leicestershire Police are one of the trailblazer police forces. These are police forces carrying out projects "exploring how to take transparency across crime, policing and justice even further and faster." (Home Office, n.d.). The projects encompassed in the trailblazer portfolio are (adapted from Home Office, n.d.):

- Avon and Somerset – Track my crime; a case tracking website where victims can track the progress of an investigation.
- Hampshire – Crime Reports; mapping software available to the public to map and compare areas of crime and ASB.
- Surrey – Surrey Police Beat; a mobile app which allows users to view what police activity is on-going in the area.
- Leicestershire, Lincolnshire and West Yorkshire – working on publishing the outcomes of policing and justice actions.
- Dyfed-Powys and South Wales – newsletters from neighbourhood teams to the local community to increase community engagement.

The trailblazer forces are looked to by other forces to be leading in terms of their use of technology in modern policing.

Unfortunately Leicestershire Police were central in one of the most highly publicised ASB cases of recent years; the Pilkington case in October 2007 (Telegraph, 2009). Since the Pilkington case ASB has been a high priority for Leicestershire Police and is identified as a priority in their Forces Priorities'published on their website (Leicestershire Police, 2011b). Leicestershire Police are constantly looking for better ways to identify and deal with vulnerable and repeat victims to ensure similar incidents do not occur again. The Pilkington case increased the priority of ASB in Leicestershire but also across all forty three police forces in England and Wales.

Leicestershire police unlike many of the CSPB partners were not unfamiliar with Sentinel prior to its choice as the partnership system. The small scale joined up working which was carried out with Charnwood council and two LPUs since 2006 had formed some strong opinions, officers disliked the interface and the need to double key incidents in both the police system and Sentinel. The use of Sentinel in only two LPUs also introduced inconsistencies in recording particular where officers were regularly rotated around the county. Post Pilkington (IPCC, 2011) the police carried out extensive internal reviews to identify how they would better handle ASB in the future. Part of this work involved hands on training such as vulnerability and ASB identification to frontline officers, with a larger review looking at the recording process in totality. This involved searching for better ways to record ASB complaints and the actions which officers took to address them.

In 2006 Leicestershire polices process involved the initial call being logged on the contact management recording system by call takers which frontline officers do not have access to. The record identified basic details of the incident and the caller which were passed to an attending officer. Once the officer had reviewed the incident they made contact with the contact management centre who were able to close the record. In the Sentinel LPUs of LO and LC, recording of high risk ASB involved the officer inputting details of the incident and the actions they had taken on to the "council Sentinel". Further actions were recorded by both the council and police on the same records.

In the review to identify a better way of recording ASB for the whole of Leicestershire police the small scale Sentinel implementation was identified as an existing process with potential. In 2008 Leicestershire police carried out a large scale review of Sentinel. The review included negotiations with the suppliers and potential development plans for the system to be able to handle existing Leicestershire police processes. Post review Sentinel was dismissed as a potential ASB recording system as it was deemed unfit for purpose. Instead the police opted to record ASB on their current crime recording system and began recording high risk ASB incidents from January 2010. The dismissal of Sentinel meant the LPUs (LO and LC) already recording on Sentinel needed to double key ASB incidents on the crime system and Sentinel. This created negative feelings towards Sentinel in those LPUs. Officers felt this was a waste of their time. The only reason officers could see for recording on Sentinel was for the councils benefit. In addition the police review identifying the system as unfit for purpose was not kept quiet. It was widely known throughout the force that it was not felt the system was suitable for their needs. When the CSPB reviewed potential systems in 2010 for the countywide recording, the police views were strongly that other systems existed which could better achieve the partnership goal.

4.2.3. City Council

Leicester City council is the biggest organisation within the CSPB partnership with approximately 15,000 employees (Leicester City Council, 2013). They deal with the largest number of ASB cases of any of the councils. The city council were positive towards the idea of a joint ASB recording system when the idea was introduced by the CSPB in 2010. In 2011 at the time of Sentinel's implementation there were many organisational changes occurring at the city council. High level management changed multiple times throughout the course of the project and with each change came a new vision for the council. The city council found it difficult to fully commit to the Sentinel project and its aims due to the high levels of changes they were going through. The city council effectively formed a sleeping partner. They were asked to attend meetings and provide input to the on-going project but regularly did not take the opportunity. The Sentinel

project team continued developing the system unsure of whether the city council would implement and if they did to what extent.

4.2.4 The Rest

The other agencies involved in the Sentinel project whilst effectively an equal partner (able to provide the same level of input as any other) were less central to the development and implementation of Sentinel. A brief overview of their motivation and vision for the system are given as follows:

- Blaby District Council – mid to low level recorder of ASB. Existing close working practices with the local police including part time co-location of a police officer within the council. The

  ASB department effectively consists of one employee and there are no plans to integrate Sentinel with other systems. Existing processes suggest ASB is dealt with in isolation in one department with little communication between other relevant departments.

- Charnwood Neighbourhood Housing – officially a separate partner but effectively managed and governed by the same managers as Charnwood borough council and represent a sleeping partner. Interfaces and recording practices are governed by Charnwood Borough council

- Harborough District Council – low level ASB recorder, initially no plans to interface with existing systems. Due to amalgamating their call centre with Charnwood Borough council they will utilise Charnwoods CRM interface to transfer incidents to Sentinel.

- Hinckley & Bosworth Borough Council – the area where the Pilkington case occurred and very wary of a repeat incident. Active in ASB work and a mid-level recorder. Plan to evaluate Sentinel within community safety team before dispersing the system for manual entry across other departments.

- Melton Borough Council – thought of by the partners as a forward thinking and innovative council. Prior to the Sentinel project utilise a co-location building bringing all relevant services to one location including police resources. A low level recorder of ASB with plans to interface Sentinel with their CRM system to integrate with their core systems.

- North West Leicestershire District Council – mid-level recorder of ASB, plan to cease using existing system entirely as licensing term ending. The council encourages the public to call employees directly rather than be routed through a call system. There is no central system for Sentinel to be interfaced with from a community safety team perspective and no plans to interface with other departments.

- Oadby & Wigston Borough Council – a relatively small council with low levels of ASB. All the departments work closely together in one building and good processes exist to informally share

information about ASB via regular internal meetings. No plans to interface Sentinel with existing systems, but will explore manual dispersion once system implemented.

- Rutland County Council – a very low level recorder of ASB. Requested to be near the end of the implementation rollout due to internal restructuring.

- Leicestershire County Council – The district and borough councils report to the county council as such they form a sleeping partner. Hold the budget for the Sentinel project as a more independent agency.

In summary all the agencies involved were positive towards the idea implementing a joint case management system across the county. However the only agency with notable motivation is Hinckley & Bosworth (avoid a repeat of the tragic Pilkington case).

4.3 Sentinel Project

Sentinel is an ASB recording and management system. It is a web accessible database based where access to other agencies data is granted via permissions. The system utilises simple form layouts including text boxes, radio buttons and check boxes for data input, alongside lookups to search for data already in the system e.g. to add a perpetrator to an incident who is already known in the system. Sentinel contains a reporting functionality which enhanced users are able to access to create reports from the data within the system e.g. monthly reports showing number and type of ASB incidents in the area.

The project manager for the Sentinel implementation was chosen as an ASB practitioner from Charnwood Borough council who already had experience with version 1.0 of Sentinel. The project manager was tasked by the Community Safety Partnership Board (CSPB) in December 2010 to implement Sentinel "to record 100% of the counties ASB" (CSPB Chair, 2010). Figure 4-4 gives an overview of the corporate governance for the Sentinel project. The left hand side of the diagram represents the multi-agency groups responsible for Sentinel's implementation, whilst the right side is Leicestershire police internal governance. Internal governance is not present in the other partners. There are three levels of governance on the multi-agency side:

1. CSPB (Community Safety Partnership Board) - chaired by the county council and the highest level of governance. The CSPB does not exist solely for the purpose of the Sentinel project but they are the commissioning body of the project. Attended by senior managers/officers from each of the agencies.

2. Management Board - looks at the overall strategic aim for Sentinel and is made up of senior representatives/directors from the partners. Chaired by senior management from Charnwood Borough council.

3. Multi-agency Board - made up of operational ASB staff. Purpose is to facilitate the implementation of the Sentinel system within their own agency. They make recommendations for the management board and carry out day to day project implementation tasks. Chaired by ASB lead from Charnwood Borough council (the project manager for Sentinel's implementation).

The governance of the project is made more complicated by a replication of the multi-agency governance within Leicestershire police (this does not occur in any of the councils). There are strategy boards and project teams which Leicestershire Police project team need to liaise with to ensure Sentinel is considered within wider organisational planning e.g. the IT project board maintains oversight of all IT projects within the force. Sentinel's inclusion in these additional boards will maximise opportunity for integration with core systems e.g. call centre software. This creates a police project manager for Sentinel's implementation within Leicestershire Police who manages a virtual police project team. It was felt by Leicestershire police this was required due to the large scale implementation Sentinel represents in their organisation (expected in the region of 2000 users compared with 150-200 users across all other stakeholders).

Beneath both the Multi-agency Board and the Police Project Team sit ad-hoc working groups. These groups do not necessarily have representation from every partner agency and are made up of relevant expertise required to achieve a specific task e.g. training or writing the information sharing agreement.
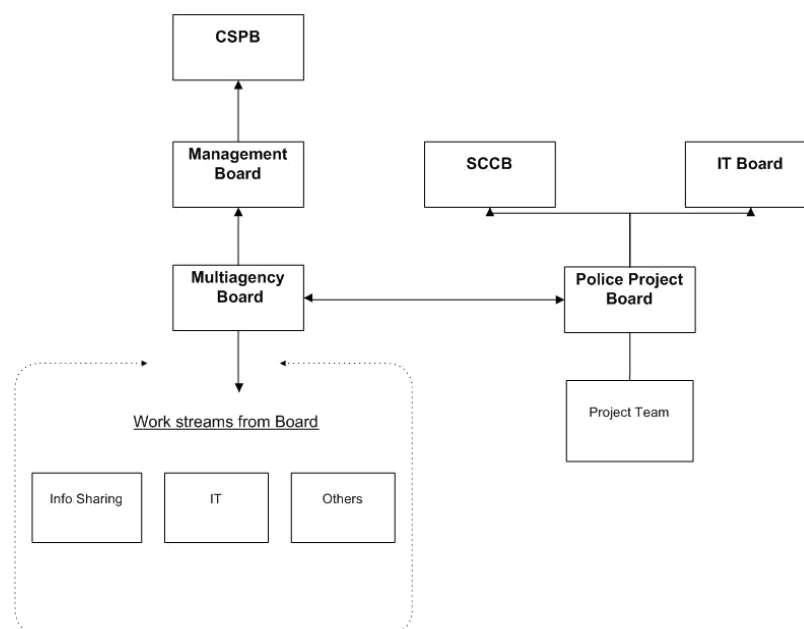
Figure 4-4 Corporate Governance for Sentinel Project (Created By Researcher)

The implementation of a single system across eleven partners is complex and resource intensive. To ease resource burden implementation across the partnership was broken down into four planned phases (a subset

of partners going live in each phase) shown in figure 1-4. To maximise the partnership benefits of the system the coterminous local policing unit would go live with the Sentinel system on the same date as the council, effectively the police will be running a phased rollout in line with the agency rollout.

4.4 Summary

Sentinel's implementation involved eleven partners each with their own motivation (or lack of) and vision for implementation. All partners had a level of influence over its success. Three agencies have been identified as central to the project; Charnwood Borough council (previous experience with Sentinel and role in implementation), Leicestershire Police (the only agency which covers the whole of the county) and Leicester City Council (the largest organisation). The next chapter details observations made throughout the researchers participation in the Sentinel implementation as part of the researchers day to day participation in the project.

5. Themes

5.0 Overview

This chapter details the themes identified from the participant observation carried out by the researcher. An overview of the meetings attended is given in Appendix A– Meeting Summary. In addition the researcher worked day to day as a member of Leicestershire Police between September 2010 and December 2012, taking a less active role between January 2013 and June 2013. Sample extracts from the researchers field diary is provided in Appendix E.

The themes have been categorised as individual, economic, technical, organisation and project. The barriers to information sharing identified by Riege (2005) were used as a starting point for the categorisation providing three of the categories (individual, organisational and technological) are taken from Rieges (2005). The categorisation was expanded to include economic (identified by Landsbergen and Wolken (2001) as a barrier to interagency operability) due to the observed impact economics had on the project. The final category of project is identified separately for the literature review and covers factors specific to the project which influenced the outcome of Sentinel's implementation. The themes discussed in the following sections are those which emerged from the data as having influenced the project.

5.1 Individual

Joyal (2012, p.10) identified characteristics that "influence the success of communication and collaboration: trust, reciprocity and genuineness". Individual characteristics reinforce the importance of personal relationships when information sharing. Trust (5.1.1) and reciprocity (5.1.2) were observed through Sentinel's implementation across the partnership.

5.1.1 Trust

Van Eyk and Baum (2002) identified trust as one of the most important factors in interagency collaboration. Each organisation within the Leicestershire partnership has a duty to protect the information they hold. They must trust those they share information with will not abuse it. Three areas have been identified where trust became an influencing factor in the Sentinel implementation: individual, organisation and supplier.

5.1.1.1 Individual

There were two observed cases which highlight the individual level of trust. The first relates to the multi-agency project team which met monthly. Each member of the team acted as a representative for their organisation. The team looked at how Sentinel would be implemented and embedded across the partnership. Part of this involved identifying faults with the system and recommendations for improvements. There was a level of mistrust between some members of the group regarding other members' motives towards the system. In particular one member was thought to be trying to stop Sentinel's implementation. The level of misgiving towards this member meant many of their fault reports and recommendations were quickly dismissed. A representative felt that some members needed to "put *their+ cards on the table" (Project Team Representative, 2012). Other members who were thought to have a more positive attitude towards Sentinel were granted a higher level of trust in their fault reports and these were more readily accepted by the multi-agency project team.

The second example of individual trust was observed at discussions with both council and police employees whilst the researcher was training various groups of users. At an operational level there was mistrust between police and council counterparts. It was felt by utilising an IT system to share ASB cases, rather than informal meetings and telephone conversations it would be too easy for people to avoid their responsibilities. There were concerns between both parties that the other, rather than taking responsibility and dealing with the ASB incident would instead reallocate the case to a coterminous partner agency. Post implementation of the system it was identified on a few occasions that cases had been incorrectly reallocated without prior agreement from the receiving agency. On further investigation into these cases the cause was identified as a misunderstanding of the process rather than deliberately attempting to avoid work. These isolated incidents and the existing mistrust increased concerns amongst frontline users that other partners would attempt to assign work inappropriately.

5.1.1.2 Organisation

At an organisational level there was a need to reinforce trust between the organisations with documentation; Information Sharing Agreements (ISAs), Code of Connection (CoCos), System Operating Procedures (SyOps). These agreements allowed the agencies a level of protection against another agency misusing their information and helped to garner trust between the partnership.

5.1.1.3 Supplier

At a supplier level there were trust issues regarding timing and quality of the delivered product. Trust in the supplier varied between the partners. Charnwood have had a long standing positive relationship with the

suppliers since 2006 and were highly confident and trusting of promises made by the supplier. Charnwood and the supplier had regular communication which helped reinforce the trust between them.

Leicestershire polices trust in the suppliers diminished as the project progressed. The company on occasion failed to deliver on time. Even when they did it appeared untested and at times introduced more issues e.g. version 2.5 discussed in 5.3.3.1 Acceptance Testing. Other examples of delivery failure included a fix to Leicestershire polices organisational wide search engine which was reported in December in 2011. The fault was identified in May 2012 with the fix although paid for still not implemented by March 2013. Delivery of the fix was consistently reported to be soon, in the pipeline or by the end of next week. The police became so distrustful of the suppliers promises they initiated six weekly reviews with the supplier from June 2012. The reviews improved the relationship between the supplier and Leicestershire police, increasing trust between the parties. The police remain wary of promises and deadlines given by the supplier bearing this in mind when scheduling future software releases.

5.1.2 Reciprocity

Reciprocity within the Sentinel project came to light when identifying how close each agency was to achieving the aim of recording 100% of ASB data onto Sentinel (shown in figure 5-1). A review was carried out in August 2012 to identify the percentage of ASB data each organisation was recording on Sentinel.

Percentage of Partner ASB Data on Sentinel

Partner Organisation	Percentage
Oadby & Wigston	70%
North West Leics	40%
Rutland	35%
Police	32%
Charnwood	25%
Hinckley & Bosworth	25%
Harborough	22%
Blaby	18%
Melton	13%
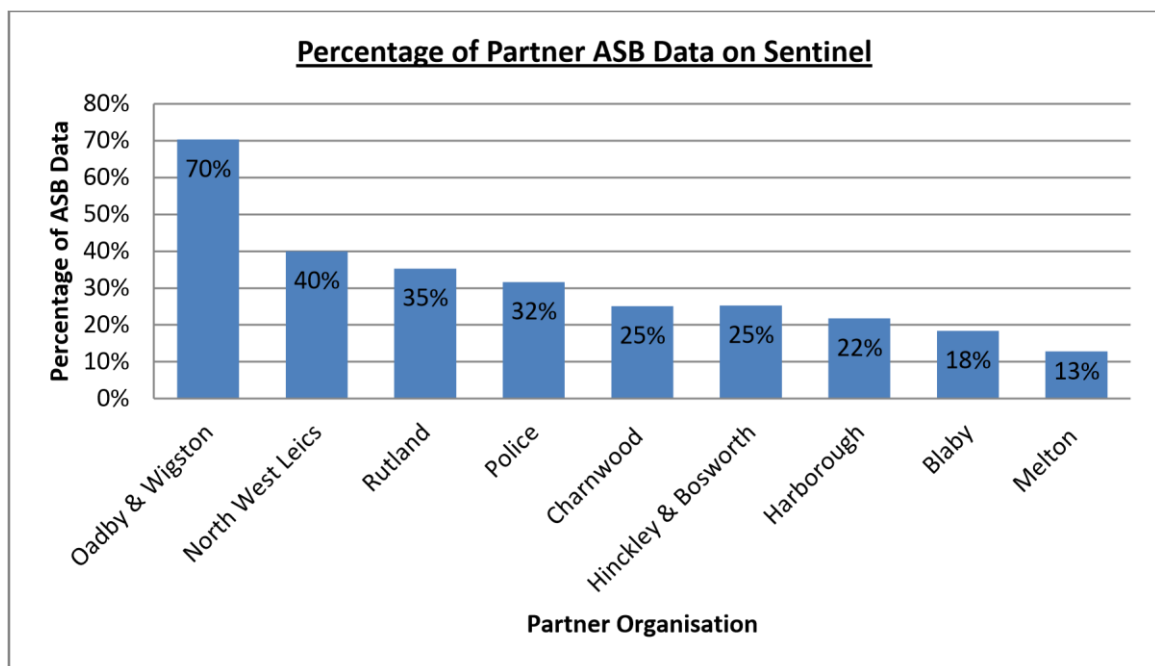
Figure 5-1 Percentage of ASB Data on Sentinel (* City excluded as not live at time of review).

Discussing the results of the analysis at the Sentinel user group partners were keen to defend poor results by deflecting with "what are the police doing?" (User Group Representative, 2012). Leicestershire police

structure means nearly all ASB incidents are reported through a central call system. This is rare at the council partners with only two councils utilising a CRM system to route incoming calls. It was felt by some partners that Leicestershire police along with Charnwood council (who had previously interfaced Sentinel with existing systems) should find it the easiest to reach the 100% recording goal. Leicestershire police were keen to highlight that the observed 32% recording of ASB incidents on Sentinel was up on the predicted 20% pre-implementation (based on conversion rates between the call centre software and the crime system in 2010/2011). The review focused the representatives on their own agency. It reopened discussions within agencies on how they could reach a higher level of recording and be seen to be "pulling their weight". No organisation wanted to be seen as not working as hard as the others i.e. not reciprocating the level of work of other partners.

5.2 Economic

Economic factors influencing Sentinel have been separated into funding (referring solely to monetary resources) and resources (referring to expertise and knowledge). Arguably the factors could be combined. They have been kept separate for analysis purposes due to the difference in how money is currently handled within the public sector as a result of the CSR (Her Majestys Treasury, 2010). In discussions with partners they were more agreeable to providing a resource such as a training room or expert than additional funding to the project.

5.2.1 Funding

Initial funding for the project was provided by a Home Office grant. The grant covered the cost of purchasing Sentinel and some interface costs (this equated to a single one way interface per organisation not including Leicestershire police). Other than the Home Office grant no other funding was initially provided for the project. Leicestershire police felt the need to employ additional resources to carry out the required work to implement and embed Sentinel within the force. This consisted of a full time trainer for a year and a project officer for a year which was paid for by Leicestershire police. Although funded by Leicestershire police the trainer was used to train all partnership users and the project officer was utilised to carry out project work for the partnership as a whole.

In 2012 once Sentinel was implemented it became evident from the user group that there were fixes and upgrades desired by the partnership, but no budget remained. At the IT workshop in April 2011 it was agreed that each agency would contribute annually £500 towards an uplift fund for maintaining and upgrading Sentinel. In 2012 the uplift fund had not yet begun receiving contributions. Without funding it was clear no changes would take place. Leicestershire police had severe concerns over a lack of ability in searching and

workload management, which had already led to a data breach (discussed in section 5.3.3.2). Leicestershire police provided additional funding solely to be used for upgrades to address their concerns. This went against the process in place at the user group where the representatives prioritised suggested fixes and upgrades. The user group agreed to prioritise Leicestershire polices desired changes as no other funding existed to address the issues currently higher prioritised.

5.2.2 Resources

In addition to economic funding other resources were required to implement the system. Resources came in the form of expertise and training locations. The only partners to contribute resources were Leicestershire police and Charnwood. For example to write the ISA information professionals were required; provided by Charnwood and Leicestershire police. Arguably other partners may not have had the resources to contribute, though it may have been symptomatic of a lack of enthusiasm for the project from some partners.

5.3 Technical

Technical factors refer to influencing factors resulting from the software and or hardware or the processes of its implementation.

5.3.1 Security

Sentinel is being used to store personal and sensitive data (as classified by the Data Protection Act, 1998) and was identified as a RESTRICTED (Cabinet Office, 2010) system. The partnership therefore need to meet certain security standards to ensure their data remains secure. The security controls put in place were detailed in a Risk Management Accreditation Document Set (RMADS) agreed and signed by all the partners. This included minimum standards each partner would adhere e.g. any printed data would be stored in locked filling cabinets.
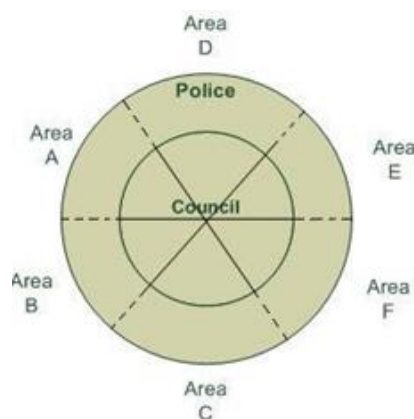
Figure 5-2 Segmentation of Data Stored on Sentinel Server (Created by Researcher)

Part of Sentinel's security covered how and what data the users would be able to access. The council partners decided that to increase data security the system would be restricted so each council was only able to view data they had input alongside their coterminous police units data (an overview is shown in figure 5-2). Every police user would have the ability to view records from across the whole of the county. The restriction was driven by the councils to minimise the risk of their users viewing records they had no legal reason to do so. Leicestershire police were happy for every user to have the same ability to access county wide records as their users did, but it was decided the restriction would go ahead. Limiting records available to users potentially limits the ability for a user to best utilise shared information. To counter the limited view of data standard council users are able to access, a super user (analyst or administrator) is able to access all records. This relies on the standard user knowing to contact their super user to access these records which they may not have found.

In addition to limiting access by area Sentinel utilises data access levels to control access to functionality. For example a standard user can carry out basic searches to find a record e.g. based on name but are unable to generate reports which could potentially export the whole database. Each organisation has many standard users, few enhanced users and one system administrator. As the level of data access increases the number of users with that access decreases shown in figure 5-3.
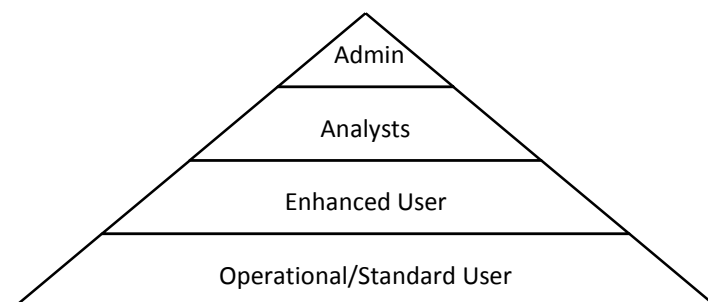
Figure 5-3 Summary of Number of Users per Access Level Across the Sentinel Partnership (Created by researcher)

The partnership utilised a new approach hosting Sentinel on an externally managed server, rather than internally behind existing security protocols and firewalls. Penetration testing was used by the partnership to provide reassurance of Sentinel's security. Penetration testing is "a live test of the effectiveness of security defences through mimicking the actions of real-life attackers" (ISACA, 2013). It attempts to hack into the system to access information or disrupt system availability. An external company was hired to carry out the penetration testing. On completion of the testing a report was provided to the partnership detailing potential weakness with an associated risk factor. The report was broken into actions which needed taken before implementing the system and actions to meet good practice. The need for penetration testing caused delays to system implementation. The penetration testing could only be carried out once Sentinel was ready for

deployment but this added a two week delay. Secondly the report produced by the testers meant a further one week delay to rectify the issues identified in the report.

5.3.2. Integration

Sentinel is a new system for all the partner agencies apart from Charnwood. A new system has the potential to introduce a new information silo. The aim of Sentinel is to remove ASB information silos across the county creating a single ASB repository. It is important that each of the partner agencies attempted to minimise introduction of a new silo. The partners needed to consider how they would integrate Sentinel with their existing systems and processes to achieve the aim of recording 100% of ASB on Sentinel. The partners took one of three approaches:

1. Interface with core systems – Charnwood BC and NH, Melton and Police.

2. Disperse system utilising manual entry – Oadby & Wigston, Northwest Leicester and Hinckley & Bosworth.

3. No integration – Rutland, Blaby, City and Harborough.

To analyse the success of the approaches a gap analysis was carried out in August 2012 to identify the percentage of ASB each organisation was recording on Sentinel (a summary of the results is shown in table 5-1). The gap analysis identified that the partnership in the first six months of 2012 were recording a mean average of 31% and a modal average of 25% of their ASB records on Sentinel. These averages hide the variance between the partnership agencies with the lowest recording at Melton of 15% and the highest Oadby & Wigston of 70%. The standard deviation of the percentage of ASB cases recorded by partnership councils was 16.70.

The approach of interfacing Sentinel with core systems is expected to become the closest to achieve 100% of ASB data onto Sentinel once the interfaces are in place. Leicestershire police expect once an interface is implemented between their call recording software (effectively a CRM system) and Sentinel that 100% of their ASB will be transferred onto Sentinel. Leicestershire polices interface falls outside of the scope of the Sentinel implementation project due to complexity, costs and timescales and is expected to be implemented mid to late 2014. Charnwood and Melton's interface with their CRM systems were due to go live shortly after the gap analysis was carried out in August 2012. The interface was initially delayed until summer 2013 as the suppliers have had insufficient resources to carry out the required work. This was further delayed until late 2013/early 2014 for Melton. Post implementation of Charnwoods' interface recording levels of ASB on Sentinel were estimated to be greater than 95% and felt by the partnership to be as close as reasonably possible to the aim of 100% of ASB on Sentinel. Meltons' interface went live early 2014 early indications

suggest they would match Charnwoods recording level once the processes had become embedded. Utilising the early indicated figures, the percentage of ASB recorded on Sentinel has increased to an average mean of 55.43%, a modal average of 40% with the standard deviation increasing to 40.0.

The gap analysis showed that the partners sharing the majority of their ASB data were those taking the second approach of manual entry being diffused to relevant departments. Both Oadby & Wigston (70%) and North West Leicester (40%) were recording above average percentages of their ASB data on Sentinel. The gap analysis did not investigate the wider effects of manual dispersion such as potential double keying in the non-ASB focused departments.

The third approach using Sentinel as a standalone system for only the community safety/ASB teams applies to two of the three partners recording the lowest percentages of ASB on Sentinel. The community safety team have the main responsibility for ASB; however ASB records are handled by a variety of departments across the council. If the system is not opened up for use by other department's large proportions of ASB data will never be recorded on Sentinel. These partners currently have no plans to expand the use of Sentinel so there is no expectation these percentages will improve. These districts have not bought in to the projects aim to input 100% of their ASB data onto Sentinel. Due to restructures in 2013, Harborough amalgamated its call centre with Charnwood and thus have also benefitted from increased recording on Sentinel. At the time of writing Harborough are still restructuring and embedding processes and are as yet unable to identify figures of ASB recording on Sentinel as a percentage of their total ASB.

The gap analysis identified where agencies have a structure of calls being routed through a central point (CRM system), an interface with this system will bring the agency closest to the goal of sharing 100% of their ASB records. The delays in implementing the interfaces mean the analysis shows currently the second approach of manual input across departments appears to be the most successful; though this is expected to change post go live of the interfaces. As expected partners who are only making use of Sentinel in their community safety team are recording the lowest percentages of ASB on Sentinel. This approach creates a new silo of information and further integration should be considered if sharing 100% of ASB data is desired.

5.3.3. Functionality

Functionality category of observed data refers to elements relating to the ability of Sentinel to achieve tasks.

5.3.3.1 Acceptance Testing

Prior to implementing Sentinel there was no centrally planned acceptance testing or review of the system pre-go live by a multi-agency team. Leicestershire police felt the need to review the system before implementing at the first LPUs. This was not a view shared by the other partners including the multi-agency

project manager who felt this was not required. Training was due to commence mid-August 2011. Leicestershire police wanted to review the system a few weeks before training commenced. Initially it was agreed the suppliers would deliver a test version of the system by the end of July 2011. This would allow time for feedback and any essential changes. The system was delivered on the 9th of August leaving only a few days to carry out acceptance testing before training began. The single day of acceptance testing with a limited group of Leicestershire Police members identified forty three issues. The issues were broken down to critical, desirable or cosmetic. The critical changes were agreed with the suppliers to be rectified before phase one go live (at this point planned for the 5th of September 2011). Of the forty three changes ten had been fixed by go-live in October 2011. Even some very minor changes such as spelling errors in field names which could be amended by a user with administrator status had not been fixed.

Comments were made by some of the partners that Leicestershire police were too controlling and that no one else felt the need to review and test changes pre-implementation. This perhaps reflects the size of implementation at Leicestershire police compared to the other partners (2000 users at the police versus approximately 20 users at the second biggest partner Charnwood Council) or previous experience Leicestershire police have had with large scale IT implementations. In an attempt to rectify this and to include as many partners as possible Leicestershire police discussed the acceptance testing of version 2.5 (see figure 4.5 for key dates on the Sentinel project) at Augusts 2012 multi-agency project meeting; extending an open invitation to all the partners. At the acceptance testing for version 2.5 Leicestershire police, Blaby, Charnwood and Hinckley & Bosworth attended. The next set of acceptance testing carried out in October 2012 implementing the first set of upgrades had a similar attendance with the Police, Charnwood and Hinckley & Bosworth.

5.3.3.2 Leicestershire Police Concerns

Leicestershire police had concerns over Sentinel's functionality prior to its implementation. Post-implementation chief officers at the LPUs reiterated this concern. The city officers (those working in Leicester City LPU's) in particular were more vocal about these concerns even to a point of threatening to order officers not to use the system. The main concerns revolved around difficulties with searching and managing workloads. It was felt by many frontline officers that they had lost the overview of their beat and the ability to keep track of their workload. The upgrade aimed to provide simple reports and a dashboard on the front page which detailed incidents in an officer's area in the last 24 hours or 7 days depending on the users settings. In an attempt to work around system issues a member of the city police introduced a spreadsheet to improve the LPUs ability to manage cases. The officer produced this daily by exporting the Sentinel database into a spreadsheet and utilising macros to highlight information required by the individual LPUs. Leicestershire polices issues with functionality and the need to use this spreadsheet ultimately resulted in a

security breach. The spreadsheet which had been produced was emailed externally from the organisation. This potentially meant the release of RESTRICTED information outside of the organisation. Fortunately the spreadsheet had followed (unwittingly) the process for emailing Sentinel information (it was marked RESTRICTED and sent only to a secure email account) and had been sent to a fellow partner. The data breach had to be reported to the ICO, though no punishment was issued due to the actions taken to contain and prevent a future incident of this kind. The data breach did focus Leicestershire police on the need to improve functionality of Sentinel and thus additional funding was granted to address the issues which led to the breach.

5.3.3.3 Leicester City Requirements

Leicester City council on reviewing Sentinel's implementation at other partners identified a list of functional requirements for Sentinel. This was a list of requirements that Leicester City council felt necessary before they would implement Sentinel. The council would need to fund these changes themselves so agreed to implement Sentinel small scale (only in ASB team) and review requirements in line with the partnership group (where changes would be funded by the partnership). Once Sentinel had reached an acceptable standard in line with the identified city requirements, the small scale implementation would be reviewed. If this provided proof of concept Sentinel would be diffused throughout the rest of the city council.

5.4 Organisational

The Sentinel implementation involved twelve organisations. Three factors were identified from the observed data as influencing Sentinel's implementation as a result of the organisations; reputation management, bureaucracy and motivation.

5.4.1 Reputation Management

For Leicestershire police reputation management was a constant concern. Leicestershire police had been in charge of multi-agency teams before. Feedback from these previous teams suggested that Leicestershire police were seen by the partners to bulldoze the project. They were not seen to be taking into account the needs and views of other partners. In general there is a view that the police can do whatever they want. Whilst presenting a paper on elements of this research a comment from an attendee reflected this; "why don't the police just make them *councils+ do it" (ICIME 2012 Conference attendee). Leicestershire police were keen from the outset of the project to be seen as an equal partner in the project (even though ultimately they would represent the largest user both in terms of records and registered users) in an attempt to manage professional differences and distrust of the police (Richardson and Asthana, 2006). When selecting a project manager Leicestershire police did not volunteer for the role even though their representative had vast

amounts of experience with project management. Leicestershire police consciously stepped back from positions of power within the multi-agency groups to manage their controlling reputation.

Another example where Leicester police tried to manage their reputation was when they became the sole source of funding for changes (discussed in 5.2.1. Funding). The directive from chief officers within Leicestershire police was this funding was solely for the purpose of addressing Leicestershire polices priority issues (searching and workload management). Leicestershire police could simply have contracted this work directly with the suppliers. In an attempt to manage relationships and their reputation the work was taken through the multi-agency group for prioritisation. This prioritisation was effectively carried out to maintain the view the multi-agency project manager was in control of all changes. It also showed Leicestershire police were following the prescribed processes even when they had the opportunity to circumvent them. No other funding was available to pay for changes so the only changes with funding (Leicestershire polices priority issues) would be put to the top of the list.

5.4.2 Bureaucracy

A level of bureaucracy is to be expected within a public sector multi-agency project. Each agency has to be able to prove conclusively the actions they have carried out are in the best interest of the pubic they serve. Bureaucracy produced an unexpected workload to the project. The initial implementation plan for the system was based on replicating the existing Sentinel for use by the partnership. The timeline produced did not consider work that would arise from the bureaucracy a multi-agency approach would bring. At the most basic level bureaucracy was introduced by the need for group discussions for each decision. Any time a decision was made by the partnership it would take months to agree, often with a decision simply being made due to running out of time. For example the mandatory fields for the system needed to be agreed by all. There was a lot of discussion in group meetings about which fields should be made mandatory. In the group discussion the list of mandatory fields became extensive and turned into more of a wish list of fields to complete on a Sentinel record. It was not a list of fields that could be completed by all agencies before the first save of a record. The list was reviewed in group meetings, sent to IT personnel within the partner agencies, discussed again, sent to other departments and so on. Time was running out to make a decision. The project manager needed to take the latest list of returns and identify the minimum number of fields all partners would be able to complete on initial reporting.

