

Getting to e-Government – The Role of Methods

A thesis submitted to the University of Manchester
for the degree of Doctor of Philosophy
in the Faculty of Humanities

2011

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Table of Contents

ABSTRACT OF THESIS	5
DECLARATION	6
COPYRIGHT STATEMENT	7
DEDICATION	8
ACKNOWLEDGEMENTS	9
PREFACE	10
INTRODUCTION	11
SCOPE AND OBJECTIVES	13
PART I - MOTIVATION AND CONTEXT	15
GENERAL DEFINITIONS	16
THE METHODS CONTEXT	20
MODELLING AND METHODS.....	24
THE MOVE TO METHODS	32
UNSTRUCTURED AND MANUFACTURER SPECIFIC METHODS.....	35
STRUCTURED AND TECHNOLOGY LED METHODS	35
SEMI STRUCTURED METHODS.....	38
BUSINESS PROCESS LED METHODS.....	41
COMMENTARY	43
MODELLING AND METHODS TOWARD E-GOVERNMENT	44
A COMPONENT BASED METHOD	46
BEST PRACTICE.....	47
COMMENTARY	50
PLATFORMS AND INFRASTRUCTURE.....	51
COMMENTARY	53
GOVERNMENT THROUGH TECHNOLOGY	53
DELIVERY	54
TECHNOLOGY SHIFT	55
THE LIMITATIONS OF ESTABLISHED TECHNIQUES.....	59
CONSIDERATIONS IN DEVELOPMENT OF FUTURE TECHNIQUES	60
COMMENTARY	63
PART II - THE E-GOVERNMENT CONTEXT	64
MODERNISING GOVERNMENT	64
GOVERNMENT MOTIVATION	66
FUNDING AND MONITORING	67
AN ESTABLISHED E-GOVERNMENT CONTEXT	69
COMPARATIVE EVALUATION	70
TRENDS IN IMPLEMENTATION TECHNIQUES	71
METHODS AND TECHNIQUES IN IST PROJECTS	73
LIMITATIONS ON LOCAL GOVERNMENT SERVICES, ORGANISATION AND DELIVERY	73
TECHNOLOGY AS A CHANGE AGENT.....	77
THE FUTURE E-GOVERNMENT AGENDA FOR THE UK	82
FUNDING IMPLICATIONS	83
EVALUATION AND MONITORING	85
CONTINUED MONITORING.....	85
PART III - FIELDWORK AND CASE STUDY	89
FIELDWORK.....	89
DETERMINING THE FIELDWORK METHODOLOGY	90
BENEFITS AND EFFECTIVENESS OF THE FIELDWORK	91
DESIGN OF THE FIELDWORK.....	91
OPTIONS FOR FIELDWORK.....	92
FIELDWORK STRUCTURE.....	93
THE CASE STUDY.....	94

CANDIDATE ORGANISATION PROFILE	95
FIELDWORK CONTACTS	96
FIELDWORK TIMEFRAMES	97
SUPPORTING RESEARCH METHOD	97
OBJECTIVES OF THE FIELDWORK	98
INFORMATION REQUIREMENTS DEFINITION	98
FIELDWORK DATA COLLECTION	99
ACCESS TO PARTICIPANTS	100
EFFECTS OF LIMITED ACCESS TO PARTICIPANTS	102
EXPECTATIONS FROM THE FIELDWORK	103
HOW THE DATA WAS ANALYSED	105
EMERGING FINDINGS	106
DERIVING UNDERSTANDING FROM FIELDWORK FINDINGS	110
SUMMARY OF FIELDWORK	112
THE CASE STUDY	115
METHOD OF APPROACH	116
CASE STUDY ACTIVITIES	117
ANTICIPATED OUTCOMES	119
AGENCY PROFILE	120
THE EXECUTIVE STRAND	121
CONTRIBUTORS AND MATERIALS	122
CASE STUDY FINDINGS	122
ORGANISATIONAL ASPECTS	122
METHODS	123
IS STRATEGY AND E-GOVERNMENT	125
CHANGE	127
TECHNOLOGY TRANSFER	129
TECHNOLOGY	130
EMERGING FINDINGS AND INTERPRETATION	131
SUMMARY OF CASE STUDY	133
PART IV – EVALUATION	134
THE FINDINGS FROM THE WORK	134
IMPLICATIONS FOR POLICYMAKERS AND PRACTITIONERS	153
PART V - CONCLUSIONS AND FUTURE OUTLOOK	161
ARE THERE METHODS AND BENEFITS AVAILABLE?	161
DEALING WITH THE COMPLEXITIES E-GOVERNMENT PRESENTS	161
GROWING ORGANISATIONAL AWARENESS	163
THE IMPACT ON E-GOVERNMENT METHODS	164
RECOMMENDATIONS FOR FUTURE DIRECTION	165
WHERE FUTURE RESEARCH CAN FOCUS	167
APPENDIX A PRIMARY TOPIC SHEET	169
APPENDIX B PROFILE ORGANISATIONS	180
APPENDIX C TRIOLE AND IDBM	181
APPENDIX D PRINCE 2	191
APPENDIX E SPRINT	193
APPENDIX F I&DEA CAPACITY BUILDING TOOLKIT	200
APPENDIX G THE ZACHMAN FRAMEWORK	202
APPENDIX H E-GIF: A SUMMARY	203
APPENDIX I NATIONAL PROJECTS	207
APPENDIX J PRIMARY FIELDWORK RESULTS	209
APPENDIX K A SAMPLE INTERVIEW	212
BIBLIOGRAPHY	216

FINAL WORD COUNT: 62,803

Table of Figures

FIGURE 1.1: A WATERFALL METHOD	27
FIGURE 1.2: THE EVOLUTION OF METHODS TIMELINE	33
FIGURE 1.3: EVOLUTION OF METHODS AND TECHNOLOGY – COMPARATIVE TIMELINES	34
FIGURE 1.4: SSM MAP	39
FIGURE 1.5: IMPLEMENTATION METHODS	46
FIGURE 1.6: GOVERNMENT GATEWAY STRUCTURE (AFTER DEFRA)	49
FIGURE 1.7: ADOPTION CURVE	56
FIGURE 1.8: NETWORK ARCHITECTURE (BASED ON THE OSI MODEL)	57
FIGURE 1.9: UNITARY NETWORK ARCHITECTURE	58
FIGURE 2.1: E-ENABLEMENT PROGRESS	68
FIGURE 2.2: THE STRUCTURE OF THE E-SOCIETY REPOSITORY (AFTER GENOUD AND PAULETTO, 2004) ..	72
FIGURE 2.3: AN EARLY INFORMATION STRATEGY APPROACH TO E-GOVERNMENT	76
FIGURE 2.4: E-GOVERNMENT ACCOUNTABILITY FRAMEWORK	86
TABLE 3.1: CANDIDATE ORGANISATION RESPONSE SUMMARY	107
FIGURE 3.1A: METHODS ANALYSIS (TECHNOLOGY)	110
FIGURE 3.1B: PERCEPTION OF CHANGE	111
FIGURE 3.2: METROPOLITAN BOROUGH COUNCIL ADVISORY STRUCTURE CHART.	121
FIGURE 3.3: COUNCIL A PHASING	123
FIGURE 3.4: NEW AUDITING PATHS	125
FIGURE 3.5: THE ‘HENSHAW HEDGEHOG’	128
FIGURE 4.1: EVOLUTION AND FEATURED ELEMENTS	155
FIGURE 4.4: GOVERNMENT WEBSITE VISITOR LEVELS	159
FIGURE 4.3: FUTURE E-GOVERNMENT FRAMEWORK OR METHOD EVOLUTION	166
FIGURE C.1: TRIOLE ROW STRUCTURE	181
FIGURE C.2: TRIOLE TEMPLATES	184
FIGURE E.1: SKILL SETS	194
FIGURE F.1: CAPACITY BUILDING TOOLKIT COMPONENTS	200
FIGURE H.1: THE E-GIF ARCHITECTURE	204

ABSTRACT OF THESIS

THE UNIVERSITY OF MANCHESTER

ABSTRACT OF THESIS

This work considers the value of applying design methods and other techniques in the implementation of electronic public services. This relates specifically to the use of Information Society Technology (IST) and related topics, for example systems analysis, change management and process reengineering specifically within the British local government sector. This is commonly referred to by the shorthand expression ‘e-Government’.

The paper examines the motivation behind methods – their design and application, a summary of their development over the past few decades, and an assessment of e-Government centric techniques. This involves a discussion of some of those techniques through a case study and fieldwork concerned with methods applied by a specific group of public agencies, the Metropolitan Borough Councils.

E-government forms a complex and inter-organisational innovation, and the work develops an evaluation of its growth since the mid to late 1990’s. There is an exploration of the experiences of a variety of methods and their application in light of new and divergent ways of working in the public sector.

More recent techniques supportive of its diffusion are introduced, and the thesis takes into account institutional, technological and organisational factors within the public sector specifically and how the concept and practicality of methods are being applied. The future direction and nature of methods within this field are key considerations and form the core of the conclusions of the work.

Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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Dedication

I would like to dedicate this work to my wife Jan, who has been shown remarkable tolerance and humour in the face of all of my academic, personal and professional endeavours.