Bureaucracy was also introduced to Sentinel's implementation from departments external to those directly working on the project. It was identified by Charnwood that the system may require a Risk Management Accreditation Document Set (RMADS). This is a set of documents detailing the information assurance and security controls deployed to ensure information stored on a public sector IT system remains safe (Sapphire,

n.d.). To create the RMADS the partnership needed to hire a mentor to help the project team create this as they did not have the required skills. The mentor provided recommendations as to how the partnership should govern the system and in particular how they should handle security incidents. The partnership adopted a very bureaucratic process for reporting and handling incidents, which was identified when there was a security breach on the system. The agency where the breach occurred first to report the incident to the agency chairing the governing groups. The chair and the agency where the breach occurred carried out the required work to isolate any breached information and rectify the breach. The issue was then reported to the security group (group responsible for agreeing changes to the system) who would make recommendations and call an extraordinary meeting of the strategic group for approval. The chair of the strategic group highlighted that the need to call an extraordinary meeting of the group when action had already been taken to rectify the problem was overly bureaucratic. The chair told the project manager and the agency that experienced the breach "you know what needs to be done now just get on with it" (Multi-agency Oversight Group Chair, 2012).

Leicestershire police introduced bureaucracy to Sentinel's implementation by their need to comply with internal bureaucratic processes. Leicestershire police had an internal governance structure similar to the multi-agency project team. For Leicestershire police to provide input to the multiagency groups it first needed to be approved by their internal bureaucracy introducing potential delay.

The documentation the partnership felt was required for Sentinel's implementation introduced bureaucratic overheads to the project. The ISA and RMADS were written in such a way that they required annual review. The agency which chaired the governance groups for the year was responsible for carrying out the ISA and RMADS annual review. In early 2013 when Sentinel was coming out of project phase and the current chair were ready to pass on the chairmanships of the groups, no agency was forthcoming in agreeing to take over the role partly due to the resources required to carry out this role.

5.4.3 Motivation

Motivation varied between the partner agencies for implementing Sentinel. Charnwood in particular were very keen to implement Sentinel across the partnership. They were instrumental in the development of the Sentinel software and were held up nationally as a model of good practice by the Home Office (May, 2010). Charnwood were champions for Sentinel within the partnership. Their role of project manager and lead agency was assigned due to their experience and enthusiasm for the project. Not all the partners were so motivated or bought into Sentinel as the solution. A symptom of this lack of motivation was seen in the lack of attendance at meetings by certain partners; one in particular only managed to attend two out of ten multi-agency project meetings.

Motivation for the project was seen in requested returns from the partners. Partners who were keen to implement Sentinel were in general the first to comment and return requests from the project manager. For example the information sharing agreement (ISA) was sent out in draft for review and comment by the partners. The ISA was written by Charnwood and Leicestershire police data protection experts. The project manager had to repeatedly chase many of the partner representatives to gather feedback on the ISA; this was repeated when the ISA was sent for official signoff.

Leicestershire police preferred other solutions to Sentinel; it would be assumed they were not fully bought in to the system implementation. In fact this was found to be untrue. Once the decision was made to implement Sentinel, Leicestershire police were fully behind its implementation. They provided extra resources to help in its implementation e.g. employing a full time trainer, providing location and equipment for training and ensuring Sentinel was integrated into police IT planning and budgeting. At times Leicestershire police's motivation to ensure Sentinel's success was received negatively by other partners. The other partners felt that the identification of faults was an attempt to prevent Sentinel's implementation, when in fact they were working hard to ensure the system was accepted by frontline police officers.

In 2013 post system implementation it was evident that partners had varying degrees of motivation towards reaching the 100% ASB recording aim set out at project initiation. Some partners began to question whether they had in fact ever agreed to the aim. Previous meetings in both early 2012 and late 2012 had documented where a senior member of each organisation had recommitted their agency to the 100% recording aim. Each agency was provided with the documentation again in May 2013 to reiterate that the agreement had been reached by all partner agencies. Even with the previous agreements it was decided that in June 2013 a workshop would be held at the practitioner level to decide what the future of Sentinel would be. It was felt by some partners that this was a way for the lower recording agencies to back out of previous commitments now the full extent of work required to achieve the aim was understood. The questioning of the aim suggests a lack of motivation to achieve the aim by some of the partners.

5.5 Project

Project factors were observed influences as a direct result of the way the project was being carried out. Six influences were identified from the observed data; delays, non-standardised project processes, control, suppliers, experience and communication.

5.5.1 Delays

In order to implement Sentinel by the April 2012 deadline set by Leicestershire police the project needed to progress quickly from its official go ahead by the CSPB in December 2010. Initial discussions suggested a

single big bang implementation in summer 2011. After reviews of required work including the number of users requiring training, production and sign off of documentation and ensuring all partners were bought into Sentinel the decision was made to phase the implementation across the county (shown in figure 5-4). The partnership was broken down into five phases:

1. Charnwood Borough Council and Melton Borough Council alongside police units LC, LM and LO.
2. Blaby District Council and North West Leicestershire District Council alongside police units LB and LN.
3. Hinckley and Bosworth Borough Council and Oadby & Wigston Borough Council alongside police units LH and LW.
4. Harborough District Council and Rutland County Council alongside police units LA and LR.
5. Leicester City Council alongside all six police city units.
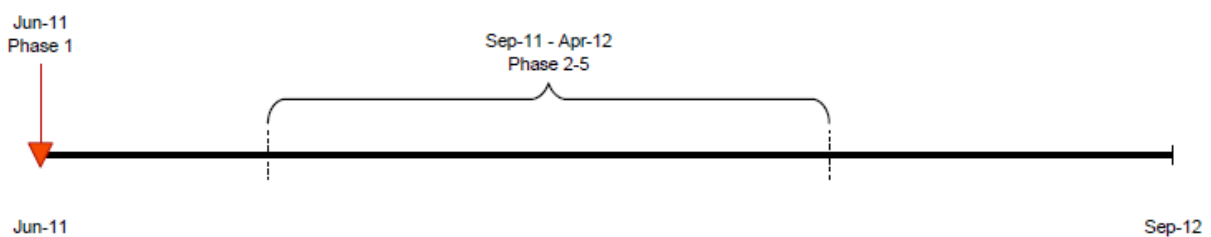
Figure 5-4 PID Planned Phase Go Live

Unexpected workloads caused delays to the initial phased rollout plan causing timelines to be revised. The completion date was fixed thus the implementation plan needed to be condensed shown in figure 5-5. Instead of two councils per phase this was increased to three councils and police units for all but the first phase:

1. Charnwood Borough Council and Melton Borough Council alongside police units LO, LC and LM.
2. Blaby District Council, North West Leicestershire District Council and Oadby & Wigston Borough Council alongside police units LB, LN and LW.
3. Harborough District Council, Hinckley and Bosworth Borough Council and Rutland County Council alongside police units LA, LH and LR.
4. Leicester City Council alongside all 6 police city units.
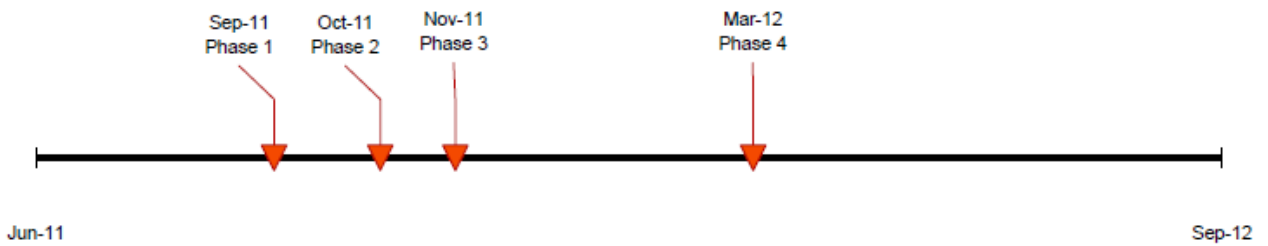
Figure 5-5 First Revision 1 of Phased Go Live

The initial revised phased roll out again needed to be revised due to delays in sign off of the information sharing agreement (ISA) and the system operating procedures and delays caused by security testing. This revision affected the go live dates only resulting in a condensed rollout plan shown in Figure 5-6.
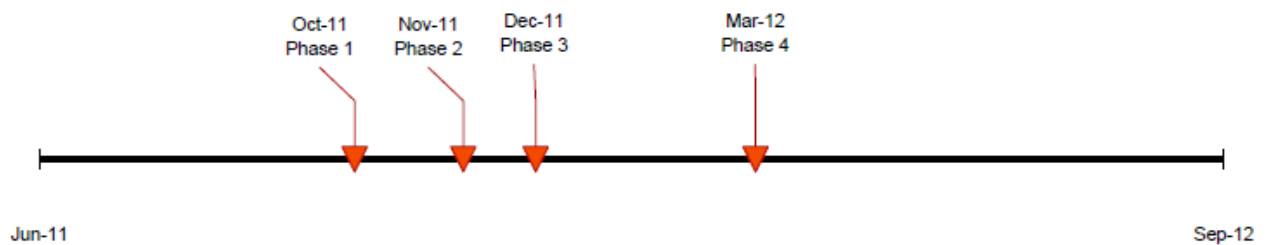
Figure 5-6 Second Revision of Phased Go Live

At this time it was also becoming clear that attitudes within Leicester city council were becoming apathetic to the project not attending meetings or commenting on documentation which had been sent out. The likelihood of Leicester city council implementing at all came in to doubt. Whilst the rest of the implementation schedule went to plan, phase four became go live solely for Leicestershire police city LPUs. After much cajoling and persuasion from the partnership the city council did agree to begin reviewing cases the city police had input onto the system in May 2012 and began inputting their own cases on August 12th 2012. The final implementation timeline is shown in shown in figure 5-7.
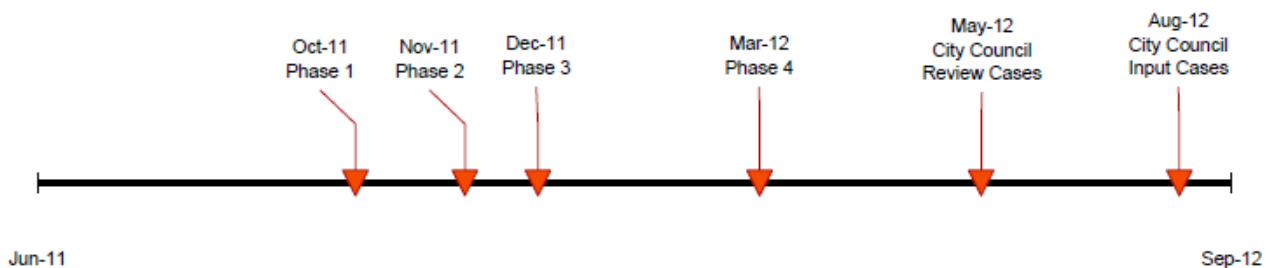
Figure 5-7 Actual Go Live Dates

5.5.2 Non-standardised Project Processes

The Sentinel implementation did not follow what would be classed as a standard IT process or official project management process such as PRINCE2. In simple terms there are four project management stages (shown in figure 5-8) and five stages of software development (shown in figure 5-9).

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┌──────────────┐      ┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│  Briefing and│ ⇨    │   Planning   │ ⇨    │Implementation│ ⇨    │  Evaluation  │
│   Scoping    │      │              │      │              │      │              │
└──────────────┘      └──────────────┘      └──────────────┘      └──────────────┘
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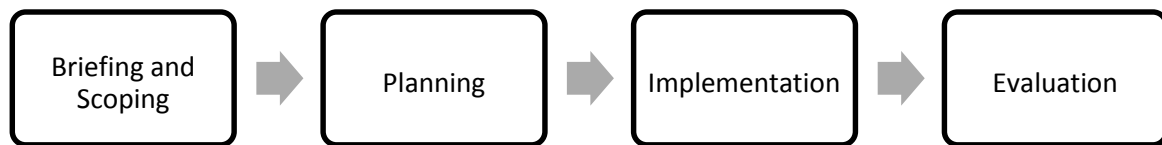
Figure 5-8 Stages of Project Management (Lock, D (2007))

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┌────────────┐   ┌──────────┐   ┌──────────────┐   ┌──────────┐   ┌────────────┐
│Requirements│ ⇨ │  Design  │ ⇨ │Implementation│ ⇨ │ Testing  │ ⇨ │ Deployment │
└────────────┘   └──────────┘   └──────────────┘   └──────────┘   └────────────┘
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Figure 5-9 Software Development Lifecycle (adapted from Somerville, 2010.)

The lack of a formal process being followed began with the choice of Sentinel as the solution for the partnership. The system was already in place in Charnwood council and met their needs. There was an assumption by some of the partners that all that was required was to allow access to the system for other partners. Sentinel was chosen partly due to the praise from the Home Office (May, 2010) and the tried and tested nature of the software versus the other unknown software options. The choice of solution did not begin by carrying out a requirements analysis of the partnership as with a formal project lifecycle. Instead the available options were reviewed against functionality and costs without a list of user requirements.

Not following a standardised methodology meant the project was at times unstructured. A project methodology structures change by providing a toolkit which can be utilised to manage the various stages of the project e.g. a communications plan is part of PRINCE2 (PRINCE2, 2013) which provides key dates of when to communicate with stakeholders. This may have helped keep some of the partners better informed of developments within the project.

5.5.3 Control

Control came from a few areas within the Sentinel implementation; position, funding and communication.

Positional control was found where a partner was able "to have control over the actions of others as a result of a position in the group" (Cairns et al, 2012, p.42). The positions observed which provided control within the partnership were:

- Group Chair – controlled group discussions.

- Project Manager – controlled the action of the project.

- Supplier Manager – controlled the communications to and from the supplier.

Funding control could be identified as a project specific factor of control (Cairns et al, 2012, p.42). Funding is a resource; control over a resource allows control over its use. The police were able to utilise funding control to prioritise the changes they required to Sentinel.

Communication enables control; communication controls information/knowledge, identified as a source of control by Cairns et al (2012, p.42). The process of communication with the partnership is discussed in section 5.5.6.

5.5.4 Suppliers

The suppliers were selected by the choice of the system. Sentinel represented an off the shelf product with the promise from the suppliers of development and personalisation. The supplier relationship was managed by Charnwood BC as their role of chair of the oversight group and project manager. The contract with the suppliers was negotiated between Charnwood BC and the suppliers. The suppliers were not contracted to the partnership in any way. The suppliers were a small software development house. The initial contract terms required the suppliers to implement the software on an externally hosted server and provide sufficient access levels as required by the partnership. In addition there was a budget for the suppliers to implement interfaces with existing systems. The partnership was unaware of the exact terms of the contract between Charnwood BC and the suppliers. The partnerships understanding was the agreement included any required development to make the system suitable for use by all the partners. The misunderstanding between the partner organisations resulted in additional costs for the project. The additional costs were incurred as the partners produced additional requirements after reviewing the selected system believing these changes would be incorporated into the system free of charge.

The additional requirements and reworks requested by the partnership throughout the project caused problems for the suppliers. The suppliers are a small company and did not have the level of resources required to carry out the additional work in the demanding timescales. This caused a four month delay to the initial implementation plan. The four month delay hid potential further delay as the system went live

without some of the requested features e.g. integration with Leicestershire polices search engine. The suppliers however were often presented with unclear requirements due to differing and at times opposing needs of the different partners.

5.5.5 Experience

Experience played two key roles in Sentinel's implementation both with Charnwood's lead agency role. The first related to a lack of experience of the project manager of previous IT implementations. This meant the project manager did not have some of the skills usually associated with project management. This many have contributed to delays due to unfamiliarity with required work for such a project. Another project manager may have been able to provide this experience and minimise these delays. However a different project manager would have lacked the information sharing experience which only Charnwood were able to provide. Dawes' (1996) model of interagency information sharing highlights the importance experience plays when carrying out an information sharing project. Charnwood had over five years' experience of sharing information with LO and LC LPUs. They had had time to experience the benefits and risks associated with sharing information on a single system and take the learning from this and apply it to the wider partnership implementation.

5.5.6 Communication

There were two main channels of communication used throughout the project; meetings and emails. In general information regarding Sentinel's implementation came centrally from the project manager either at multi-agency meetings or via emails. Adopting a wheel pattern of communication (Mullins, 2002) between agencies shown in Figure 5-10. At the meetings it was expected that each partners representative would relay required information to relevant people within their organisation e.g. when discussing requirements for interfaces the representative at the user group was expected to liaise with relevant departments such as IT to identify required interfaces. The representatives attending meetings acted as a single point of contact within each organisation with the project manager acting as the point of contact for the project.
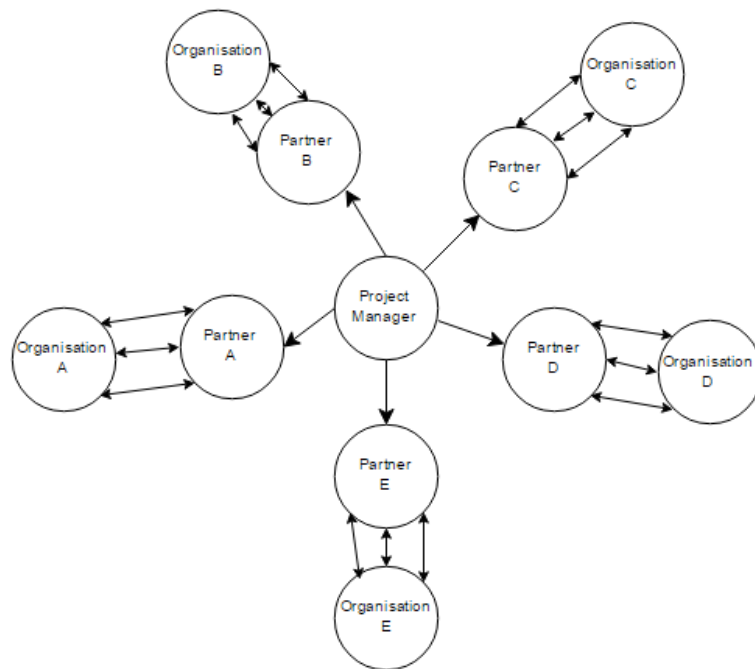
Figure 5-10 Overview of Pattern of Communication (adapted from Mullins, 2002, p.500)

Communication to the supplier until June 2012 was controlled entirely by the project manager. All communications were filtered through the project manager who passed on required messages to the supplier e.g. the project manager collated responses for request of information regarding versions of internet explorer each of the partners were using and sent this on to the suppliers. In June 2012 Leicestershire police instigated direct communication with the supplier to address their specific concerns.

5.6 Summary

The observed data gathered from day to day exposure to the project and attending meetings (detailed in Appendix A) identified numerous elements which affected Sentinel's implementation and success. These elements have been categorised into five high level categories; individual, organisation, technology, economic and project specific. These categories were drawn from existing literature (Cairns et al, 2012, Riege, 2005, Dawes, 1996, Landsbergen and Wolken, 2001) to provide structure to the observed data. The observed data was used to develop a framework of factors impacting information sharing project which is presented in chapter six.

6. Information Sharing Project Analysis Framework

6.0 Overview

The chapter begins by introducing a framework of factors which impact a multi-agency information sharing project (6.1). The creation of the framework is discussed in section 6.2. The high level categories of external environment (6.3), organisation (6.4) and information sharing (6.5) are then discussed with the chapter concluding with a summary (6.6).

6.1 Introducing the Information Sharing Framework

The creation of a framework analysing an information sharing project aligns itself to the adaptation of a technology acceptance model, such as TAM (Davis, 1989) or UTAUT (Venkatesh, et al 2003). The process of sharing information often utilises technology to achieve its goal. Adapting a technology acceptance model was dismissed by the researcher as this puts the focus of the information sharing project on the technology being used to implement the sharing process. Technologies in place to share information enable the process, but sharing will (and does) occur with or without technology. A further drawback of beginning with a technology acceptance model is the mandatory nature of systems utilised in the public sector; as is often the case with the police. In terms of working practice the police still conform to a hierarchical command and control military structure (Shane, 2010, Arbuthnot, 2008); directions are given by those with authority to those who are expected to carry out orders. Resources are set aside to audit frontline officers ensuring compliance with policies. An element of voluntariness of use of system will always remain e.g. attempts to classify an incident differently to utilise a different recording system, but the concept of voluntariness is minimal due to the punishments of non-compliance. The ethos behind technology acceptance models is focusing on improving facets of the technology in order to encourage users to adopt it. It is not contested here that utilising the principles found in UTAUT or TAM when selecting or designing a system for information sharing could benefit the project by enhancing system acceptance by users.

Information sharing is affected by many additional factors not just the technology being used. The framework presented in this chapter was developed from scratch utilising themes found in the existing academic

literature (as detailed in chapter 2). The framework of information sharing examines holistically the elements influencing the information sharing project including but not focusing on the technology.

6.2 Framework Creation

On first review of the data from the participant observation it became clear that much of the data could be categorised using the barriers to information sharing identified in the literature review (Riege, 2005, Dawes, 1996, Landsbergen and Wolken, 2001). This led to an initial classification of the data along Riege's (2005) themes of individual, organisation and technology shown in table 6-1.

Organisation	Individual	Technical	Uncategorised
Funding	Trust	Security	Delays
Resources	Reciprocity	Integration	Unexpected Workloads
Reputation Management	Experience	Functionality	Non-Standardised Process
Bureaucracy	Communication		Suppliers
Motivation			
Control			

Table 6-1 First Data Categorisation

The categorisation of the data elements identified a portion of data which could not be accommodated within Riege's (2005) categorisation. These elements: unexpected workloads, suppliers, delays, non-standardised process, arguably could have been categorised into the organisation category. It was felt there was a much stronger commonality between the factors; they all related to actions taken by the project team. The categorisation was thus expanded to create a project category which the uncategorised elements were grouped into. In addition the delay element was removed as the researcher felt the other elements in the project category explained the reasons for delays and the element was superfluous. The second categorisation is shown in table 6-2.

Organisation	Individual	Technical	Project
Funding	Trust	Security	Unexpected Workloads
Resources	Reciprocity	Integration	Non-Standardised Process
Reputation Management	Experience	Functionality	Suppliers
Bureaucracy	Communication		
Motivation			
Control			

Table 6-2 Second Data Classification
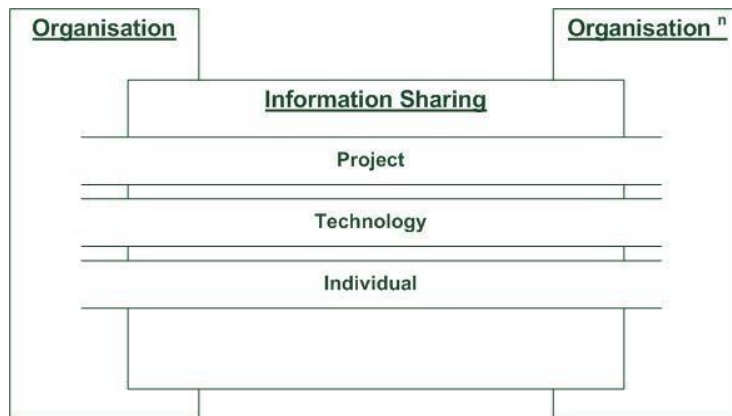
Figure 6-1 Initial Information Sharing Framework (Version 1)

The second data classification began to form an outline of a framework with the individual, technical and project categories bridging between the organisations sharing information (shown in figure 6-1). The model depicts two organisations for simplicity but the model is designed to include n organisations. The level of complexity of the information sharing project is expected to increase as the number of organisations involved increases. This is expected to plateau at approximately five organisations based on experience from this research shown in figure 6-2. At the plateaux the process of information sharing ceases to become more complicated with increasing organisations. The time to reach a decision may continue to increase depending on the decision making process utilised.
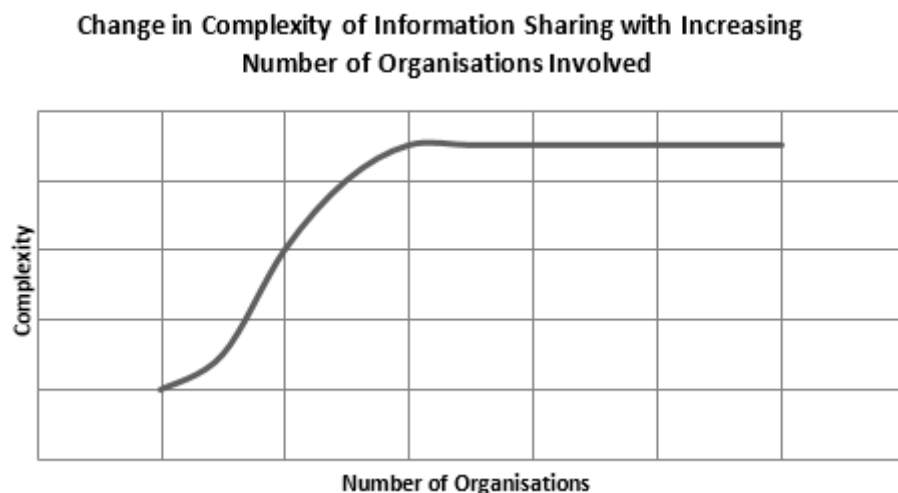
Figure 6-2 Complexity of Information Sharing with Number of Organisations Involved

Reviewing the observed data and literature alongside the initial framework two gaps were identified. First there was no consideration within the framework of the influence of external factors. Secondly the key component of an information sharing project is the information being shared. It was considered essential to

highlight the importance of information considerations for such a project and thus a separate category of information was added to the framework. Adding two categories to the framework required a review of the categorisation of the observed data, shown in table 6-3.

External Environment	Organisation	Information Sharing			
		Information	Technical	Individual	Project
Crisis/Driving Force	Reputation Management	Information Sharing Process	Security	Relationships	Project Processes
Directives	Bureaucracy	Legislation	Integration	Attitude to Sharing	Resources
	Motivation and Leadership		Functionality		Control
					Suppliers
					Communication
					Experience

Table 6-3 Finalised Data Categorisations

The finalised data categorisations resulted in the information sharing framework, shown in figure 6-3.
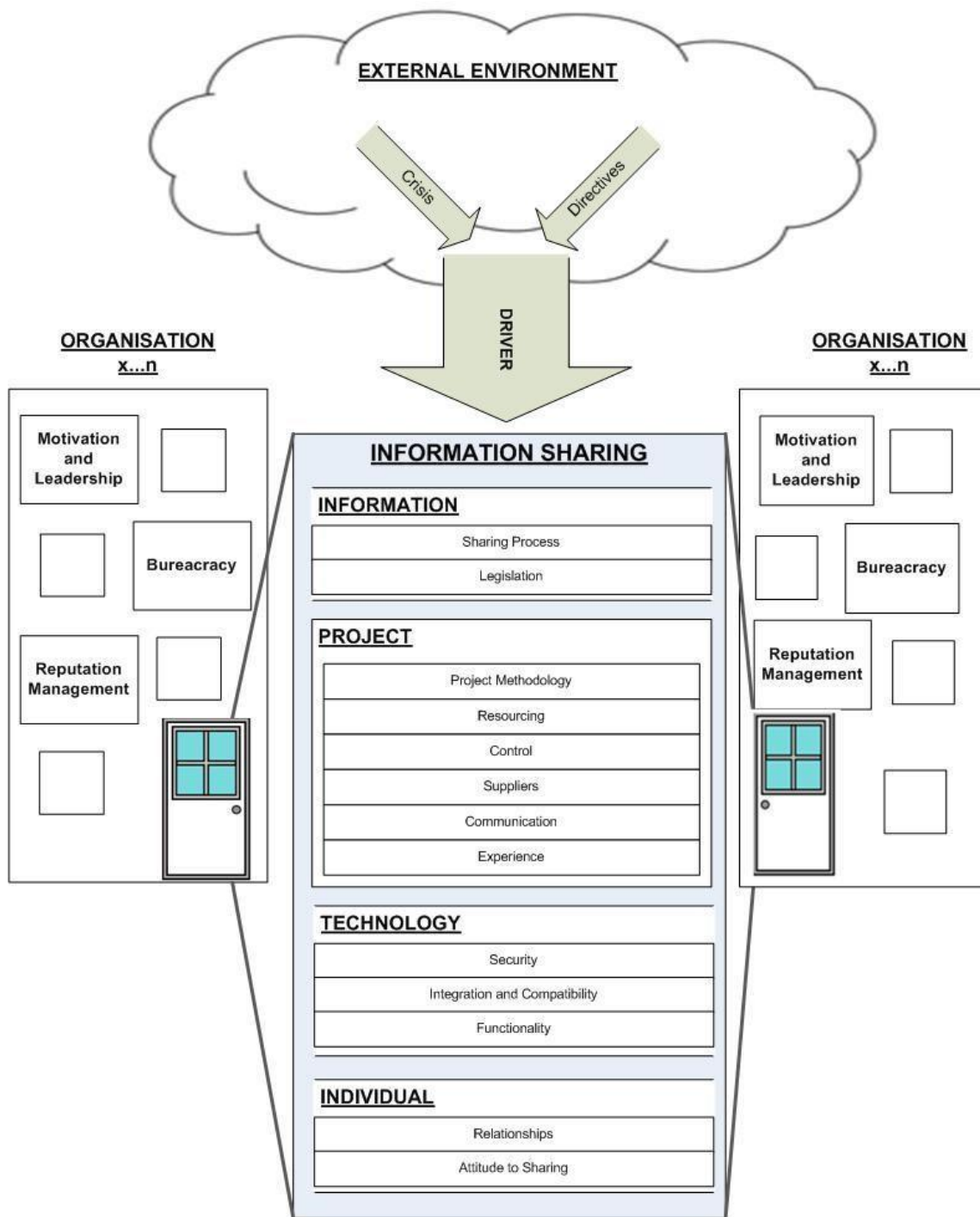
Figure 6-3 Information Sharing Project Analysis Framework

The following sections (6.3, 6.4 and 6.5) provide further details on the high level categories and the elements found within.

6.3 External Environment
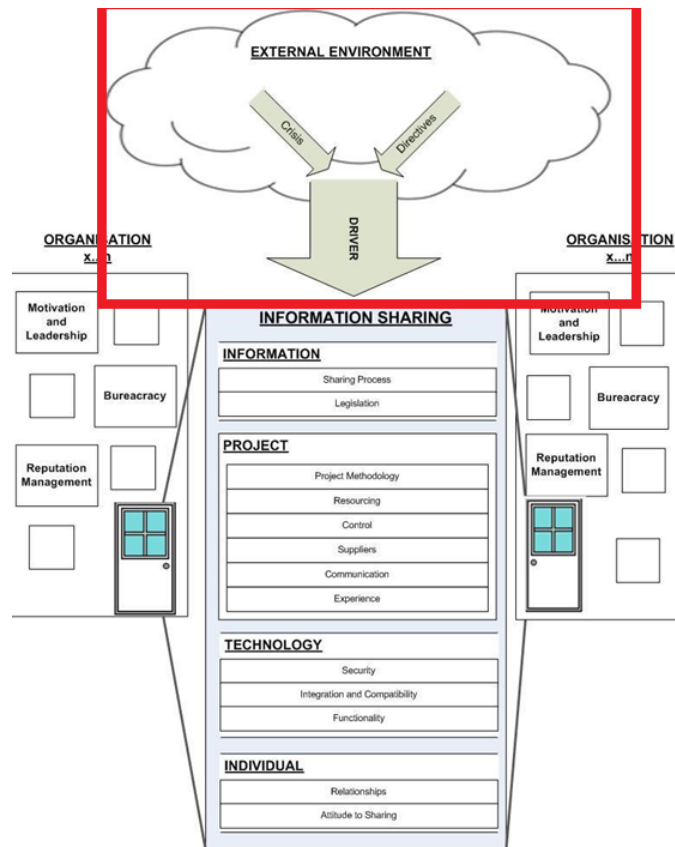
Figure 6-4 External Environmental Factors Impacting a Multi-Agency Information Sharing Project

The external environment relates to the world outside of the organisations involved in sharing information. It is the environment in which the organisations exist. External environment will affect information sharing between organisations at a macro level, enhancing or limiting the ability of the organisations involved and their desire to share information in two ways. Firstly the drive to share information between public agencies is most likely to occur as the result of external stimulus e.g. Pilkington case (IPCC, 2011) or budget reductions (HM Treasury, 2010). Secondly factors in the external environment will influence an organisations ability and or desire to share information.

6.3.1 Crises/Drive

Weiss (1987, p.110) identified that for successful information sharing there must be a problem which would benefit from a cooperative solution, resources available to address the problem or a capacity to carry out the program. In the absence of one of these precursors an external crisis must occur to prompt action. The current UK public sector climate (HM Treasury, 2010) has resulted in a reduction of resources (both people and monetary) to carry out proactive work. It is expected that the presence of a precursor to information sharing is currently insufficient to prompt information sharing without the presence of an external crisis to

increase motivation. A crisis prompts the need for action with organisations wanting to be seen as haven taken actions to rectify faults which led to the crisis.

6.3.2 Directives

Public sector agencies are held accountable by the government on behalf of the public. The work public sector agencies carry out is thus subject to external influences. Local and national directives from outside the agencies will impact information sharing. For example the current UK government has directed public agencies to work more closely together in order to improve efficiency by "tackling duplication and silo working within delivery networks" (Deloitte, 2010, p.16). The drive to remove duplication increases the likelihood of partnership working. Partnership working increases the likelihood of information sharing as agencies working together can do so more efficiently with access to shared information. In addition there is a drive by the government for public services to be more transparent to the public (HM Treasury, 2012). Agencies need to be able to justify and make visible the actions and decisions they take. This could increase bureaucracy as agencies look to provide documentation for their actions. Directives encouraging lock downs in security and personal privacy may also reduce the likelihood of a sharing project taking place.

6.4 Organisation(s)

Organisation factors relate to factors the organisations involved with the information sharing project have control over. These factors must be examined by each organisation individually as each will have their own specific considerations.
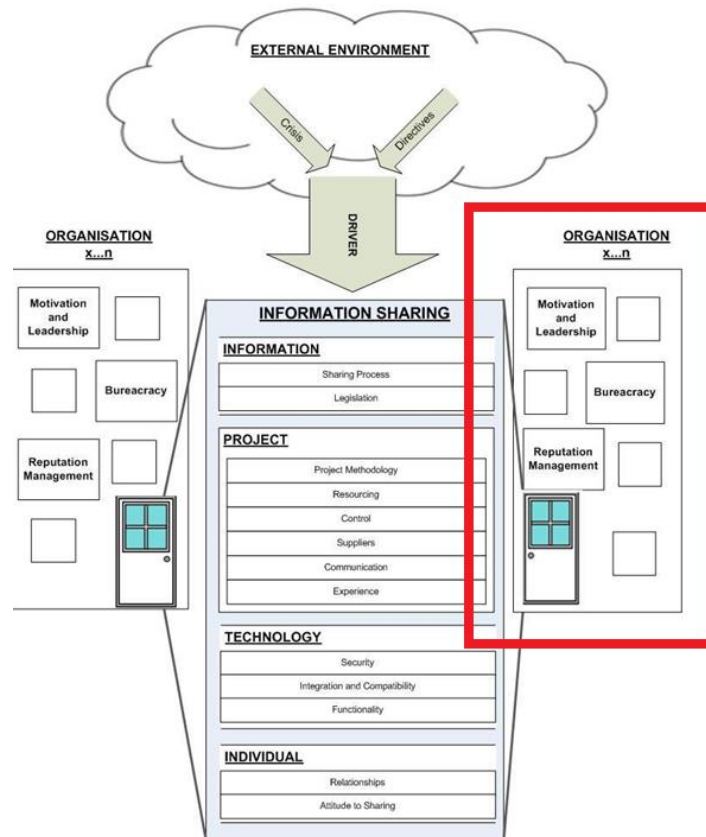
Figure 6-5 Organisational Factors Impacting a Multi-agency Information Sharing Project

6.4.1 Reputation Management

The UK public sector is broken into discrete areas of business; the NHS deals with health, police deal with crime and local government deliver local services. The complex issues these organisations deal with often overlap numerous organisational spheres of work (Rees et al, 2012, p.3). For example the focus of this research ASB overlaps numerous organisations approaching the issue from different angles to achieve a solution. These overlaps result in interactions between the organisations and provide opportunities for information sharing. In a new information sharing project between public sector organisations these historic interactions may need to be addressed. The history will have created a perception (reputation) of the other organisations involved in the project. Argenti and Druckenmiller (2004, p.369) define reputation as a "collective representation of multiple constituencies' images of a company built up over time". A simplified definition of reputation is the "beliefs or opinions that are generally held about someone or something"

(Compact Oxford English Dictionary, 2009). "It has been well established that perceptions drive behaviour" (Brown and Brudney, 2003, p.36) therefore reputation can be a source of power (French and Raven, 1959). A positive reputation can result in others carrying out actions in an attempt to please (Halo effect), whilst a negative reputation can result in reactance (Brehm, 1966) where others react negatively to constructive positive suggestions. Reputation management is taking actions to create or maintain a desired reputation.

Reputation management has two strands when working in an information sharing partnership; perceived professional differences and existent organisational characteristics. The perceived professional differences are the generally held beliefs people have about a particular profession. Richardson and Asthana (2006) identified that differences in professional ethos can be a barrier to information sharing. For example the police are controlling and their sole purpose is to arrest people thus will use any shared information to make arrests. Health services value confidentiality above all else and will not share information in any circumstance. Local councils are bureaucratic and slow lacking the ability to share information in a timely manner. Perceived professional differences are difficult to overcome and throughout the information sharing project they are likely to reappear. To manage the perceived professional differences representatives of the organisation should take steps to address queries and concerns as they arise.

Existent organisational characteristics refer specifically to the organisations involved rather than generalisations about the profession. They will be based on historical interactions between the organisations. For example Leicestershire police and the Leicestershire councils had been involved in a previous collaborative project and were felt by many involved to be overly controlling, pushing through their own ideas rather than reaching a collaborative decision (Multi-agency Project Team Member, 2011). Unlike perceived professional differences existent organisational characteristics are based on actual events. Where it is known that existent organisational characteristics may cause problems to the current information sharing project proactive actions should be taken. As in the previous example one way Leicestershire police managed their controlling reputation was to ensure they were not seen to be in position of power e.g. project manager or chairman of any groups. Leicestershire police ensured that they stuck rigidly to processes laid down by the partnership, even when they had the opportunity to fast track outside the process. When managing existent organisational characteristics it is important organisations stick rigidly to group prescribed processes.

Reputation management is an on-going process. It requires the ability to think before acting particularly in the case of heated group debates. Ultimately managing the organisations reputation will maintain a more harmonious partnership, increase group buy in and enable open considered discussion.

6.4.2 Bureaucracy

Bureaucracy refers to "rational rules, regulations, and standard operating procedures" (Griffin and Putsay, 2005, p.625). There are two likely outputs from bureaucracy; documentation and meetings. Bureaucratic outputs provide observable work giving managers "an opportunity to design (within the limits established by external constraints) a compliance system to produce an efficient outcome" (Wilson, 1989, p.159). Bureaucracy provides a feeling of protection for organisations. Producing documentation gives an auditable trail providing justification for actions taken in the event of internal or external questioning. Meetings are required as a form of communication and to allow open discussion for the advancement of the project. Whilst documentation and meetings are required it is important to ensure each piece of documentation created or meeting carried out has a purpose. McConnell (2009, p.19) recommends that projects "establish the minimum amount of process overhead needed to achieve project's objectives". For example any documentation created should be generated with as little review and amendments required as possible to avoid bureaucratic overhead in the future. For example annual reviews of documentation are not recommended unless this is felt absolutely necessary by the partnership. In addition it is suggested meetings are reviewed regularly to ensure the purpose for which they are set up is still relevant. Bureaucracy needs to be managed throughout the project to ensure it does not become a burden on the project causing unnecessary delays.

6.4.3 Motivation and Leadership

The aim of the information sharing project is shared common to all partners. But each organisation has its own motivation for the information sharing project. Motivation determines behavioural intention (Wilson and Lankton, 2004, p.242) and so will affect the effort expended by each organisation e.g. in a sharing partnership if the council are highly motivated to share information but the police are not it is unlikely that the police will contribute as much time and resources to implementing the sharing project as the council. In an ideal world all the partners involved in sharing information will be equally motivated to do so. This is unlikely and motivation will vary between the partners. Motivational differences need to be understood to avoid frustrations with other organisations who may be felt not to be pulling their weight. There are four features (identified as barriers to information sharing) that will impact the organisations' motivation for the information sharing project:

1. Reason for involvement with the project i.e. motivation –Wilson and Lankton (2004, p.242) identified that intrinsic motivation (enjoyment gained from the task) and external motivation (reward gained for completing a task) affect the behaviour of an individual or organisation. The enjoyment and reward each organisation receives for implementing the information sharing

project will differ. Understanding the reasons for involvement can identify level of buy in and potential areas for apathy. For example if partner A will enjoy the task of implementing the system but has no motivation to use the system, it is likely to be implemented quickly but with little consideration of integration. If partner B gains nothing from implementing the system but can see numerous ways how the system could be utilised to consolidate existing processes they may be more likely to explore opportunities for integration. Differing motivations can benefit the project by looking more holistically at the information sharing project, but this may cause unacceptable delays. The project must attempt to balance the differences to gain the optimum system in the time available.

2. Leadership - The agencies' leadership both executive and at project level will have a large impact on the project. "Key personalities can act as barriers to effective partnership working" (Maddock and Morgan, 1999, p.36). A lack of leadership support for the project will lead others within the organisation to doubt the benefits of the project and generate apathy. It is key that agencies appoint people to the project who will act as a champion to information sharing and encourage others within the agency to adopt the new way of working.

3. Openness to public scrutiny – Public sector agencies must be transparent in their actions. Information sharing is a volatile subject and provides "opportunity to attack an agency for motives" (Landsbergen and Wolken, 2001, p.209). Each agency will have a differing level of openness to the public. An agency needs to justify its decisions to the public they serve which may cause increased bureaucracy and impact the agencies motivation.

4. Attitude to external influence/ loss of control – entering into an information sharing partnership requires losing some control over the information and the system used to share it. The partnership must make decisions based on consensus and compromise. Some partners may feel they could have implemented a better solution themselves, though it would not match all the partner's needs. A partnership requires compromise though partners will react differently to this. The attitude towards loss of control will impact the agencies motivation for the information sharing project.

An agency's motivation ultimately decides their level of commitment to the information sharing project. Agencies with low motivation will be less engaged with the project and will have a lower threshold for cost of sharing. For agencies to commit to an information sharing project their level of motivation must exceed the perceived cost of sharing.

6.5 Information Sharing
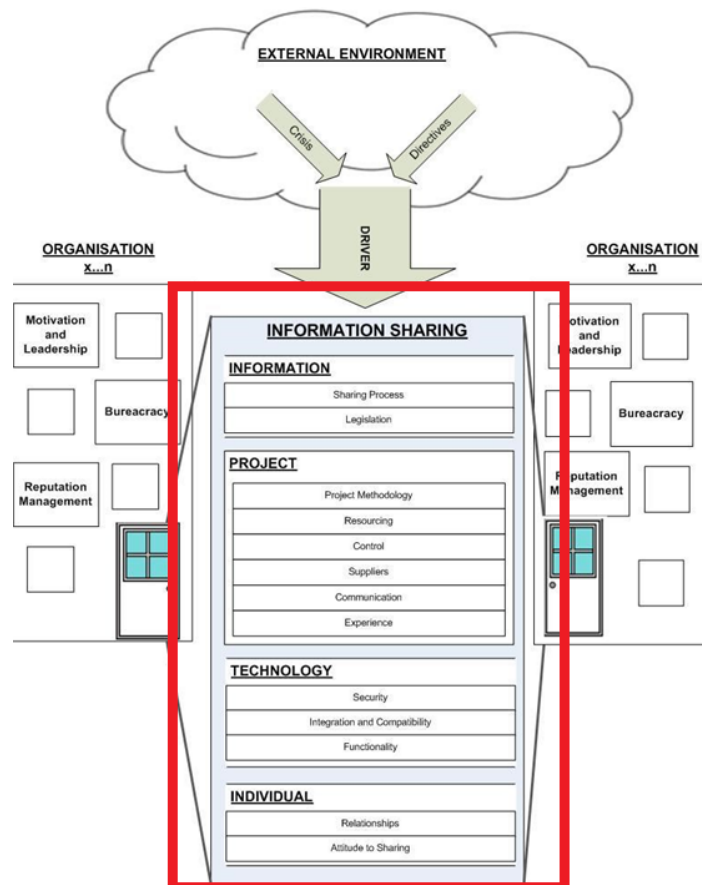
Figure 6-6 High Level Information Sharing Factors Impacting a Multi-agency Information Sharing Project

Information sharing relates to elements specifically connected to the information being shared for the information sharing project. There are four categorises; information, project, technology and individual. The framework shows information, technical and individual as open boxes which flow in to the agencies involved. Project is depicted as a closed box which overlaps the agencies. The difference between open and closed boxes relate to the factors finite influence. Project factors relate to the agency but there is a finite life of the project, whereas individuals are intrinsic to an agency and will continue to impact the agency once the information sharing project is completed.

6.5.1 Information

The information category refers to factors based on what and how information is shared between the partners. Information is represented by an open ended box as the information is not solely used by either

agency for this information sharing project. The information may be stored and utilised for many purposes within an agency other than that set out for this information sharing project.
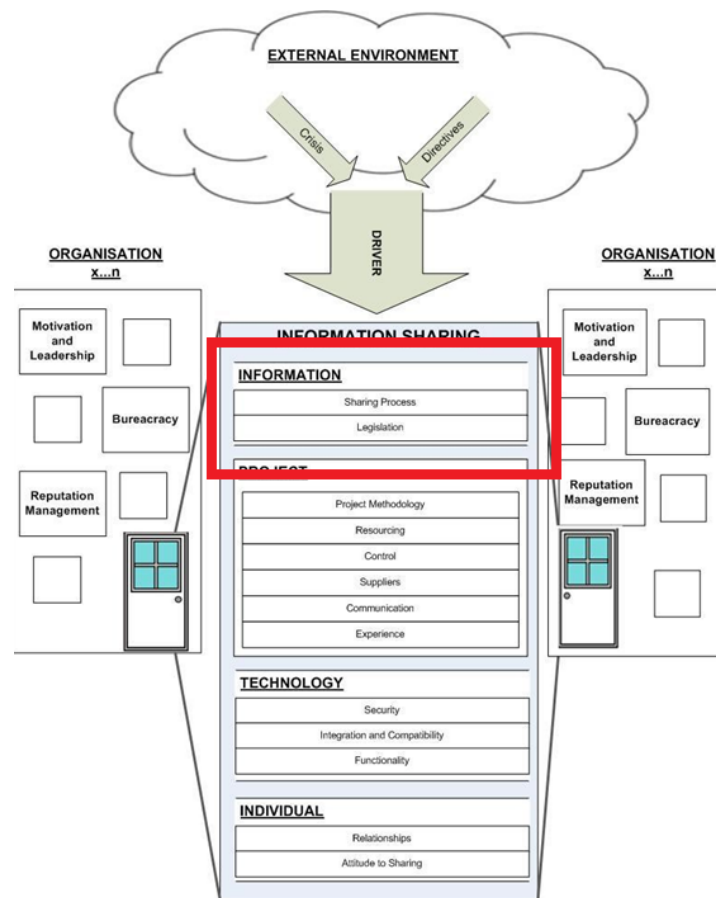
6.5.1.1 Information Sharing Process

Once the aim of the information sharing project is identified the information sharing process need to be analysed. This will identify what information is to be shared and the process for sharing. The sharing process impacts the rest of the project as many decisions are dependent on it. For example if no personal or sensitive data is being shared between the organisations the project will not be affected by the Data Protection Act (1998) and security measures for sharing will be reduced. Identifying what information is being shared impacts whether the partners are able to provide that information. Key questions when identifying the information being shared are:

- Are all the partners able to provide the information?

- Will the information be shared in a timely manner?

- Can the information be assimilated in a way to achieve the project's aim?

These questions can be aligned with Hatala and Lutta (2009) stages of the information sharing process shown in figure 6-8.

Information Acquisition → Information Dissemination → Interpretation of the Information
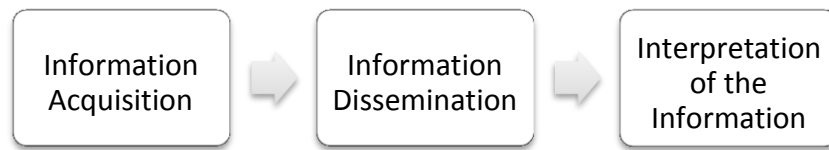
Figure 6-8 Three Step Process for Sharing Information (Adapted from Hatala and Lutta, 2009, p.12)

Analysing each stage of the process can provide an early indication of the work required to carry out the information sharing project and where problems are likely to occur.

6.5.1.2 Legislation

Legislation refers to laws dictating the sharing of information. There are two types of legislation; laws restricting sharing and laws enabling sharing. The two key laws dictating rules around sharing of information in the UK are the Data Protection Act (1998) which provides "regulation for the processing of information relating to individuals" (Data Protection Act, 1998) and the Freedom of Information Act (2000) which details rights of "access to information held by public authorities" (Freedom of Information Act, 2000). Agencies wishing to share information must ensure they are able to comply with the relevant regulations to ensure they do not incur fines from the ICO. In addition to repercussions in the form of monetary punishments public agencies are accountable to the public which they serve. When there is a data breach media coverage results in public outcry against the offending agency. In order to maintain their reputation agencies must ensure they take appropriate actions when handling the public's data.

Legislation enabling information sharing is not as simple to identify. The legislation will relate to the specific agencies involved and the purpose of the information sharing. In the public sector some examples of legislation which exists to enable information sharing are the Children's Act (2004) and the Crime and Disorder Act (1998). The Children's Act (2004) was introduced to "encourage integrated planning, commissioning and delivery of services" (RCGP, 2009, p.9) specifically aimed at children's wellbeing, as a result of highly publicised failings, specifically the Climbie case (Health Committee, 2003). The Children's Act was introduced to specifically enable information sharing for the wellbeing of children and has helped increase multi-agency work in this area. The Crime and Disorder Act (1998) enables information sharing to prevent crime and disorder although it is mainly aimed at information sharing within between police forces. It is important whilst analysing the legalities of sharing information that relevant legal advisors are consulted e.g. information security personnel or data protection specialists.

6.5.2 Project

The project category details factors identifying how the project is carried out. The category is represented by a closed box; unlike the other categories the project is finite. There is interaction with the agency but it is not intrinsically embedded in the agency like the other categories within the information sharing category.
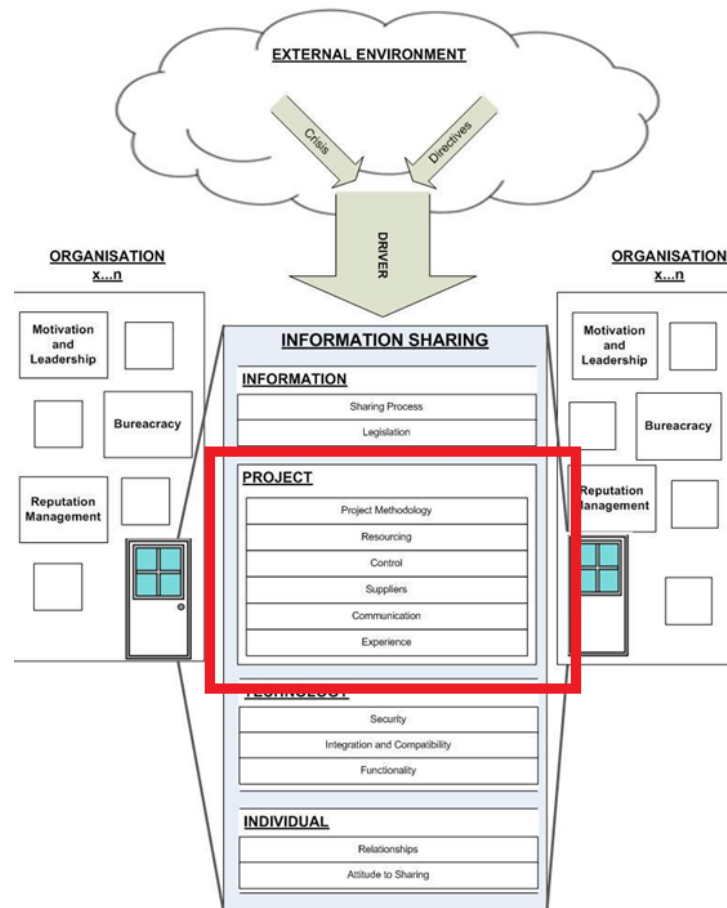
Figure 6-9 Project Factors Impacting a Multi-agency Information Sharing Project

6.5.2.1 Project Methodology

Many project methodologies exist such as PRINCE2 (Her Majestys Govermnment, 2012) or Agile (Oxagile, n.d.). This framework does not suggest which project methodology to follow, but strongly recommends that a project methodology is followed to implement the project. A project methodology is "an integrated assembly of tasks, techniques, tools, roles and responsibilities, and milestones used for delivering the project" (Attarzadeh and Ow, 2008, p.2). The official PRINCE2 website (2013) provides the following reasons for using a methodology:

- "A controlled and organised start, middle and end"

- "Regular reviews of progress against plan"

- "Automatic management control of any deviations from the plan"

- "The involvement of management and stakeholders at the right time and place during the project

- "Good communication channels between the project, project management, and the rest of the organisation."

A project methodology "can provide a useful way for organisations to manage change effectively"

(Clarke, 1999, p.139) by providing structure to a project, making it easier to identify and plan work. Regular reviews allow early identification of deviation from the schedules allowing earlier remedial action increasing the likelihood of a successful project (defined as on time and on budget (Standish Group, 2009, p.2)). Those involved in an information sharing project may not have experience in managing projects and a project methodology can "provide novice project managers with the tools to manage projects, without requiring a long learning curve" (Attarzadeh and Ow, 2008, p.4).

6.5.2.2 Resourcing

All projects require some level of resourcing, if the project has insufficient resources it cannot continue or at best can continue on a restricted scale. Olivia (2005) identified economics as a key barrier to information sharing. In the initial stages of the information sharing project agencies should be explicit on the level of resources they are willing to commit. This refers not only to funding for purchasing and on-going cost such as licensing fees but the extent the agency is willing to commit people and other resources. Being aware of resourcing levels up front can enable the project team to consider appropriate solutions in line with budget constraints. For example when choosing between system A and B (shown in table 6-4) on-going budgets will impact the system chosen.

System A	System B
£100k purchase cost	£100k purchase cost
£25k annual license fee	£5k annual license fee

Table 6-4 System Cost Choices

In a multi-agency project it is essential workloads are fully explored. Resources are spread across multiple agencies increasing complexity in scheduling work. The agencies involved need to be able to plan work for the information sharing project into other scheduled work. Multiple stakeholders and differing levels of priority placed on the project by the various agencies can cause delays in excess of the time taken to complete

the unplanned work. Analysis of available resources early in the project provides the limitations for the project and helps inform project decisions.

6.5.2.3 Control
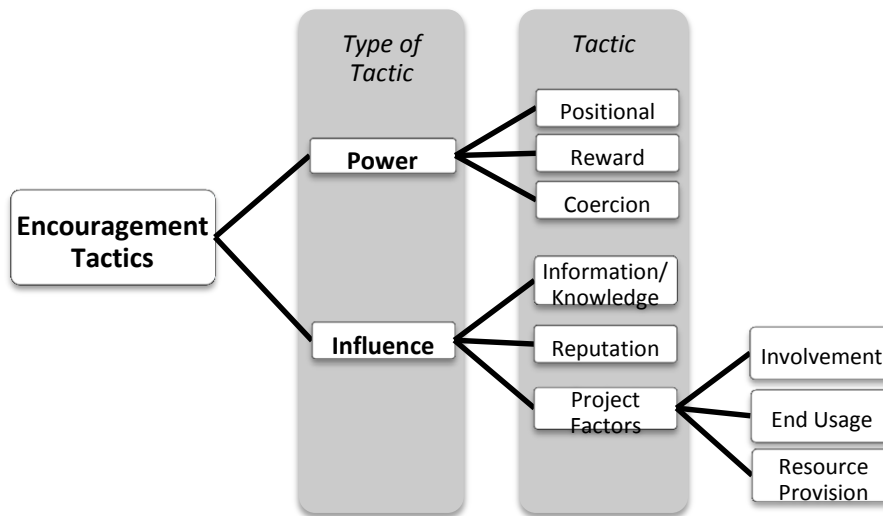
Figure 6-10 Encouragement Tactics/Sources of Controls (adapted from Cairns et al, 2012, p.42)

Control for a multi-agency information sharing project is complex. No single agency has full control over the projects direction or outcome. Control is found in multiple forms; figure 6-10 identifies the sources of control available to partner agencies, based either on power or influence tactics. The distinction is drawn based on how the tactic is implemented and whether the person being acted upon is ordered or suggested to alter their behaviour. Control based on power utilises formal control based on "the promise of rewards or sanctions exercised mainly by the use of force and coercion in order to control how a person or group behaves" (Cairns et al, 2012, p.41). It can be positional, reward or coercion control; all utilise explicit actions to achieve desired results.

Control based on influence utilises the "ability to alter another's behaviour by the provision of something they do not already posses e.g. information" (Cairns et al, 2012, p.42). Influence control is exercised in the form of information/knowledge, reputation or project specific factors such as resources. Influence attempts to persuade people to act in the desired manner rather than ordering them to. It is recommended where possible in a partnership setting that influence control is used over power control. Partners will buy in more to decisions made as the result of influence which will ease the process of embedding the information sharing project. Continued use of power tactics can result in declining effectiveness; "negative emotional reactions by those upon whom power is exercised may block the effect" (Willer, 1997, p.587). This can ultimately result

in reactance (Brehm, 1966) where people rebel against power tactics deliberately carrying out opposing actions.

Identifying potential sources of control may affect how the project is set up e.g. a project specific factor such as resource provision may identify one agency in the partnership is contributing higher levels of resources to gain a higher level of control. If it is felt this could be abused by the agency contributing more, in initiation stages a more equal contribution by each partner should be considered.

6.5.2.4 Suppliers

If the project is utilising a technical solution the supplier of the product must be thoroughly considered. The considerations will vary from project to project however the following are provided as a guide:

- Does the partnership have an existing relationship with the supplier?
- Can recommendations be provided by existing customers?
- Is flexibility required? If so can the supplier provide this?
- Can they provide guarantees on deliverables and timescales?

The public sector has prescribed procurement processes (OGC, 2008) which may impact the choice of supplier for the project, where relevant procurement departments should be consulted for latest regulations.

6.5.2.5 Communication

A multi-agency project requires communicating with the partnership and stakeholders on a regular basis. This can be through meetings which provide interactive communications or with regular email and or printed communication such as newsletters to provide latest updates. Regular communication has two purposes throughout the information sharing project:

- Engage with stakeholders to reach decisions.
- Keep stakeholders informed.

Communication is considered key to project management processes; for example PRINCE2 (HM Government, 2012) recommends producing a communications plan covering details of stakeholders, key messages and communication delivery dates and frequencies. Communication is a key way relationships are created and reinforced. On-going communication builds trust (Shapiro, 1987), a requirement for effective information sharing (Landsbergen and Wolken, 2001, p209). If stakeholders are not kept up to date with the project they may feel decisions are being made without their input reducing buy in and trust in the project.

6.5.2.6 Experience

Dawes (1996) interagency information sharing model identified the experiential cycle of information sharing. The model identified that previous experience with an information sharing project improved the ability to plan and predict the outcomes of a future information sharing project. Ideally the project team implementing the new information sharing project should have members with experience of previous information sharing projects. It would also be beneficially for members to have experience of IT system implementation and project management. Previous experience will help the project predict problems and outcomes, increasing the chance of successful implementation (Almotairi, 2009, Payne and Flow, 2005, Mankoff, 2001).

6.5.3 Technical

Technical factors relate to the software, hardware and the processes being used to share information.
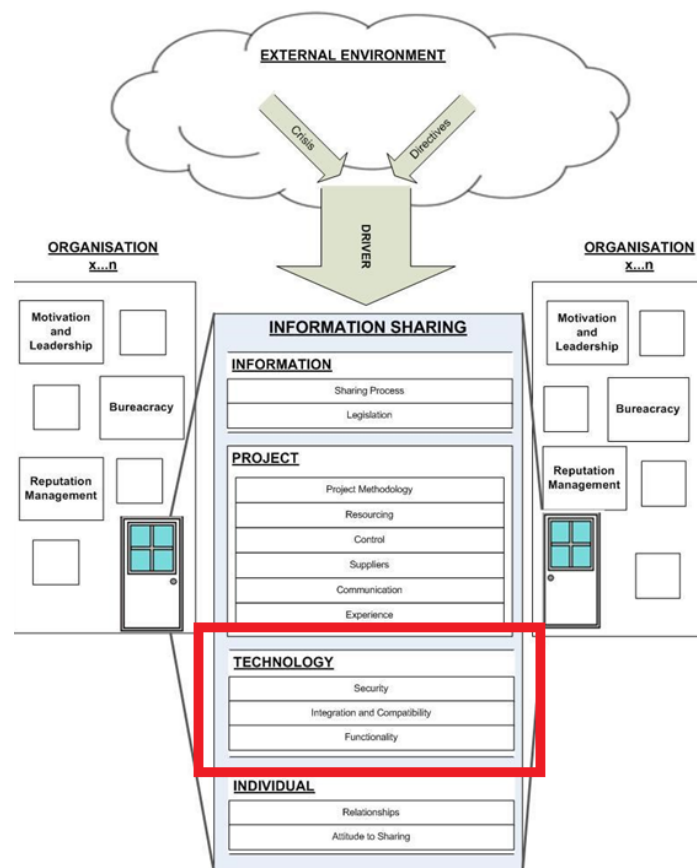
Figure 6-11 Technical Factors Impacting a Multi-agency Information Sharing Project

6.5.3.1 Security

To comply with legislation and in order to be answerable to the public they serve, public sector organisations must take due care to protect the information they hold. Security of the information sharing project is

therefore a key consideration. The levels of security which the project employs will depend on the level of risk the partnership places on the system. This will be based on internal risk analysis processes in existence (a common approach is to apply the ISO 27000 family of standards (ISO 27000 Directory, 2009)). Risk is based on the likelihood and the impact of a breach (Aagedal et al, 2002, p.55) with mitigating solutions based on an organisation's appetite for risk. When working in a partnership the security protocols must meet the required standards for the agency with the lowest risk appetite i.e. the highest required security. This will ensure the system can be utilised by all partners.

6.5.3.2 Integration/Compatibility

Large organisations and in particular public sector agencies are guilty of creating and maintaining silos of information. The idea of sharing information is to remove agencies' silos of information. When implementing the new information sharing system the partnership may remove the silos between the partnership agencies but create a new silo within their own agency. Consideration should be given to how the new system will integrate with existing systems and processes. This research showed agencies with greater levels of integration with existing systems and processes share a greater proportion of their agency data. Integration is interlinked with the compatibility of the new system with existing systems both in terms of technical ability and data structures. The easier it is to integrate the system the higher the likelihood it will be integrated. Compatible technologies and integration reduces the cost of sharing which was identified by Dawes (1996) as a barrier to information sharing

6.5.4.3 Functionality

Functionality is the ability of the information sharing project or system to achieve the desired goals. Utilising standardised project process will identify the required functionality of the system by carrying out a requirements analysis. It is important functionality is separated into essential and desired functions. Any system which does not meet the essential criteria (compatibility test (Beach, 1998)) should be immediately ruled out with the remaining options assessed against the profitability test (Beach, 1998) to identify the optimum solution. Utilising concepts from technology acceptance models such as TAM (Davis, 1989) and UTAUT (Venkatesh et al, 2003) will allow the project agencies to assess the systems' profitability. Suggested assessment criteria are shown in table 6-5.

Compatibility Criteria	Profitability Criteria
• Budget • Has essential functions or functions can be added by supplier. • Deliverable in time constraints • Allowable supplier (if restrictions apply)	• Performance expectancy (UTAUT, Venkatesh et al, 2003, p.447) • Effort expectancy (UTAUT, Venkatesh et al, 2003, p.450) • Job relevance (TAM2, Venkatesh and Davis, 2000, p.191) • Output Quality (TAM2, Venkatesh and Davis, 2000, p.191) • Result Demonstrability (TAM2, Venkatesh and Davis, 2000, p.192) • Objective usability (TAM3, Venkatesh and Bala, 2008, p.279) • Perceived enjoyment (TAM3, Venkatesh and Bala, 2008, p.279)

Table 6-5 Assessment Criteria for System Functionality

In its simplest form the compatibility criteria is asking will the system meet the basic constraints and functionality required from the system? This will create a shortlist for review of the profitability criteria by the agencies involved to identify the solution, which will provide the most benefit/profit.

6.5.4 Individual

Individual relates to factors impacting the information sharing project at a single person level either user of an information sharing system or person involved with implementing the information sharing system.
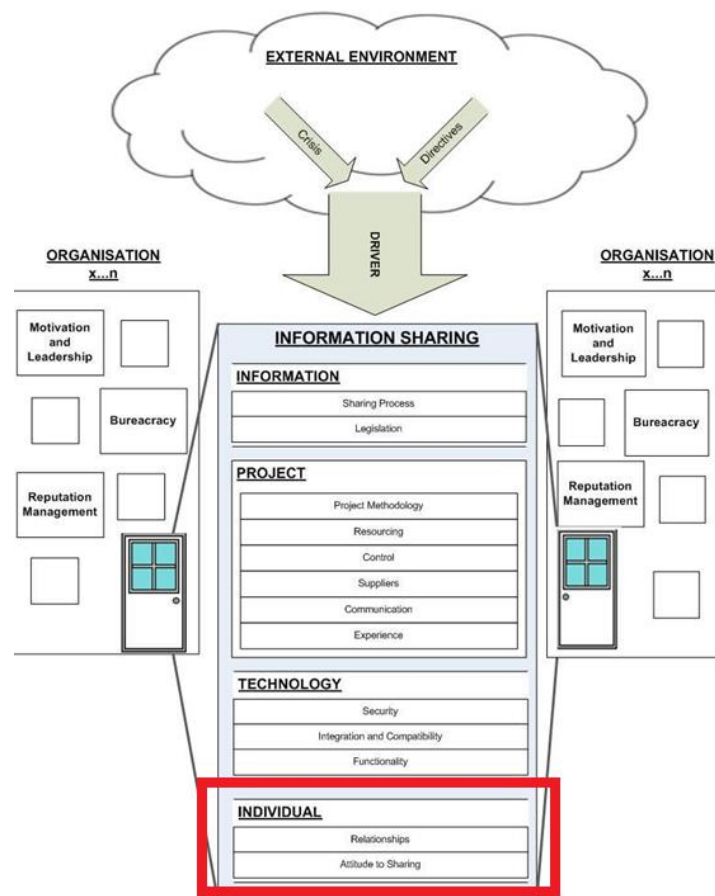
Figure 6-12 Individual Factors Impacting a Multi-agency Information Sharing Project

6.5.4.1 Relationship

Arguably the biggest factor to influence an information sharing project is the relationships between people. "Friendships and personal contacts heavily influence communication between individuals; when these exist, the likelihood of information sharing is increased." (Kolekofski and Heminger, 2003, p.523). To share information relationships must exist. These are based on trust which was identified (Lin, 2007 p.413) as one of two critical factors influencing the propensity to share. "How the requester treated the information holder in the past" (Kolefofski and Heminger, 2003, p.525) is strongly linked to the likelihood of sharing information. Joyals' study (2012) of American fusion centres found that three characteristics were identified that influenced the success of "communication and collaboration; trust, reciprocity and genuineness" (p.10). Trust and credibility have been identified by numerous authors (Mayer et al, 1995, Landsbergen and Wolken, 2001, Van Eyk and Baum, 2002, Riege, 2005) as a factor which will act as a barrier to multi-agency information

sharing. Liao (2006) showed the statistical relationship between increased trust and increased knowledge sharing. Whilst this framework refers to information sharing similar barriers and enablers have been found for both information and knowledge sharing.

Agency representatives on the project team should work hard to ensure they do not endanger relationships with partners. One way to do this is to ensure promises are kept. Trust is reinforced when both parties meet the expectations of the other (Vangen and Huxman, 2003, p.10). It is suggested all partners are held equally to policies and regulations put in place by the partnership. Inconsistent application of rules reduces trust and therefore damages relationships (Lin, 2007, p.422). Lin (2007, p.422) identified "an organizational culture that encourages the development of social network ties" increased the formation of trust between people. If possible the users of the information sharing system should develop social ties for example via meetings and phone calls to enhance relationships.

6.5.4.2 Attitude to Sharing

Identifying the attitude to sharing at an individual level will help to identify the level of cultural change required at a user level. Kolefofski (2003, p.523) identified that employees with an attitude of stewardship rather than ownership of information were more likely to share. If information sharing is a new concept within the partnership agencies, work will be required to educate users and embed the concept of information sharing. Lin (2007, p.423) suggests "orientation training, realistic job reviews, and formal and informal socialization processes for employees will inspire their willingness to work closely with their co-workers, leading to stronger cooperativeness". If individuals "perceive that sharing such information will lead to their loss of power, position of influence, or promotion" (Hatala and Lutta, 2009, p.12); project resources will need to be assigned to work on changing this culture and educating users. Lin (2007, p.422) suggests holding up individuals "who behave cooperatively" as a good example for others to learn from. This could extend to utilising those individuals as local champions for the information sharing system promoting a positive attitude to information sharing.

6.6 Summary

The factors impacting the information sharing project were identified by the researcher's participation in an information sharing project and extensive review of the existing literature. These were then classified in the high level categories of external environment, organisations and information sharing. The information sharing category is further divided into four sub-categories of information, technology, project and individual. This chapter provides an introduction to a framework of areas for consideration when carrying out a multi-agency information sharing project.

7. Framework Feedback and Refinement

7.0 Overview

The chapter begins by providing an overview of the feedback gathered to refine the framework. The suggested and considered refinements are then detailed, with the final model presented with details of added and modified constructs.

7.1 Feedback

Any model or framework proposed by an individual requires verification and validation to ensure the model or framework achieves its original aim (GHTF, 2004). The aim of the framework created for this research was to model the factors which impact a multi-agency information sharing project. The framework is to be used by partnerships in particular public sector partnerships entering into an information sharing project. The framework at a practitioner level is designed to act as a guide, in the hope it will ease the process of setting up an information sharing process. At an academic level the analysis aims to produce a complete schema of factors impacting a public sector multi-agency information setting.

7.1.1 Verification and Validation

"Verification is the process of checking, confirming, making sure, and being certain" (Morse et al, 2002, p.17) this is the process of confirming the framework has been constructed correctly i.e. the constructs found within the model accurately reflect the situation being modelled. Validation on the other hand is determining whether the framework produced is the correct framework.

The ideal way to verify and validate the framework would be to repeat the information sharing project with another partnership providing the information sharing framework at the project's initiation. The second study could be used to verify the concepts within the framework and to validate if the framework makes the process of implementing an information sharing project easier. This was dismissed for two reasons. First the timescale of the project meant verification and validation of the framework in this way would fall outside the time assigned to carry out the research. Secondly in the event time had been available only one other project was identified which could potentially have been used for the additional study. It was identified that a nearby policing area were implementing the same software in a multi-agency partnership. It was thought it may

have been possible to use the second area to validate the framework and findings of the first and as such the researcher made contact with the second project. It became clear that the second project were struggling to implement due to extremely limited resources and challenging conditions. Resources were so limited that communications with the researcher became less and less frequent, before ceasing in late 2012. The limited data the researcher was able to gather from the second area prior to this time has been used where possible to input into the frameworks development.

To verify and validate the framework produced the researcher held semi-structured interviews with the partners involved in Sentinel's implementation (the semi-structured interview plan is shown in Appendix D). Over the time of the research unfortunately many of the agency members involved in the project were replaced and as such were unable to comment on the project's implementation. Those partners who were still in post were invited to semi-structured interviews. The researcher discussed the project team members' experience of Sentinel's implementation and then introduced and briefly discussed the framework. A copy of the framework along with some pointer questions were left with the interviewee for them to feedback further once they had had time to review the model. The second stage of feedback was gathered either by phone calls or email.

7.2 Refinement

The following sections detail areas identified for potential inclusion in the framework after feedback from the partners involved in the information sharing project.

7.2.1 Absent Constructs

The following section details constructs which were felt to be absent from the framework by the participants in the information sharing project.

7.2.1.1 Buy In/Involvement/Decision Making

Decision making had been included as a factor under the project category in an early version of the framework as the researcher felt this was a key consideration. When reviewing the observed data decision making was not evident in impacting the project and was better expressed under the category bureaucracy. In the feedback contradicting points were made regarding decision making with some agencies feeling overly involved and others not feeling consulted at all. On reviewing the observed data again those agencies who felt they were not consulted or felt processes were too prescribed matched up with agencies who displayed signs of not being bought into the project. For example they attended fewer meetings, were slow to reply to requests for information etc. This identified a potential category for inclusion in the framework of buy in

again a factor previously considered but dismissed in early versions. In an earlier version however buy in was placed in the individual category and was later replaced by attitude to sharing.

An interesting point in the feedback came from one partner who felt that control had not impacted the project at any point. This was in stark contrast to all other feedback which had felt control was often a barrier to implementing the information sharing project. In addition the construct of control offers very interesting research debate. This perhaps suggests that those bought in to the project and keen to implement may be less aware of control being exerted upon them.