Acknowledgements

There are a number of acknowledgements connected with this work. This could prove lengthy, so, briefly and incompletely, many thanks to my family for being there, Gary Dodson for his support, my colleagues for their contributions, my critics (Lyulph Lubbock and Chris Murtagh) and also to my employers for the resources put at my disposal.

Preface

The author has been an IS professional for over twenty years in technical and consultancy roles. He graduated in 1999 from the University of Salford with an MSc in Managing IT, having previously obtained a BSc in Applied Computing from Manchester Polytechnic. He was subsequently accepted as a part of the UMIST doctoral programme (subsequently the University of Manchester).

In 2004, he presented a paper entitled Modelling, Methodologies and e-Government at the European Conference on e-Government (ECEG) held at Dublin Castle. The paper was published as a part of the proceedings, Proceedings of the 4th European Conference On e-Government held on 17-18 June 2004 at Dublin Castle, Dublin, Ireland.

A second paper entitled Good Practice in e-Government was accepted for presentation at the (TCGOV) held at Bozen-Bolzano, Italy, in 2005. The paper was published as a part of the proceedings, E-Government: Towards Electronic Democracy: International Conference, TCGOV 2005, Bolzano, Italy, March 2-4, 2005, Proceedings (Lecture Notes in Computer Science).

The author has worked in the utility, entertainment, pharmaceutical and process industries. He is currently a business consultant within the Public Sector business of an IT services company.

Introduction

The concept of e-Government has continued to grow and evolve from its early beginnings in the early to mid 1990s. Automation and simplification of business activities in the public and private sectors has been stimulating interest prior to this in terms of the benefits signposted to adopters. Developments in printing, databases and work study are examples of use of knowledge and technology to these ends. The differentiator for e-Government, however, is in the nature of technology and its role in involving the public in the business processes of public activity.

Ramifications of e-Government are increasingly profound across many spheres of influence which have usually coalesced around change management, internet technologies, business process reengineering, organisational management and societal use of technology. These effects tend to stem from public agencies historically being arranged on a departmental or functional silo basis with individual business systems, practices and often high levels of operational independence. Closely interrelated to these issues are contemporary central government driven factors of social inclusion, data protection and the freedom of information. The emphasis on the latter two factors has been made by many national governments who have implemented a government agency to regulate on these matters – the Information Commissioner is an independent official appointed by the United Kingdom Government to oversee relevant legislation and related matters.

This work explores the application of methods and standards in a field that has evolved rapidly in a short space of time. In setting the context, the development and dissemination of standards and methods within the IST environment is examined and any evidence of parallels discussed. The tools and approaches available in the early and even continued adoption of e-Government are assessed, in terms of the advantages and limitations they present.

The premise for selecting the topic is assessing how a complex operational, tactical and strategic change driven by ICT in a large sector of a nation is assessed, structured and delivered. What methods are available to provide consistency between stakeholders in a nationwide project? Where there are methods, will they need to develop to reflect the unique nature of the project? As the nature of the e-Government programme

changes from implementation through return on investment to a transformational character, the methods both in use and development will be examined.

The value that is anticipated to be drawn involves the confirmation that methods as a form of 'common currency' are available to practitioners tasked with implementing e-Government. These may be existing methods or newer ones being developed with the e-Government agenda clearly in mind. The analysis undertaken in the course of the work based on experience in the sector, together with relevant fieldwork, is intended to provide advice and guidance to policymakers and practitioners in order to permit the evolutionary nature of e-Government to continue as smoothly as possible.

The structure of the work is outlined below. Although the work provides examples of practice in related fields throughout, a literature search is not specifically presented. Individual Parts are introduced with a commentary on related subject matter, positioning the work within the portfolio and in a context appropriate to the field of study. Contemporary writing on the topic is continuing to appear, and references are provided to underline points specifically within the text.

The drivers identified by the work are intended to assist those practitioners where updated or more innovative methods, such as interactive messaging, are increasingly prevalent in later phases of e-Government programmes. In these situations, where the extra-organisational use and control of information systems begins to develop and wider organisational factors arise, new methods and processes are beginning to be developed and tested in environments reliant on e-Government and its continued implementation.

The work is structured in the following way:

- In Part I, the introduction describes the nature and contribution of the work. This includes a consideration, at a high level, of the field of methods, and also outlines techniques developed directly or as a result of e-Government programmes in the UK or overseas;
- In Part II, the work surveys the landscape in which e-Government is being undertaken. Here, the domestic context in the UK is discussed and contrasted with the experiences overseas, using examples from Europe, Asia and the Americas;
- In Part III, the premises of the fieldwork and outcomes are explained. An interpretation of the findings is made in terms of the case study and supportive fieldwork;

- In Part IV, a summary of findings and commentary is made;
- In Part V, conclusions and recommendations developed from the work are presented.

Scope and Objectives

In the work, the role of methods played within e-Government projects is investigated. It is hypothesised that current methods address control and delivery aspects and are inadequate in supporting the broad nature of the e-Government concept. The work therefore asserts the benefits of the development of a specific method or linking of established techniques to provide the capability to bridge these aspects and provide the flexibility to embrace others as they are identified. The literature references throughout the work are intended to be pertinent and demonstrate support for this hypothesis. The premise of the work has several objectives, which are outlined below:

- Firstly, the work seeks to identify the nature of established methods applied in IT projects with an emphasis on the United Kingdom (U.K.) Public Sector. This is to be achieved through considering the methods relevant to the components of IT projects, for example their use in systems analysis, applications and infrastructure design and project management. This will also involve an assessment of the actual usage of the methods and the extent to which their usage has been beneficial in terms of the outcome of the projects involved.
- Secondly, an objective is to determine if the use of methods has positively contributed to the introduction of e-Government, specifically within the U.K. Public Sector. The definition of e-Government covered by the scope of this work is outlined earlier in this Section, and the segment of the Public Sector under specific scrutiny is discussed in Section III, Fieldwork and Case Study. This is to be achieved through considering the methods found to have been used in the definition and undertaking of e-Government projects, for example their use in business analysis, requirements definition and change management. This will also involve an assessment of the actual usage of the methods and the advantages or otherwise that have been identified and/or documented as a result of these initiatives.
- The next objective for the work is to identify if any gaps exist in the established portfolio of methods that have been used during the e-Government programme in

the U.K. Public Sector. This analysis will assess what was missing from existing methods functionality, the effect of these omissions on the ability to define, design and deliver e-Government capabilities and what issues have resulted from any gaps in existing methods provision.

The final two objectives complement the aims of the work in adding to the knowledge within the field and providing advice and guidance to policy makers and/or practitioners in the shifting environment of e-Government.

- The first of these will identify implications for policy makers and practitioners in the field. The concept of 'Best Practice' will be considered in relation to IT projects and e-Government where it has been discussed, especially in relation to the circumstances faced by practitioners in projects contributing to e-Government implementations. Where future developments can be identified and offer potential support within the scope of the work they will be included.
- Secondly, the work will include the provision of recommendations regarding changes, improvements or additions to the use of methods discussed or envisioned during any future e-Government programme in the U.K. or elsewhere. This will take into account strategies that have been identified as a part of the work through investigation and fieldwork in terms of established methods. Alternatively, the recommendations may include use of new, emergent methods, the innovative application of established methods or a new method framework if practicable.

It is intended for these objectives to provide the framework for the overarching structure of the work. The Conclusions, in addition to describing the progression and activities covered by the work, will affirm or otherwise the fulfillment of the objectives presented above given the major findings.

PART I - Motivation and Context

The work discusses the application and usage of methods and tools in an environment that is dominated by rapidly evolving internet technologies. The evolution of new or existing methods or processes will profoundly affect the future design and implementation of systems and technologies in this field, which is impacting social issues as well as organisational efficiencies. The ability to employ a template or recognised design process for e-Government will introduce a consistency relevant to these technologies in a similar way Structured Systems Analysis and Design (SSADM) brought consistency to practitioners in previous phases of IT innovation.

The acceleration of implementation of e-Government, especially in the UK has been accompanied by a growing coverage in academic and literary circles. The exploration of the phenomenon has also been supported by public agencies, typified by the Improvement and Development Agency (I&DeA), founded in 1999 to assist local government better comprehend e-Government and promote collaboration and sharing of best practice in this and related areas. The I&DeA website states that:

‘E-Government is central to the modernisation of local government. As champions of local e-government, I&DeA seeks out and shares the innovation and good practice that is already delivering improvements in local authorities around the country. We also create a platform for projects of national importance to underpin e-government initiatives. Our aim is to provide authorities with all the knowledge and tools they need to implement e-government.’

The strategy has been supported by regular publications, in both trade and policy, by such publications as Government Computing and the journal of the British Computer Society.

Increasingly, seats of learning have been developing qualifications based around the topic. Sheffield Hallam University was one of the first to offer such a course, an MSc designated Information Systems and Technology Management for e-Government. The qualification was developed as a result of work undertaken by the university in conjunction with RBT (Connect). RBT is a joint venture company set up by Rotherham Borough Council and British Telecom to manage the technology investment needed to modernise the local authority and help meet its e-Government targets. Such investment

in academic advancement reflects the value placed on the topic and the future it has in social, bureaucratic and business terms.

E-Government is also transcending national boundaries on an operational basis in the public sector. There is a global aspect to the drive to e-Government, with attendant variations in the complexity and facilities in implementation. This underlines the need to study and understand the drivers, mechanisms and controls of e-Government, in order to best harness the technologies and issues at both a strategic and tactical level.