7.2.1.2 Timescales

The construct of timescales was fed back in two ways. First the unforeseen benefit of the information sharing system in saving time. One partner in particular identified the system as saving them as much as two hours a day in writing emails to partner agencies. Secondly the time taken to implement the project and reach decisions. Overly long implementation timelines meant that at times work was obsolete or had minimal benefit by the time it was implemented. For example at two agencies interfaces were still not live when the feedback was gathered. In the absence of interfaces the agencies had found workarounds to negate the issue of missing data on the system. As such they felt by the time the interfaces were delivered they would have little benefit to their agency, though benefit could potentially be gained for partner agencies on the system having wider access to information.

7.2.1.3 Co-location

The biggest factor which respondents felt was missing from the framework was the aspect of colocation. In addition to Sentinel as a technical solution some councils had implemented co-location of officers at least on a part time basis. Two councils had built new premises during the time of implementing Sentinel. Whilst designing the new buildings the councils designed areas where partners could come to work. These areas were designed to be used at any time for partners not just when partners were required to visit the council. This had the benefit of increasing interactions between police and council officers. This is backed by the literature which highlights the importance of relationships and social interactions for information sharing. Areas which implemented colocation felt this had benefited partnership working more so than any other initiative taken to improve partnership working. Areas which had not yet implemented any co-location seeing the success of co-location are now looking at ways to implement co-location.

7.2.1.4 Standardised Processes

The construct of partnership-wide standardised processes was reported in feedback from partners in conflicting ways. Some partners felt the partnership was too prescriptive, telling agencies exactly what and how they should be recording on Sentinel. The agencies who felt the partnership were overly prescriptive

also fell in to the category of agencies which displayed fewer characteristics of being bought in to the project. As such these comments were included with the construct of buy in and decision making.

Others agencies felt that a lack of consistency in recording processes meant it was difficult to accurately understand information. This had been a consideration in earlier development of the framework. It was not included due to the researcher feeling standardised processes were appropriately covered in other constructs. For example if all partners are equally bought in to the aim of the information sharing project; in this project the need to record 100% of ASB information on a single system standardised processes will be achieved through the need to achieve the project's goal. In addition sufficient communication between the partners can negate misunderstandings due to differences in processes. For example the definition of an ASB incident does vary slightly between the partners. By communicating and discussing the various partners definitions other partners are able to understand what incidents are classed as ASB at other partner agencies.

7.2.1.5 Transparency/Responsibilities

The construct of resourcing was already present in the model but this was further highlighted in the feedback summarised in one particular statement "there were a lot of meetings and time required to implement the project especially compared to other work we had on" (Sentinel Project Partner, 2014). Further discussion highlighted that on initiating the project most of the partners were unaware of the level of resources they would need to commit in order to implement the system. On a similar theme another partner felt that in early stages of the project they were unaware what their role and responsibilities were towards the project. They were provided with "strategic goals rather than practical details" (Sentinel Project Partner B, 2014). The partners at times felt ill equipped to make decisions which would impact the project due to a lack of understanding their responsibilities. For example the project members were asked to input into processes regarding the administration process without having seen or experienced the technical details of administering the system. The public sector are pushing for greater transparency to the public, but this seems to sum up the requirement for transparency to the project around resourcing and responsibilities for each partner.

7.2.2 Validated Constructs

The feedback gathered suggested some strong agreements with particular constructs. These are detailed below.

7.2.2.1 Security Restrictions

Feedback highlighted how security restrictions put in place early in the project impacted the partner's ability to share information. One partner in particular felt that the security procedures "put the focus on not sharing ASB information unless there is a good reason when instead the focus should be to share unless there is good

reason not to" (Sentinel Partner C, 2014). The security construct in the framework presented to the partners highlights the need for security. It is key that partners with a low risk appetite do not cause the information sharing system to become so restricted that benefits are not gained as appropriate information is not shared. Utilising bureaucratic processes such as sharing agreements and proper research of the legislation can help negate these issues.

7.2.2.2 Communication

Some of the partners felt that the information sharing had "promised a lot, but hasn't delivered" (Sentinel Partner D, 2014). This helps to validate the communication construct. Communication helps manage expectations of those in the project. This is key as when expectations are not met trust can be lost. Trust is a key requirement for sharing information between partners. It is visible in multiple constructs in the framework e.g. Reputation Management, Security and Relationships.

7.2.2.3 Sharing Process

The process of sharing the information is key to the ability of the partners to provide information in a timely manner. If information is not shared in a timely manner it becomes obsolete and any benefits of sharing the information become reduced. The partners when feeding back on the framework highlighted timeliness; "I have information the same day now, before I had to wait a month" (Sentinel Partner, 2014), "We're chasing within the week now if we haven't had updates" (Sentinel Partner C, 2014). This ability to access the information in real time and be provided updates almost instantaneously has allowed the partners to act more quickly in resolving issues. It is expected that the public view this as a better service.

7.2.2.4 Functionality

All the partners who provided feedback raised in some way issues of functionality with the system used to share information. Utilising concepts from models such as TAM3 (Venkatesh and Bala, 2008) and UTAUT (Venkatesh et al, 2003) could help improve the acceptance of the system and minimise complaints about functionality. Particularly concepts such as job relevance (TAM2, Venkatesh and Davis, 2000, p.191) and result demonstrability (TAM2, Venkatesh and Davis, 2000, p.192)

7.2.2.5 Integration

Partners who had managed to integrate their existing systems with Sentinel showed a higher percentage of ASB shared with partners than those who had not integrated. Melton and Charnwood who had integrated with their CRM systems were considered to be sharing as close as possible to 100% of their ASB with partners. The success of their interfaces since prompted partners who were not considering interfaces to begin scoping and development of interfaces within their own agency. From initial decisions made in 2012 only four of the

eleven partners were considering interfaces, by early 2014 only one was still deciding whether to implement an interface.

7.2.2.6 Bureaucracy

A complaint from many of the partners when discussing the implementation of the information sharing system was bureaucracy. Whilst it was felt outputs from bureaucracy such as the information sharing agreements were positive in allowing the partners to share information, the process of producing the documents was felt overly bureaucratic. Some partners felt that meetings had lost track of their purpose and took up a disproportionate amount of their time for the benefits gained. The framework discusses the need for bureaucracy to provide reassurance to those involved in the project but that any meetings put in place should regularly be considered for their relevance and benefit.

7.3 Refined model

On reviewing the framework there were some general features of the model which required some rework. Firstly the general look and feel had originally been designed to look like two organisational buildings with additional squares added to look like the buildings windows. Whilst reworking the model the researcher felt these "windows" could be confusing to people using the model as they may feel that there is something missing. The windows were removed and the closed doors were altered to be open doors. On reflection it was felt the closed doors could unintentially suggest to people either that information sharing should not happen between organisations or that each organisation should consider information sharing alone. Open doors suggest a more flowing collaborative process for the information sharing project.

Some terms on the framework were altered to more accurately reflect what they were representing.

The terms rephrased are as follows:

1. Driver → Catalyst. Driver suggests that the whole process is being carried out in pursuit of the cause of the driver. In fact the crisis or external directive acts as a catalyst which prompts the agencies involved to look at ways of information sharing to achieve another goal. For example in this project the crisis of the Pilkington case (IPCC,2011) caused the Leicester, Leicestershire and Rutland CSPB to look at ways to share ASB information to better tackle ASB in the area.

2. Information Category of constructs → Process.

3. Resourcing construct in the Project category → Transparency. The renaming is to allow the inclusion of both resourcing and responsibilities. In addition the term transparency more accurately reflects the public sector environment.

7.3.1 Dismissed Constructs

The feedback from the partners was considered carefully alongside early drafts of the framework. Three suggested constructs were not included in the refined framework; timescales, buy in and decision making. The alteration of the resourcing construct to transparency which included responsibility in collaboration with communication and bureaucracy is considered appropriately to cover the construct of timescales. The second construct of buy in was covered by the existing construct of motivation as the level of motivation a partner has is visible in the level of buy. The third construct of decision making is covered in the bureaucracy, control and decision making constructs. Adding it as a separate construct was felt unnecessary and potentially damaging as it could make the framework overly prescriptive. The decision making process taken by the project need to be effective for the members involved in the project. As such a single partner making all the decisions may be equally as beneficial as a consensus decision making process depending on the exact information sharing situation.

7.3.2 New/Altered Constructs

From the feedback and review of the framework one constructs were added (Location) and one was altered (Resourcing).

7.3.2.1 Location
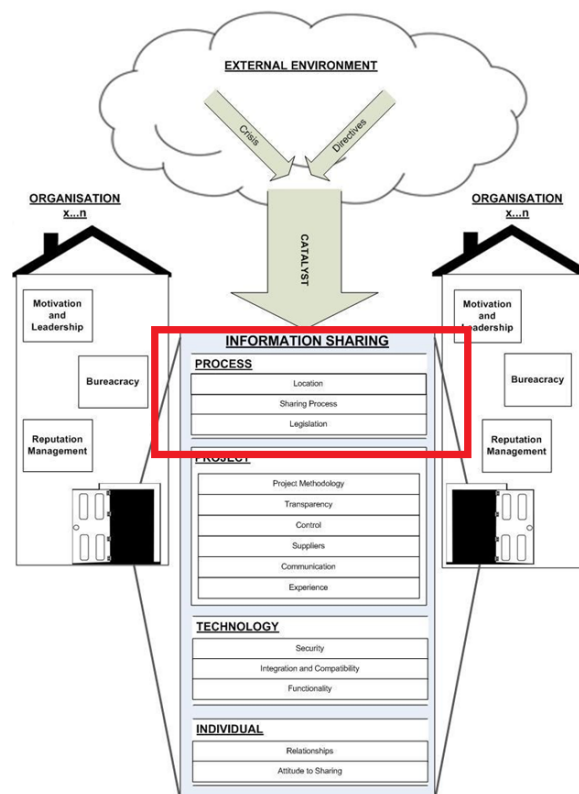
Figure 7-1 Refined Process Category

One of the biggest influences on information sharing identified from this research was the location of people wishing to share information. Four councils utilised co-location of ASB officers in some way. Two had designed areas for partnership organisations to come and work, for example if a police officer had to go to the council for the meeting rather than starting work at the police station and travelling to the meeting at the council they could begin working at the council office at the start of the day. The second approach to co-location utilised by three councils (one who implement a partner working area) was to spend at least one day a week working from the police station. Both approaches were highly praised by both the council and police partnership agencies. All those involved felt that co-location was the one factor they would encourage anyone attempting partnership working to consider. The work at these council has been so successful that other councils in the partnership are looking at ways to implement co-location. This is backed by the literature where increased social interactions, increases trust (Woolcock and Narayan, 2000, Landsbergen and Wolken, 2001, Van Eyk and Baum, 2002, Riege, 2005) and therefore increases the likelihood of information sharing. Working in the same office allows relationships to build and improve based on trust which is shown to increase the likelihood of information sharing (Drake et al, 2004, p.69). Where possible when implementing an information sharing process consideration should be given to co-location at least on a part time basis.

7.3.2.3 Transparency
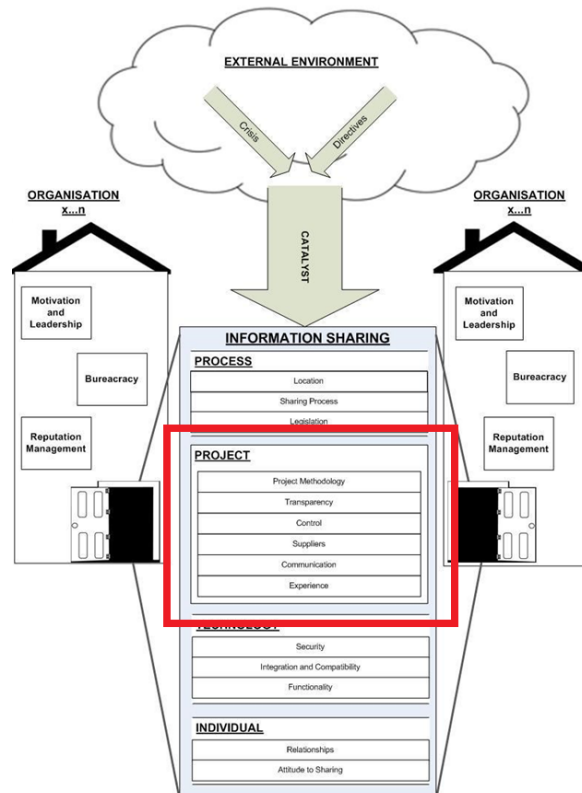
Figure 7- 2 Refined Project Category

Transparency in the project refers specifically to two elements; resourcing and responsibilities. Resourcing was already a construct in the model. This was altered to include responsibilities whilst gathering feedback from the partners. If partners understand the responsibilities they are expected to take they are able to manage their own and others expectations. This in turn allows the agency to estimate the required effort on the project and plan accordingly. The constructs of resourcing and responsibilities were grouped together as the central tenant behind these constructs is the ability to plan and manage demand. These constructs were grouped under the term transparency to convey the idea that the project must be transparent and up front with partner agencies in order to be able to appropriately manage demands.

7.4 Summary

The chapter has detailed the refinements made to the information sharing analysis framework. The finalised information sharing analysis framework is shown in Figure 7-3.
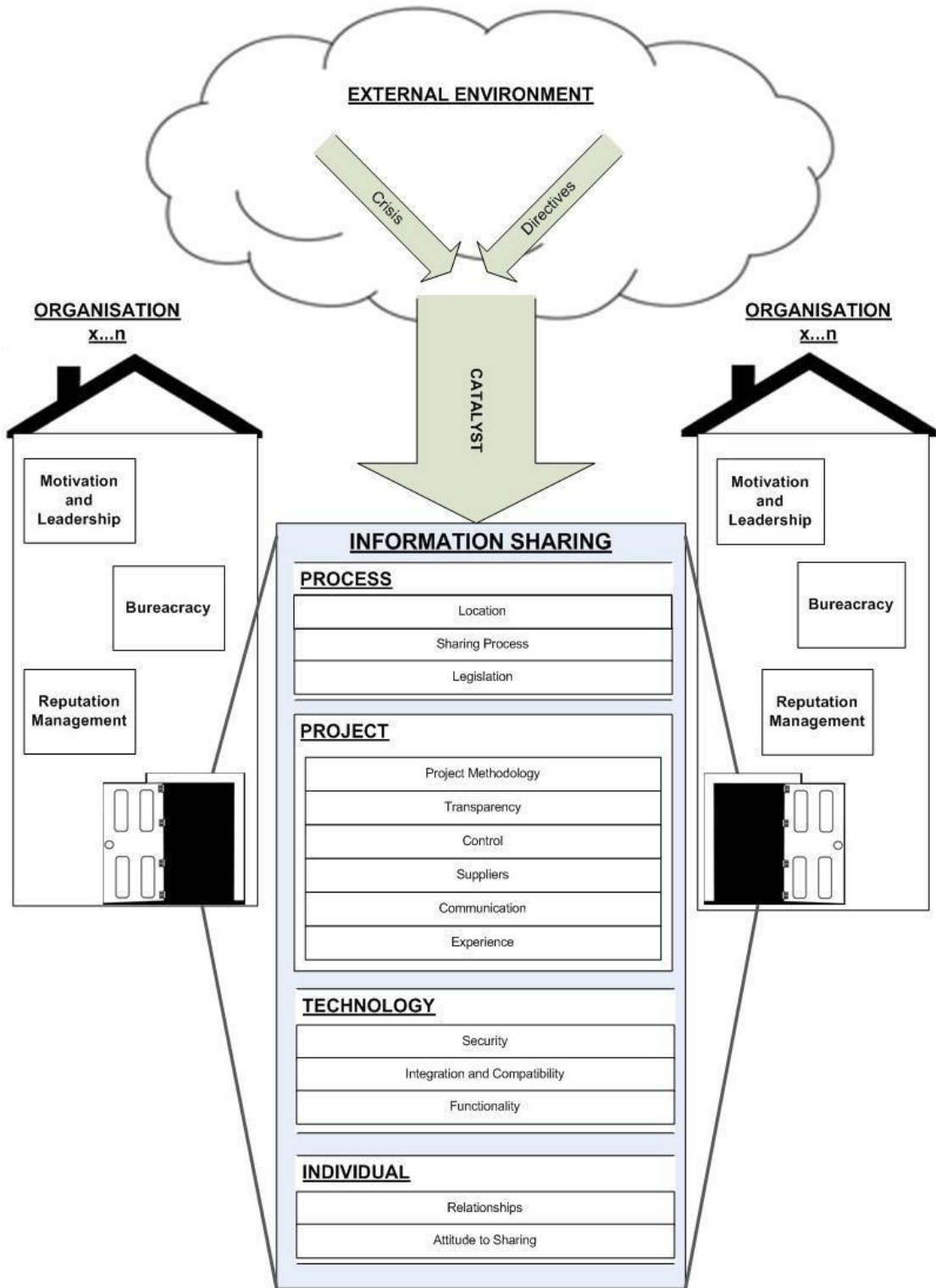
Figure 7-3 Final Information Sharing Analysis Framework

8. Discussion

8.0 Overview

Austerity measures are set to continue to impact the UK public sector at least until 2017 (BBC News, 2013). In requiring agencies to reduce spending they must look at ways of maximising their resources, whilst at a minimum maintaining the current level of service they provide to the public. Pooling information across partnership agencies provides access to large amounts of previously inaccessible potentially useful information. Shared information with partners allows an agency a greater amount of information on which to base their decisions therefore improving the likelihood of appropriate actions being taken. This research studied one example of a public sector partnership working together to implement a system to share information to improve the service they provide to the public they serve. This chapter details the key findings and their importance alongside identifying similar studies.

8.1 Key Findings

Toffler (1970) identified individuals are able to cope with large amounts of change and confusion if at least one area of their lives is relatively stable. It should be borne in mind alongside the implementation of the information sharing system the partnership agencies were going through large scale changes. Two of the councils moved or were in the process of moving premises. All agencies involved had to review spending as part of the CSR (Her Majestys Treasury, 2010) there was high staff turnover and uncertainty about job security. In addition many of the councils and the police were implementing large scale IT changes, including three new CRM systems. The findings from this research must be considered alongside the volume of changes already occurring in the partner agencies.

8.1.1 Bureaucracy

The public sector is almost inextricably linked with bureaucracy, with bureaucracy used as a byword for inefficiency. This study has shown that bureaucracy is both an enabler and a barrier to a multiagency information sharing project.

8.1.1.1 Positive Bureaucracy

Positive bureaucracy comes in the form of increased motivation easing the ability to carry out information sharing. Once written and agreed documentation such as information sharing agreements provides agencies

with a level of protection and reassurance. Sharing in line with agreed and documented process justifies their actions in case of future questioning. This reduces fear of sharing. In addition written agreements provide a level of accountability which partner agencies can use to hold partner agencies to account. One issue encountered as a result of organisational changes within partnership agencies was changing leadership. New leaders changed the motivation and commitment to the information sharing project. One council almost withdrew entirely from the project when their leadership changed. It took significant discussions with the project manager and other project member to convince the organisation to remain part of the project. Discussing with members of the project team areas for improvement in the project one mentioned the example set by regional policing. When police forces enter into regional policing they utilise section 23 contracts which bind each force to the decisions made at a regional level. This ensures that even if personnel within the agencies change the police force will continue to adhere to the agreements already made. Utilising contractual obligations to the partners to enforce commitment to the project could help to negate issues around organizational structure changes though may negatively impact buy in to the project.

8.1.1.2 Negative Bureaucracy

Negative bureaucracy is bureaucratic process which increases the cost of sharing adding little (if any) value to the project. This includes meetings which were set up for a specific purpose but continue long past the achievement of their goal. The meetings have lost focus and there is reduced chance of people attending. Other examples include overly bureaucratic processes such as written documentation requiring yearly reviews. The overhead and burden added to the project with the need to regularly review documentation can use up valuable resources and increase timescales for the project.

8.1.1.3 Bureaucracy Findings

The key finding from this research is that not all bureaucracy is unconstructive. Eliminating all bureaucracy would have a negative impact on the project. It is important to remove negative bureaucracy as far as possible, but bureaucracy which encourages information sharing must be maintained even if there is initial pain in generating such agreements. In summary bureaucracy must work to reduce the cost of sharing either for an individual or an organisation in order to increase the likelihood of sharing.

8.1.2 Decision Making and Buy In

A multi-agency project involves complicated decision processes, with multiple layers of agreement required. Numerous agencies brings with it an added dimension to decision making effectively producing three approaches; consensus, majority or dictatorship. The study has identified ambiguous decision making processes with examples of all three approaches at various stages. Three years after implementation began and over three and a half years since the project was initiated disagreements are still on-going. The decision

to put 100% of ASB data onto the system is still questioned as to whether this was fully agreed even with documentation from meetings stating and restating this agreement by all parties. Whilst buy in to the overall aim of the project is key utilising non-consensus decision making at times has been necessary to attempt to keep the project on track. Discussing decision making through the project partners had hugely differing opinions as to whether they were consulted sufficiently. All partners agreed that had the project manager at times not made decisions no system would currently be in place.

A change in project management post system implementation has taken a more consensus approach to decision making. The agencies involved in feedback felt they were more equal partners with equal say than in earlier stages in the project. The agencies also appear more bought in to the project with this approach, but it is clear had this approach been taken from the projects initiation the system implementation would still be in early stages rather than part of daily business. Buy in to the project is key to encourage partners to share information and one way this can be achieved is by consensus decision making. An argument can be made that a system to share information which is implemented without all partners bought in is preferable to an information sharing system which is not yet implemented. Buy in by partners can be worked on and improved post implementation, but information will not be shared on a system which is not implemented.

8.1.3 The role of people and technology

A multi-agency information sharing project occurs through two elements; people and technology. Prior to Sentinel's implementation the counties of Leicestershire and Rutland implemented a "people based" information sharing system as an intermediary step. The "people based" solution relied on a monthly face to face meeting where relevant partners met to discuss high priority ASB issues. The people based solution worked well for most of the partners involved as it required little adjustment to existing processes and limited overheads. The face to face nature of the solution allowed relationships and trust to develop naturally over time, to the point where some partners utilised these relationships to co-ordinate activities reducing duplication in work and wasted resources.

As other studies have shown (Halliday et al, 2004, Joyal, 2012) and confirmed by this study information sharing will occur in spite of technology. The existence of technology which eases the process of sharing will however reduce the cost of sharing and increase the likelihood of it occurring. Throughout the study agencies which have felt most empowered to share information are those which utilise co-location. Co-location enables relationships and trust to develop naturally. In addition it allows those sharing information to incidentally share information through general discussions and or overhearing incidents being discussed. This allows the partners to work together much more closely than if they solely utilised a technology information sharing system. Discussing information sharing with the partners who co-locate everyone when asked what

best enabled information sharing said the co-location of officers. All partners still utilise the "people based" monthly information sharing meeting to keep track of incidents and discuss action plans. Seeing the success of co-location all partners who currently do not co-locate are looking to co-locate at least on a part time basis. In a time of austerity measures where agencies are looking to reduce inefficiencies in work and remove unnecessary processes, the decision to dedicate resources to being away from the office highlights the benefits the agencies must feel they are gaining. On further discussion with partner agencies about their co-location, all stated if they had to choose between the IT solution for information sharing or their co-location, they would choose co-location.

The high regard agencies hold co-location for enabling information sharing represents an interesting research opportunity on how to better design technology solutions to replicate the benefits of colocation. Co-location may not be possible for information sharing systems of disparate partners and teams. The elements of co-colocation which best enable information sharing system should be further examined to identify if and how these can be built into future information sharing systems.

8.1.4 Public Sector Readiness

The research has identified that whilst public agencies are aware of the benefits which can be achieved from information sharing there is a lack of readiness. The scope of any information sharing project is increased due to previous IT infrastructure and planning. At a single organisation level the agency is still looking to overcome and rectify information silos which have built up over the preceding decades. In general there has been a lack of strategic IT planning at an organisational level resulting in disparate and often incompatible technologies across the organisation. Taking one organisation involved in the Sentinel project as an example. ASB data is reported to three departments; community safety, housing and environmental health. Each department has over the years adopted their own IT system to record and track incidents. Each system individually achieves the goals required by that department. To gather ASB statistics from this council three disparate systems must be interrogated. The community safety system and housing systems are able to generate spreadsheets which can be exported and manually manipulated to create a consolidated data source. The environmental health system cannot export data in any form, a search must be carried out with manual review of the onscreen data. The environmental health data cannot be aggregated with the other two systems output. The community safety system and housing system requires significant manual intervention to be able to successfully consolidate the data for interrogation. In simple terms the three existing disparate systems (in one council) create information silos which are not easily aggregated.

Partners involved with the Sentinel project have attempted to improve on the silos of information in one of three ways. First as with the city council a data warehouse is created where every system uploads data at

regular intervals. The warehouse can then be interrogated to provide an aggregated view of the data (accurate to the latest uploads). The second approach implements a CRM (Customer Relationship Management) system where calls are routed through a central system with workflows coming from the CRM into the silo systems with updates provided back to the CRM. The final approach to aggregating the silos is taken by Leicestershire police who utilise a search engine which is integrated with most systems within the force. When searching for information the search engine is used to bring back results from all integrated systems.

The problems with gathering data from multiple silos in to one source for interrogation are multiplied across the numerous partners involved in the information sharing project. Olivas (2005) reviewed non-technical barriers to information sharing and recommended activities which could improve information sharing. One suggestion was to create standards "for a minimum level of upward and downward compatibility" (2005, iii). This was in reference to word processing packages to enable people to share documents with a basic level of compatibility. If this idea was adopted by the UK government to create minimum standards which all public sector IT systems had to comply with some barriers to information sharing would be removed or at the very least reduced. There are numerous ways this could be achieved:

1. Creation of a single system for use by all public sectors.

2. Minimum standards for systems implemented by the public sector.

3. Creation of a central data warehouse

Creation of a single system for use by all public sector agencies would require significant investment and development. Historically large scale public IT implementations have been unsuccessful e.g. NHS database (BBC News, 2014). To ensure the system maximised potential for information sharing across all public sector agencies the system would need to be complex; potentially broken into modules for the various agencies e.g. police modules could include crime recording and custody management, council modules could include housing and environmental health. The modules would need to remain standardised to ensure the information could easily be aggregated. Alternatively the system could take a more functional approach, rather than dividing the system based on agency the modules could be split in a functional way e.g. ASB, crime, mental health, vulnerability. This way each agency could utilise the same modules based on the task they are carrying out. Utilising a single system would have risks associated with it. Firstly a single system storing all data required by the public sector would represent an attractive target for hackers. Security concerns would be high. In addition if every service is using the same system what system outages would have a large impact on the UK public sector.

Potentially the system could make large savings to the public sector. Once implemented licensing and maintenance fees from the large number of systems currently in use would be diminished and compatibility issues would be removed. A single system opens up potential efficiency savings by giving agencies access to data they would not normally have. For example for a witness statement to be made available to court the police must first take the statement from the witness. The statement must then be uploaded to the police system and then transferred to the CPS (Crown Prosecution Service) system. These systems are often incompatible and require the statement to be printed out and rescanned by the CPS or alternatively re-input into the system. It must then be disclosed to lawyers and made available to the court. Again often incorporating manual interventions to make the statement available in a form accepted by the multiple systems. There is significant chasing required by various people along the process taking up valuable time. If the statement was input on to the single system when recorded by the police this would then be accessible to the relevant agencies making large time and resource savings. The option of utilising a single system is an ideal situation logically but is extremely unlikely to ever happen. It adopts a one size fits all approach which agencies are unlikely to agree to. The problems experienced in the Sentinel implementation attempting to gather agreement on what is required for the partnership to manage ASB on a single system would be multiplied exponentially.

An alternative approach would be to create a set of standards which all systems implemented in the public sector must adhere to. This approach is likely to be much more palatable to organisations who would still retain the freedom to choose their own system, which they feel best fit their needs. The minimum standards would require extensive consultation and research to ensure they are not only achievable but allow agencies to share information with minimal cost. At the most basic level the system would require the ability to export data in a standardised format, which could be viewed by partner agencies. A suggested requirement would be for all systems to be able to receive a basic record from another agencies system. The ability to receive records from a partner agency allows work to be more appropriately allocated for example if the police receive a call about nuisance noise at an address, they will attend and carry out the required work. If in the course of the investigation they find issues with a vulnerable child this work might more appropriately be dealt with by social services. The ability to transfer the record to another agency allows the second agency to take control of the incident without having to duplicate the initial stages of the investigation.

A third option would be for all public sector agencies to export their data to a central data warehouse. This would incorporate the need for some form of standardisation in the creation of an export format. The central data could then be accessed by multiple agencies for review. This is effectively what the police have opted for in the creation of the PND (NPIA, 2011a). A central system however acts more as a repository of

information. It enables improved decision making by having greater access to information it does not maximise opportunities for joined up working.

8.1.5 Summary of Key Findings

Information Sharing = Motivation to Share – Cost of Sharing

Figure 8-1 Information Sharing Equation (created by Researcher)

Information sharing in its simplest form is brought down to the cost of sharing. The cost of sharing is evaluated by each individual and organisation involved in the sharing process. For information sharing to occur the cost of sharing needs to be below the individual or organisations motivational threshold.

8.2 Importance of Findings

Multi-agency information sharing is an important area of research for two reasons; cost saving and improving service to the public. Austerity measures are in place in the UK public sector and are set to continue until at least 2017 (BBC News, 2013). These measures are reducing funding available to public sector agencies to carry out their work. "In nonprofit organizations, decisions made by management are intended to result in providing the best possible services with available resources; and success is measured primarily in how much service the organisations provide and by how well the services are rendered" (Anthony and Herzlinger, 1980, p.31). The agencies must therefore find ways to work more efficiently and effectively with less available resource. One way suggested is for partnership agencies to work closer together to remove duplication of work (Department of Health, 2013).

A major problem that public agencies face is the need to make informed and timely decisions. "If the market has imperfect information then the market fails to act efficiently" (Coleman et al, 2009). Working more closely with partner agencies provides the potential for information sharing. Sharing information allows the agencies involved access to a larger amount of disparate information as shown in figure 8-1. This wider information pool provides the agencies with more information on which to base their decision making.

No information sharing between partners

NHS
?

Local Authority

Probation
?

OUTCOME = SEMI-INFORMED

Information sharing between partners

NHS

Local Authority

Probation

OUTCOME = FULLY INFORMED
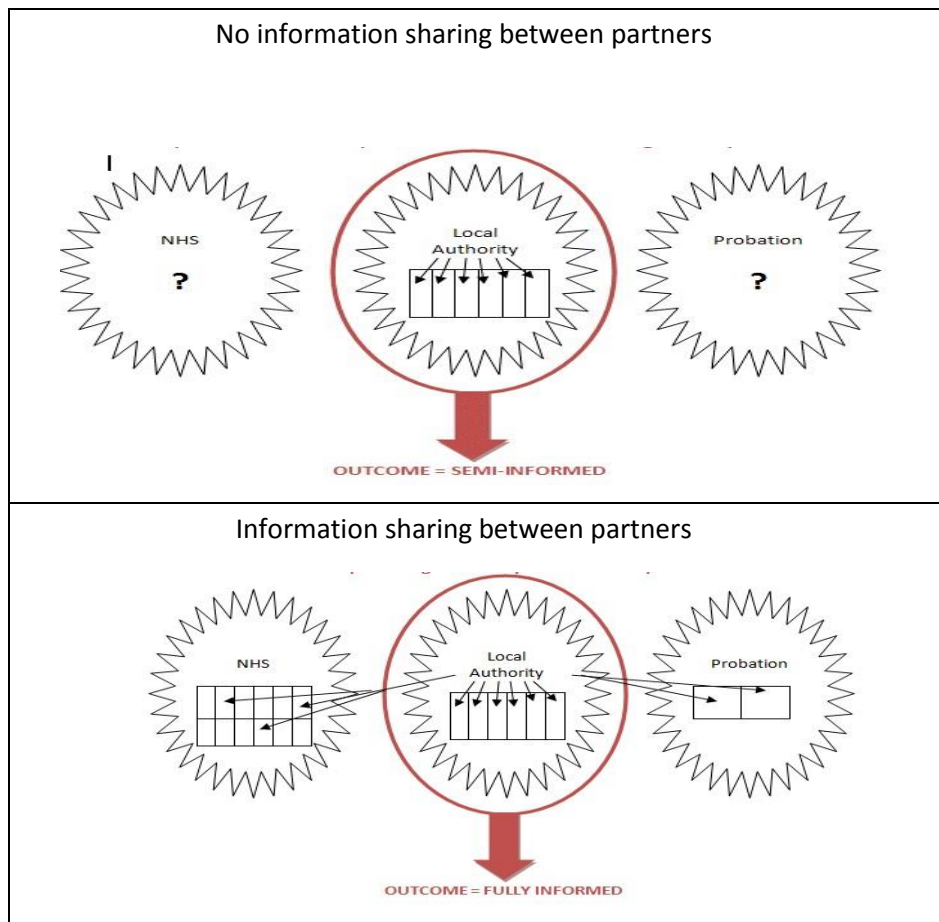
Figure 8-2 Semi and Fully Informed Decision Making Based on Partnership Information Access. (Cairns et al, 2011)

This research studied one example of public sector agencies working together to share information to improve the service they provide to the public they serve. The findings will impact future information sharing project by providing guidelines on areas for improvement and discussion whilst carrying out an information sharing project.

8.3 Similar Studies

Literature related to this study can be found from wide ranging fields of research due to the number of elements such a study includes; primarily technology, organisational behaviour and the specific process of information sharing. Studies with similar elements can be found in technology acceptance, influence and power struggles, public sector IT implementations, knowledge sharing, information sharing in the UK for child protection and US information sharing at fusion centres. Whilst all these areas of research link into this study the areas with the greatest similarities are found in UK child protection information sharing and the implementation of US fusion centres.

8.3.1 Post 9/11 US Information Sharing

The US information sharing environment post 9/11 terrorist attacks has similarities with this study. Research in the post 9/11 information sharing environment focused on the success of changes made at state and federal levels to improve sharing of intelligence between government agencies, with a focus on fusion centers. Fusion centers are hubs where representatives of various agencies are based to share information by co-location. A key finding of this research has been the importance of personal characteristics i.e. personal relationships. Joyal (2012, p.1) identified that "interpersonal relationships and trust lie at the core" and that whilst technology acts as an enabler to information sharing co-location is identified by those carrying out the sharing as the biggest enabler.

8.3.2 Information Sharing in UK Child Protection

Research into UK public sector information sharing focuses on child protection. Since the implementation of the Childrens' Act in 2004 information sharing between partner agencies has improved vastly. As with this study an external crisis prompted a need for change in working practices between agencies. The government in response to both the ASB and child protections crises introduced legislation stating local areas must initiate partnership committees (LSCB for child protection and CSPB for ASB). "The overall aim is to encourage integrated planning, commissioning and delivery of services as well as improve multi-disciplinary working, remove duplication, increase accountability and improve the coordination of individual and joint inspections in local authorities."(Department for Education).However a key difference between child protection and ASB information sharing is the lack of a legal precedence to share information. In the case of child protection agencies have explicit legislation in the Childrens' Act (2004) to share information. For ASB agencies must rely on vaguer statutes in the Crime and Disorder Act (1998) and Local Government Act (2000) which permit data/information sharing in the event that it prevents crime and disorder. This lack of explicit legislation can act as a deterrent to legitimate information sharing if agencies fear punishments for doing so. In this study the partnership implemented information sharing agreements and consulted directly with the ICO in an attempt to negate worries over the legality of information sharing between partners.

8.4 Summary

This chapter has highlighted the key findings of this research, highlighting the importance of colocation, appropriate bureaucracy and buy in for an information sharing project. The chapter also identified similar areas of research in American post 9/11 intelligence sharing and child protection in the UK public sector. The next chapter details how the aims and objective of the research were achieved and the limitations of the research.

9. Conclusions

9.0 Overview

This chapter summarises how the aims and objectives identified in chapter one were achieved (9.1). Recommendations identified from this research are presented in 9.2 with the research limitations discussed in section 9.3 and further work suggested in 9.4.

9.1 Achieving the Aims and Objectives

Three aims were identified for the research to align with the three phases of the project being studied; pre-implementation environment, system implementation and post implementation evaluation. The aims and related objectives are summarised in table 9-1 alongside a brief overview of how it was achieved.

Aim	Objectives	Achieved
To understand the current information sharing environment between Leicestershire Police and the local authorities with regards to Anti-Social Behaviour.	1. To review existing literature. 2. To identify relevant partner agencies.	Chapter 2 details the literature review carried out and Appendix F – SQM Paper (2011).
	3. To explore the current processes in place to share anti-social behaviour information with partners. 4. To explore to what extent the police and relevant partners share anti-social information. 5. To identify how the anti-social behaviour information currently being shared is used to tackle anti-social behaviour.	Chapter 4 Partnership Context details the relevant partners and processes existent in Leicestershire Community Safety Partnership pre-implementation of the single system.

	1. To analyse the governance in place for the development project.	Details of observed data in chapter 5 and creation of framework in chapter 6.
	2. To investigate how the governance in place for the project effects the development.	
To understand how a partnership develops and implements an information sharing system to share anti-social behaviour information.	3. To analyse how partners reach decisions related to developing the system.	Initial work presented at ICIME conference on how partners use power and influence to reach a decision. The ICIME paper is included in Appendix G. This work also forms part of the Control section (6.5.2.3)
	4. To map the impact of decisions made in the development stages.	Details of observed data in chapter 5 and creation of framework in chapter 6.
	5. To evaluate the processes in place, post system implementation to share anti-social behaviour information and how they have changed since the system implementation.	Feedback in chapter 7.

To identify the learning from the project to provide recommendations for future information sharing projects between partners.	1. To identify barriers to successful implementation of an information sharing system. To recommend factors for consideration at the different stages of project implementation. 2. To produce a framework of factors which impact an information sharing project. 3.	Chapter 6 and 7 details the framework created identifying the factors which impact an information sharing project.
	4. To recommend essential features and processes for an information sharing system.	Recommendations are given in section 9.2.

Table 9-1 Overview of Aims and Objectives and how they were Achieved

The research findings can be summarised with a simple equation that hides the complexities beneath (shown in figure 8-1). The importance of this simple equation is it highlights the relationship between motivation and cost of sharing. Prior to this research the organisations involved in the study were focused on the need to motivate staff to share information, ignoring reducing the cost to staff of sharing information. The information sharing analysis framework developed throughout this research identifies factors which will increase or decrease either the motivation to share or the cost of sharing. A key finding from this study identified that whilst technology can enable information sharing by reducing the cost of sharing, if motivation is high enough sharing will happen in spite of technological limitations. In certain circumstances technology may in fact hinder information sharing if there are concerns over the confidential nature of the information or how the information may be used by other parties. This has implications on information sharing projects as it highlights the need to consider factors other than the technological solution used to share information. The process of information sharing must be looked at holistically not solely from a technological standing.

At the initiation of the research three aims were identified:

1. To understand the current information sharing environment between Leicestershire Police and the local authorities with regards to Anti-Social Behaviour.

2. To understand how a partnership develops and implements an information sharing system to share anti-social behaviour information.

3. To identify the learning from the project to provide recommendations for future information sharing projects between partners.

The aims naturally aligned themselves to pre-implementation of Sentinel, implementation of Sentinel and post-implementation evaluation. The findings of the aims has been detailed throughout this thesis, for completeness a summary is given here of how these aims were achieved.

9.1.1 Pre-implementation

Prior to the implementation of Sentinel it was important to understand the base line the partnership were dealing with in Leicestershire and to identify what literature exists with relevance to this research. This was key in order to identify changes post Sentinels implementation. The objectives were:

1. To review existing literature

2. To identify relevant partner agencies

3. To explore the current process in place to share anti-social behaviour information with partners.

4. Explore to what extent the police and relevant partners share anti-social behaviour information.

5. To identify how the anti-social behaviour currently being shared is used to tackle anti-social behaviour.

Objective one was achieved through an extensive and thorough review of the academic literature, surrounding data and information sharing (not only in the public sector) this is detailed in Chapter two. A summarised review was also presented as a paper at SQM (2011). Chapter four Partnership Context details the results of participant observation which achieved objectives two, three, four and five. Extensive consultation between the police and members of the multi-agency project team identified which of the partners would be relevant to Sentinels implementation. This involved attending numerous multi-agency meetings as well as one on one meetings with council representatives in the early stages of the research including the researcher being involved in anti-social behaviour audits and shadowing officers (both police and council). In addition to achieving these objectives these early meetings helped to establish the relationships which then allowed the research to act as a participant observer. A much more in-depth understanding of the processes of anti-social information sharing surrounding JAGs (Joint Action Groups) and the integrated community safety board which identified the key threats per area was gathered than is presented in Chapter four. However chapter four details the pertinent information for the research presented in this thesis.

9.1.2 System Implementation

The second aim related to elements of the research which occurred during the implementation of Sentinel. The objectives were:

1. To analyse the governance in place for the development project.
2. To investigate how the governance in place for the project effects the development.
3. To analyse how partners reach decisions related to developing the system.
4. To map the impact of decisions made in the development stages.
5. To evaluate the processes in place, post system implementation to share anti-social behaviour information and how they have changed since the implementation.

Analysis of the governance (objective 1 and 2) is detailed in chapter five, specifically in the section 5.4.2 Bureaucracy and 5.5.6 Communication. The governance in place was one example of bureaucracy put in place by the project. Arguably the governance was over complicated by the police who felt the need to replicate the multi-agency governance internally. Though it should be borne in mind the police were the largest active partner in the project (2000 users versus the second biggest of approximately 20 users). The additional governance in the police meant that when other departments within the police such as IT needed to be consulted the process to do so already existed. Meaning often the police could more quickly respond to requests from the multi-agency project manager than other members of the partnership. This reflects one of the key findings of this research of positive bureaucracy. Having the processes in place to enable communication flow can enable the project, whether this is meetings or documentation.

Objective three was achieved through extensive attendance by the researcher at multi-agency groups including monthly reviews of the system development, IT workshops, training days and other miscellaneous meetings (detailed in Appendix A). This gave the researcher access to meetings where decisions impacting the system were made. The exposure to the decision making process allowed the researcher to present a paper (Appendix G) at the ICIME conference (2012) which analysed the influence tactics partners used in order to reach decisions. A summary of this is provided in section 6.5.2.3. Control.

Objective four was less successfully achieved than originally desired by the researcher. The hope was key decisions from the system development could be reviewed post system implementation with the key stakeholders to discuss their thoughts on how these decisions impacted the delivered information sharing process (both Sentinel as the system and the processes around it). The high turnover of personnel in the agencies meant this was not possible. The researcher's observations are presented in chapter five detailing

the themes found from the observed data and in the inclusion of elements in the framework in chapter 6. For example the inclusion of Legislation was specifically included as it was discovered late on in the project that legal documentation was required by the partnership to detail the security processes in place for the information stored on the system. This caused a delay to the system implementation which may have been avoided had this been considered earlier in the project.

Objective five again suffered from project delays meaning that when the researcher was nearing the end of their time with the police many of the agencies were still embedding processes and developing areas of the system. As such the post system evaluation was limited to the researchers' feedback from multi-agency representatives when gathering feedback on the information sharing framework detailed in chapter seven.

9.1.3. Post System

The final aim aligned to post system implementation. The identified objectives were:

1. To identify barriers to successful implementation of an information sharing system.
2. To recommend factors for consideration at the different stages of the project.
3. To produce a framework which impact an information sharing project.
4. To recommend essential features and process for an information sharing system.

Objectives one to three can be considered together as they all relate to elements involved in the creation of the information sharing framework. The identification of barriers began with the literature review detailing the known barriers from the academic literature. On analysing the observed data, themes were identified and grouped together. These groupings were compared with the literature and reviewed whilst developing the categorisations for the framework. The flip side to this was analysing the data for enablers to the project. These reviews identified the categories for inclusion in the framework and ultimately resulted in the information sharing framework presented in chapter six and refined in chapter seven.

The final objective was to identify essential features and processes for an information sharing system these are detailed in section 9.2.

9.2 Recommendations

Experiencing the implementation of an information sharing system highlighted some essential features for those wishing to implement a sharing system in the future. These are:

- Ability to identify source of information.

- Audit capability to identify who has accessed information.

- Ability to assign responsibility of information to another user/organisation.

- Ability to restrict access to certain information.

Throughout the participant observation the focus was on the Anti-Social Behaviour system being implemented, but the researcher had the opportunity to experience and discuss other information sharing initiatives taking place within the partnership. A reoccurring theme when discussing information sharing initiatives was that of co-location. Areas which utilised co-location (generally on a part time basis) felt they gained more benefit from part time co-location even as little as a half day a week than any other initiative. The co-location helped forge relationships between workers in the different agencies to a point where they almost became part of the other organisation. Co-location has appeared to be so successful in the areas of the partnership where it took place that nearly all other areas were looking to implement some form of co-location. One council in particular when designing their new offices took the concept of co-location on board specifically designing areas other agencies could come at work at as well as providing hot desk/offices for those people who co-located on a more regular basis. The agencies felt this co-location helped to break down the barriers between the agencies forging a more unified partnership with mutual responsibility.

The ability for public sector agencies to share information using technology is impacted severely by their ability to integrate their systems. Whilst programs at a national level such as the PSN (Public Services Network) are being carried out in order to better enable public services to use technology a wider scale review is required. This review should look not only at what systems can be put in place for public services to use but at how technology infrastructure is developed in the future. One suggestion is the development of minimum standards. If all agencies were at a minimum able to send and receive basic records from other agencies their cost of sharing information would be reduced and thus they would be more likely to share information. A second recommendation is that agencies working in local areas look to develop IT infrastructure in conjunction rather than in silos. This is more likely to result in agencies developing compatible systems both in terms of technology and data structures. It is also likely agencies would benefit from reduced costs by sharing these amongst multiple agencies.

9.3 Limitations

Any research study will be impacted by the environment in which it takes place. This environment will limit aspects of the research in various ways. The following limitations were identified in this research:

- Data collection techniques.

- Delays to the project.

- Need for positive spin

9.3.1 Data Collection Techniques

The information sharing system being implemented in Leicestershire is one of very few partnership systems implemented in the UK. At the outset of the research only two other police forces were known to be involved in similar information sharing projects; Hampshire and Lincolnshire. Hampshire have a form information sharing system implemented across the police and local government, but this system focuses on aggregating data sets for mapping data which the public can view. Each organisations systems remain separate and they do not work off single records, recording actions and updates. Lincolnshire were implementing the same system as Leicestershire but had a troubled implementation mainly due to resourcing. After initial communications, collaboration of Lincolnshire with Leicestershire and the researcher ceased. The researcher was able to have some brief communications with the Lincolnshire project but could not carry out any detailed data collection. In addition to the uniqueness of the information sharing project the time commitment required from using participant observation as a data collection technique meant it was not feasible for the researcher to commit to multiple information sharing projects.

Participant observation as a data collection technique has inherent limitations. Where possible the researcher attempted to negate these potential limitations. For example one drawback identified with participant observation is the potential for researchers to only view atypical situations or situations which are of interest to them (DeMunck and Sobo, 1998). In an attempt to minimise this, systematic observation (Jorgensen, 1989) was adopted with the researcher becoming a regular member of the police project team. This involved taking a day to day role in the project implementation and systematically attending meetings as opposed to just attending meetings on an ad-hoc basis.

The researcher was based mainly at the police organisation as one of the police representatives for the system implementation. It is therefore possible that representatives of partner organisations were influenced by the researchers' affiliation with the police. This may have impacted behaviours observed by the researcher. This effect was minimised due to repeated assertions in meetings and private conversations with representatives that the researcher was not affiliated with the police. Conversations with representatives and behaviours observed led the researcher to believe that observations were minimally affected by perceived affiliations to the police.

Carrying out research in the real world puts various restrictions on the researcher's ability to carry out research. Working within the police meant restrictions on research techniques that could be utilised. For example the researcher attempted to utilise focus groups to analyse differences in acceptance of the information sharing system based on time users had been exposed to the system. As the researcher had been involved in training many of the police officers, Leicestershire police requested a facilitator host the

focus groups to ensure officers could feed back freely. The researcher carefully identified individuals to attend the focus groups based on the officer role and the phase in which their LPU went live. In order to invite police officers to the focus groups these individuals needed to be assigned by central resource planners, rather than invited directly by the researcher. On providing the list to the resource planners the individuals invited to the focus groups were not those assigned by the researcher. Instead officers were assigned who were unsuitable for the purpose of the focus group. Another example caused by organisational delays within the police meant the survey which was to be used to generate discussion points for the focus group had not yet been analysed prior to the focus groups commencing. The pilot focus group showed the researcher that useful data was not being gathered, particularly in comparison to the resources required to carry out the focus groups. The researcher took the decision to cancel the rest of the focus groups. Focus groups were dismissed as a future data gathering technique due to the lack of autonomy the researcher would have in facilitating and organising the focus groups.

9.3.2 Project Delays

Initial plans for the project meant interfaces would be implemented in mid to late 2012. The researcher planned to investigate the differences in percentage of ASB data input onto the system by organisations with interfaces compared to those without. In addition to the percentages, differences in attitude to sharing and work processes were also to be investigated. It was hypothesised that interfaces would reduce the cost of sharing to both individuals and organisations and thus a higher percentage of ASB data would be shared. Delays in the system implementation meant no interfaces were implemented whilst the researcher was a participant observer at Leicestershire police. Only two interfaces had been implemented prior to the researcher's submission of this thesis; these were implemented in late 2013 post researcher's withdrawal from the police and day to day work on the project. The researcher was only able to gather anecdotal evidence to the changes in recording post implementation of the interfaces.

9.3.3 Positive Spin

Participant observation means the researcher is based within the setting of the research. The researcher was based at Leicestershire police between September 2010 and May 2013. The researcher was only able to observe behaviours which were presented. The partnership organisations when discussing or evaluating the system and project appeared to constantly feel the need to put a positive slant on evaluations of the project and system. For example reports produced for strategic boards highlighted positive aspects and minimally reported problems and concerns. This positive spin at times made gathering true opinions difficult as some project members were conditioned to provide a more positive view point.

9.4 Potential Further Work

There are four areas in particular the researcher has identified for furthering this study. These are:

- **Effects of integration –** the researcher hypothesises that reducing costs of information sharing increases the likelihood of information sharing. It is therefore expected that interfacing an information sharing system with existing systems will minimise the cost of sharing both to the individual and organisation, thus maximising the amount of information being shared. An extension to this could include the effects of sharing information where organisations utilise a CRM or central system rather than multiple systems.

- **Catalysts for information sharing** – this study identified the need for a crisis or directive from the government to act as a catalyst for information sharing. Analysing the effects of increased government directive to share information could identify ways to encourage information in the absence of a crisis.

- **Creation of standards** – Oliva (2005) identified creating standards would enable information sharing. This study has shown the problems encountered with data incompatibility between systems when sharing data. Investigating/creating standards for public sector systems could impact information sharing system.

- **Co-location –** this study highlighted how highly regarded co-location of partnership officers was to enabling information sharing. Investigating ways in which the benefits of co-location can be achieved in a technical solution represents an interesting research avenue.

9.5 Final Remarks

This study has identified numerous factors which impact information sharing in a multi-agency partnership setting. The framework and recommendations identified from this study can be used by future partnerships in an aim to achieve a better outcome and potentially avoid some issues encountered in this project. The framework can be further developed in future studies to look more closely at specific aspects of information sharing and in turn build on this as a foundation prompting further discussion and debate.

10. References

Ackoff, R. L. (1989). From Data to Wisdom. **Journal of Applied Systems Analysis.** 16, pp 3-9

Aagedal, J.O., den Braber, F., Dimitrakos, T., Gran, B.A., Raptis, D. and Stolen, K., (2002) Model-based risk assessment to improve enterprise security, **Proceedings of Enterprise Distributed Object Computing Conference** (**EDOC 2002**), pp.51-62

Agarwal, R. and Prasad, J., (1997). The Role of Innovation Characteristics and Perceived Voluntariness in the Acceptance of Information Technologies. **Decision Sciences**, 28(3), pp. 557-582.

Anti-Social Behaviour Act 2003. Great Britain. London:HMSO. Available at: http://www.legislation.gov.uk/ukpga/2003/38/contents [Accessed 10.10.2010].

Arbuthnot, K. (2008) "A Command Gap? A Practitioner's Analysis of the Value of Comparisons Between the UK's Military and Emergency Services' Command and Control Models in the Context of UK Resilience Operations". **Journal of Contingencies and Crisis Management**. 16 (4) pp.186 - 194

Argenti, P.A., and B. Druckenmiller (2004). _Reputation and the corporate brand,' **Corporate Reputation Review**, 6(4), pp.368-374.

Attarzadeh, I. and Ow, S.H (2008) New direction in project management success: Base on smart methodology selection, Proceedings of Information Technology International Symposium (ITSim) 26-28 Aug. 1, pp.1-9

Ayer, A.J. (2002). **Language, Truth and Logic (2nd Ed)**. Penguin: Harmondsworth.

Bandura, A., (1977). Self-Efficacy: Toward a Unifying Theory of Behavioral Change. **Psychology Review**, 84, pp. 191-215.

Barki, H. and A. Pinsonneault,(2002) **Explaining ERP Implementation Effort and Benefits With Organizational Integration**. Cahier du GReSI.

Barki, H. and A. Pinsonneault, (2005) A Model of Organizational Integration, Implementation Effort, and Performance. **Organization Science**. 16(2): p. 165- 179.

BBC NEWS (2003). Huntley guilty of Soham murders 17th December [online]. Available at: http://news.bbc.co.uk/1/hi/uk/3312551.stm [Accessed 01.05. 2011].

BBC NEWS. (2010). Leicestershire Police Told to Make Further Budget Cuts. 16th December [online]. Available at: http://www.bbc.co.uk/news/uk-england-leicestershire-12012152 [Accessed 06.01.2012]

BBC NEWS (2012). **Police and crime commissioner elections: Leicestershire. 19th October [online].** Available at: http://www.bbc.co.uk/news/uk-england-leicestershire-19486519 [Accessed 18.06.2013]

BBC NEWS (2013) **Budget 2013: George Osborne halves growth forecast but insists plan is working [online].** Available at: http://www.bbc.co.uk/news/uk-politics-21850011 [Accessed 02.04.2014]

BBC NEWS (2014) **Giant NHS Database Rollout Delayed 18th February [online].** Available at: http://www.bbc.co.uk/news/ health-26239532 [Accessed 02.04.2014]

Beach, L., (1998). **Image theory: theoretical and empirical foundations**. Mahwah, N.J. ; London: L. Erlbaum Associates Associates.

Bell, J. (1993) **Doing your Research Project. A Guide to First-time Researchers in Education and Social Sciences** (2nd edn). Buckingham: Open University Press

Bellinger, G., Castro,D. and Mills, A. (2004) **Data, Information, Knowledge, and Wisdom**. [online] Available at: http://www.systems-thinking.org/dikw/dikw.htm [Accessed 02.012013]

Berk, R.A. and Rossie, P.H. (1990). **Thinking About Program Evaluation.** Sage: California.

Bernard, H,R. (1998). **Handbook of methods in cultural anthropology**. AltaMira Press: Walnut Creek.

Bhoopalam, K.., Maly, K.., Mukkamala, R. and Zubair, R, M.,(2007). Framework for Information Sharing Across Multiple Government Agencies under Dynamic Access Policies. **The Second International Conference on Availability, Reliability and Security (ARES'07**), pp. 934-940.

Bichard, M., (2004). **The Bichard Inquiry Report**. London:HMSO. Available at: http://www.bichardinquiry.org.uk/10663/report.pdf [Accessed 10.06.2010].

Blaikie, N, (2007). Approaches to Social Enquiry: Advancing Knowledge. 2nd Ed. Cambridge: Polity.

Bock, G., Zmud, R., Kim, Y. and Lee, J., (2005). Behavioral Intention Formation in Knowledge Sharing: Examining the Roles of Extrinsic Motivators, Social-Psychological Forces, and Organizational Climate. **MIS Quarterly**, 29(1, Special Issue on Information Technologies and Knowledge Management), pp. 87-111.

Bogdan, R and Biklen, S.J (1982). Qualitative Research for Education: an Introduction to Theory and Methods. Allyn and Bacon.

Bond, S. (1993) **Experimental research nursing: necessary but not sufficient**. In: Kitson A (Ed) Nursing. Art and Science. Chapman and Hall: London.

Brehm, J. W. (1966). **A Theory of Psychological Reactance**. Academic Press.

Brennan, Z (2010) For sale: Your most intimate secrets... thanks to the national NHS database **Daily Mail.** 22nd April [online] Available at: http://www.dailymail.co.uk/news/article-1267892/Putting-health-records-nationalNHS-database-save-lives-deeply-disturbing-questions-remain.html> [Accessed 14.11.2012]

Brown, M.M. and Brudney, J.L., (2003). Learning Organizations in the Public Sector? A Study of Police Agencies Employing Information and Technology to Advance Knowledge. **Public administration review**, 63(1), pp. 30-43.

Bronowski, J. (1956) **The Common Sense of Science**. Pelican: London

Bryman, A (2004). **Social Research Methods (2nd Ed**). Oxford University Press.

Bryman, A., (2008). **Social Research Methods. (3rd ed**). Oxford: Oxford University Press.

Cabinet Office (2010) **Cabinet Office Security Policy Framework** [online] Available at: http://www.cabinetoffice.gov.uk/resource-library/security-policy-framework [Accessed 22.08.2012]

Cabinet Office (2011) **Big Society.** [online]. Available at: http://www.cabinetoffice.gov.uk/big-society [Accessed 01.06.2012].

Cabinet Office (2012) **The Public Services Network [online].** Available at: http://www.cabinetoffice.gov.uk/content/public-services-network [Accessed 20.11.2012]

Cabinet Office (2012a) Government ICT Strategy - Strategic Implementation Plan [online]. Available at: http://www.cabinetoffice.gov.uk/content/public-services-network [Accessed 20.11.2012]

Cairns, A., Jackson, T.W. and Cooke, L., (2011). The factors involved in sharing information between public agencies. IN: Dawson, R.J., Ross, M. and Staples, G. (eds). **Proceedings of Software Quality Management XIX: Global Quality Issues, 18th-19th April 2011, Loughborough, UK,** pp.403-419.

Cairns, A., Jackson, T. and Cooke, L., (2012). Determining tactics that influence partners in the creation of an interagency information sharing system. IN: Erkan, T.E. (ed.). **Proceedings of the 3rd International Conference on Information Management and Evaluation (ICIME), Atilim University, 2012**. pp.37-46.

Chalmers, D. (2002). **Philosophy of Mind: Classical and Contemporary Readings**. Oxford University Press: Oxford and New York.

Childers, T., (1989). Evaluative research in the library and information field. **Library Trends.** 38(2), pp.250267.

Children Act 2004. Great Britain. London:HMSO. Available at: http://www.legislation.gov.uk/ukpga/2004/31/contents [Accessed 01.06.2010].

Cilesiz, S. (2009). Educational computer use in leisure contexts: A phenomenological study of adolescents' experiences at Internet cafes. **American Educational Research Journal**, 46(1),pp. 232-274.

Clarke, A. (1999) ―A practical use of key success factors to improve the effectiveness of project management‖, **International Journal of Project Management**, 17(3), pp. 139-145.

Coghlan, D and Brannick, T. (2005) **Doing Action Research in Your own Organization**. Sage: London.

Coleman, J. (1993). Social Capital in the Creation of Human Capital, **American Journal of Sociology**, 94(S), pp. 95-120

Coleman D.W, Hughes A.A, Perry,W.D (2009), The Role of Data Governance to Relieve Information Sharing Impairments in the Federal Government, **2009 WRI World Congress Computer Science and Information Engineering**, vol 4 pp 267-271

Compeau, D.R. and Higgins, C.A. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. **MIS Quarterly**, 19(2), pp. 189-211.

Constant, D., Kiesler, S. and Sproull, L., (1994). What's Mine Is Ours or Is It? A Study of Attitudes about Information Sharing. **Information Systems Research.** 5, pp. 400-421.

Creswell, J. W. (1998). **Qualitative inquiry and research design: Choosing among five** traditions. SAGE: Thousand Oaks, CA.

Crime and Disorder Act 1998. (c1) Great Britain. London:HMSO. Available at: http://www.legislation.gov.uk/ukpga/1998/37/contents [Accessed 10.10.2010].

Crossan, F (2003)Research philosophy: towards an understanding [Online]. **Nurse Researcher**. 11(1). Pp. 4655. Available at: http://nurseresearcher.rcnpublishing.co.uk/archive/article-research-philosophy-towards-anunderstanding [Accessed 05.01.2013]

Crotty, M., (1998). The foundation of social research: meaning and perspectives in the research process. London: Sage Publications.

Cumbria County Council (n.d.) **Safeguarding Adults – Serious Case Reviews**. [online] Available at: http://www.cumbria.gov.uk/adultsocialcare/safeguarding/seriouscasereviews.asp [Accessed 08.11.2012]

Cusick, P. A. (1973). **Inside high school: The student's world**. Holt, Rinehart & Winston: New York.

D'Astous, A., Colbert, F. and Montpetit, D. (2005). Music piracy on the web - how effective are anti-piracy arguments? evidence from the theory of planned behaviour. **Journal of Consumer Policy**, 28(3), pp. 289-310.

Data Protection Act (1998). Great Britain. London:HMSO. Available at: http://www.legislation.gov.uk/ukpga/1998/29/contents [Accessed 04.06.2011]

Davis, F., (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology**. MIS Quarterly**, 13(3), pp. 319-340.

Davis, F.D., Bagozzi, R.P. and Warshwaw, P.R., (1992). Extrinsic and Intrinsic Motivation to Use Computers in the Workplace1. **Journal of Applied Social Psychology**, 22(14), pp. 1111-1132.

Dawes, S.S., (1996). Interagency information sharing: Expected benefits, manageable risks. John Wiley & Sons, Inc.

Deloitte (2010) **Reducing Costs in Public-Sector Organisations in an Age of Austerity [online]**. Deloitte, LLP. Available at: http://www.deloitte.com/view/en_GB/uk/industries/government-publicsector/3fdbb107c8b67210VgnVCM100000ba42f00aRCRD.htm [Accessed 23.05.2013]

deMunck, V, C.. & Sobo, E, J., 1998. **Using methods in the field: a practical introduction and casebook.** AltaMira Press: Walnut Creek, CA.

Denscombe, M (2002) Ground Rules for Good Research: A 10 Point Guide for Social Researchers. Open University Press.

Department of Health (2013) **Making Sure Health and Social Care Services Work Together.** Available at: https://www.gov.uk/government/policies/making-sure-health-and-social-care-services-work-together [Accessed 25.02.2014]

Denzin, K .,(1978), **The Research Act**. McGraw Hill: New York.

Denzin NK, Lincoln YS (1998) **The Landscape of Qualitative Research**. Sage: London.

Department for Educaiton (2004) **The Childrens Act Report** [online] http://www.dcsf.gov.uk/childrenactreport/ [Accessed 14.01.2011]

Department of Education, (2006). **Every Child Matters**. Available at: http://education.gov.uk/publications/standard/publicationDetail/Page1/DFES-0012-2006 [Accessed 04.18. 2011].

DeWalt, K.M. and DeWalt, B.R. (1998). Participant observation. In H. Russell Bernard (Ed.), **Handbook of methods in cultural anthropology** (pp.259-300). AltaMira Press: Walnut Creek.

DeWalt, K. M., & DeWalt, B.R., (2002). **Participant observation: a guide for fieldworkers**. AltaMira Press: Walnut Creek, CA.

Dey, I., (1993), **Qualitative Data Analysis: A User-Friendly Guide for Social Scientists**. Routledge.

Drake, D., Steckler, N. and Koch, M., (2004). Information Sharing in and Across Government Agencies: The Role and Influence of Scientist, Politician, and Bureaucrat Subcultures. **Social Science Computer Review.** 22(1), pp. 67-84.

Easterby-Smith, M et al (1997) **Management Research: an Introduction**. Sage: London.

Easton, V.J. and McCall, J.H (n.d.). **Statistics Glossary**. [online] Glasgow University. Available at: http://www.stats.gla.ac.uk/steps/glossary/basic_definitions.html#popn [Accessed 03.01.2013]

Emiliani, R (2007) **Real lean.** Wethersfield, Conn: Center for Lean Business Management.

Engage in the Visual Arts (n.d.) **Young People and the Arts: Policy, Initiatives and Opportunities** Available at: www.engage.org/downloads/Initiatives_Summary.doc [Accessed 19.10.2012]

Equality and Human Rights Commission. (EHRC) (2012) **Hidden in Plain sight inquiry into disabilityrelated harassment.** Available at: http://www.equalityhumanrights.com/uploaded_files/disabilityfi/ehrc_hidden_in_plain_sight_3.pdf [Accessed 01.10.2012]

Erhenrich, B. (2001). **Nickle and dimed: On not getting by in America**. Metropolitan Books: New York, NY.

eVALUEd (2006). **An Evaluation Toolkit for e-Library Developments**. [online]. Available at: http://www.evalued.bcu.ac.uk/tutorial/4b.htm [Accessed 03.01.2013]

Eveleens, J. Laurenz, and Verhoef, C (2010). The rise and fall of the Chaos report figures. **IEEE software** 27(1) pp. 30-36.

Extreme Programming (2009) **Agile Software Development: A Gentle Introduction** [online]. Available at: http://www.agile-process.org/ [Accessed 02.01.2013]

Fidgeon, T (2011). Ethnography – when and how to use. [online]. Available at: http://www.spotlessinteractive.com/articles/usability-research/ethnography-when-and-how-to-use.php [Accessed 11.11.2012]

Fisbein, M. and Azjen, I. (1975). Belief, attitude, intention and behavior : an introduction to theory and research. Reading, Mass. ; London: Addison-Wesley.

Freedom of Information Act (2000). Great Britain. London:HMSO. Available at: http://www.legislation.gov.uk/ukpga/2000/36/contents [Accessed 04.06.2011]

French, J.R.P Jr and Raven, B.H. (1959) The Bases of Social Power. In Cartwright, D (Ed),**Studies in Social Power**. (pp. 150-167). Ann Arbor, MI: Institute for Social Research.

Fuchs, E. (1966). **Pickets at the gate**. Free Press: New York.

Galegher, J., Kraut, R.E. and Egido, C., (1990). **Intellectual teamwork : social and technological foundations of cooperative work**. Hillsdale, N.J.: L. Erlbaum Associates.

George, J. (2004). The theory of planned behavior and internet purchasing**. Internet Research**, 14(3), pp. 198212.

GHTF (Global Harmonization Task Force). (2004) **Quality Management Systems - Process Validation Guidance** [online] 10 (2) Available at: http://www.imdrf.org/docs/ghtf/final/sg3/technical-docs/ghtf-sg3-n9910-2004-qms-process-guidance-04010.pdf [Accessed 25.04.2014]

Gibbert, M. and Krause, H. (2002). ‗Practice exchange in a best practice marketplace,‗ in **Knowledge management case book: Siemen Best Practices**, Davenport, T.H and Probst, G.J.B. (eds.). Publicis Corporate Publishing, Erlangen, Germany.

Gibbs ,A. (1997)**. Focus Groups Social research Update Issue 19b** [online]. Available at: http://sru.soc.surrey.ac.uk/SRU19.html [Accessed 18.5.2012]

Glass, R. (2005) IT Failure Rates—70% or 10–15%. *IEEE Software*, May pp. 110–112.

Glass, R (2006) The Standish Report: Does It Really Describe Software Crisis?. **Communications of the ACM**. 49(8), pp. 15–16.

Goodley, D. (n.d.?). **Ethnography: A Teaching Resource**. [online]. Available at: http://www.leeds.ac.uk/disability-studies/archiveuk/goodley/Ethnography.pdf [Accessed 09.01.2013]

Goss J.D & Leinbach T.R. (1996). Focus groups as alternative research practice. **Area 28** (2) pp. 115-23.

Goulding, C. (2005). Grounded theory, ethnography and phenomenology. **European Journal of Marketing** (39) 249-308.

Greenwood, D.J, and Levin, M. (1998). **Introduction to Action Research: Social Research for Social Change.** SAGE Publications: Thousand Oaks.

Griffin, R.W and Putsay, M.W (2005) **International Business** [4th Ed]. Pearson: Prentice Hall.

Griffiths, J. M., & King, D. W. (1991). **A manual on the evaluation of information centers and services**. American Institute of Aeronautics and Astronautics Technical Information Service: New York.

Hale, J.L.; Householder, B.J. & Greene, K.L. (2003). The theory of reasoned action. In J.P. Dillard & M. Pfau (Eds.), **The persuasion handbook: Developments in theory and practice** (pp. 259–286). Thousand Oaks, CA: Sage.

Halliday, J. Asthana, S and Richardson, S. (2004) "Evaluating Partnership The Role of Formal Assessment Tools." **Evaluation** 10.3 pp.285-303. Available at: http://www.uk.sagepub.com/upmdata/44744_halliday_evaluating_partnership.pdf [Accessed 25.04.2014]

Hammersley, M. (1990). **Reading ethnographic research: A critical guide**. London: Longma

Hammersley, M. and Gomm, R. (1997) 'Bias in Social Research' **Sociological Research Online**, 2 (1), Available at: http://www.socresonline.org.uk/2/1/2.html [Accessed 01.03.2014]

Handy, C.B. (1976). **Understanding organizations**. Harmondsworth: Penguin Education.

Harris, N.D., (2000) Intergovernmental Cooperation in the Development and Use of Information Systems, in **Handbook of Public Information Systems**, G.D. Garson, Editor. Marcel Dekker: New York.

Hatala, J.P. and Lutta, J., (2009). **Managing information sharing within an organizational setting: A social network perspective.** John Wiley & Sons, Inc.

Hazleton, V. and Kennan, W. (2000). Social Capital: Reconceptualizing the Bottom Line. **Corporate Communications: An International Journal**, 5(2), pp. 81-86.

Health Comitee. (2003). **The Victoria Climbie Inquiry Report**. London:HMSO. Available at: http://www.publications.parliament.uk/pa/cm200203/cmselect/cmhealth/570/570.pdf [Accessed 20.11.2012] Henn, M., Weinstein, M., and Foard, N. (2006). **A Short Introduction to Social Research**. London: Sage.

Antony, R.N and Herzlinger, R.E (1980) **Management control in nonprofit organizations**. R. D. Irwin

HMIC (Her Majestys Inspectorate of Constabulary) (2010) **Anti-social Behaviour: Stop the Rot**. London:HMSO. Available at: http://www.hmic.gov.uk/media/stop-the-rot-20100923.pdf [Accessed 11.10.2012]

HMIC (Her Majestys Inspectorate of Constabulary) (2012) **A Step in the Right Direction: Policing Anti-social Behaviour**. London:HMSO. Available at: http://www.hmic.gov.uk/media/a-step-in-the-right-directionthe-policing-of-anti-social-behaviour.pdf [Accessed 11.10.2012]

HMIC (Her Majestys Inspectorate of Constabulary) (2012a) Anti-social behaviour [online]. Available at: http://www.hmic.gov.uk/programmes/anti-social-behaviour/ [Accessed 11.10.2012]

HMIC (Her Majestys Inspectorate of Constabulary) (2012b) **Policing in Austerity: One Year on Leicestershire Police [online].** Available at: http://www.hmic.gov.uk/media/leicestershire-policing-in-austerityone-year-on.pdf [Accessed 18.06.2013]

Health Committee (2003) Victoria Climbie Inquiry Report [online] Available at:

http://www.publications.parliament.uk/pa/cm200203/cmselect/cmhealth/570/570.pdf [Accessed 10.01.2011]

Her Majestys Government. (2010). **The Coalition: our programme for government** [online]. Available at: http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/documents/digitalasset/dg_18787__6.pdf [Accessed 09.01.2013]

Her Majestys Government (2012) **Official Prince Website**. Available at: http://www.prince-officialsite.com/. [Accessed 02.01.2013]. Last Updated: 10.12.2012.

Her Majestys Treasury. (2010). **The Spending Review Framework**. Cm7872. London:HMSO.

Hernon, P. (1991). **The Elusive Nature Of Research In LIS**. In Library And Information Science Research: Perspectives And Strategies For Improvement, eds. C.R. Mclure & P. Hernon, Ablex Publishing Corporation: Norwood, NJ, pp. 3-4.