The capabilities offered by the technologies, particularly Internet based, present many issues for consideration at a technical and academic level. Core issues, drawn from the increasingly global nature of implementation of e-Government, revolve around the commonality, format and usage of information. These concerns embody the security and confidentiality of information, particularly in relation to individuals and personal details. At a base level, this can be illustrated by ensuring that the details of a citizen are made available across a local authority and its partners to ensure a consistent level of service is provided (often referred to as 'joined-up' working). At a different level, this information may need to be provided to a European agency planning for educational funding across the European Union to enable like for like comparisons.

These examples of personal information usage highlight the issues that organisations implementing e-Government have to contemplate. At a high level, there are three major issues. Firstly, the new multi-agency environment requires the capacity to allow sufficient control over information resources. Secondly, there is a balancing act between the needs of the individual and those of the state, and thirdly matching information supply to the demand. Representational of these issues include the perceived loss of control of information assets; designing networks to cope with increased traffic volumes; generation of corporate systems to reflect internal and external use of information and above all, suitable and transparent policies to embody public and organisational storage, usage, dissemination and retention of personal information.

General Definitions

The initial aim of this section is to introduce the reader to related subject material in the area of methods and e-Government. Secondly, it is intended to position the work within the portfolio of e-Government, which covers a diverse range of topics that includes call centres, flexible working, electronic forms, verification techniques and

social inclusion. This aims to provide both a context and presence appropriate to the study undertaken.

There are two central terms employed throughout the work which merit clarification given their core contribution to the topics under discussion, and their widespread use within the subject areas referred to. Firstly, for the purposes of this work, ICT is defined as being the application of computer oriented techniques and technologies used in two interleaving ways, both automating and informing activities undertaken by Government.

Within this definition, particularly in terms of automation, an ICT project would, at an abstract level, comprise a series of managed activities intended to deliver a series of improvements or costs savings to an existing business process through cost effective use of said technologies. The activities comprising the project may be defined within a specific method, which provides a recommended sequence and set of activities focused around established procedures involving introduction of ICT into organisations.

The parallel effect would involve informing the organisation and its stakeholders. Reflecting the concept presented by Zuboff (1984), the information provided by a project within an e-Government programme would bring new knowledge to the organisation regarding the service users, who would in turn benefit from a new and more direct relationship with the organisation in conjunction with improved service levels. The provision of increased accessibility to public services through the automating nature of ICT encourages greater interaction which is so often sought by organisations, together with improved service anticipated by the users.

Examples are discussed later in this and subsequent Sections, of which Structured Systems Analysis and Design and Management (SSADM) is one. SSADM was developed by UK Central Government in order to provide a uniform approach to assessing business requirements of public agencies and the subsequent design, and implementation of ICT strategies into the relevant agencies.

The series of activities would be undertaken in an agreed manner, commencing with a consensual definition of the nature of the problem to be addressed. Subsequent activities would, at a high level, document the requirements of any replacement process or facility, identify available options available and recommend a strategy given any constraints. Any agreed strategy would move into a further round of activities that detail the chosen plan of action, manage the putting into place of the strategy and the management and monitoring once put into place within the organisation.

The strategies that have typified ICT projects have included financial accounting systems – providing computer based programmes that enable financial accounting of organisations based upon legal and professional rules applicable to the organisation. Other examples include case management systems for young people in the care of Local Authorities or the use of e-mail to simplify and extend the communication capabilities of organisations.

The ICT capabilities used to enact these strategies involve a range of technologies, including computer networking, database technologies, software applications (acquired off the shelf or commissioned on a bespoke basis), Personal Computer (PC, server or mainframe equipment and storage facilities for the data and programs.

The capabilities outlined above, forming the definition of ICT, also includes many non-Internet "electronic government" technologies are included in this context. Examples include telephone, fax, SMS text messaging, wireless networks and services, Bluetooth, CCTV, tracking systems, RFID, biometric identification, identity cards, smart cards, TV and radio-based delivery of government services, online community facilities, online chat, and instant messaging technologies. The scope of the definition of ICT in the context of the work does not extend to a detailed discussion of the nature of the technologies involved.

Secondly, the concept of e-Government itself, for the purposes of this work is to be defined as a means of providing clear, understandable, accountable and cost-effective interaction between government, citizens, businesses and other governments and/or public agencies, primarily involving the use of ICT in line with the previous definition. This particularly refers to aspects including:

- The use of ICT, and particularly the Internet, as a tool to achieve better government;
- The use of information and communication technologies in all facets of the operations of a government organisation.

The types of activities enabled by these aspects include presenting, publishing or delivering information over the Internet, e.g. details of regulatory services, general holidays, public hearing schedules and other notifications. Further to this are interactive communications between the agency and the citizen, a business, or another government agency. In this model, users can engage in dialogue with agencies and post problems,

comments, or requests to the agency. More complex activities include conducting transactions, for example lodging tax returns, applying for services and grants.

There exists a range of definitions in literature, ranging from high level or working definitions, for example “the ability for anyone visiting the website to communicate and/or interact with the city via the Internet in any way more sophisticated than a simple email letter to the email address provided at the site”. An alternative high level definition is “the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees.”

The scope of the definition of e-Government in the context of the work excludes governance – and in this context this means both the continuous optimisation of service delivery, constituency participation and governance by transforming internal and external relationships through technology, the Internet and new media, for example online polling, voting, and campaigning.

The presence referred to reflects the focus of current work in the policy, technology and implementation strategies of e-Government, rather than the underlying methods and planning techniques that have traditionally come to underpin the use of technology as a change agent within public and private organisations. The contemporary nature of the overarching topic does need to be emphasised, and a key factor in this instance is that implementation projects and the evolution of methods are ongoing within a fluid and constantly evolving political and technological landscape.

Initially, consideration is given to the background to the ancestry of methods that has led to the format they currently have, and the manner in which they are being used within ICT projects involved in e-Government programmes. The emphasis on related work develops to an appraisal of the broader e-Government context, including the applicability and value that methods can bring. Although a more recent context, the closing appraisal of more recent work by commentators, academics and practitioners in the field is intended to place methods in a shifting political and technological landscape, preferably in relation to the methods employed in recent programmes within the U.K. specifically.

In subsequent sections, the nature of methods and their acceptance of structuring approaches to projects are discussed. Such structuring relates to the recommended or preparatory steps to be undertaken within a project within a particular discipline or subject area that can have a material effect on the progress and/or outcome of the endeavour. Consideration is given to previous work undertaken in several areas

pertinent to methods, technology and change in addition to e-Government. Each of these has provided a background for reflective thinking in relation to the development of the hypothesis presented in the thesis.

The Methods Context

The approach and framework applied to an ICT project have been shown to significantly influence the eventual outcome. From many assessments in this area, the British Computer Society (BCS) and Lancaster University case study of successful complex IT projects (2005) illustrates this as a key success factor. One of the conclusions stated that where there is the rigorous and flexible execution of a previously agreed methodology, this allows better process and more efficient change control.

Conversely, where in depth assessments have been made of the numerous examples of projects being challenged (being late or over budget, for example) or failures (cancelled or unused), the lack of a consistent method is often cited as one of the contributing factors to the unsuccessful outcome, for example Laurie (2003) examining the University Accounting System failure. The absence of a framework for a project to operate within led to documented issues that included a failure to plan, overspending, poor accountability and unrealistic deadlines being set and missed.

How to best approach such projects have been the subject of numerous works, including Bradley (1997) who deals with the Prince 2 approach to managing large projects and which include more logical step by step approaches to those including investigation, analysis and development phases. The work by Bradley focuses on management and control techniques which certainly play a key role in e-Government programmes. For other aspects that investigate systems, processes and operational aspects, Edward Yourdon and colleagues developed a more inquisitive and technologically rigorous approach in the 'Yourdon methodology' in the 1970s and onwards.

This rigour is characterised by recognition of organisations for the formality in implementing a major change. The structured approach advocated by Yourdon addresses three objectives. Firstly, there is the definition of the activities to be carried out in a project. This ensures a common understanding and agreement of the nature and priority of project phases across the varied stakeholders and enables decisions to be made concerning how resources are to be allocated to best effect.

Secondly, value comes from introducing consistency among the many projects that can be under consideration or active in the same organisation. The use of a consistent framework for all projects, whether they use some or all of each stage or not, provides for a simplified analysis and a consistent comparator for management in assessing progress and risks to project success. Thirdly, management has checkpoints for control purposes in the event of decisions being required over the continuation or termination of a project. This may involve a number of intermediate checkpoints during the project, which provide opportunities to determine whether the project is behind schedule, and whether additional resources need to be procured. In addition, other stakeholders, for example the user community, will also want involvement at selected checkpoints so that they can determine if the project is still economically and functionally viable.

Initial efforts in this field often consisted of a prescriptive formula to projects, irrespective of the subject or environment under consideration, which were in many cases established ways of working in organisations such as payroll processing. These formulas reflected the understanding that although a system is represented by a number of discrete steps followed to reach an end, the technique brooked no omission of any stage defined in the documenting or redesigning of a new system. Specific roles were sometimes identified explicitly, and the approaches were often generic, not taking into account the complexities of the system in terms of factors such as processes, scale and stakeholders.

The steps outlined in works presenting systems analysis present a clear, linear process to achieving the successful delivery of a project. Efforts by writers such as de Neufville (1971) attempt to bring the process to a wider audience, in this case managers and engineers. The emphasis is often on the risk in omitting a step and the risk of failure, as opposed to taking relevant factors into consideration along the way. These factors included, as mentioned previously, the complexities of the system in terms of processes, scale and stakeholders and the reason these carry weight is because they have a role in shaping both the current system and any replacement, influencing the resources and cost required to make changes or design a new system.

Adopting a method predicated upon adherence, sometimes rigorously, to a documented process may be appropriate. The outcomes may not always be positive, especially in a situation where pressures exist to deliver a project or benefits through 'short circuiting' steps. This 'short circuiting' is the omission of selective stages or steps in the method agreed for the project. The pressures of less time through the use of

artificial deadlines, the lack or reduced availability of resources may force decisions to reduce quality checks or engagement with stakeholders, particularly users. Amongst the risks faced by these omissions may include a rejection of the system by the user, or faulty products or processes that would usually have been trapped by a scheduled test programme. Pardo and Scholl (2002) recounted a public accounting project where such demands were brought to bear. This example draws into focus the relevance and emphasis to be placed upon differing stages, which can vary considerably between projects.

Within the public sector, organisations with comparable responsibilities (for example local environmental services departments) face data and processing problems that have become fairly well defined over time. Central government agencies have responded to this by publishing guidelines epitomised by the Structured Systems and Analysis and Design Methodology (SSADM) (1981)

The extent to which a rigid, formulaic method could address all of the salient factors in a project began to be explored by Peter Checkland (1999), amongst others. A holistic and integrated view began to be proposed where wider issues than project objectives were taken into account. An appreciation of less technical issues, such as cultural, business and environmental factors began to be recognised as contributing to project outcomes.

These 'softer' issues were explored by Checkland (1990) and provided a route to examine a range of factors. Where factors were identified as key or deserving of a greater degree of detail, the method allowed an iteration (through established fact finding methods such as closer observation or in depth interviews) around the topic to allow further details information to be included in the process. Although providing the opportunity to absorb new learning about project circumstances, Shroff (2000) noted several drawbacks to this more open ended attitude, including that designs are not necessarily produced in a structured manner and the iterations could be many, demanding time and resources with reducing value.

Theory and practice of methods involving business began to extend from projects to analysing operational processes. Improving business performance was championed by Peters (1993) with some notable case studies. The practicalities of undertaking Business Process Reengineering (BPR) as it became known, were discussed by Hammer (1990) where the linkage to IT capabilities in delivering business benefits began to be made.

Formal methods, usually defined as mathematically-based techniques for the specification, development and verification of software and hardware systems, have developed over time in order to support project teams and provide some assurance of successful delivery. E-Government is a change initiative in the public sector which relies heavily upon ICT in delivering the projected benefits outlined in the UK by Modernising Government (1999). The introduction of technology has been examined in some depths by Orlikowski (1993) where the strategy adopted has in certain cases led to user rejection. The evidence of project failure, many examples which are available, were summarised by Laurie (2003) where initial and continued communication was not managed through the introduction of a University accounting system. Having a user as a member of the team is one way to address this, as in many instances the customer and the user will not be the same person. The customer is responsible for handling the business and logistical issues around a project, but it is the user who has ultimate say in whether or not the output from a project, for example an application, is actually usable.

Such thoughts had been incorporated into one of the National Projects in the UK (discussed in more detail in the section headed Modelling and Methods Towards e-Government), which was developing a method to take into account risk and organisational factors in planning a change programme behind the e-Government initiative. This provided a blend of procedural, operational, hard and soft concepts that could be included or omitted, prioritised or completed ad hoc based around the nature of the project under consideration.

Modelling and Methods

Project and programme management, change, technology transfer and business reengineering are examples of disciplines applied in enabling the introduction of new technologies or working practices within an organisational context. This blend of disciplines is intended to motivate, manage and monitor the people and processes involved in the reshaping of the enterprise. Heeks (2008) identified three key factors that can influence the introduction of an e-Government project – people, politics and risk. Where either of these is neglected, Heeks expects the likelihood of failure to increase.

The scale of an undertaking may determine the relevance of applying some or all of these techniques in practice, but a pragmatic blend of these is often required in many instances. The flexibility to consider this blend is clear during the design, rollout and take up of e-Government in developing and industrialised states. The converse costs of ICT and labour between the two nation profiles, discussed by Heeks necessitates the increased role of people in developing nations. The blend requires more focus on change and stakeholder management to support the process, compared to industrialised states where ICT resources are the focus of more controlling project management techniques.

In terms of definitions, we can make distinctions between models, methods, tools and technologies – what were they designed for, what can they achieve and how they are used in practice. Models are generally defined at a high level as the process of representing a real-world object or phenomenon as a set of mathematical equations or analogous processes. They provide a description of observed behaviour, simplified by focusing on key parameters that characterise the entity. Models allow complex systems to be understood and their behaviour predicted within the scope of the model. This complexity is characterised by interconnected parts that as a whole demonstrate one or more properties not obvious from the properties of the individual parts, but may give incorrect descriptions and predictions for situations outside the realm of their intended use. Examples of complex systems include modern energy or telecommunication infrastructures, ant colonies, human economies and the climate.

A model may be used as the basis for simulation. In one instance, the term modelling is often used to describe the process of representing 3-dimensional objects in a computer using Computer Aided Design/Manufacturing (CAD/CAM) or animation

software. A more relevant example is the use of workflow diagrams. These are useful as a precursor to Business Process Reengineering (BPR), using representations of current or planned processes, combined with differing parameters to reflect differing situations.

The use of alternative circumstances, perhaps with higher numbers of transactions or allowing electronic channels for submitting forms, permit modelling in order to find an optimum arrangement or process. For example, the call centre is a centralised office used for the purpose of receiving and transmitting a large volume of requests by telephone. These are increasingly being operated by local and central government administer incoming services, support or information inquiries from citizens. Outgoing calls for citizen advice, support and service delivery are also made. In addition to a call centre, collective handling of letters, faxes, and e-mails at one location is known as a contact centre.

A call centre can be seen from an operational point of view as a queuing network. The simplest call centre, consisting of a single type of customers and statistically-identical servers, can be viewed as a single-queue. Queuing theory is a branch of mathematics in which models of such queuing systems have been developed. These models, in turn, are used to support work force planning and management, for example by helping answer the following common staffing-question: given a service-level, as determined by management, what is the least number of telephone agents that is required to achieve it. (Prevalent examples of service levels are: at least 80% of the callers are answered within 20 seconds; or, no more than 3% of the customers hang-up due to impatience, before being served.)

Call centre operations have been supported by mathematical models beyond queuing, with operations research, which considers a wide range of optimisation problems, being very relevant. For example, for call forecasting, determining shift-structures, and even for analysing customers' impatience while waiting to be served by an agent.

Methods are an organised, documented set of procedures and guidelines for one or more phases of the software life cycle, such as analysis or design. Many methods include a diagramming notation for documenting the results of the procedure; a step-by-step "cookbook" approach for carrying out the procedure; and an objective, preferably quantified, set of criteria. The criteria will normally have been agreed in advance with the relevant stakeholders upon which to determine whether the results of the procedure are of acceptable quality. Fixed price contractual agreements are normally provided by

suppliers based upon a high granularity of requirements being defined to reduce the risk of project overrun.

For example, the waterfall model is an established and widely used variant of the systems development life cycle model for software engineering. The waterfall model is widely used by such large software development houses as those employed by the U.S. Department of Defense and NASA, and for many large government projects. Often considered the classic approach to the systems development life cycle, the waterfall model describes a development method that is linear and sequential, featuring distinct goals for each phase of development.

Imagine a waterfall on the cliff of a steep mountain. Once the water has flowed over the edge of the cliff and has begun its journey down the side of the mountain, then it cannot turn back. It is the same with waterfall development. Once a phase of development is completed, the development proceeds to the next phase and there is no realistic way of turning back. A variation of the model with typical phases is provided in Figure 1.1, A Waterfall Method.

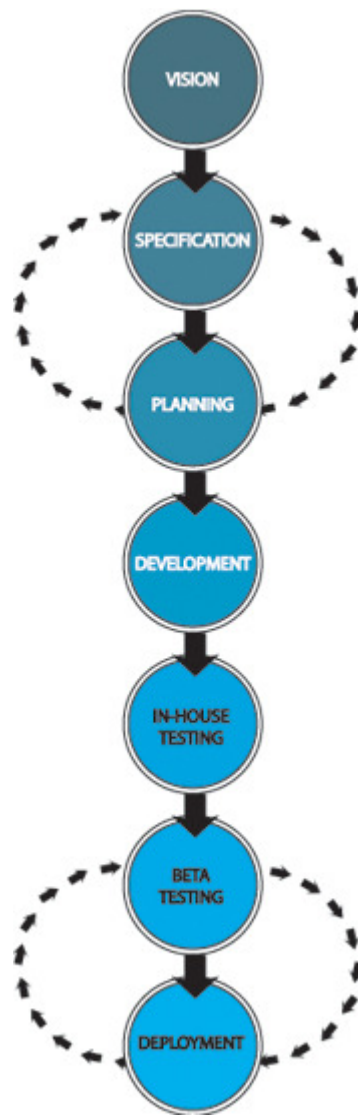


Figure 1.1: A Waterfall Method

The waterfall model provides a structured approach; the model itself progresses linearly through discrete, easily understandable and explainable phases and thus is easy to understand; it also provides easily markable milestones in the development process. It is perhaps for this reason that the waterfall model is used as a beginning example of a development model in many software engineering texts and courses.