Homeland Security. (n.d.) **Fusion Center Locations and Contact Information** [online]. Available at: http://www.dhs.gov/fusion-center-locations-and-contact-information [Accessed 15.10.2012]

Home Office (2008) **Crime in England and Wales 2007/2008.** London. Available at: http://webarchive.nationalarchives.gov.uk/20110218135832/rds.homeoffice.gov.uk/rds/pdfs08/hosb0708.pdf [Accessed 20.11.2012]

Home Office. (2010). **Information Sharing for Community Safety**. [online] Availabe at: http://www.homeoffice.gov.uk/publications/crime/info-sharing-community-safety/ [Accessed 09.01.2013]

Home Office.(n.d.) **Trailblazers** [online] Available at: http://www.homeoffice.gov.uk/police/street-level-crimemaps/trailblazers/ [Accessed 01.11.2012]

Home Office (n.d.) Community Safety Partnership [online] Available at: http://www.homeoffice.gov.uk/crime/partnerships/ [Accessed 25.01.2013]

Home Office Development and Practice Report (2004). **Defining and Measuring Anti-Social Behaviour**. London:HMSO. Available at: http://www.homeoffice.gov.uk/publications/science-research-statistics/researchstatistics/crime-research/dpr26?view=Binary [Accessed 20.11.2012]

HM Treasury (2012) **Transparency [online**]. Available at: http://www.hm-treasury.gov.uk/psr_transparency_index.htm [Accessed 15.05.2013]

Hood, J.C (2006) Teaching Against the Test: The Case of Qualitative Methods. **Teaching Sociology**. 34 (3) pp.207-223.

Hughes J (1994) **The Philosophy of Social Resear**ch. Longman: Essex.

Husserl, E (trans D Carr) (1970) **Logical investigations.** Humanities Press: New York.

ICO (Information Commisioners Office) (2010) **First monetary penalties served for serious data protection breaches** [online]. Available at: http://www.ico.gov.uk/~/media/documents/pressreleases/2010/first_monetary_penalties_press_release_2411201 0.ashx [Accessed 02.11. 2011]. Last updated 11.24.2010

Independent Police Complaint Commissioner (IPCC) (2011) IPCC publishes Fiona Pilkington investigation report. Available at: http://www.ipcc.gov.uk/news/Pages/pr_240511_pilkington.aspx [Accessed 08.11.2012] Last updated 24.05.2011

Isaac, S., & Michael, W. B. (1997). **Handbook in research and evaluation: A collection of principles, methods, and strategies useful in the planning, design, and evaluation of studies in education and the behavioral sciences. (3rd Ed.).** Educational and Industrial Testing Services: San Diego.

ISO 27000 Directory (2009) **An Introduction to ISO 27001, ISO 27002....ISO 27008 [online].** Available at: http://www.27000.org/ Accessed 17.06.2013

Jacobson, J., Millie, A. and Hough, M. (2008) Why Tackle Anti-social Behaviour? In: Squires, P. (Ed) **ASBO Nation the Criminalisation of Nuisance**. Policy Press, pp. 37-56.

Johnson, A & Sackett, R (1998). **Direct systematic observation of behavior**. In H. Russell Bernard (Ed.), Handbook of methods in cultural anthropology (pp301-332). AltaMira Press: Walnut Creek.

Jorgensen, D.L. (1989). Participant Observation A Methodology for Human Studies. Applied Social Research Methods Series Volume 15. SAGE.

Jorgensen, M. and Molokken, K. How Large Are Software Cost Overruns? A Review of the 1994 Chaos Report. **Information and Software Technology.** 48(8) pp. 297–301.

Jorgensen, M and Molokken, K. (2006) . How Large Are Software Cost Overruns? A Review of the 1994 Chaos Report, **Information and Software Technology.** 48(8), pp. 297–301.

Joyal, R.G. (2012): How far have we come? Information sharing, interagency collaboration, and trust within the law enforcement community. **Criminal Justice Studies: A Critical Journal of Crime, Law and Society.** 25(4) pp.1-14

Kaplan, B. and Harris-Salamone, K. D. (2009). Health IT success and failure: recommendations from literature and an AMIA workshop. **Journal of the American Medical Informatics Association**, 16(3),pp.291-299.

Kitzinger J.(1995) Introducing focus groups. **British Medical Journal** (311) pp.299-302.

Koch, J. and Feingold, B. (2006). Enginnering a Poem: An Action Research Study**. Journal of Technology Education.** 18 (1) pp. 54-65.

Kolakowski, L (1993). **An Overall View of Positivism**, in Social research: philosophy, politics and practice, ed M Hammersley, Sage, London

Kolekofski Jr., K.E and Heminger, A.R (2003) Beliefs and attitudes affecting intentions to share information in an organizational setting. **Information & Management,** 40 (2003) pp.521–532

Krauss , S. (2005). Research Paradigms and Meaning Making: A Primer. **The Qualitative Report** (10) 4. Pp.758-770

Krueger, R.A & Casey, M.A. (2000). **Focus Groups: A Practical Guide for Applied Research (3rd eds)** . Sage.

Lau, F., Straub, D. and Hayward, R. (2001). Fostering an Internet-Based Work Group in Community Health Through Action Research. **Journal of Healthcare Information Management**. 15 (3)

Landsbergen , Jr,D. and Wolken JR., G., (2001). Realizing the Promise: Government Information Systems and the Fourth Generation of Information Technology. **Public administration review**, 61(2), pp. 206-220.

Leavitt, H. J. (1951). Some effects of certain communication patterns on group performance. **The Journal of Abnormal and Social Psychology.** 46(1), p.38-51.

Leicestershire City Council (2013). **About Us** [online] Available at: http://www.leicester.gov.uk/aboutus/ Accessed: 11.03.2013

Leicestershire Constabulary (2011). Internal Procedure for Major Crime Investigations.

Leicestershire County Council (2010) Code of Practice for Travellers [image] http://www.leics.gov.uk/index/community/gypsies_and_travellers-2/code_practice_travellers.htm Available at: Accessed 14.11.2012 Last Updated 5.12.2012

Leicester Mercury (2012). Police Warning Budget Cuts are Harming Ability to Fight Crime. 31st July. [online]. Available at: http://www.thisisleicestershire.co.uk/Police-warning-budget-cuts-harming-ability-fight/story16618440-detail/story.html [Accessed 22.11.2012]

Leicestershire NHS Partnership (2012) **About Us** [online] Available at: http://www.leicspart.nhs.uk/_aboutus.aspx [Accessed 14.11.2012]

Leicestershire Police (n.d). Internal Major Crime Investigation Review Procedure.

Leicestershire Police (2011) **Internal NSIR documentation**.

Leicestershire Police, (2011a), **Leicestershire Police History**. [online]. Available at: http://www.leics.police.uk/about/3_our_history/ [Accessed 04.03.2011].

Leicestershire Police, (2011b), **Leicestershire Police**. [online]. Available at: http://www.leics.police.uk/ [Accessed 04.03.2011].

Leicestershire Police, (2011c) **Leicestershire Police Our People**. [online] Available: <http://www.leics.police.uk/about/4_our_people/> [Accessed 04.03/2011].

Leicestershire Police, (2012), **A Police Service for Everyone**. [online]. Available at: http://www.leics.police.uk/about-us/ [Accessed 20.11.2012].

Leicestershire Police (2012). **The Savings Challenge.**

Leicestershire Police Authority (2012) **Policing Plan 2012** [online]. Available at: http://www.leics.police.uk/media/uploads/library/file/Policing_Plan-2012_2013-300312.pdf [Accessed 18.06.2013]

Levinson, M (2009) Recession Causing Rising IT Project Failure Rates. **CIO.** 18th June. [online] Available at: http://www.cio.com/article/495306/Recession_Causes_Rising_IT_Project_Failure_Rates_ [Accessed 14.11.2012]

Lester, S, (1999). **An introduction to phenomenological research** [online]. Taunton UK, Stan Lester Developments Available at: www.sld.demon.co.uk/resmethy.pdf,> [Accessed 4.5.12]

Letourneau, N. and Allen, M. (1999) Post-positivistic critical multiplism: a beginning dialogue. **Journal of Advanced Nursing**. 30 (3). pp.623-630

Liao, L.F (2006) A learning organization perspective on knowledge-sharing behavior and firm innovation **Human Systems Management** 25, pp. 227–236

Lin, C.P (2007) To Share or Not to Share: Modeling Tacit Knowledge Sharing, Its Mediators and Antecedents **Journal of Business Ethics**, 70, pp.411–428

Local Government Act 2000. Great Britain. London:HMSO. Available at: http://www.legislation.gov.uk/ukpga/2000/22/contents [Accessed 17.04.2014].

Local Safeguarding Children Board (LSCB) Haringley (n.d.) **Serious Case Reviews**. Available at: http://www.haringeylscb.org/index/scr.htm [Accessed 08.11.2012]

Lock, D. (2007) **Project Management [9th Edition].** Gower Publishing Ltd

Lord Laming, (2009). **The Protection of Children in England: A Progress Report**. London:HMSO.

Lowe, J. (2010). Public Sector Projects Thinking across Five Dimensions**. Presentation from Public Sector Project Management Conference December 2010.** Available at: http://www.publicserviceevents.co.uk/ppt/PPM_Joseph_Lowe.pdf [Accessed 20.11.2012]

Lussier, R.N and Achua, C.F. (2012) **Leadership: Theory, Application and Skill Development**.[5th Ed]. Cengage Learning.

MacIntosh J. (1981). Focus groups in distance nursing education, **Journal of Advanced Nursing**(18) pp.198185.

Maddock, S. and Morgan, G. (1999). **Conditions for Partnershi**p. Manchester Business School.

Magnanti, B. (2005). **The intimate adventures of a London call girl**. London, UK: Weidenfeld & Nicolson. (Re edited and published in the United States as Belle De Jour: Diary of an unlikely call girl, 2006, New York, NY: Grand Central)

Marsh, D. & Furlong, E. (2002). Ontology and Epistemology in Political Science' in Marsh, David and Stoker, Gerry: **Theory and Methods in Political Science**. Palgrave Macmillan.

Mason, J. (2002). **Qualitative Researching**. Sage Publications: London.

May, T. (2010) **Moving Beyond the ASBO [online]** Available at: http://www.homeoffice.gov.uk/mediacentre/speeches/beyond-the-asbo [Accessed 25.01.2013]

Mayer, R., Davis, J. and Schoorman, F. (1995). An Integrative Model of Organizational Trust. **The Academy of Management Review,** 20(3), pp. 709-734.

Mays, N. and Pope, C. (1995). Researching the parts that other methods cannot reach; an introduction to qualitative methods in health and health services research. **British Medical Journal**. 311. Pp. 42-45.

McNiff, J. (1988) **Action Research: Principles and Practice**. Macmillan: Basingstoke.

Milne, J. 1999. **Evaluation Cookbook** [online]. Available at: http://www.icbl.hw.ac.uk/ltdi/cookbook/info_questionnaires/index.html [Accessed 7.5.2012]

Moccia, P. (1988) A critique of compromise: beyond the methods debate. **Advances in Nursing Science**. 10 (4) pp.1-9.

Moore, G. and Benbasat, I.,(1991). Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. **Information Systems Research**, 2(3), pp. 192-222.

Morse, J., Barrett, M., Mayan, M., Olson, K. and Spiers, J. (2002) Verification Strategies for Establishing Reliability and Validity in Qualitative Research **International Journal of Qualitative Methods**, 1(2)p.13-22.

Morton, A. (1999). Ethics in action research. **Systematic Practice and Action Research**, 12(2), pp. 219-222.

Mullins, L.J (2001) **Management and organisational behaviour**. Financial Times/Prentice Hall

Myers, M. D. (1997). Qualitative Research in Information Systems [online]. **MISQ Discovery**, Available at: http://www.qual.auckland.ac.nz/, [Accessed 20.4.2011].

NahapietT, J. and Ghoshal, S., (1998). Social Capital, Intellectual Capital, and the Organizational Advantage. **The Academy of Management Review, 23**(2), pp. 242-266.

Narciso, C. and Verner, J.M. (2009) Why did your project fail?.**Communications of the ACM** 52(12) pp.130134

National Policing Improvement Agency (NPIA). (2008) **Baseline Review of the National Standard for Incident Recording.** Available at: http://www.nypa.gov.uk/CHttpHandler.ashx?id=1443&p=0 [Accessed 20.10.2013]

National Policing Improvement Agency (NPIA). (2011) **The National Standard for Incident Recording.** Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/116658/countnsir11.pdf [Accessed 12.03.2012]

National Policing Improvement Agency (NPIA). (2011a) **Impact Program**. [online] Available at: http://www.npia.police.uk/ [Accessed 15.1.2011]

National Society for the Prevention of Cruelty to Children (NSPCC). (2010) **Serious Case Reviews – NSPCC Factsheet**. [online] Available at: http://www.nspcc.org.uk/inform/research/questions/serious_case_reviews_wda70252.html Last Updated March 2010 [Accessed 08.11.2012]

Newton, I (1846) **The Mathematical Principles of Natural Philosophy.** Trans. by Motte, A.

NGfL (National Grid for Learning). (2004). **Research Methods** [online]. Available at: http://www.ngflcymru.org.uk/vtc/ngfl/psychology/learn_train/research_methods/208E70A8-8FBD-45C2-8DC2A212F1991377/s03research_methods/070a_semistruct.htm [Accessed 18.5.2012]

NHS. (2001). **Home Dialysis: Who Cares for the Carer?**[online] Available at: http://www.kidneycare.nhs.uk/news_events/news/who_cares_for_the_carer__an_ethnographic_understanding_of_the_role_of_carers_in_home_dialysis/ [Accessed 06.01.2013]

Neuman, L. (2007). **Basics of social research: qualitative and quantitative approaches**. Pearson: Boston.

Newell, S. Robertson, M., Scarbrough, H. and Swan, J. (2002). **Managing Knowledge Work.** Palgrave Macmillan.

Oakley, A.(2000). **Experiments in Knowing: Gender and Method in Social Sciences.** Cambridge:Polity Press

Oates, B.J. (2006). **Researching Information Systems and Computing**. Sage Publications: London.

Office of National Statistics (2012) **Crime in England and Wales, Quarterly First Release to March 2012.** London. Available at: http://www.ons.gov.uk/ons/dcp171778_273169.pdf [Accessed 11.10.2012]

Oliva, L. (2005). 21st Century Challenges to Sharing Information. **Information Resources Management Journal**, 18(4).

Osborne, D and Gaebler, T. (1992), **Reinventing Government**. Addison-Wesley:Reading, MA.

Oxford Dictionary (2009) **Definition of Reputation** [Online]. Available at: http://oxforddictionaries.com/definition/english/reputation?q=reputation.

Oxford Dictionary (2012) **Definition of Credibility** [online]. Available at : http://www.oxforddictionaries.com/definition/credibility?view=uk [Accessed 16.05. 2012].

Oxford Dictionary (2012a) **Definition of Motivation** [online]. Available at: http://oxforddictionaries.com/definition/english/motivation?q=motivation [Accessed 13.05. 2012].

Oxford Dictionary (2012b) **Definition of Research** [online]. Available at : http://oxforddictionaries.com/definition/english/research?q=research [Accessed 16.05. 2012].

Parahoo, A.K. (1997). **Nursing Research, Principles, Process, and Issues**. MacMillan: London.

Pan, S. and Scarbrough, H. (1998). A Socio-Technical View of Knowledge Sharing at Buckman Laboratories. **Journal of Knowledge Management**, 2(1), pp. 55-66.

Pan, S. and Scarbrough, H. (1999). Knowledge Management in Practice: An Exploratory Case Study **Technology Analysis & Strategic Management**, 11(3), pp. 359-374.

Parlimentary Office of Science and Technology (POST) (2003) **Government IT Projects**. Available at: http://www.parliament.uk/documents/post/pr200.pdf [accessed 03/08/2012]

Payle, J.F. (1995) Humanism and positivism in nursing. **Journal of Advanced Nursing**. 22, pp. 979-984.

Peat, J., Mellis, C., Williams, K. and Xuan W.(2002), **Health Science Research: A Handbook of Quantitative Methods.** Sage: London.

Pfeffer, J. (1978). **The external control of organizations : a resource dependence perspective**. New York: Harper & Row.

Philips. D. (1990) **Post-positivistic science myths and realities**. In Guba E (Ed) The Paradigm Dialog.Sage: Newbury Park.

Pickard, A.J. (2007). **Research Methods in Information**. Facet Publishing.

Police.UK (n.d.). **Police.UK** [online]. Available at: http://www.police.uk/ [Accessed 09.01.2013]

Polit DF et al (2001) **Essentials of Nursing Research: Methods, Appraisal and** Utilisation. Lippincott: Philadephia,

Popper, K. (1959) **The Logic of Scientific Discovery**, Hutchinson: London.

Powell R.A., Single H.M. & Lloyd K.R. 1996. Focus groups in mental health research: enhancing the validity of user and provider questionnaire. **International Journal of Social Psychology** 42 (3) pp.193-206

Power, R. (1989). Participant Observation and its Place in the Study of Illicit Drug use. **British Journal of Addiction.** 84. Pp. 43-52.

Prior, D. and Paris,A. (2005) **Preventing Children's Involvement in Crime and Anti-Social Behaviour: A literature Review.** A paper produced for the National Evaluation of the Children's Fund Institute of Applied Social Studies. University of Birmingham. Available at: https://www.education.gov.uk/publications/eOrderingDownload/RR623.pdf [Accessed 11.10.2012]

Putnam, R. (1993). The Prosperous Community: Social Capital and Public Life. **The American Prospect**, 13, pp. 65-78.

PRINCE2. (2013) **PRINCE2 [online].** Available at: https://www.prince2.com/ [Accessed 03.02.2013]

Proctor S (1998) Linking philosophy and method in the research process: the case for realism. **Nurse Researcher**. 5, (4), 73-90.

Race K.E., Hotch D.F. and Parker T. (1994). Rehabilitation program evaluation: use of focus groups to empower clients. **Evaluation Review.** 18 (6). Pp.730-40.

Rad, A.M.M and Yarmohammadian, M.H (2006) "A study of relationship between managers' leadership style and employees' job satisfaction", **Leadership in Health Services**, 19 (2), pp.11 – 28

Rappoport, R.N. (1970). Three dilemmas in action research. **Human Relations**, 23(4), pp. 499-573. Cited in Easterby-Smith, M., Thorpe, R. and Jackson, R.R. (2008), Management Research, 3rd Ed., Sage, London.

Rawson, D. (1994) ‗Models of interprofessional work: likely theories and possibilities‗, in Leathard A. (ed.), **Going Inter-Professional: Working Together for Health and Welfare**, London, Routledge, pp. 38–63.

RCGP (2009) **Care of Children and Young People v1.2.** Available at: http://www.rcgp.org.uk/gp-trainingand-exams/gp-curriculum-overview/~/media/Files/GP-training-and-exams/Curriculum%20previous%20versions%20as%20at%20July%202012/RCGP-Curriculum-8-Care-Of-Children-and-Young-People-2009.ashx [Accessed 10.01.2011]

Reichardt, C. S., and Rallis, S. F. (1994). The Relationship Between the Qualitative and Quantitative Research Traditions. In C. S. Reichardt & S. F. Rallis (Eds.), **The Qualitative-Quantitative Debate: New Perspectives** (pp. 5-11). San Francisco: Jossey Bass Publishers.

Reeves, S, Kuper, A & Hodges, B,D. 2008. Qualitative research methodologies: ethnography. **BMJ (British Medical Journal)** 337, pp.512-514.

Richards, L, and Richards, T. (1990). **The Transformation of Qualitative Method** in Feilding, N,G and Lee, R.M Using Computers in Qualitative Research**.** London: Sage.

Richardson, J.T.E. (1999). The Concepts and Methods of Phenomenographic Research. **Review of Educational Research.** 69 (1) pp.53-82.

Richardson, S. and Asthana, S. (2006). Inter-agency Information Sharing in Health and Social Care Services: The Role of Professional Culture. **British Journal of Social Work**, 36(4), pp. 657-669.

Riege, A., (2005). Three-dozen knowledge-sharing barriers managers must consider. **Journal of Knowledge Management**, 9(3), pp. 18-35.

Robson, C. (2011). **Real World Research (3rd ed)**. Wiley : Chichester

Rogers, E.M. (1962). **Diffusion of Innovations**. New York: The Free Press.

Rogers, E.M. (1995). **Diffusion of Innovations (4th Ed)**. New York: The Free Press.

Rossi, PH & Freeman, H.E. (1993). **Evaluation: A Systematic Approach**, Sage:CA

Royal College of General Practitioners (RCGP) (2007) **Care of Children and Young People**. [online] Availabe at: http://www.rcgp.org.uk/gp-training-and-exams/gp-curriculum-overview/~/media/Files/GP-training-andexams/Curriculum%20previous%20versions%20as%20at%20July%202012/RCGP-Curriculum-8-Care-OfChildren-and-Young-People-2009.ashx [Accessed 19.10.2012]

Rubinstein, D. (2007). Standish group report: There's less development chaos today. **Software Development Times.** 1st March [online]. Available at: http://www.sdtimes.com/link/30247 [Accessed 20.11.2012]

Russell, C.K. and Gregory, D.M. (2003). Evaluation of Qualitative Research Studies. **Evidence Based Nursing**. 6. pp. 36-40.

Rutland County Council (2011) **About Rutland County Council.** [online] Available at: http://www.rutland.gov.uk/council_and_democracy/about_rutland_county_council.aspx [Accessed 14.11.2012]

Sapphire (n.d.) **CLAS/RMADS** [online] http://www.sapphire.net/clas-rmads-7/accreditation-informationsystems-74.html [Accessed 04.10.2012]

Schein, E., (1996). Three Cultures of Management: The Key to Organizational Learning. **Sloan management review**, 38(1), pp. 9-20.

Schensul, S. L.; Schensul, S. J. & LeCompte, M D. (1999). Essential ethnographic methods: observations, interviews, and questionnaires (Book 2 in Ethnographer's Toolkit). AltaMira Press: Walnut Creek, CA.

Schwandt, T (2001). **Dictionary of Qualitative Inquiry**. Sage Publications: Universtiy of Michigan.

Shapiro, S. (1987). The social control of impersonal trust. **American Journal of Sociology**, 93, p.623-658.

Shane, J. M. (2010). Organizational stressors and police performance. **Journal of Criminal Justice**, 38(4), pp. 807-818.

Sheppard, B.H.; Hartwick, J. & Warshaw, P.R (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. **Journal of Consumer Research**, 15, pp.325–343.

Silver, H. (2004). **Evaluation Research in Education.** [online]. University of Plymouth. Available at: http://www.edu.plymouth.ac.uk/resined/evaluation/index.htm#1 [Accessed 05.01.2013]

Slayton, J. (2000). Establishing and maintaining interagency information sharing. US Department of Justice, Office of Justice Programs, **Office of Juvenile Justice and Delinquency Prevention**.

Smith, M.J. (1998) **Social Science in Question**. London, Sage.

Snape,D . & Spencer,L .(2003). The foundations of qualitative research. In: Stewart, D.W and Shamdasani, P.N 1990 **Focus Groups: Theory and Practice**. Newbury Park, CA:Sage.

Spender, J.C. (1996) "Organizational knowledge, learning and memory: three concepts in search of a theory",

Journal of Organizational Change Management, 9(1), pp.63 – 78

Somerville, I **(2010) Software Engineering (9th Ed)** Addison Wesley

Standish Group (2003) **CHAOS Chronicles** [online]**.** The Standish Group International. Available at: http://www.standishgroup.com/chaos/introduction.pdf [Accessed 14.11.2012]

Standish Group (2009) **10 Laws of CHAOS**. The Standish Group International.

Stewart, D.W and Shamdasani, D.W (2006). **Focus Groups: Theory and Practice (2nd Ed)**. Sage.

Stringer, E.T.. (2007). **Action Research 3rd eds**. SAGE: London

Tarde (1903) **The Laws of Imitation.** H. Holt and Company: New York.

Taylor, S. and Todd, P.A. (1995). Understanding Information Technology Usage: A Test of Competing Models. **Information Systems Research**, 6(2), pp. 144-176.

Telegraph (2009), Mother and daughter who burned to death: 'no excuses' says Alan Johnson. 29th September [online]. Available at: http://www.telegraph.co.uk/news/uknews/6241791/Mother-and-daughter-who-burned-todeath-no-excuses-says-Alan-Johnson.html [Accessed 11.02.2011]

Teoa, T., Limb, V. and Lai, R. (1999). Intrinsic and extrinsic motivation in Internet usage. **Journal of Management Science**, 27(1) pp. 25-37.

Thomas, R. and Walport, M. (2008). **Data Sharing Review**. Royal Academy of Engineering.

Thomas, S. (2009). **How to do Your Research Project**. SAGE: London.

Thompson, R., Higgins, C. and Howell, J. (1991). Personal Computing: Toward a Conceptual Model of Utilization. **MIS Quarterly**, 15(1),. pp. 125-143.

Toffler, A. (1970). **Future Shock**. Turtleback Books.

Triandis, H., (1979). Values, attitudes, and interpersonal behavior. **Nebraska Symposium on Motivation**, 27, pp. 195-259.

Tsai, W. and Ghosal, S. (1998). Social Capital and Value Creation: The Role of Intrafirm Networks. **The Academy of Management Journal**, 41(4), pp. 464-476.

Rees, J., Mullins, D and Bovaird, T (2012). "Third Sector Partnerships for Public Service Delivery: An evidence review." **Third Sector Research Centre, London, Working Paper 60** (2012).

Upadhyayula, R. S., & Kumar, R. (2004). Social capital as an antecedent of absorptive capacity of firms. **DRUID Summer Conference on Industrial Dynamics, Innovation and Development**, Elsinore, Denmark.

University of Cambridge. (n.d.). Ethical considerations for action-based management research. [online]. Available   at: https://camtools.cam.ac.uk/wiki/site/e30faf26-bc0c-4533-acbc-cff4f9234e1b/actionbased%20management%20research.htm [Accessed 08.01.2013]

University of Manchester Glossary (n.d.) **Glossary**. Available at: http://www.psych-sci.manchester.ac.uk/actnow/glossary [Accessed 16.5.2012]

University of Maryland. (2001). **Ethnographic Methods** [online]. Available at: http://otal.umd.edu/hcirm/ethno.html [Accessed 09.01.2013]

U.S. Dept. of Justice, Office of Justice Programs. (n.d.) **Fusion Centers and Intelligence Sharing** Available at: http://www.it.ojp.gov/default.aspx?area=nationalInitiatives&page=1181 [Accessed 15.10.2012]

US GAO (General Accounting Office). (2003). **Federal Programs: Ethnographic Studies' can Inform Agencies' Actions.** [online]. Available at: http://www.gao.gov/new.items/d03455.pdf [Accessed 09.01.2013]

Van Eyk, H. and Baum, F., (2002). Learning about interagency collaboration: trialling collaborative projects between hospitals and community health services**. Health & Social Care in the Community.** 10(4), pp. 262269.

Van Maanen, J. (1996). **Ethnography**. In: A. Kuper and J. Kuper (eds.) The Social Science Encyclopedia (2nd ed) pp.263-265. Routledge: London.

van Manen, M. (1990**). Researching lived experience: Human science for an action sensitive pedagogy**. State University of New York Press: Abany, NY

van Teijlingen, E., Hundley, V. (2001) The importance of pilot studies. **Social Research Update**. 35. Available at: http://aura.abdn.ac.uk/bitstream/2164/157/1/SRU35%20pilot%20studies.pdf [Accessed 4.3.2012]

Vangen, S and Huxham, C. (2003) Nurturing Collaborative Relations : Building Trust in Interorganizational Collaboration. **Journal of Applied Behavioral Science**. 39, p.5-31.

Venkatesh, V. and Bala, H., (2008). Technology Acceptance Model 3 and a Research Agenda on Interventions. **Decision Sciences**, 39(2), pp. 273-315.

Venkatesh, V. and Davis, F. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. **Management Science**, 46(2), pp. 186-204.

Venkatesh, V., Morris, M., Davis, G. and Davis, F. (2003). User Acceptance of Information Technology: Toward a Unified View. **MIS Quarterly**, 27(3), pp. pp. 425-478.

Wallace, D. P., & Van Fleet, C. (2001). **Library evaluation: A casebook and can-do guide**. Libraries Unlimited: Englewood, CO.

Walliman, N. S. R., (2006). **Social research methods**. SAGE: London.

Waters-Adams, S. (2006). **Action Research in Education.** [online]. University of Plymouth. Available at: http://www.edu.plymouth.ac.uk/resined/actionresearch/arhome.htm#LIMITATIONS AND CRITICISMS OF ACTION RESEARCH [Accessed 08.01.2013]

Watt, N. (2010) **David Cameron reveals 'big society' vision – and denies it is just cost cutting. The Guardian. 19th July [online]** Available at: http://www.guardian.co.uk/politics/2010/jul/19/david-cameron-bigsociety-launch [Accessed 13.06.2013]

Web Centre for Social Research. (2006). **Evaluation Research. [online].** Available at: http://www.socialresearchmethods.net/kb/evaluation.php [Accessed 12.11.2012]

Webb, C. (1989). **Action research: philosophy, methods and personal experience**. In: Kitson A (Ed) Nursing. Art and Science. Chapman and Hall: London.

Weiss, C. H. (1998). **Evaluation: Methods for studying programs and policies** (2nd ed.). Prentice Hall: NJ.

Weiss, J.A., (1987). Pathways to cooperation among public agencies. **Journal of Policy Analysis and Management.** 7(1), pp. 94-117.

Widen-Wulff, G. (2007). **The challenges of knowledge sharing in practice: a social approach**. Chandos Publishing: Oxford.

Willer, D, Lovaglia, M.J and Markovsky, B (1997) Power and Influence a Theoretical Bridge. **Social Forces.** 76 (2), pp.571-603.

Wilson, E. and Lankton, N. (2004). Modeling Patients' Acceptance of Provider-delivered E-health. **Journal of the American Medical Informatics Association**, 11(4), pp. 241.

Wilson, J.Q (1989) Bureaucracy**: What Government Agencies Do and Why They Do It? [2nd Ed].** Basic Books, Inc.

Whitehead, T.(2003). What is Ethnography?**. Ethnographically Informed Community and Cultural Assessment Research Systems (EICCARS) Working Paper Series** Available at:
http://www.cusag.umd.edu/documents/WorkingPapers/EpiOntAttrib.pdf [Accessed 4.5.12]

Whitehead, T. (2005). Basic Classical Ethnographic Research Methods. **Ethnographically Informed Community and Cultural Assessment Research Systems (EICCARS) Working Paper Series** Available at :
http://www.cusag.umd.edu/documents/WorkingPapers/ClassicalEthnoMethods.pdf [Accessed 4.5.2012)

Williams, T (1997) Interorganisational Information Systems: issues affecting interorganisational cooperation. **Journal of Strategic Information Systems,** 6 , pp.231-250

Wolfinger, N.H. (2002). On Writing Fieldnotes: Collection Strategies and Background Expectancies. **Qualitative Research**. 2.(1). Pp. 85-95.

Woolcock, M. and Narayan, D. (2000). Social Capital: Implications for Development Theory, Research, and Policy. **The World Bank Research Observer**, 15(2), pp. 225-249.

Xpert HR Online HR Intelligence (2011). **Labour Turnover rates: XpertHR Survey 2011** [online]. Available at:
http://www.xperthr.co.uk/article/109819/.aspx. [Accessed 07.01.2013]

York University (2006) **Social Cognitive Theory** [online]. Available at:
http://www.istheory.yorku.ca/socialcognitivetheory.htm [Accessed 05/16, 2011]. Last Updated 02.02.2006

York University (2005) **Theory of Planned** Behaviour [online] Available at:
http://www.istheory.yorku.ca/theoryofplannedbehavior.htm [Accessed 17.04.2014]. Last Updated 17.09.2005

Zheng, L, Yang, T-M, Pardo, T and Jiang, Y (2009) Understanding the Boundary in Information Sharing and Integration. **Proceedings of the 42nd Hawaii International Conference on System Sciences – 2009**

Zimmermann, K , Hurtig, J. and Small, E. (2006). **Tools of the Trade: A CWIT Guide to Participatory Evaluation [online].** Available at: http://www.uic.edu/depts/crwg/cwitguide/01_EvalGuide_title&intro.pdf [Accessed 7.5.2012]

Zuber-Skerritt, O. and Perry, C. (2002). Action Research Within Organisations and University Thesis Writing**. The Learning Organisation**. 9(4). Pp.171-9

Appendix A – Meeting Summary

Meeting	Organisations Involved	Frequency	Purpose
Multi-agency Project Team	- Blaby - Charnwood Borough Council - Charnwood Neighbourhood Housing - Harborough - Hinckley & Bosworth - North West Leicester Oadby & Wigston - Melton Mowbray - Rutland - Police - Leicester City* *although invited did not begin attendance until April/May 2012*	Monthly – from 10/01/12 to on-going	Provide updates each organisation on what is required for project implementation updates from organisation on their ability to implement the software.
Police Project Team	- Police	Monthly – February 2011-March 2012 Bi-monthly – May 2012 – on-going	Strategic leads from the force covering learning and development, analysts and BCU commanders from each area meet monthly to be kept up to date on the project and provide assistance where required to remove blockages from the project team.

| Police Working Group | • Police | Monthly – January 2011 to June 2012

Fortnightly – June 2012 to October 2012

Monthly - October 2012 – March 2013. | Active project team to implement the system to the police.

Carries out tasks required to implement the software and embed within the police. |
|---|---|---|---|
| Project Issue Meetings | • Police
• Charnwood Borough Council | Ad – hoc between June 2011 and October 2012

At least once a fortnight in this time. | Each meeting addressed a specific issue which was threatening the project. |
IT Workshop	• Blaby • Charnwood Borough Council • Charnwood Neighbourhood Housing • Harborough • Hinckley & Bosworth • North West Leicester Oadby & Wigston • Melton Mowbray • Rutland • Police • Leicester City Council	1 day 21/04/2011	Identify IT requirements for system implementation and provide an opportunity for discussion by the IT professionals around the implementation.
System Readiness Meetings	• Police	Ad-hoc look for exact dates	Review the system/upgrades prior to implementation.
Training	• Police • Councils	August 2011 - 2 weeks	Train front line officers both council and police in the use of the system at various user levels.

		October 2011 –	
		2 weeks	
		December 2011 –	
		2 weeks	
		Ad-hoc days	
		throughout January	
		2012 to April 2012	
Security Meetings	• Police • Charnwood Borough Council • PEN Testing Company	05/09/2011 23/09/2011 06/10/2011 2012	Review meeting post security testing by an external company to identify potential weak spots hackers could use to enter the system.
HMIC Pre-Inspection Visits (Police)	• Police	Ad hoc (January 3rd to 5th)	To understand the level of understanding by the LPUs of ASB and related concepts including where implemented the Sentinel system.
Supplier 6 Weekly Reviews	• Charnwood Borough Council • Police • Software Developers	29/06/2011 06/10/2011 6 weekly – June 2012 – March 2013	Updates on reported errors and outstanding work e.g. interfaces, plus updates on system updates the company are looking to implement.
Supplier Meetings (police contract work)	• Police • Software Developers	½ day 7/8/2012 ½ day 26/9/2012 ½ day 20/10/2012	Scope and progress upgrade work to the Sentinel.
ASB SPOC meetings (Police)	• Police	Ad-hoc	Provide updates to the identified specialised ASB resources at the Police LPUs. Also utilised to gather feedback and prioritise work.
Site Reviews (Council)	• Blaby • Charnwood Borough Council	½ Day at each between 26/6/12 and 25/7/12	Identify where the organisations have reached in terms of inputting 100% of ASB

	• Charnwood Neighbourhood Housing • Harborough • Hinckley & Bosworth • NorthWest Leicester • Oadby & • Wigston • Melton Mowbray • Rutland • Leicester City		records onto Sentinel. Calculate percentage of records being input by each organisation and what plans are in place to get closer to 100%.
12 Month Hot Debriefs	• Police	Ad hoc (22/10/12 to 26/10/12)	Gather views of the system from users to identify acceptance of the system.

RMADs Creation	• Researcher (police
	• representative)
	• Multi-agency
	    project
	    manager
	• Data Protection Officer
	• (police)
	• Data Protection Officer
	• (Charnwood)
	• External Mentor
		May 2011 to September 2011	Identify required security procedures, document and audit partners.

PSD Security and Audit Review	• Police • Charnwood Borough Council	Ad hoc as required	Review policies and system security

Appendix B- Charnwood Sentinel Process

Charnwood Borough Council Sentinel Process

Calls coming through CRM relate to departments such as:
- Green Spaces
- Cleansing
- Street Management

Calls not coming through CRM go directly to the relevant departments for example:
- Environmental Health
- Housing
- Community Safety

Call

Has call come through LAGAN (CRM)?

Yes

Details of call input into LAGAN (CRM) and assigned to workflow

LAGAN (CRM)

This update is sent as soon as the call is logged in LAGAN

Dept works on call

Update sent

Updates LAGAN Call

POLICE

Manual Input

No

Dept records details of call

Non-environmental Health Calls

Is dept receiving call environmental health?