It is argued that the waterfall and comparative models can be suited to software projects which are stable (especially those projects with unchanging requirements, such as with off the shelf software) and where it is possible and likely that designers will be able to fully predict problem areas of the system and produce a correct design before implementation is started.

However, the waterfall model is argued by many to be a bad idea in practice, mainly because of their belief that it is impossible, for any non-trivial project, to get one phase of a software product's lifecycle perfected before moving on to the next phases and learning from them.

For example, stakeholders may not be aware of exactly what requirements they want before they see a working prototype and can comment upon it; they may change their requirements constantly, and program designers and implementers may have little control over this. If stakeholders change their requirements after a design is finished, that design must be modified to accommodate the new requirements, invalidating quite a good deal of effort if overly large amounts of time have been invested into design up front.

This is particularly relevant within the e-Government landscape, where designers may not be aware of future implementation difficulties when writing a design for either established or unimplemented software products. That is, it may become clear in the implementation phase that a particular area of program functionality is extraordinarily difficult to implement. If this is the case, it is better to revise the design than to persist in using a design that was made based on faulty predictions and that does not account for the newly discovered problem areas.

An alternative illustration is provided by the Yourdon Methodology, the software engineering method developed by Edward Yourdon and colleagues in the 1970s and 1980s. "Yourdon methodology" is a generic term for all of the following methods: Yourdon/Demarco, Yourdon/Constantine and Coad/Yourdon. This was one of several schools of thinking which contributed to the Structured Systems Analysis and Design Method (SSADM) is a systems approach to the analysis and design of information systems. SSADM was produced for the CCTA, a UK government office concerned with the use of technology in government, from 1980 onwards. SSADM is a waterfall method by which an Information System design can be arrived at; SSADM can be thought to represent a pinnacle of the rigorous document-led approach to system design, and contrasts with more contemporary Rapid Application Development methods such as Dynamic Systems Development Method (DSDM).

Tools are supportive forms of software that are generally used to make something else. Tools are usually heard referred to in the plural form, as in, "A set of development tools". A tool can be any of the following (or in some cases, more than one): a small, text-based application; an HTML-editing application; a huge graphics program and/or a

little mini-action or function performed within a larger application (for example, "cut-and-paste" or "launch application"). Microsoft Visual Studio is an example of a range of software development tools designed for standalone, web site and web service application building.

Technologies are those areas of research that contain relatively well-defined bodies of theory, methods and tasks, and whose results are often the subject of active transfer from research labs into application or hardware development. For example, Customer Relationship Management (CRM) is a technology using this definition (and has underlying technologies such as relational databases). Other areas of technology that are enabling the introduction of e-Government include Electronic Document and Records Management, which is intended to enable organisations to manage documents throughout the life cycle of those documents, from creation to destruction. Further examples include multiple function Smartcards, mass storage facilities and improved search engines which contribute to the sharing, availability and consistent processing of information in line with e-Government objectives.

Looking at the implementation of e-Government, all of the above are applicable given the scale and complexity of the undertaking. This work focuses upon the topic of methods in the context of e-Government, and it will encompass both current use and the future role of methods in the evolution of e-Government.

Models, methods and standards provide routes to promoting consistency and other aspects of best practice, and it is appropriate to note the relationship between successful projects and the measured application of such tools and techniques. Indeed, Lancaster University in conjunction with the British Computer Society (BCS) (2005) identified an increased project failure rate where structured methods pertaining to planning, design and management were absent or minimal in projects of all levels of complexity.

This evolution needs to reflect how the systems lifecycle has become more layered and complex over time. The introduction of enterprise wide systems such as ERP, GIS, CRM and MIS are positioned above business or vertical systems that include financial systems. These business systems themselves are overlaid upon office systems, including email and records management. Changes in any layer can create a 'ripple', spreading the effect of even a small amendment into areas or layers below or above it that had not necessarily been foreseen.

Over the past forty years, the emergence of 'hard' and 'soft' schools of systems thinking have shaped perceptions of approaches to the implementation of IST within

organisations. In hard systems approaches (or Structured Systems Analysis and Design Methodology (SSADM)), rigid techniques and procedures provide unambiguous solutions to well-defined data and processing problems, focused on computer implementations. These problems can be characterised by established manual processes that have rigorous control processes – typical examples include financial accounting, sales order processing or stock control. The nature of these processes are established patterns with limited decision points for choice of actions.

In Soft Systems Methodology (SSM), a "toolbox" of techniques can be used at the discretion of the analyst, focused on improvements to organisational problems. The primary use of SSM is in the analysis of complex situations where there are two factors to be considered. Firstly, there may exist divergent views about the definition of the problem- 'Soft Problems' (e.g. How to improve the National Health Service? How to manage disaster planning?) Secondly, there may be a large number of variables and stakeholders to take account of that differentiates the situation from established and well understood processes.

The method adopted to implement IST influence the way in which decisions are taken in pursuit of objectives within the organisation. The selection of a method can itself be significant, reflecting the nature and philosophy of the organisation and its operations. The way in which functional groups such as production, financial and marketing systems are characterised will determine the way in which each of the subsystems in place will be engineered to optimise the introduction and use of IST in each. The opportunity for overlap can exist – operational systems may suit a hard systems method given the well defined procedural aspects, and this can be complemented with a softer approach dealing with change management for people affected directly or otherwise by the implementation, Awareness raising and training are aspects that can influence perceptions and tolerance of the nature and rate of change, and ultimately the acceptance and success of the project in the medium to long term, an impact discussed by Orlikowski (1993).

Established methods apply a logical series of steps to analyse and redesign or rearrange the features of subsystems, for example Boehm's (1998) description of (and later Sommerville (2000)) waterfall (and later spiral) approaches. Examples of commercial or proprietary methods include Structured Systems Analysis and Design Method (SSADM), advocating a documented process to investigate, assess and

reengineer an identified system or process. Prince 2 (Projects In Controlled Environments) enables formalised control and oversight of an agreed project.

The Modernising Government agenda may have contributed to an increased take up of the method as a 'house style' by public and private bodies as a route to reduce excess spend and over run of projects. The success of this adoption may yet to be realised given the continued focus on failed ICT projects by commentators and the media. Although public accountability bodies such as the National Audit Offices (NAO) do not keep definitive lists of which schemes go wrong, well respected publications regularly assess the apparent lack of control despite a focus on control methods like Prince 2. As an example, the Guardian published findings from its survey of public ICT projects in January 2008. This estimated the cost to the taxpayer of abandoned Whitehall computer projects since 2000 has reached almost £2bn - not including the bill for an online crime reporting site that was cancelled that week. The adoption of methods does not guarantee benefits.

The boundaries of procedural methods may prove to be tested by the expanding remit of e-Government. These challenges reflect the established nature of processes in public organisations, frequently run as autonomous units (or 'silos'), which report to central executives. The silo structure suited a formalised approach to system innovation through hard systems methods, with limited overlap or perceived need to consider external stakeholders. The nature of e-Government represents a widening of process scope and stakeholders which reduces the effectiveness of established methods. Access to information, single update responsibilities and currency of data indicates a growing contrast to a more holistic and integrated approach advocated by Checkland (1990). Factors noted by Bailey (1993) that would fall under a more inclusive approach to introducing technologically linked change (a core feature of e-Government) might include:

- Strategic planning;
- Organisation structures;
- Existing procedures and systems;
- Skill levels and existing training and development programmes;
- Cultural makeup;
- Accepted means of introducing new technologies;

- Design methods and project management;
- Project team membership;
- External relationships.

This expansion of focus, linked to the pressure to consider factors beyond traditional departmental boundaries is increasing the level of complexity in organisational life. Checkland (1999) continued to investigate the focus of broadening the inquiry into management where harder systems engineering techniques discovered limits and boundaries to their applicability. The limitations with an established method, in this case the waterfall type approach, are illustrated through the very objectives of a project utilising such a method – ‘short circuiting’ the steps in search of a reengineered system. Here, stages key to the method were overlooked or bypassed altogether

This was analysed in the action research project presented by Pardo and Scholl (2002), where short circuits to failure in a large project were identified and addressed in a live project, the New York State Central Accounting System Redesign Project. Management pressures came into play and the project risked failure through subsequently trying to take the identified ‘short cuts’ to project delivery. These shortcuts were typified by the two as conducting merely a cursory stakeholder identification process, omitting to seek serious partnerships or ongoing information collection with stakeholders, key or otherwise and usually following a pre-determined path for the project and not developing a plan based on stakeholder feedback.

The Move to Methods

The introduction of computing capabilities into mainstream government and private sector operations can be considered against a timeline that reflects the growth and evolution of the technologies involved. These milestones, illustrated in Figure 1.2, represent advances in technologies that have extended the capabilities of user organisations in terms of communications, productivity and operational capacity. Networks, for example, allow integrated, flexible information sharing, instantaneous information updating and access, lower equipment costs, flexible use of computing power and the secure management of sensitive information.