Environmental Health Calls ONLY

Details of call manually input

Details Input manually

SENTINEL

FLARE

Export of Sentinel Records

Weekly export of FLARE

ICSB

ASB Analysis Charnwood Borough Council

Appendix C – Copy of User Acceptance Survey

Organisation:	o	Police	o	Council	o	Blaby
					o	Charnwood
					o	City Council *
					o	Harborough
					o	Hinckley
					o	Loughborough

				o	Melton
				o	North West Leics
				o	Oadby & Wigston
				o	Rutland
Role	o	Analyst	o	ASB Manager	
	o	CF Sgt/SPOC	o	Community Saftey/ASB Officer	
	o	LPO	o	Housing Officer	

	o	PBO/PCSO
	o	Neighbourhood Sgt
	o	Other
What training did you attend?	o	Full day at Police HQ
	o	LPO Briefing At Station/Euston St
	o	Local Input by SPOC/ Administrator
	o	None

Approximately how long have you spent logged in to Sentinel?	o	0 minutes
	o	Under 10 minutes
	o	11-30 minutes
	o	31-60 minutes
	o	1-2 hours
	o	2 hours - full day
	o	1-5 days
	o	More than 5 days
Approximately how may records have you accessed/input?	o	0
	o	1 to 4
	o	5 to 9

	o	10 to 14
	o	15-19
	o	20+
Compared to CIS/previous ASB recording system eg. FLARE, how long does it take to input an ASB case?	o	+ 30 minutes
	o	+ 25 minutes
	o	+ 20 minutes
	o	+ 15 minutes
	o	+ 10 minutes
	o	+ 5 minutes
	o	Same

	o	- 5 minutes
	o	- 10 minutes
	o	- 15 minutes
	o	- 20 minutes
	o	- 25 minutes
	o	- 30 minutes
If quicker, why?	o	Easy to identify repeat victims/offenders
	o	Easy to use

	o	Integrated ASB tasks
	o	Other
Please Specify (if other)		
If slower, why?	o	Integrates tasking of partners (saves time overall)
	o	Need to Double Key
	o	Other
	o	Poor Design
	o	Still Getting Accustomed to System
	o	Unsure of Process
Please Specify (if other)		
Scale Questions:		

Disagree Fully	Disagree Slightly	Agree	Agree Fully	N/A

		Slightly		
Sentinel improves the service a victim receives from the partnership				
o	o	o	o	o
Why do you say that?				
Sentinel improves my ability to deal with threat, risk and harm				
o	o	o	o	o
Why do you say that?				
Sentinel improves my ability to identify repeat & vulnerable victims				
o	o	o	o	o
Why do you say that?				
Sentinel improves my ability to identify repeat perpetrators				
o	o	o	o	o
Why do you say that?				

I am better able to assess the risks of an ASB incident since Sentinel has been implemented o	o	o	o	o
Why do you say that?				
Sentinel better allows me to implement the incremental approach o	o	o	o	o
Why do you say that?				
Sentinel increases my ability to share information about ASB with partners o	o	o	o	o
Why do you say that?				
Since Sentinels implementation I am better informed about ASB in my area o	o	o	o	o

Why do you say that?	
Free Text Replies	
What positives (if any) has Sentinel brought to your role?	
What negatives (if any) has Sentinel brought to your role?	
Any suggestion for improvement or further comments?	

Appendix D – Semi-Structure Interview Plan

Discussion - General introductions and catch up on how Sentinel is going.

Questions - Review of project and system:

- What was the most positive factor/what most enabled the implementation of Sentinel?

- What eased its implementation in your organisation?

- What was the biggest hindrance?

- If you were to repeat a similar project what learning(s) would you take from Sentinel's implementation.

- Has information sharing around ASB changed since Sentinel's implementation?

  - o What has changed?

  - o Has the system helped?

Discuss - Introduction to Information Sharing Project framework and general overview.

Questions – Framework:

- Which factor on the framework do you feel most enabled Sentinels/information sharing implementation?

  - o How? Why?

- Which factor on the framework do you feel most hindered Sentinels/information sharing implementation?

  - o How? Why?

- Is there any elements of the framework you feel you did not experience during the project?

- Is there any elements you feel are missing from the framework which you experienced during the project?

- Are there any terms which are misleading?

- Do you think utilising the framework at the start of the Sentinel project would have had an impact?

  - o How? Positive/Negative?

- Any other thoughts or feedback.

Appendix E – Field Diary Extracts

16-30 Jan
- LPO training.
- Rewriting paper for Turkey on power and influence tactics utilised by partners.

Feb 6-10

2nd Sentinel user group, and this time the project group were invited. The user group was hosted by a CBC representative (Mark) rather than the PM as they had to be elsewhere This did result in much better and open minded discussions around the faults with the system

Most users raised a desire for more training on the reporting functions and a general feeling the ad hoc reporting is too complicated for users.

It has also been noted that some reports only provide data for certain LPU's e.g. even though the lead officer

field is completed for all records, but when a report is run only LC, LO and LM based records bring back this info. It appears to be yet more sloppy programmi[ng]

14-19
- Blaby training day.
- Kal and Zoe

One LPU (Blaby) are struggling with Sentinel as such they have requested I attend their neighbourhood training day. I attended this for an hour to field questions and show some tips for using the system.

In attendance at this training session was the police authority representative for the area. After the training he spoke to me about Sentinel and his concerns over the claims given during the Pilkington enquiry that Sentinel would fix the problems. He also mentioned the system looks old fashioned clunky.

you can't help but know whats going on and share information with people.

The county LPU LO generally liked the idea of Sentinel, but the application itself was not currently sufficient.

Jan $ 9-14

Unfortunately the multiagency PM arranged the first Sentinel user group without (GDT) inviting anyone from the Police project team. (SPOCs had been invited). This meant no-one from the project team was aware the user groups had even began I only found out the user group had occurred in a reply from WB on another email subject entirely saying "as you are aware the user group took place last week". I was very annoyed as not only did I lose the ability to present police issues I also lost a valuable research meeting.

This was brought to the attention of the police PM who put an angry call into WB basically stating it is for the police to decide who attends the user groups.

WB had invited all the ASB SPOC meaning there were 9 police invitees. Not a sustainable option over the life time of Sentinel and public sector cuts. This would need to increase to 14 once the city were also live. The decision has been made that the city and county ASB SPOCs will attend along with representation from the project team.

CrimeReports

Attend CrimeReports presentation by Hampshire which is part of the gov. transparency program. It looks to map partnership data on google maps for easy consumption by the public. It also has a powerful and extremely simple to use analytical tool.

6th Oct 2011

Crunch Meeting

After a pre meet where there was no chance the Police would be going live We are going live on Monday Every ultimatium made has been empty threats No genie, no single sign on, no confidence in system, and no time to test as site will not be ready until Monday morning yet still Go Live is set to go ahead

To provide a more balanced view of this the serious security flaws Vantage have said they will be able to fix pre go live → However the other issues still remain.

Police however want PEN testing pre go live PM has felt this is unneccessary, and the police are just attempting to delay yet again. ∴ agreed can go live without retest as PEN tester will do a quick check on Monday afternoon to check the issues identified are fixed

Police are unhappy to go live without Genie, however again the PM feels this is unnecessary as there is a search facility within Genie. However in short term (8-10 weeks) they can live with it.

The police have identified a list of errors which PM believes are not errors, as such these are not reasons not to go live.

Conference call scheduled for Mon 10th to agree a go live on Tuesday. I am away next week so could be interesting on return to see how this pans out.

Appendix F – SQM Paper

The Factors involved in Sharing Information between Public Agencies

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Abstract

With the increasing move to partnership working in the public sector this paper looks at the main barriers in place which reduce the chances of Public Agencies working together. Agencies such as the Police, Local Councils, Youth Services and Health Services would like to work closer to improve their ability to serve the public whilst reducing the costs associated with this. A review of the literature along with personal experience from talking to and working with these agencies has identified the key elements affecting data and information sharing. The paper has found that whilst the agencies themselves are able to work on many of the barriers to data and information sharing the Data Protection Act 1998 continues to act as a deterrent.

1.0 Introduction

The technological world of 1998 was very different from that existing now in 2011. The growth of the Internet and Smart phones has moved information to a point where it is now expected to be instantaneously available anytime, anywhere. Information has now become a resource in its own right. 'New information needs to be disseminated continually to key individuals within organizations and as a result is treated as an economic resource' [1]. This has ramifications for organisations that need to ensure that their systems are able to provide this. Not only do their systems need to be able to provide this but they need to ensure they are legally allowed to do this.

A major problem that Public Agencies in particular are facing is to make informed and timely decisions they need to ensure they have all relevant information available. For example, a local housing authority is rehousing a single man in his 30's who has recently been released from prison. The housing authority would like access to the criminal history of this man so they can make an informed decision as to where to place him. If he had been in prison for drug related crime, they may want to avoid areas of high drug crime, if it was for a child abuse crime they would want to avoid areas near schools or community centres. In any circumstance the housing authority are likely to want to avoid housing the man near his victims. This is information that the housing authority will not have access to. Other Public Agencies such as Probation or the local Police will have this information but under the Data Protection Act [13] conditions 2, 3 or 5 neither the Police nor the Probation Service could lawfully pass on the information.

'If the market has imperfect information then the market fails to act efficiently.' [2]
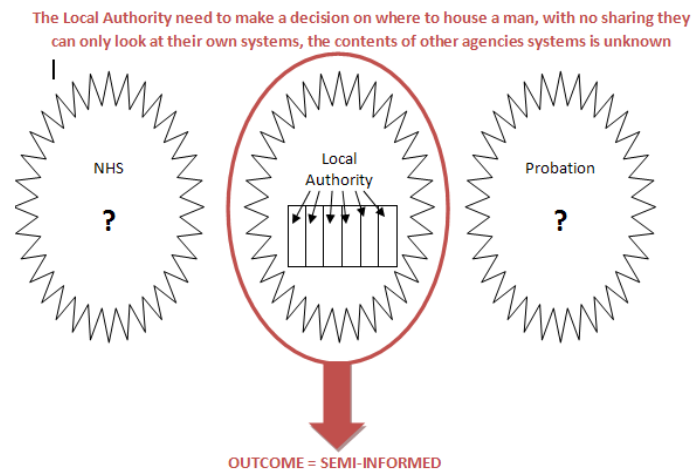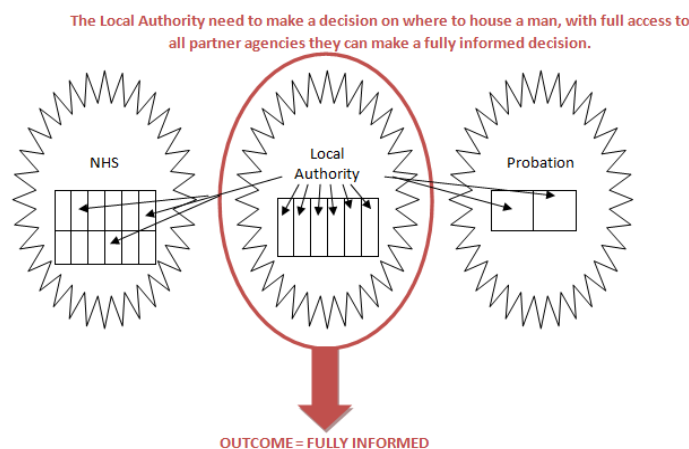
Figure 1 Semi-informed decision

Figure 2 Fully Informed decision

A fully informed process requires information sharing between agencies. From an information perspective the ideal situation is real time access to all partners' systems. This would ensure timely and accurate decision making.

This paper begins by identifying three case studies where information sharing between Public Agencies was suboptimal and why there is now 'strong pressures from central government to increase inter-organizational information exchange.' [3]. The paper then discusses the role of the Data Protection Act in Public Agency interagency information sharing and the success story of the Childrens' Act 2004[14]. Factors affecting the success of information sharing are then identified and discussed. Finally the paper concludes with a short discussion on who needs to deal with each of the influencing factors.

2.0. Case Studies: The Need to Share Information between Agencies

Without access to other agencies' systems you may never know what you do not know. Whilst access to the other agencies' system is not required the relevant data from that system must be provided in a timely manner. People can then be confident they have access to all data/information that could be relevant to make a fully informed decision. This is particularly pertinent with the likes of the Soham case [15] in 2002. Huntley had come to the attention of Humberside Police and Humberside County Council Social Services on multiple occasions but was never convicted. Huntley applied for a caretaker job at a school in Cambridgeshire under a different name where the CRB (Criminal Records Bureau) check would have gone through Cambridgeshire Police. The Bichard inquiry [16] carried out following the Soham case showed that actions and decisions taken prior to the murders were made on the basis that those acting had all available information and people were working to the best of their knowledge. Without access to other sources they simply did not know that there was other information they should be considering before acting. From the Major Case Review carried out post trial it became evident that although not the fault of the Police Forces, if other systems and process been in place they

may have been able to reduce the chances of this happening. This was highlighted in Thomas and Walports' Data Sharing Review [4] 'The results of the Bichard inquiry show that better use of information might have prevented the Soham murders'. Another key message of the Bichard Inquiry was the finding that 'an IT system capable of allowing police intelligence to be shared nationally is a priority.'

The Pilkington case [17] in October 2007 involved the suicide of a mother and daughter as a result of repeated antisocial behaviour towards the family in Leicestershire. This is another example of where information sharing has been raised as a priority. The family had come into contact with the Police and local services on multiple occasions. Each individual contact with the Public Agencies was not enough to raise concern, but had the systems been in place to allow agencies to share information they may have been able to identify the family as vulnerable and been able to work with the family to make changes and improve their quality of life. As a direct result of this case nationwide the Police and other Public Agencies such as local councils are working hard to try to find a solution to enable them to identify vulnerable callers at point of contact. Most the Agencies internally now have flags, where if a person has called x number of times within a set period of time they are flagged as vulnerable and more attention is given to what can be done to solve the problem.

The Bichard Inquiry highlighted the need for information sharing between forces, but other cases (such as Climbie in 2000 [18]) involving a more multi-agency approach, in particular child abuse cases, have highlighted the need for greater interagency information sharing.

The Climbie case was a child abuse case which ultimately lead to the death of Victoria Climbie. Prior to her death the Police, four different local authority Social Services departments, the NHS and the NSPCC (National Society for Prevention of Cruelty to Children), had all come into contact with the family and noted the abuse. All agencies involved were found to have acted inadequately and as a direct result of this case changes were made to the legal system with the introduction of the Childrens' Act 2004 [14] and the formation of the Every Child Matters initiative [19].

It is clear that in the Public Sector information sharing and Partnership working (in particular) has moved high up on the agenda. Even to the extent that the government is currently carrying out a consultation with local governments with regards to community budgets, where they are asking local governments what they would like from the government to be able to carry out their work better.

3.0 Big Barrier to Sharing Information?

The Data Protection Act 1998 [13] was introduced in 1998 to replace and consolidate earlier legal Acts such as the Data Protection Act 1984 [20] and the Access to Personal Files Act 1987 [21], as a response to concerns about individual's right to privacy in an increasingly digital age. It was introduced to bring UK law in line with the European Directive of 1995 [22].

Since the introduction of the Data Protection Act there has been little practical guidance in its implementation with regards to information sharing. The ICO did issue a Data Protection Good Practice Note for Data Sharing Between Local Authority Departments [23]; the note clarifies that even if the Local Authority is passing information to another department within the Authority it must comply with the second Data Protection Principle as this passing of data would be a secondary use for the data. Although this helps to understand the need to satisfy the condition before passing the data between departments it reinforces an increased cost of sharing the data and hence reduces the likelihood of the data being shared. It again emphasises not sharing over sharing data.

The ICO recently produced a Data Sharing Code Of Practice [24]; this does provide some case studies as examples of what to do in particular situations and some templates for data sharing protocols. However the document is lengthy and seems in many places to simply reiterate the Legal Acts without further clarity.

In terms of legislation again there has been little to help bolster the defence of agencies who do carry out information sharing. The legitimacy of information sharing is often based on consent as rarely would sharing information fall under the 2nd condition of the Data Protection Act, often although data is collected for one purpose it can be very useful in others. For example, when data is collected at a crime scene it is collected for the purpose of solving a crime, however the charity Victim Support find it useful to be able to have access to the details of the victim so they can contact them to help offer support and practical assistance whilst the victim comes to terms with the crime. The passing on of this data would not come under condition two of the Data

Protection Act, this is not what the data was intended for, but it is likely at least some of the victims of crime would like the support Victim Support can offer them. A workaround has been put in place where by Police Officers attending the crime will now explain what Victim Support do and instead of victims opting in for the services as they once did it is now an opt out. This is based on the assumption that, in the immediate reality of a crime, the victim has many concerns other than someone phoning them later or the next day to offer support.

There is a degree of legitimacy to data sharing with regards to crime prevention and national security (Data Protection Act Section 29 [25] Crime and Taxation). In many situations it is unclear what data may be relevant to prevent crime. Most organisations require that those requesting data under section 29 do so in a formal written manner with justification as to why they need the data. Two examples at random from a Google search found 'The Police must inform the University in writing' [26] and 'Always ask for a request formally, in writing and on the organisation's headed stationery' [27]. This leads to increased bureaucracy, but more importantly could delay vital data being received. The decision to disclose is ultimately up to the individual ('it is up to you to decide to release personal information under this exemption' [23]). This can make people over cautious, it would be interesting to see how the recent ICO fines have affected disclosure under section 29 as people may be even more cautious now about sharing data, with the fear of incurring penalties for the organisation and perhaps in turn themselves.

4.0 Lessons of Success

There are a couple of Laws which explicitly allow agencies to share data/information in particular cases such as The Crime and Disorder Act 1998 [28](Police for crime prevention) and The Children's Act 2004 [14](multiagency for child well being).

'Improvements to the way information is exchanged within and between agencies are imperative if children are to be adequately safeguarded . . . [E]ach agency must accept responsibility for making sure that information passed to another agency is clear and the recipients should query any points of uncertainty' Lord Laming Review 2003 [18].

As a result of the Lord Laming Review in 2003 which identified information sharing as a weakness both within agencies and between agencies The Childrens' Act 2004 was introduced. This Act requires each local authority to set up a Local Safeguarding Children Board (LSCB) where key partners involved in Safeguarding children must all be represented. 'The overall aim is to encourage integrated planning, commissioning and delivery of services as well as improve multi-disciplinary working, remove duplication, increase accountability and improve the coordination of individual and joint inspections in local authorities.'[29]. Many families receiving attention from agencies can feel that their lives become a 'revolving door' for meetings with multiple Public Agencies, all with similar agendas and often similar courses of actions. One practitioner commenting on the situation said 'it's amazing these families are able to keep track of the meetings they are required to attend'.

The Children's Act has helped partnership agencies legitimately share information on a legal basis. The LSCBs have helped clarify what each agency is doing and made collaborating easier as it has put a basis of information sharing in place. LSCBs also allow agencies to co-ordinate their work and actions to reduce the burden on the family of the work they are carrying out.

5.0 - The Role of Cost, Trust, Privacy and Infrastructure

5.1 Cost of Sharing

There are many costs associated with information sharing: 'loss of exclusivity to information'; 'investment of time and effort'; loss of autonomy; costs of technology; and 'perceived risk' [5, 6]. Whether these costs are real or perceived as in risk and loss of autonomy makes little difference as 'the link between perceptions and behaviour has been well substantiated.'[7]

It is important for Public Agencies to be provided with motivation 'beyond the barrier reduction to participate in information sharing.' [6] The provision by government of clearer guidelines around information sharing or statutes which allow Public Agencies to share information with each other would remove a significant barrier, which the Agencies themselves cannot. As mentioned earlier the Children's Act 2004 has significantly improved the way Public Agencies work together to improve the lives of children. The agencies themselves are already beginning to work on other barriers such as interoperability of systems; producing technical standards of data and creating

processes which can enable information sharing. National standards for the Police (MOPI [30]) and NHS (Information Standard [31]) have been created which represent the overriding authority with regards to these Agencies' information standards. This lack of a joined up approach for all Public Agencies means that whatever work these agencies do at a lower (local) level is undermined by Government/ National directives. There is a need for a more unified approach to Public Agencies from the top down. Whatever Public Agencies do at a local level they will always need to work with the national directive: if each of these agencies have differing directives they will each be working toward their individual goal and simply forming weak linkages to share data/information. This is increasing the cost of sharing to the Public Agency and thus reducing the chances of it happening.

Perhaps the most significant cost factor in the Public Sector at the moment is the economic outlay required for information sharing. 'A relative funding decline has increased the pressure to 'do more with less'' [8]. As each of the Public Agencies face a reduced budget they can afford less time to try to understand the legalities of information sharing and to work out how they can carry out information sharing. They are less able to provide resources in terms of both money and employees time to attend partnership meetings spending hours working out what they can and can't do and how they could/should do this. In the current economic climate of doing more with less it is more important than ever for the government to provide simplified/clear guidelines for the Public Agencies to work with. This will reduce the cost of sharing and increase the chances of sharing occurring.

There are two approaches to sharing information [12]. The first is single copy, there is only one copy of the information and it is this copy which is passed on and altered as appropriate e.g. a handwritten witness statement. The second is replicated copy approach; rather than the original information being passed around and altered, a copy of the information is passed on and changed, meaning each holder of a copy can change that copy without affecting the others e.g. Organisation A creates a proposal for funding a copy of this is emailed to Organisation B and C, where B and C are able to alter the proposal without affecting the original. This means the value of the information to the original owner is unchanged, with the exception that they have lost exclusivity to the information. However in a public sector setting where organisations are not exploiting information to produce products or profit, loss of exclusivity is much less likely to increase the cost of sharing, while 'Not losing one's own possession of information seems likely to lower the barrier to information sharing' [1]. Where the option is available replicated copy approach should be taken as this will reduce the cost of sharing.

5.2 Trust

'Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or confront that other party' [5].

Part of the Data Protection Act requires agencies to report when a breach has occurred: between November 2007 to May 2010 there were 1000 such breaches [32]. The press release states that these were due to human and technical error. This includes both breaches with regards to people disclosing information to the wrong people (data/information sharing breaches) and issues such as people losing laptops containing data (data security breaches). The press release points to guides such as that produced by the ICO [33] to help explain the Data Protection Act in simpler language, however the ICO has failed to produce such a plain language guide for data/information sharing. Whilst organisations now understand and implement data protection they are now at a point where, to an extent, they are scared to share information. The recent fines of agencies are likely to make agencies more wary about reporting breaches and reduce the transparency of mistakes. It gives the impression that the ICO do not trust organisations to do the right thing (rightly so in some cases) but this top down attitude of distrust does not help build an open flow of information between trusting agencies. For Public Agencies to share data they must trust the other Agency with whom they are sharing. The recent ICO fines [34] came from mistakes made within an organisation, the ease with which mistakes are made within their own organisation can make others extremely cautious of sharing even with those they believe to be trustworthy. The fines act as yet another deterrent to sharing data/information between Public Agencies.

What the statistics fail to show is the number of instances where the sharing of data between Public Agencies has had a positive outcome. Organisations, particularly Public Agencies, are never rewarded for any proactive approach to data and information sharing but are instead brow beaten by the Data Protection Act whenever the smallest mishap occurs. This has helped to create a culture in the public sector of fear of information sharing. There is a perception that they constantly need to find work arounds or a tedious link to an exemption clause to justify the need to share data/information, which ultimately could be lifesaving

5.3 Privacy

The biggest risk identified from Thomas and Walport 2008 Data Sharing Review [4] was '[the] main concern is the effect of a real or perceived loss of privacy. This may lead to a loss of trust'. The need to pay a fee to discover what data/information an agency holds on you acts as an 'effective deterrent and a barrier to transparency', this also reduces the level of trust people can have in Public Agencies storing data on them.

5.3.1 Media Reporting

Most people have read media stories where personal information has been lost. One case in 2007 of the data discs containing records on 7.25 million families claiming child benefit that were lost in the post [35]. The discs were password protected but the person who had sent the discs had breached all the security regulations in place at HM Revenue & Customs and the discs were never found. 2008 saw yet more media reports 'A record 37 million items of personal data went missing last year, new research reveals'[36] and again in 2009 **'Thousands of NHS medical records lost'** [37]. Every few months there appears to be a new media story about loss of data making the public worry about the security of their data.

These media stories highlight the need for a robust information governance framework, which can be used to minimise the risks of such data losses. The policies and procedures set out in an organisation's governance framework need to be regularly updated to reflect changing technologies and practices in the working environment. As was shown in the HMRC disc losses, even with policies in place people do not always follow them and it is important to try to automate data security as much as possible. For example, in Lloyds TSB they have a system in place where employees have different access rights to being able to copy data to removable media. You can only have the ability to copy data with business justification and even with the ability to copy data to these removable devices the data is automatically encrypted when written to the media. This has helped reduce the chances of data being copied, lost, stolen or used for fraudulent purposes.

5.3.2 Effect of Social Networking Sites

Loss of trust and privacy? One step closer to a big brother state? Whenever sharing of personal data is mentioned these are automatic responses from the media. In a world where millions of people update everyone on the minute details of their lives on social networking sites such as facebook and twitter, is this a view which is diminishing, particularly with Generation Z? (*The generation born between 1991 and 2010 also known as Generation I or Generation @ due to being the first generation to have been brought up with the internet[38])*. Attitude to data privacy does vary hugely between generations; many of Generation Z appear to see little problem with flaunting their lives all over the world, whereas older generations (in general) are more cautious when it comes to putting their personal lives online. This appears to be changing and the percentage of over 30's on social networking sites is growing quickly. In an online study carried out by Pingdom using Google Ad Planner data on US internet users [39] the most dominant age range in social networking turned out to be 35-44 (25%), but if you add in the 45-54 (19%) age range you have 44% of all social network users. Other research carried out by the Pew Research Center [40] in the United States found 'Between April 2009 and May 2010, social networking use among internet users ages 50-64 grew by 88% from 25% to 47%'. 'During the same period, use among those ages 65 and older grew 100%--from 13% to 26%'. Neither of these studies researched how the different age ranges used social networking sites and there appears to be no research in this area. The assumption is that people utilise the same social networking site in the same way for example LinkedIn is aimed at business connections where the likes of Twitter is for microblogging where users update the world on thoughts and actions.

Social networking use continues to grow among older users

The percentage of adult internet users who use social networking sites in each age group

18-29   30-49   50-64   65+
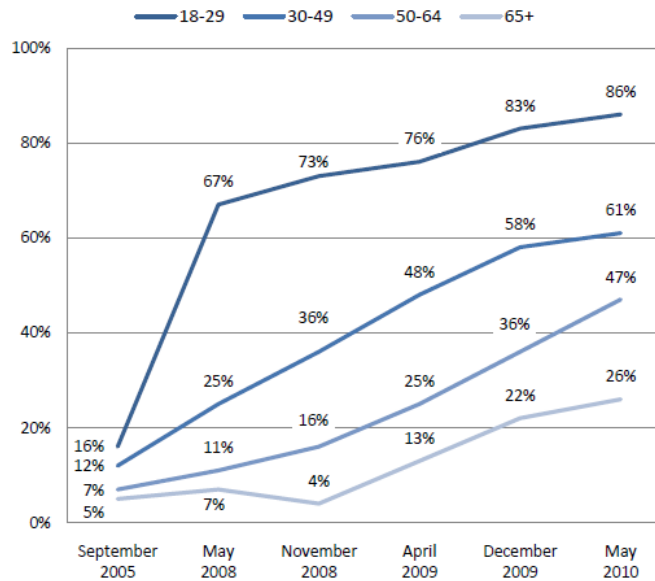
Source: Pew Research Center's Internet & American Life Project Surveys, September 2005 - May, 2010. All surveys are of adults 18 and older.

Figure 3 Social Networking Use Continues to Grow

Social networking appears to have altered peoples' perception of privacy of data. A study found that 'many Facebook profiles they contain, or appear to contain, almost every category of data deemed especially "sensitive" by EU law' [9]. Another study found 'that users are generally unaware and/or unconcerned with protecting their privacy on social networking sites' [10]. Perhaps in 20/30 years when most of the population have grown up with this approach to online life the idea of privacy of data will have completely disappeared.

Can we truly still stand by the need for Public Agencies to respect a right to privacy many people themselves are not respecting? Or is it simply a case that the Data Protection Act was written in a different time, when few understood the true implications of not having the ability to share information between agencies? Does the danger of not sharing data between public bodies simply outweigh the dangers of sharing? Cases such as the Pilkington murder-suicide [17] in Leicestershire in relation to Anti-Social Behaviour or the recent Baby P case [41] in relation to Child Protection have highlighted the increasing need to utilise the information all these different agencies have, perhaps in ways that the agency itself has not thought of.

Drake et al 2004 [11] relates information sharing to a value chain within organizational subcultures. This could also be related to the different cultures present in different agencies that need to share information. Each of the cultures tend to 'require different data, information, and knowledge to do its work', have 'different abilities and propensities to collect and acquire its own information', 'gather data in different categories' and 'have different requirements for and uses of the outputs of its information, leading to challenges in coordinated and productive information sharing'. But it is these differences which in a Public Agency setting improve the agencies' ability to carry out work. For example Anti-Social Behaviour could be reported to a number of different agencies. Lady A reports 2 noise complaints to her local council due to late night noise, she then reports people throwing stones at her window to the police and reports 2 incidents of misbehaving children to a local youth group. These 5 incidents taken in isolation are likely to result in little action. However if each agency has access to the others information they could discover this is a pattern; all these incidents are occurring on a particular day and at roughly the same time. Further analysis shows this to be a group of 2 or 3 youths carrying out these incidents after getting off at the bus stop next to A's house following a youth club. The partnership Agencies can then take action and put a strategic plan together about how these agencies will tackle these youths and improve the situation for A. Individually none of these agencies would be able to put this pattern together and resolve the issue, together they provide different perspectives and can work in unison to put a solution in place. For example the police may caution the youths about what could happen if they continue their actions, the youth services may work with the youths to alter their behaviour and the local council could notice lighting at this bus stop is poor and install more

street lighting. It is unlikely without access to the other agencies information that any of these actions would take place and it is likely that the behaviour would continue, perhaps escalating into a more serious issue.

One possible move to improve information sharing could be to alter Schedule 2 condition 1 of the Data Protection Act, from the 'The data subject has given his consent to the processing' to 'The data subject has not objected to the processing'. It would be useful to carry out a case study to see what effect this has on Public Agencies' perceptions to information sharing.

5.4 Infrastructure

'A major obstacle to information sharing is the lack of a framework and an infrastructure that allows government organizations to share information selectively with different user groups. Lack of such a framework creates unwillingness among government organizations to share their digital content.'[12]

Although most organisations do have some network enabled systems in place the idea of giving another organisation access to their system is not a favourable one. Within organisations usually different employees have different access levels to the systems which are relevant to the work they carry out, restricting access to only relevant data. A similar access level system would be required for external users of the system also. A system would be required to, in real time, enforce the access policies of the external users. This in itself is not too hard a task to accomplish but when you take into account the number of different external users from multiple different partners which could be requiring access to the system perhaps on a one- off basis, this adds a large administrative burden for the organisation to manage users and their privileges.

6.0 Conclusions

The current trend towards partnership working in Public Agencies is likely to continue under the direction of the current UK government. This leads to a need to improve Public Agencies' ability to work together; working together requires the sharing of data and information. There are a multitude of issues affecting how an organisation shares information. The technology and processes must be in place and there must be a desire from the organisations to work together on a common goal. Technology and processes are areas the organisations working together are able to work through themselves and problem solve as relevant.

The main barrier to sharing data and information that the agencies cannot work on is the legalities of sharing this data and information. There are certain well defined areas such as Safeguarding Children where there is clear legal guidance for a need to share information. In most areas there is a lack of legal basis for legitimate information sharing. The Agencies are often forced to rely on Statutory duties placed on public bodies as a reason to share data and information. The problem they face is that they are not always sure to what information they need access to complete their work. For example, the police have the ability to access data under section 29 Crime and Taxation of the Data Protection Act, however they may not know exactly what data from another organisation would lead to the prevention of crime.

Sharing between public agencies will continue to be suboptimal whilst the costs of sharing are so high. To be able to implement a sharing programme takes time and resources which are scarce in the public sector. There is a need to reduce the overheads and change the culture of fear surrounding sharing. A major factor in this is to consolidate and clarify guidance related to data and information sharing making it clearer for all. The publishing of the ICO's Data Sharing Code of Practice Consultation in October 2010 [42] has at least shown that the government understands that it is unclear for organisations who share data what they can and cannot do. The results of the consultation have not yet been published but discussion with people in Public Agencies who carry out data sharing suggests that unfortunately this paper has not made the situation any clearer. By the time the finalised consultation is published this may have changed and be more usable for day to day practitioners. It does show that there is a desire from the government to help clarify information sharing for practitioners.

In conclusion whilst the agencies themselves are able to work on many of the barriers of data and information sharing including reducing the cost of sharing and putting the infrastructure in place, other factors such as the Data Protection Act 1998 continues to act as a deterrent to information sharing. This is something the agencies will be unable to change themselves and needs to be looked at from a higher authority such as the government.

7.0 References

Journals

[1] Hatala JP, Lutta J (2009), Managing information sharing within an organizational setting: A social network perspective, Performance Improvement Quarterly vol 21 (4), pp5-33

[2]Coleman D.W, Hughes A.A, Perry,W.D (2009), The Role of Data Governance to Relieve Information Sharing Impairments in the Federal Government, 2009 WRI World Congress Computer Science and Information Engineering, vol 4 pp 267-271

[3]Richardson, S; Asthana S (2006), Inter-agency Information Sharing in Health and Social Care Services: The Role of Professional Culture, British Journal of Social Work vol 36 (4), pp657-669

[4]Thomas R, Walport M (2008) Data Sharing Review, Royal Academy of Engineering

[5] Yan Z, Sun B, Wang T (2009) A study on information sharing of e-government, proceedings of IEEE International Conference on Grey Systems and Intelligent Services, 2009 pp1331-1335

[6]Barua, A., Ravindran, S., & Whinston, A. B. (2007). Enabling information sharing within organizations. Information Technology and Management, vol 8(1), pp31–45.