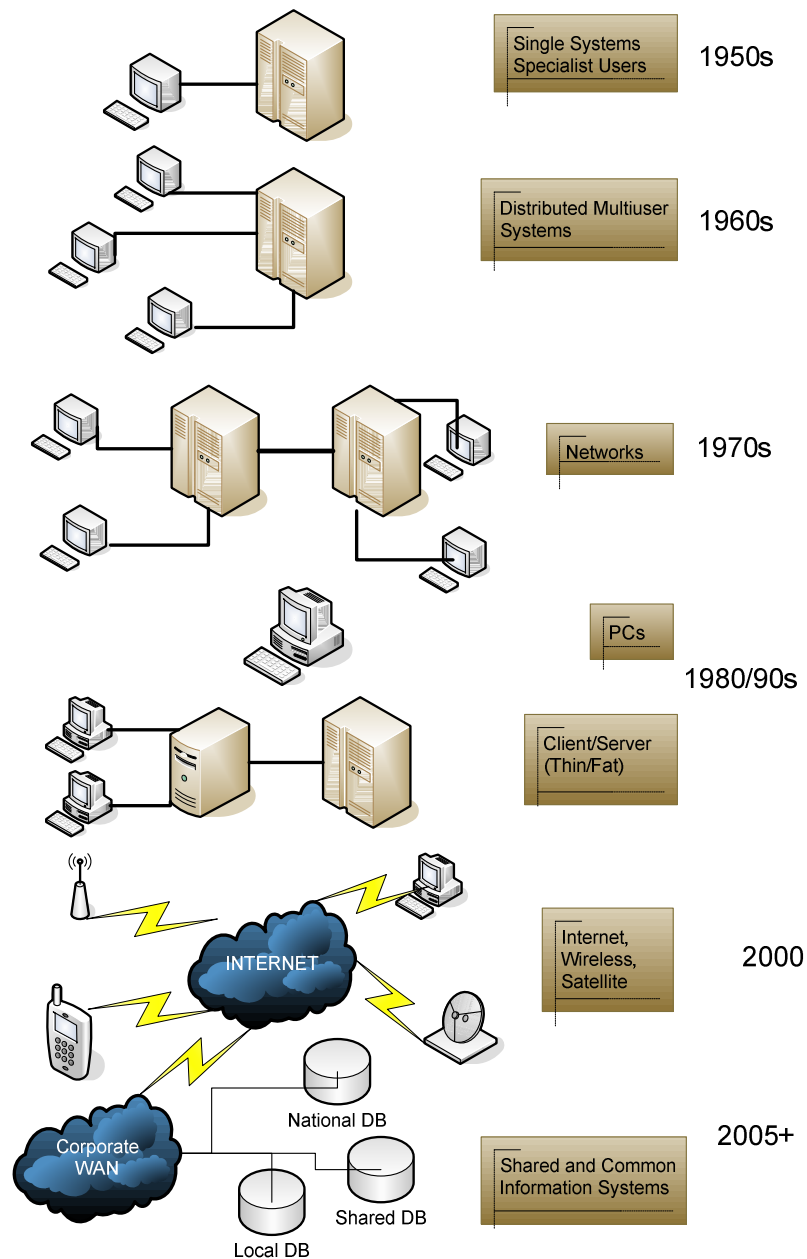


Figure 1.2: The Evolution of Methods Timeline

The technologies involved have consistently developed at a rate that has outstripped the organisational and management processes available to facilitate the optimal means of deploying such technologies. This development rate has become known as Moore's Law (Moore, 1965).

Moore observed an exponential growth in the number of transistors per integrated circuit and predicted that this trend would continue. Although he was also addressing capacity in general, through Intel's relentless technology advances, Moore's Law, the doubling of transistors every couple of years, has been maintained, and still holds true

today. Intel expects that it will continue at least through the end of this decade. The mission of Intel's technology development team is to continue to break down barriers to Moore's Law. This mission may be hindered if the promise of technical advances such as quantum computing where particle properties are used for representing, structuring and operating upon data are not realised.

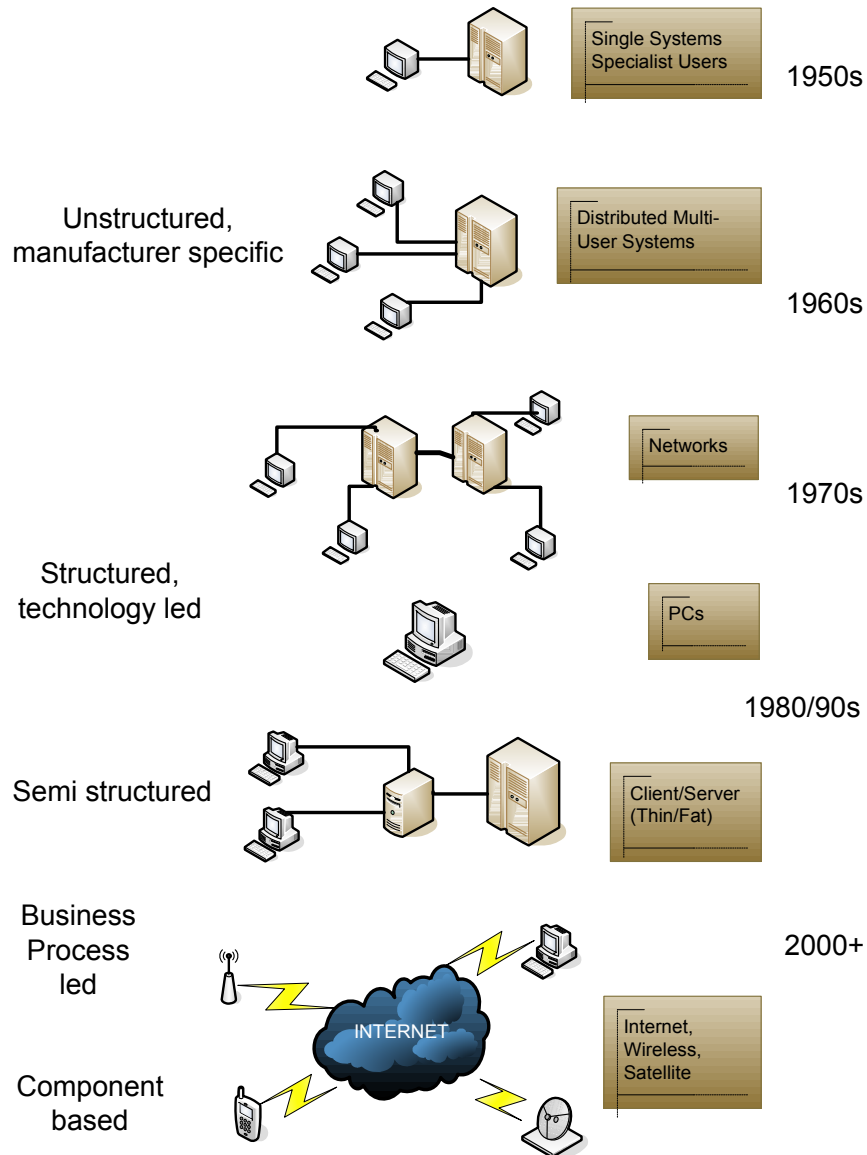


Figure 1.3: Evolution of Methods and Technology – Comparative Timelines

The complexity of the new technologies, tied to the widening opportunities for the practical application of them, led to the evolution of methods intended to ease the preparation, design, construction, implementation, support and eventually replacement of technologies in an organisational context. This move to methods based

transformation has tended to lag behind the introduction of previous technology innovation. This is illustrated in the timeline that reflects the appearance of methods in contrast to the previously highlighted technology milestones, presented in Figure 1.3.

The formats of the methods were derived from the nature of the technologies being addressed as well as the environmental context to which they were to be utilised. The following headings briefly outline the nature of the stages of method development focused on Information Systems using a pertinent example.

Unstructured and Manufacturer Specific Methods

The early days of operational systems were epitomised by installations being islands of technology. Organisations applying the new equipment and systems were usually of a large scale, often Government agencies, with disposable income to tentatively invest time and money in an unproven technology.

The year 1953 saw the development of the IBM 701, which, according to IBM, was the first commercially successful general-purpose computer. The 701's invention, according to Thomas Watson, was to contribute a "defence calculator" to aid in the United Nations' policing of Korea. Only nineteen were manufactured (the machine could be rented for \$15,000 per month). The first 701 went to IBM's world headquarters in New York, the remainder to atomic and other research laboratories, aircraft companies and government and defence agencies.

The IBM 701 was the first of many systems characterised by being manufactured for a specific task by niche technology specialists, using specific instructions and methods defined by the manufacturer. IBM decided to open a new laboratory to provide support for the systems, due to the specialised tasks associated with the implementation of such facilities within an organisation.

Structured and Technology Led Methods

This was a mechanistic, 'hard' school of systems thinking coinciding with a move to efficiencies, cost gains and leveraging the economies of scale in line with the scope of the systems involved. The approach was characterised with the definition of a formal

series of stages and processes, providing the team delivering a system with a common process and context, where progress could be clearly assessed and set outputs for each stage.

Control methods as a branch of management science were developing, with pioneer organisations such as the US Navy, Lockheed and Remington Rand developing tools and techniques such as Program Evaluation and Review Technique (PERT) and Critical Path Method (CPM) which have led to recognised programme and project management disciplines, for example Prince 2.

The methods growth led to more formal and generic techniques being developed away from specific devices. The premise of supplier or device specific ('proprietary') standards began as commercial strategies intended to lock customers in to a product or service. As the cost of computing dropped with a wider take up, the commercial viability and acceptability of this commercial model has declined. IBM, historically a major force in the development of ICT technologies and for many years a proponent of proprietary models has committed to open standards. Robert Sutor, Vice President, Open Source and Standards at IBM commented in 2007 that

“Open standards are key to government ICT programmes because they provide insurance that the systems they have today will be able to talk to the systems they put in tomorrow, and next year, and in the decades to follow. This is especially true for documents, because what is expressed in the documents created by governments and citizens now will become the history of the future”.

Examples of the structured school are summarised below.

Structured Systems Analysis and Design Method (SSADM)

SSADM is a set of standards developed in the early 1980s for systems analysis and application design widely used for government computing projects in the United Kingdom. SSADM uses a combination of text and diagrams throughout the whole life cycle of a system design, from the initial design idea to the actual physical design of the application. SSADM uses a combination of three techniques:

Logical Data Modelling - the process of identifying, modelling and documenting the data requirements of the system being designed. The data is separated into *entities* (things about which a business needs to record information) and *relationships* (the associations between the entities).

Data Flow Modelling - the process of identifying, modelling and documenting how data moves around an information system. Data Flow Modelling examines *processes* (activities that transform data from one form to another), *data stores* (the holding areas for data), *external entities* (what sends data into a system or receives data from a system, and *data flows* (routes by which data can flow).

Entity Behavior Modelling - the process of identifying, modelling and documenting the events that affect each entity and the sequence in which these events occur.

Each of these three system models provides a different viewpoint of the same system, and each viewpoint is required to form a complete model of the system being designed. The three techniques are cross-referenced against each other to ensure the completeness and accuracy of the whole application. SSADM projects are usually divided into five modules that are further broken down into a hierarchy of stages, steps and tasks:

1. **Feasibility Study** - the business area is analysed to determine whether a system can cost effectively support the business requirements.
2. **Requirements Analysis** - the requirements of the system to be developed are identified and the current business environment is modeled in terms of the processes carried out and the data structures involved.
3. **Requirements Specification** - detailed functional and non-functional requirements are identified and new techniques are introduced to define the required processing and data structures.
4. **Logical System Specification** - technical systems options are produced, as are the logical designs of update and enquiry processing and system dialogues.
5. **Physical Design** - a physical database design and program specifications are created using the logical and technical system specifications.

Unlike Rapid Application Development (RAD), which conducts steps in parallel, SSADM builds each step on the work that was prescribed in the previous step with no deviation from the model. Because of the rigid structure of the method, SSADM is praised for its control over projects and its ability to develop better quality systems.

Systems Development Life Cycle (SDLC)

SDLC is the process of developing information systems through investigation, analysis, design, implementation and maintenance. SDLC is also known as *information systems development* or *application development*. SDLC is a systems approach to problem solving and is made up of several phases, each comprised of multiple steps, including:

The Software Concept - identifies and defines a need for the new system.

A Requirements Analysis - analyses the information needs of the end users.

The Architectural Design - creates a blueprint for the design with the necessary specifications for the hardware, software, people and data resources.

Coding and Debugging - creates and programs the final system.

System Testing - evaluates a system's actual in relation to expected or intended functionality.

Data Flow Modelling - the technique is one of the foundations of SSADM.

Semi Structured Methods

The observation by practitioners and commentators, most notably Peter Checkland, of the boundaries imposed on the so-called 'hard' systems thinking led to an alternative approach, Soft Systems Methodology (SSM). Here, the philosophy was centered on the context and wider environment in which the new system was to become a part of.

In contrast to structured methods, SSM encouraged the user community becoming an integral part of the team from initial meetings through to post-implementation reviews. This provided for a continual review process, contributing to an increased probability of user acceptance. Figure 1.4 illustrates a typical SSM 'map' diagram, which involves the users and stakeholders in agreeing the form and nature of both the issue at hand and the route to defining and providing a solution. Previous practice often involved users through production of a requirements document, which was engineered into a solution where the users returned to the project for acceptance and training.

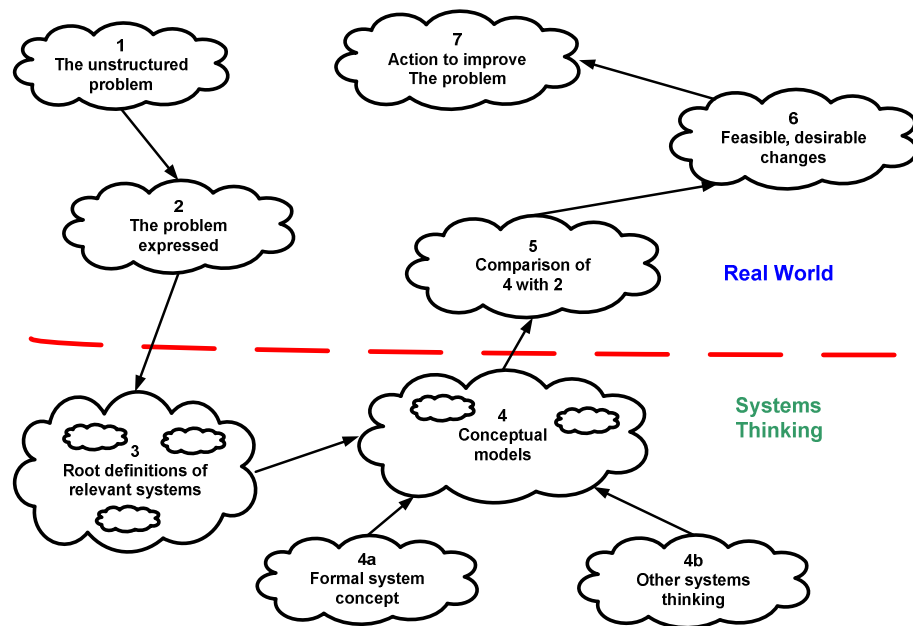


Figure 1.4: SSM Map

SSM is divided into seven distinct stages. These are:-

1. **Finding out about the problem situation.** This is basic research into the problem area. Who are the key players? How does the process work now?
2. **Expressing the problem situation through Rich Pictures.** As with any type of diagram, more knowledge can be communicated visually – ‘a picture is worth a thousand words’.
3. **Selecting how to view the situation and producing root definitions.** From what different perspectives can we look at this problem situation?
4. **Building conceptual models of what the system must do for each root definition.** From earlier investigation, there have been "Whats" derived from the root definitions. The next stage allows definition of the "Hows" to begin.
5. **Comparison of the conceptual models with the real world.** Compare the results from steps 4 and 2: compare and contrast the differences and are there similarities?
6. **Identify feasible and desirable changes.** Are there ways of improving the situation?
7. **Recommendations for taking action to improve the problem situation.** Explain how the changes identified in step 6 would be implemented.

SSM is essentially an iterative approach: in many cases, several iterations of these steps are required to produce good results in a complex situation. The adoption of a ‘Weltanschauung’ or world view provided for richer factors to be taken into account. A criticism of SSM has been based on its contrast to structured methods through the difficulty in setting boundaries to design criteria, as opposed to setting formal rigid parameters at the outset. In terms of the demands regarding delivery of systems on a goal-oriented basis (such as e-Government), Shroff (2000) noted that:

- SSM does not actually tell you how to build a system;
- Problems are not structured but ‘fuzzy’ and subject to change because people are involved;
- Requirements emerge from a discussion and bargaining process;
- There is no way of telling whether an SSM project is a success or a failure;
- It includes non-technical issues;
- Only covers requirements stage;
- Requires time, money and experts;
- It produces models of system activity that are usually informal and therefore subject to misunderstanding;
- It ignores issues of power. It is based on the idea that managers and workers can openly discuss their problems and needs;
- Its emphasis on human facilitators to manage the process and requires more than one participant (which may not always be the case in Requirements Engineering);
- Many times this may result in the restructuring of an organisation;
- The analyst may cycle round the processes until a well-formed root definition is agreed and a goal can never be reached.

Although e-Government is a change agent through use of technology in one respect, a number of these limitations do not allow the complete use of SSM given the constraints faced by many national Governments. Although these constraints are not dissimilar to recognised project management issues, their nature can be subtly different and can include:

- Limited or poor change management;
- Low internal political desire;
- Lack of overall vision or strategy;
- Dominance of self interest;
- Inter-jurisdictional or inter-agency issues;
- Budgetary or other resource commitment.

Where a project has been commissioned, the limitation applies to the extensive procedural method provided by the project control method Prince 2. Timescales, resources and targets in terms of improved service levels do not provide scope for a lengthy re-assessment of an organisation where the requirements are already well documented. Indeed, these requirements are already being delivered through manual or automated procedures and the improvements sought from e-Government are focused around wider channels for service user access, improved communications between delivery units and subsequent cost and efficiency gains.

There are several variations on the SSM approach, including KJM, Praxis, Boardman SSM, KADS and PCP. Other versions, such as Dynamic Systems Development Method (DSDM) and RAD provide iterative routes on a more simplistic and user oriented basis, often referred to as agile methods.

Business Process Led Methods

The wider view adopted by SSM appears to have taken root with management scientists. The discipline that has become known as Business Process Reengineering (BPR) has adopted a wider focus on organisational improvement. Muthu, Whitman and Cheragi (1999) state that:

“Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed.”