[7] Brown M.M, Brudney J.L (2003), Learning Organizations in the Public Sector? A Study of Police Agencies Employing Information and Technology to Advance Knowledge, Public Admistrative Review, vol 63(1), pp30-43

[8] Hughes V, Jackson P (2004), The Influence of Technical, Social and Structural Factors on the Effective use of Information in a Policing, Electronic Journal of Knowledge Management, vol 2, pp75-86

[9] Edwards L, Brown I (2009), Data Control and Social Networking: Irreconcilable Ideas?. HARBORING DATA: INFORMATION SECURITY, LAW AND THE CORPORATION, A. Matwyshyn, ed., Stanford University Press, 2009. Available at SSRN: http://ssrn.com/abstract=1148732

[10] Goettke R, Christiana J (2007) Privacy and Online Social Networking Websites, Computer Science 199r: Special Topics in Computer Science Computation and Society: Privacy and Technology, May 14, 2007

[11] Drake DB, Steckler Nam Kock MJ (2004),Information Sharing in and Across Government Agencies: The Role and Influence of Scientist, Politician, and Bureaucrat Subcultures, Social Science Computer Review, vol 22(1), pp67-84

[12] Bhoopalam K Maly K, Mukkamala R, Zubair M (2007) Framework for Information Sharing Across Multiple Government Agencies under Dynamic Access Policies

[13] Data Protection Act 1998 **http://www.legislation.gov.uk/ukpga/1998/29/contents** **Retrieved 05/01/2011**

[14] Childrens Act 2004 http://www.legislation.gov.uk/ukpga/2004/31/contents **Retrieved 11/01/2011**

[15] BBC News, Huntley guilty of Soham murders, Posted 17/12/2003
http://news.bbc.co.uk/1/hi/uk/3312551.stm **Retrieved 11/01/2011**

[16] Bichard Inquiry, Published 22/6/2004 http://www.bichardinquiry.org.uk/10663/report.pdf **Retrieved 6/01/2011**

[17] Telegraph, Mother and daughter who burned to death: 'no excuses' says Alan Johnson Posted 29th Sept 2009 http://www.telegraph.co.uk/news/uknews/6241791/Mother-and-daughter-who-burned-to-death-no-excuses-says-Alan-Johnson.html **Retrieved 11/02/2011**

[18] Victoria Climbie Inquiry Report Published 3/06/2003
http://www.publications.parliament.uk/pa/cm200203/cmselect/cmhealth/570/570.pdf **Retrieved 10/01/2011**

[19] Every Child Matters Published January 2006
http://education.gov.uk/publications/standard/publicationDetail/Page1/DFES-0012-2006 **Retrieved 10/01/2011**

[20] Data Protection Act 1984 http://www.legislation.gov.uk/ukpga/1984/35/contents **Retrieved 5/01/2011**

[21] Access to Personal Files Act 1987 http://www.legislation.gov.uk/ukpga/1987/37/contents **Retrieved 5/01/2011**

[22] European Directive of 1995 http://en.wikipedia.org/wiki/Data_Protection_Directive **Retrieved 5/01/2011**

[23]Data Protection Good Practice Note Releasing information to prevent or detect crime
http://www.ico.gov.uk/upload/documents/library/data_protection/detailed_specialist_guides/section_29_gpn_v1.pdf **Retrieved 10/01/2011**

[24] ICO Data Sharing Code of Practice Published October 2010
http://www.ico.gov.uk/about_us/consultations/our_consultations.aspx **Retrieved 28/10/2010**

[25] Data Protection Act 1998 Section 29 http://www.legislation.gov.uk/ukpga/1998/29/contents **Retrieved 5/01/2011**

[26] Loughborough University, Section 10: Disclosures to the Police and Legal Proceedings
http://www.lboro.ac.uk/admin/ar/policy/dpact/disclosure/index.htm#sec10 **Retrieved 11/02/2011**

[27] Kirklees NHS, Data Protection – Prevention & Detection of Crime, Posted 05/2007
http://www.kirklees.nhs.uk/uploads/tx_galileodocuments/Disclosing_Information_to_Police_and_Others_Investigating_a_Crime.pdf **Retrieved 11/02/2011**

[28] Crime and Disorder Act 1998 http://www.legislation.gov.uk/ukpga/1998/37/contents **Retrieved 07/01/2011**

[29]The Childrens Act Report http://www.dcsf.gov.uk/childrenactreport/ **Retrieved 14/01/2011**

[30] MOPI (Management of Police Information) http://www.npia.police.uk/en/15088.htm **Retrieved 14/01/2011**

[31] NHS Information Standard http://www.isb.nhs.uk/ **Retrieved 14/01/2011**

[32] ICO (Information Commissioners Office) 1000 data breaches reported to the ICO Posted 28/05/2010
http://www.ico.gov.uk/~/media/documents/pressreleases/2010/1000_DATA_BREACHES280510.ashx **Retrieved 05/01/2011**

[33]Information Commissioner's Office demystifies data protection Published 26/11/2009
http://www.ico.gov.uk/~/media/documents/pressreleases/2009/GUIDE_TO_DP_261109FINAL.ashx **Retrieved 12/01/2011**

[34] ICO First monetary penalties served for serious data protection breaches Published 24 November 2010
http://www.ico.gov.uk/~/media/documents/pressreleases/2010/first_monetary_penalties_press_release_24112010.ashx **Retrieved 06/01/2011**

[35] Guardian, Lost in the post - 25 million at risk after data discs go missing Posted Wednesday 21 November 2007
http://www.guardian.co.uk/politics/2007/nov/21/immigrationpolicy.economy3 **Retrieved 11/02/2011**

[36] Telegraph Government's record year of data loss Posted 6th January 2008
http://www.telegraph.co.uk/news/newstopics/politics/1574687/Governments-record-year-of-data-loss.html **Retrieved 11/02/2011**

[37] Telegraph Thousands of NHS medical records lost Posted 25 May 2009
http://www.telegraph.co.uk/health/healthnews/5381605/Thousands-of-NHS-medical-records-lost.html Retrieved 11/02/2011

[38]Wikipedia Generation Z http://en.wikipedia.org/wiki/Generation_Z#Beyond_Z **Retrieved 11/01/2011**

[39] Pingdom Study: Ages of Social Network Users Posted 16/02/2010
http://royal.pingdom.com/2010/02/16/study-ages-of-social-network-users/
Retrieved 11/02/2011

[40]Pew Internet, Older Adults and Social Media Posted 27/09/2010
http://www.pewinternet.org/Reports/2010/Older-Adults-and-Social-Media.aspx **Retrieved 19/01/2011**

[41]The Times, After 17 months of unimaginable cruelty, Baby P finally succumbed, Posted 12 November 2008
http://www.timesonline.co.uk/tol/news/uk/crime/article5140511.ece **Retrieved 11/02/2011**

[42] ICO Consultation on the first ever UK code of practice on data sharing launched Published 8th October 2010
http://www.ico.gov.uk/~/media/documents/pressreleases/2010/Data_sharing_consultation_press_release_07102010.ashx **Retrieved 16/10/2010**

Appendix A: Royal Pingdom Social Networking Statistics
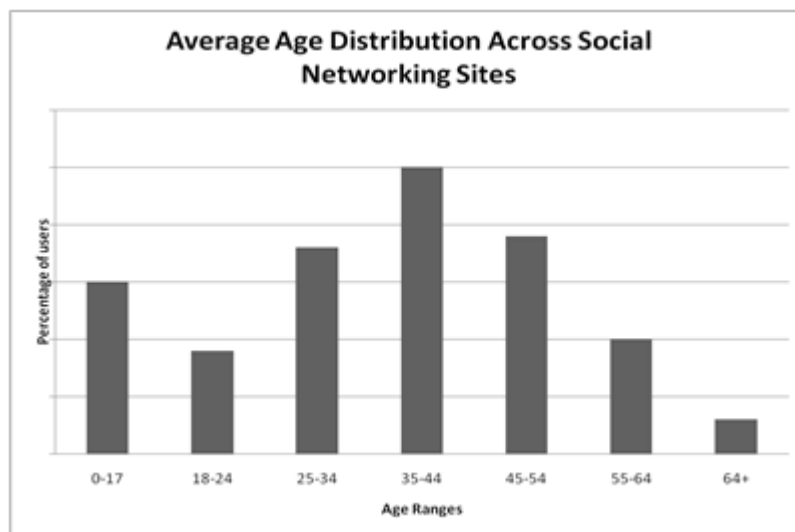
Figure 4 adapted from royal pingdom website

Some facts on age distribution on social network sites:

- **The average social network user** is 37 years old.
- **LinkedIn**, with its business focus, has a predictably high average user age; 44.
- **The average Twitter user** is 39 years old.
- **The average Facebook user** is 38 years old.
- **The average MySpace user** is 31 years old.
- **Bebo** has by far the youngest users, as witnessed earlier, with an average age of 28.

Appendix G – ICIME Paper

Determining Tactics that Influence Partners in the Creation of an Interagency Information Sharing System

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Abstract

Partnership working is increasing dramatically in the public sector in the UK. Partly as a result of reduced funding (as part of government budget cuts) but also as a reaction to the increasing realisation that sharing information improves the service individual partners can provide. This brings a new paradigm to sharing information for non-competitive purposes. To achieve the partnership aim of providing a better service each partner must attempt to put aside their normal ways of working (i.e. protecting their information) and attempt to produce an information sharing system where information can be shared legally, purposefully and in a timely manner.

This paradigm is in most cases new to the organisations involved and their approach to the level of influence they have in a partnership to produce a system can be challenging. This paper forms part of a larger research project, researching how public sector agencies can share information more effectively. The goal of the research is to develop a model for partnership information sharing, which models the outcomes of decisions made during the development stages of the system and how these have affected the overall acceptance and success of the system. The paper provides a classification of encouragement tactics which partners in a public sector partnership can utilise when implementing a new information sharing system to achieve their own objectives. The encouragement tactics classification helps to both clarify the concepts of power and influence by providing a clear distinction between the terms and bridge the terms by combining them in a single classification. This approach of a unifying classification has not previously been attempted and further work is required to validate the classification proposed in this paper. The classification has been created from participant observation

of the creation of a trailblazing information sharing system between the police and councils (districts, county and city) to improve their ability to handle anti-social behaviour.

Keywords: Public Sector, Partnership Working, Influence, Information Sharing, Multiagency working, Information Management

1.0 Introduction

Bringing partners from different agencies together to work on a joint information sharing system involves bringing together different professionals. Dawes (1996) paper on government agencies identifies that there is a traditionally strong separation of professions into different government agencies, with the profession at the core defining „that agency"s perspective on the world." Blighs" (1979) paper also discusses an agency"s creation of reality/perspective on the world referring to professional tribes. These tribes shape their own reality with members of the tribe conforming to this reality or else facing sanctions. A group made up of representatives from different agencies will have differing views of reality and requirements for a system. To develop an interagency information sharing system for use by all the partners, the group will need to overcome these differences through the use of power and influence over other group members.

Research into power and influence spans multiple disciplines; e.g. politics – the meanings and relations of power (Parsons 1963, Pfeffer 1993), marketing – the marketing channel and the use of power within it (Hunt and Nevin 1974, Kasulis and Spekman 1980), organisational behaviour – how managers exert power and influence over subordinates (Israeli 1975, Schein 1977) and group dynamics – the power and influence members of a group have over each other (Blalock 1989).

Azim and Bozeman (1975) said „there are as many definitions of power as there are writers about power". To summarise the existing literature and definitions there are four main perspectives at which power can be viewed (adapted from Ragins (1997)):

- Individual - individuals" ability to influence another"s behaviour (French and Raven (1959), French (1993) and Dahl (1957)).

- Interpersonal –reciprocal relationship between two or more parties (Cartwright (1959)).
- Macro-organisational –controlling resources and information as a result of a persons" position within the organisation or group (Pfeffer (1981)).
- Sociological – „power is viewed as a fluid relationship between groups in society" (Ragins (1997)).

Ragins (1997) attempts to integrate the four perspectives defining power as „the influence of one person over others, stemming from an individual characteristic, an interpersonal relationship, a position in an organization, or from membership in a societal group". As can be seen from this definition power and influence appear to be intertwined.

Influence research centres mainly on marketing and its ability to influence people to purchase specific products or on a managers" ability to influence subordinates (Kipries et al 1980). Over the years researchers have not been particularly interested in studying the ways in which people at work influence their colleagues to obtain personal or to satisfy organisational goals (e.g. Kipries et al 1980; Jackson and Dawson, 1999). Zuker (1991) defines influence as „the ability to affect another"s attitudes, beliefs, or behaviours – seen only in its effect – without using coercion or formal position, and in such a way that influencees believe that they are acting in their own best interests", the first part of this definition could be a definition for power in many researchers view. Influence is seen as a life skill to be developed and many popular science books have been written on how to influence people such as Cialdini (2001), How to Win Friends and Influence People (Carnegie 2006) and „I" is for Influence: The New Science of Persuasion (Yueng 2011).

Further studies and definitions of the concepts increases confusion. Wrong (1979) defines power as „the capacity of some persons to produce intended and foreseen effects on others" and Zimbardo and Leippe (1992) define influence as „the changes in people caused by what others do" both could be defining either power or influence. It can be difficult to separate research on influence and power some definitions combine the two terms in a single definition for example Northouse (2010) states „power is the capacity or potential to influence". The definitions are changeable and conflicting as are the classifications/typologies dependent on what research is being looked at.

The main issue with the existing research into power and influence is the inconsistencies in the use of the terms influence and power. For French and Raven (1959) and Dahl (1957) power is the ability to influence others. Raggins (1997) research influence leads to power. Where Salancik and Pfeffers (In

Leavitt et al 1988) and Parsons (1963) leads us to an understanding that power is a resource completely separate from influence, where influence is only used in the absence of power. The research detailed in this paper is taking the concepts of influence and power and applying them to how members of a partnership use these tactics to achieve their own outcomes when developing a system for information sharing. To do so a clearer distinction between the concepts of influence and power needs to be made, where further work will be able to identify the success of both influence and power tactics on the overall success of the partnership system.

This paper looks to help provide a clearer distinction between the and identify both power and influence tactics that group members utilise when developing an interagency information sharing system in a classification referred to as encouragement tactics. Section 2 provides a summary of the theoretical background to this research broken down into research on power and research on influence. Section 3 describes the participant observation used for collecting data over a seven month period from multiple meetings held by the partners, involving approximately 20 different representatives across the 10 partners and software developers. The observations along with a proposed classification for encouragement tactics are presented in section 4, highlighting examples of the different types of tactics utilised by the partners. The paper concludes with a conclusion and discussion around the results of the study and future work based on these findings.

2.0 Theoretical background

Decisions made in the development stages of a partnership information sharing system will affect the success of the system. To be able to model the success of the information sharing system an understanding of how these decisions are made must be gained. A partnership development involves multiple partners interacting through the use of power and influence to make decisions. **2.1 Types of power**

French and Ravens (1959) 5 Bases of Power was one of the earliest attempts to model where people gain and utilise power. They identified five bases of power; coercion (use of force to alter behaviour), reward (providing something someone desires or removing something they do not), legitimacy (use of a feeling of obligation), expert (the use of position of knowledge or information) and referent (use another"s feelings of approval to initiate desired actions).

This later developed into the 11 bases of power (Raven 1992), which further differentiated reward (personal and impersonal), coercion (personal and impersonal) and legitimate (position reciprocity, equity and dependence) and added the power base of information. In 1998 Raven again looked at the bases of power this time incorporating the differences in hard and soft types of power. This resulted in seven types of power; personal sanctions (combining personal reward and coercion), impersonal sanctions (combining impersonal reward and sanctions), credibility (combining expert and information), legitimate equity (combining legitimate equity and reciprocity), reference, legitimate position and legitimate dependence.

Table 2 taken from Northouse 2010 p8 table 1.2

Positional Power	Personal Power
Legitimate	Referent
Reward	Expert
Coercive	

Northouse (2010) differentiates French and Ravens 5 bases of power as either personal or positional power. Personal power is „the influence capacity a leader derives from being seen by followers as likeable and knowledgeable", where positional power „a person derives from a particular office or rank".

Table 3 Kraus 1986 6 Types of Power

Organisational Power	Personal Power
Coercion or Pressure	Support
Position	Knowledge
Reward	Interpersonal Competence

Kraus also used the 5 Bases of Power as the basis for their 6 types of power; coercion or pressure, position, reward, support, knowledge and interpersonal competence. These were split as either organisational based power („they may only be used as part of the organization structure") or personal power („may be used in any situation").

Etzionis (1963) developed an alternative topology of power though this is more concerned with the power of organisations. Etzioni identified three forms of power „classified according to the means of control applied"; coercive (physical means), remunerative (material objects) and normative (symbolic). Although this typology looks to categorise an organisation based on how power is used rather than where the people within the organisation gain power, similarities can be found with the bases of power.

Coercive exists in French and Ravens classification to a lesser degree. Remunerative power is the same as reward power. Normative can be seen in the use of legitimate power where people comply due to group norms.

2.2 Types of influence

Parsons (1963) research identified three types of influence; inducement, persuasion and deference. These forms of influence are similar to French and Ravens (1959) bases of power with inducement similar to reward power (the promise of gain) and persuasion similar to expert power (the provision of information). Deference is not present in French and Ravens, but is similar to Etzioni"s (1963) normative power as deference relies on the use of ethical norms or social standards to convince someone to act in a particular way.

Other forms of influence have been identified by other researchers; conformity (behaving to fit in with the group) and self-fulfilling prophecy (a prediction that causes itself to become true due to feedback between the belief and behaviour (Merton 1968)).

Kipries et al (1980) researched the tactics people used to influence their managers, co-workers and subordinates. This identified eight dimensions of influence; assertiveness, ingratiation, rationality, sanctions, exchange, upward appeal, blocking and coalitions. How these tactics were utilised varied on who they were attempting to influence. The dimensions of assertiveness, sanctions, ingratiation and rationality were used when attempting to influence people at any status level. The dimension of coalitions was only utilised when attempting to influence subordinates and the remaining three dimensions (exchange of benefits, blocking and upward appeal) were only utilised when attempting to influence superiors.

3.0 Methodology

This paper forms part of a larger research project researching how public sector agencies can share information more effectively. The ultimate aim is to develop a model for partnership information sharing, which will model the outcomes of decisions made during the development stages of the system and how these have affected the overall success of the system. For this larger research project the researcher has been granted an active role in the project team representing one of the ten partners

developing a joint information sharing system. The research has an ethnographic strategy and for the data in this paper the research method of participant observation has been adopted. Participant observation has been chosen as it allows the researcher the opportunity to experience the situation as the other group members are; helping to provide „direct experiential and observational access to the insider"s world of meaning" (p15 Jorgensen 1989). Data collected from observation will often contrast with data collected from other techniques such as interviews and surveys where what is said is done differs from what is observed (p316 Robson 2011). Participant observation allowed the researcher to observe what actually happened as opposed to what participants recalled. The use of participation was also chosen due to its ability to improve the „quality of the data obtained during fieldwork" and the „quality of the interpretation of data" (DeWalt and DeWalt 2001).

Data was collected by the researcher at meetings between March and November 2011. These meetings are detailed in Table 3.

In early meetings the group were made aware of the researchers" role as a participant observer. Members of the group quickly identified the researcher as a member of the organisation they were representing rather than as a researcher. This helped to minimise „the extent to which the researcher disrupts and otherwise intrudes as an alien, or nonparticipant, in the situation studied" (Jorgensen 1989 p16) thus minimising reactivity (Robson 2011 p316). Representing one of the partners also reduced the researchers" ability to manipulate the group meetings to the researchers" goal which can be a concern with observation in particular participant observation (Robson 2011 p322).

Data from the observed meetings was recorded in a field diary. In an attempt to minimise any bias which could occur from being a representative of one partner, entries were reviewed a few days after the meeting to confirm the accuracy. Any opinions or feelings recorded were not removed as these provide an insight into how other group members may be experiencing the group meetings, but additional notes were made where appropriate.

Table 4 Meetings Data Collected From

Meeting	Participants	Duration per meeting	Date
Multi-agency Project meetings	Approximately 12 participants, at least one from each partner.	2 hours	16/03/2011 04/04/2011 06/05/2011
Side meetings *(focused on specific project issues)*	Varied attendance with a core group of Police project lead, partnership project manager, training representative and researcher. Additional members were based on	30 min – 2 hours.	At least one a fortnight between June and October.

			the expertise required at the meeting.		
Police Project Team	System trainers, IT, project liaisons, project manager, Business leads, System administrators and researcher.	2 hours	23/06/2011 29/07/2011 24/08/2011 19/10/2011
Software Developers	Project manager from software development firm, Partnership and Police Project Managers, IT, Strategic Leads and researcher.	2-3 hours.	29/06/2011 06/10/2011
IT Workshop	IT and project representative from each of the 10 partners and external software developers.	Full Day (7 hours)	21/04/2011
Strategic Leads	Partnership strategic lead, Partnership and Police Project Managers, Security Lead, IT Leads and Researcher	2 hour	5/09/2011 23/09/2011 06/10/2011

3.1 Case study context

Case study is based on creation of a joint information system to improve the management of anti-social behaviour and the identification of repeat and vulnerable victims. The system will be developed by a partnership consisting of a Police Force (B), City Council (C), County Council (D) and seven district councils (A, E-J). The system will combining the different information and knowledge silos from each partner into one system all the partners will work from. It replaces informal information sharing practices such as phone calls, emails, local meetings, with a formalised single system which all the partners will use to store their data. Data on the system will only relate to anti-social behaviour, which is only one aspect of business for each of the partners so this will not fully replace other systems already in place. An older version of the system has been in place at partner A, who were also involved in its initial development for the previous 7 years and as such they have been identified as the lead agency (A) for the project. Since its introduction the system at A has been identified as a national model of good practice. They have been pivotal in urging the other partners to adopt this system and modify it for the joint information sharing system as opposed to other systems which were available. The project manager for the creation and implementation of the system for the partnership works for the A and they are the contact for the software developing company.
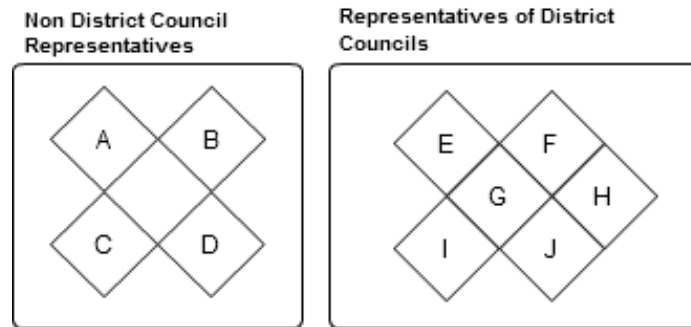
Figure 7 Overview of the Partners involved in the case study

4.0 Results and analysis

The meetings involved multiple partners depicted in Figure 1. Table 4 gives some examples of the data collected.

Example of Data	Observed	Type of Tactic	Classified Tactic
E requested different search fields to fit working practices e.g. looking up a person by telephone number. The project managers" reply "I don"t see why you would need to", E was told there was no need for it and no further discussion about the idea was had in multiagency meetings.	Side Meeting	Power	Legitimate/ Positional
B insisted on extra security testing pre go live, by forgoing this, other development work specific to B on a search engine integrated with their systems was prioritised.	Software Developers & Multiagency Meetings	Power	Reward
B wished to delay implementation to ensure the system was completely tested pre-go live. Due to political ramifications threatened at higher level strategic meetings B was effectively forced to go live before they wanted to.	Side Meetings & Software Developer Meetings.	Power	Coercion
In the production minimum requirements each partner would need to meet before being allowed access to the system, a requirement for a certain sequence of authentication would stop B implementing a single sign on. B and the software company were able to	Multiagency & Software Developer Meetings	Influence	Information/ Knowledge

provide knowledgeable experts to present information to the group producing the minimum requirements and convince them to reword allow the development of a single sign on as this still met the desired level of security.			
B had a reputation for being extremely bossy and controlling. From the beginning of the project partners have been very critical of the ideas presented by this partner reducing the level of influence they have been able to have.	All	Influence	Reputation
F was poor at returning documents and information for the project to progress. As such, when they have been absent from a meeting decisions have been made without seeking their consent. Other partners, who were highly involved, when absent from a discussion, their opinion has been actively sought after the meeting to ensure their views are heard.	Multiagency Meetings.	Influence	Involvement
B will put approximately 60-70% of the data on the system. As such in discussions around layout of forms and fields required they have been allowed a greater level of say, as ultimately they will be the biggest user.	Multiagency Meetings.	Influence	End usage
B has supplied the testers for the system, from this they have been able to get the system reconfigured to a more appropriate way for them. Other partners have not done this and as such have not had this same influence.	Side Meetings.	Influence	Resource Provision

Table 5 Example Data

4.1 Classification:

For the classification proposed in this study French and Ravens (1959) original 5 bases of power model was used as a foundation. As Northouse (2010) did with their distinction between personal and positional power, French and Ravens original 5 bases of power were separated into either power or influence tactic based on the distinction between power and influence. This distinction was drawn from the definition made by the researcher in this study that power is the promise of rewards or sanctions exercised mainly by the use of force and coercion in order to control how a person or group behaves, where influence is the ability to alter another"s" behaviour by the provision of something they do not already posses e.g. information. The distinction is drawn based on how the tactic was implemented and

whether the person being acted upon was ordered or suggested to alter their behaviour. Imposing the researchers" definition of power and influence onto French and Ravens (1959) bases of power results in Table 5.

Table 6 French and Ravens (1959) Bases of Power split by distinction between influence and power

Power	Influence
Legitimate	Expert
Coercion	Referent
Reward	

This matches Northouse (2010) results of overlaying the bases of power with their distinction between personal and positional power. This result suggests that personal power and influence are similar concepts and helps to support the earlier discussion about confusion between the terms of power and influence. Although the outcome of applying the distinction to the bases of power has been the same it is important to note Northouses" definitions refer only to power. This does not help to distinguish between power and influence as this research is attempting.

To more appropriately reflect the observed data the original five bases of power are renamed and an additional factor of Project Specific Factors has been added to influence factors, this refers to factors such as end usage, involvement and resource provision. The factors were grouped together as they only represent influence where inequality in the factor is present. E.g. in a project where all partners are providing equal resources, the provision of resource would not be a source of influence. Project specific factors were not present in Northouses (2010 p8) or French and Ravens (1959) work, it is expected that this factor reflects the partnership environment found in this study which was not present in the other research. The addition of project specific factors produces a classification which can be generalised to other projects where the partnership may be setup differently from this case study. Table 5 summarises the breakdown of tactics, with further details on the tactics found in 4.2 and 4.3.

Table 7 Proposed classification of Encouragement Tactics

Power	Influence
Positional	Information
Coercion	Reputation
Reward	Project Specific factors

4.2 Power tactics:

Power is the promise of rewards or sanctions exercised mainly by the use of force and coercion in order to control how a person or group behaves.

4.2.1. Positional

Positional (or legitimate) power is the ability to have control over the actions of others as a result of a position in the group. The case studied identified three sources of positional power; project manager, software developer contact and trainers. In developing a system in a group setting those with positional power are able to have greater control over what is discussed and ultimately have the final say in what ideas are communicated to the developers. Potentially those with positional power have the opportunity to overrule group decisions. In the case study partner D questioned a functionality of the system which could potentially produce duplication within the database; this idea was brought to the project manager but was never shared with the other partners.

4.2.2. Rewards

Reward in this context is the provision/prioritisation of a function being developed for the system. This tactic has mainly been utilised by those with positional power who hold the authority to prioritise/alter work schedules. There is the potential for partners without positional power to utilise reward power by grouping together to support an idea, in return the partner would get support for their own idea/issue. From the study B by agreeing to train all the partners standard users were rewarded by having discretion over when and where the training would be carried out.

4.2.3 Coercion

Coercion is the use of force to encourage someone to act as desired. In this classification coercion does not refer to the use of physical force, rather a more subtle use of force, that of a tarnished reputation and political fallout. No single partner wants to be blamed if the project fails. Utilising this threat of

reputation and politics, partners are able to coerce others when required. From the study E, F and G wanted to wait for interfaces with their existing systems before going live, pressure was placed on these partners by A and B to go live before the interfaces were ready using the threat of blame for failure of the entire system and highlighting that other partners would be going live before all their functionality was achieved.

4.3 Influence tactics

Influence is the ability to alter another‟s behaviour by the provision of something they do not already posses e.g. information. The observed meetings identified five tactics of influence; three of these have been grouped into one tactic called project specific factors as they are all dependent on the projects‟ set up.

4.3.1 Information/knowledge

Information/knowledge is a key way partners influence each other. It is where one party has a greater level of expertise and can present this to another partner in a way which allows the partner to change their behaviour of their own volition. Example from the study, the original selection of mandatory fields was altered after information presented by B, E and F which demonstrated an inability to meet these mandatory fields.

4.3.2 Reputation

Reputation is the positive or negative result of another partners‟ expectations of your actions. A positive reputation may result in partners carrying out actions in an attempt to please you, whilst a negative reputation could result in reactance (Brehm 1966). From the study H were extremely keen and positive from the start of the project, they have a forward thinking and innovative reputation. Ideas presented by H were received more positively than other partners.

4.3.3. Project specific factors

Project specific influence refers to factors specific to the project which will affect the level of influence a partner has. These project three factors have been observed:

1. Involvement – the level of participation of each partner. Those more actively involved have a greater level of influence. Data collected evidenced this where G had minimal involvement, post-go live G discovered could not complete a mandatory field, more actively involvement would have prevented the issue.
2. End Usage of the System – The amount each partners will utilise the system. Those with greater expected use can have a greater level of influence. E.g. I is expected to put very few cases on the system per year, their interface with the system has been given low priority due to the minimal resource drain of double keying compared to others.
3. Resource Provision – Level of resource whether money, equipment or people each partner provides to the group. Partners providing greater levels of resource have a greater level of influence. E.g. A and B provided the resources required to develop the risk accreditation for the system, this included making decisions which affected the whole partnership. As A and B had carried out the work other partners who were not involved were effectively forced to agree to recommendations from this work stream.

These factors are unlikely to be the only project based factors affecting the level of influence each partner has, but were the factors evidenced from this study.
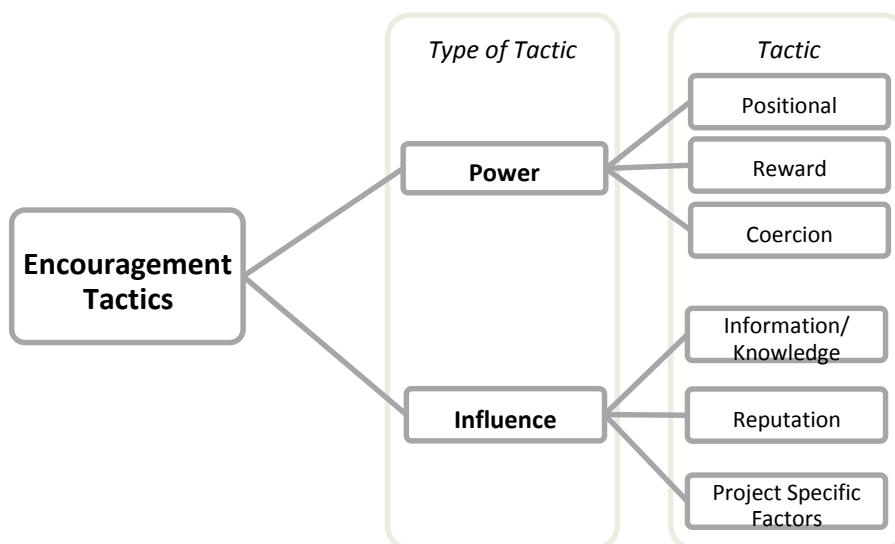

Figure 8 Classification of Encouragement Tactics

Work is on-going with a similar project in another county implementing the same system in a partnership to validate this classification.

5.0 Discussion and conclusion

Partnership working in the public sector continues to increase as does the use of information systems to share information. It is highly likely more partnership groups will need to come together to develop joint information sharing systems. Utilising participant observation to collect data over seven months in various meetings allowed the researcher a unique perspective on the experience of group members. Observation allowed the researcher to experience the roles of both initiator and receiver of various tactics evidenced in this study. The classification proposed in this paper builds on French and Ravens;" (1959) bases of power model, overlaying the distinction between power and influence. The distinction between the terms states power is the promise of rewards or sanctions exercised mainly by the use of force and coercion in order to control how a person or group behaves, where influence is the ability to alter anthers" behaviour by the provision of something they do not already posses e.g. information. The distinction is drawn based on how the tactic was implemented and whether the person being acted upon was ordered or suggested to alter their behaviour. Combining the concepts of power and influence into a single classification has not previously been attempted but will provide a more holistic view of how group members are achieving their outcomes. The classification helps to both clarify the concepts of power and influence by providing a clear distinction between the terms and bridge the terms by combining them in a single classification.

The classification will allow public sector agencies in a partnership partners to identify tactics they previously haven"t utilised. The larger research project will model the outcomes of decisions made in the development stages to the success of the implemented system. This will help the public sector partnerships developing joint systems to utilise tactics which are more likely to result in a successful system. It is expected future work will show partners are more resistant to power tactics than influence as decisions made from a power tactic are not inclusive of the group and they are therefore not bought in and committed to the decision. This is currently a working hypothesis and needs to be tested. The project specific factors in this study may also encourage public sector partnerships in the setup phases to seriously consider the levels of resource and involvement each partner commits to, an equal distribution of resources in the project reduces the ability for one partner to push through their ideas or be solely responsible for tasks due. This has been a problem in on-going work with a similar project in another county, the server for the joint system is located in one partners building, the partnership expects the partner hosting the server to pay all costs with no contributions being made by the other

partners. In this study the server is located offsite at a neutral venue; all the partners provide equal money its purchase and maintenance. Early consideration of how influence and power tactics may be used by other partners throughout the project can help prevent later sources of contention.

The encouragement tactics classification in this paper represents the first step in a larger research project researching how public sector agencies can share information more effectively through joint information sharing systems. The larger project looks to model the outcomes of decisions made during the development stages of the system and how these affect the success of the system. The aim is that this research will allow the research community and public sector agencies to identify the likely success of a project in the development stages. By understanding the likely success of a project, it will be possible to identify potential problems and rectify these in the development stages where it is often easier and less costly to do so than once the system is implemented.

The classification helps to clarify the concepts of power and influence by providing a clear distinction between the terms and bridge the terms by combining them in a single classification. This approach of has not previously been attempted, as such further work is required to validate the classification. The classification is currently being reviewed by the partnership from the case study to gather their input which will be fed back into the classification. It will then be validated against work from another county attempting a similar project. Further work which has come from this study is the effects of repeated use of a particular tactic or type of tactic on partners and whether this diminishes its effectiveness and how the use of particular tactics affects the success of the system being developed.

6.0 References:

Berger, J and Zelditch, M. (1998) **Status, Power and Legitimacy: Strategies & Theories.**Transaction Publishers.

Blalock, H. M. (1989). **Power and conflict: Toward a general theory**. Newbury Park, CA: Sage.

Bligh, D. (1978) *Some Principles for Interprofessional Learning and Teaching*. A paper from the Symposium on Interprofessional Learning, Central Council for Education and Training in Social Work, University of Nottingham.

Brehm, J. W. (1966). **A Theory of Psychological Reactance**. Academic Press.

Carnegie, D (2006) **How to Win Friends and Influence People.** Vermillion.

Cialdini, R. (2001) **Influence: Science and Practice.** Pearson

Dawes, S.S. (1996) *Interagency information sharing: Expected benefits, manageable risks.***Journal of Policy Analysis and Management**, vol. 15, no. 3, pp. 377-394.

DeWalt, K. and DeWalt, B. (2001) **Participant Observation: A Guide for Fieldworkers**. AltaMira.

Evenden, R. and Anderson, G. (1992) **Management Skills: Making the Most of People**. AddisonWesley

Falbo, T. (1977).*The Multidimensional Scaling of Power Strategies.***Journal of Personality and Social Psychology**, vol. 35, pp. 537-547.

French, JRP Jr and Raven, BH. (1959) *The Bases of Social Power*. In Cartwright, D (Ed),**Studies in Social Power**. (pp. 150-167). Ann Arbor, MI: Institute for Social Research.

Handy, C (1993) **Understanding Organisations 4th Edition**. Penguin

Hunt, S. and Nevin, J. (1974) *Power in a Channel of Distribution: Sources and Consequences.* **Journal of Marketing Research,** vol. XI, pp186-93

Izraeli, D. N. (1975) *The middle manager and the tactics of power expansion*. **Sloan Management Review**, vol. 16, pp. 57-70.

Jackson, T. and R. Dawson (1999). The Need for Computer Scientists to Receive Training on People Skills. **PPIG 11th Annual Workshop**.

Jorgensen, D (1989). **Participant Observation: A Methodology for Human Studies.** Sage Publications.

Kasulis, J. and Spekman, R. (1980) A *Framework for the Use of Power.* **European Journal of Marketing**, vol. 14, No. 4, pp.180 – 191

Kipries, D. Schmidt, SM and Wilkinson I (1980) *Intraorganizational Influence Tactics: Explorations in Getting Ones Way*, **Journal of Applied Psychology**, vol. 65, pp 440-452.

Kraus, R (1986) *Power and Leadership In Organizations.* **Transactional Analysis Journal**. Vol 16 (2)

Leavitt, H. , Pondy, LR. and Boje, DM. (1988) **Readings in Managerial Psychology.** University of Chicago Press.

Merton, RK. (1968) **Social Theory and Social Structure**. Macmillan

Mokken, RJ and Stokman FN. (1976) *Power and Influence as Political Phenomena.*pp33-54.In Barry, B (Ed), **Power and Political Theory: Some European Perspectives** (pp 33-54). John Wiley.

Northouse, P (2010) **Leadership: Theory and Practice.** Sage.

Parsons, T. (1963) *On The Concept of Influence.* **Public Opinion Quarterly**, vol. 27, pp 37-62.

Parsons, T. (1963) *On The Concept of Political Power.* **Proceedings of the American Philosophical Society** vol. 107, no. 3, pp. 232.

Pfeffer, J. (1993) **Managing with Power: Politics and Influence In Organisations.** Harvard Business School Press

Raven, BH.(1993) *The Bases of Power: Origins and Recent Developments.***Journal of Social Issues**, vol. 19, no. 4, pp. 227-251.

Raven, B, Schwarzwalk, J and Koslowsy, M. (1998). *Conceptualizing and Measuring a Power/Interaction Model of Interpersonal Influence.* **Journal of Applied Social Psychology.** Vol. 28, no.4, pp. 307-332.

Robson, C. (2011) **Real World Research.** Wiley.

Schein, V. E. (1977) *Individual power and political behavior.* **Academy of Management Review**, vol. 2, pp. 64-72.

Wrong, DH. (1979) **Power Its Forms Bases and Uses***.* Basil Blackwell

Yeung, R. (2011) **I Is For Influence: The New Science of Persuasion: Mastering The Art of Influence.** Macmillan.

Zimbardo, PG and Leippe, MR. (1991)**The Psychology of Attitude Change and Social Influence***.* McGraw-Hill.

Zuker, E. (1991). **The Seven Secrets of Influence***.*McGraw-Hill.