The role of IT is recognised by commentators as a key enabler in the reengineering process. BPR does not see business activities as a simple collection of tasks. BPR and

IT do not exist in isolation and support each other in maximising the capabilities and effectiveness of each other. Hammer (1990) states that the interconnectedness of IT and BPR is forged through the principles of reengineering, which he states are:

- Organise around outcomes, not tasks;
- Have those who use the output of the process perform the process;
- Subsume information processing work into the real work that produces the information;
- Treat geographically dispersed resources as though they were centralised;
- Link parallel activities instead of integrating their results;
- Put the decision point where the work is performed, and build control into the process;
- Capture information once and at the source.

This seemingly radical approach has produced notable champions, including Peters (1993). From populist and prominent work in the field of management, Peters embraced the concept of BPR and continued to assess the wider pressures and future direction of organisations. However, despite the increased holistic nature of the method, Malhotra (1999) states that 70% of specifically BPR projects fail. The primary obstacles cited by Malhotra that reengineering faces are:

- Lack of sustained management commitment and leadership;
- Unrealistic scope and expectations;
- Resistance to change.

Although the view of outcomes rather than tasks in BPR may be reflected in the service aspect of e-Government, the assessment in its entirety of an enterprise as a cornerstone of BPR does not lend itself to its application in this field. IT is a key enabler for e-Government, but in a parallel to the requirements of SSM, timescales, resources and targets in terms of improved service levels do not provide scope for a lengthy re-appraisal of an organisation where the processes are too heavily ingrained.

Indeed, these processes will be subject to change based on delivery through new means. As the improvements sought from e-Government are focused around wider

channels for service user access, improved communications between delivery units and subsequent cost and efficiency gains, there is an element, if somewhat cursory, of BPR in the process in the short term. E-Government has slightly improved take-up of the approach, but the perception of BPR as being a major commitment and a break in business continuity presents a major barrier to significant corporate change projects.

Commentary

In preparing an organisation, especially those within the public sector, for a sea change in service delivery presented by e-Government, there is a requirement for a suitable design method at both an organisational and technological level. The selection of a relevant method will provide consistency across the multiple stakeholders, processes and boundaries within a complex project. The requirement referred to is driven by the likelihood of benefits accruing through method use increasing, which can include reduced risk, improved quality and reduced delay.

Historically, as the above section has recounted, methods have lagged behind developments in other disciplines. The adoption of new working methods, particularly where new technology has been involved, can prove difficult. This was illustrated by Orlikowski (1993), who shows through an analysis of implementations of Computer Aided Software Engineering (CASE) technology, that organisations run the risk of new systems or methods being rejected by the user community through a poorly considered strategy of introduction.

The adoption of a suitable method in support of delivering the Modernising Government agenda therefore has to take into account the type of factors presented above through introducing a combination of change and technology at a varying number of levels both internally and externally. There have been three clear phases in delivering e-Government, starting with government led initiatives and direction. This has led to a second phase where best practice in numerous disciplines has often resulted from experience from first phase projects. The third phase has culminated in a quest for return on investment, characterised in the UK in the driving out of efficiencies in organisations. Further phases are yet to take shape.

Each phase has overlapped to differing degrees, each presenting risk centered on the technical, organisational and process based changes involved in an e-Government

programme. The risks presented by change can make automation of existing processes alone easier than a combination of process change and automation. It may also follow that the method selected by an organisation may reflect the attitude and nature of the organisation to both its members and the communities it does business with, collaborates with and serves. The following section outlines the continuing evolution of the methods presented above, and how the nature of e-Government and its operational and technical environment continue to shape a new generation of methods.

Modelling and Methods Toward e-Government

The statutory activities and responsibilities that public sector organisations support through use of documented procedures and IST are consistent across the UK, with minor variations in the nation states of England, Scotland and Wales. Organisations in the public sector have a mixed record of using methods in introducing IST for new or replacement systems, as Collins (2000) observes in his appraisal of some of the lesser successful projects.

The UK Government has made use of a concept entitled National Projects in the e-Government programme, and a list of these is provided in Appendix I, National Projects. The strategy created proven generic solutions covering key priority services provided by local authorities. The aim of the projects was to ensure all councils have access to key electronic services and building blocks, without having to build them from scratch. The projects pulled together councils, central government, the private sector and others to define and deliver projects that offer national solutions. The products from the national projects have now been migrated to interested agencies, mainly local authorities.

The projects consisted of twenty two funded Local Government Online (LGOL) initiatives, which aimed at exploring and developing new ways of implementing e-Government. These are intended to provide consistent 'blueprints' for organisations undertaking projects which inherently address the same core requirements. These blueprints support all the activities involved in the development, deployment and continued operation of an IST project, which are all candidates for design, implementation and management through relevant techniques.

The levels of sustainability between the projects have proved somewhat variable, despite the contribution to the March 2006 IEG 6 returns from all local authorities in England showing that the average local authority was 98 per cent e-enabled, and that 84 per cent of Priority Service Outcomes delivered (on 'green') by the end of March of that year and 15 per cent in the active process of being delivered (on 'amber'). The factors influencing the sustainability include ensuring a clear, collective, corporate vision, building strong partnership arrangements, continued consultation with users and potential users in developing services and ongoing staff management and development.

The Government may have recognised a shortcoming of available methods tailored to address the nuances associated with e-Government projects. The combination of factors that sets e-Government apart (including change, new technologies, process re-engineering and so on), may not be perceived as particularly onerous within a single project. However, converging circumstances and scale multiply the complexity to be taken into account, and brings into question the applicability and support offered by existing methods.

One of the National Projects, intended to address new or complex areas of the e-Government agenda was the Salford Process Reengineering method Involving New Technology (SPRINT). The new method was designed to introduce programmes involving the level of complexity and risk presented by the implementation of e-Government. To date, few Local Authorities have publicly adopted SPRINT for their e-Government programmes. Current empirical evidence and fieldwork has suggested that the use of existing methods and particularly project management (notably Prince 2) are being employed to control the implementation of e-Government within the public sector.

There is a clear, if somewhat potted, genealogy for the techniques used to specifically deliver e-Government in the UK and elsewhere. The succinctness of new techniques and tools such as the C programming languages and the immediacy of equipment such as Personal Computers (PCs) can provide such ancestry through the 1980s. The increased availability of user oriented applications (for example personal databases and spreadsheets typified by dBase and Lotus 1-2-3) were leading to ad hoc systems appearing within organisations across public and private sectors without regard to organisational standards or best practice.

Again, in a responsive manner, formalised techniques such as prototyping and RAD came into being following these paradigm shifts in both technology and user attitudes to

the benefits of the technology. The application (or otherwise) of appropriate techniques and a reliance on control methods has really only served to throw into sharp relief the gap between established thinking and practice compared to new situations and circumstances arising from the change in systems and practice driven by strategic initiatives characterised by e-Government generally.

A Component Based Method

Through experiences with large projects, the national UK Government has continued to develop a methods based approach centered on Best Practice. A statement of this experience came from the Central Computer and Telecommunications Agency (CCTA), now absorbed into the Office of Government Commerce (OGC) in the shape of ‘An Introduction to Project Management’ published in 1993 by HMSO. Subsequent revisions of this has evolved into recent and contemporary methods like SPRINT, which are not stepped processes with formal stages, but a superstructure of guidelines and standards to lead to a solution that addresses interoperability between public and private agencies.

The current status of this superstructure relates several core components. The relationship of these components compared to previous methods discussed earlier in this section is illustrated in Figure 1.5, Implementation Methods.

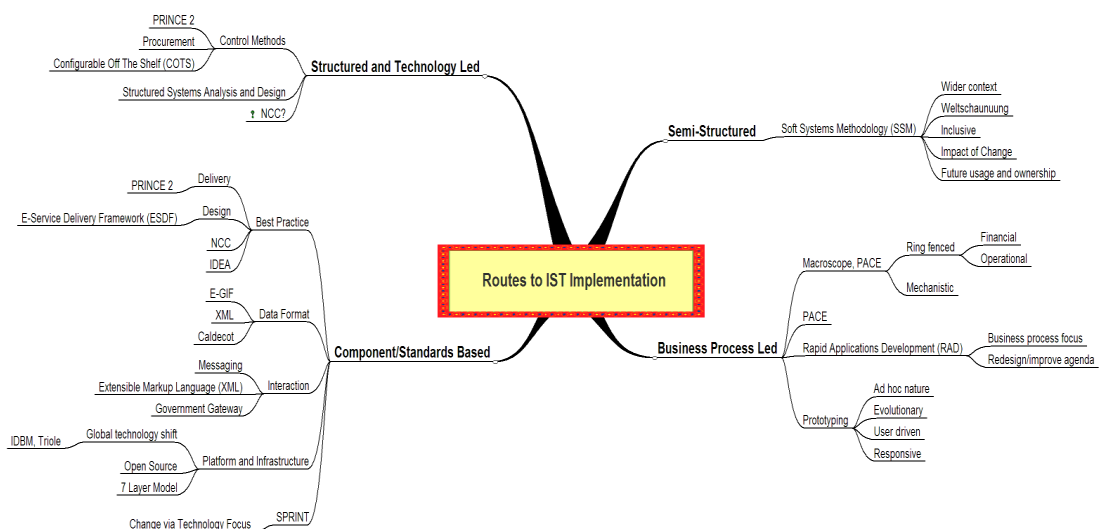


Figure 1.5: Implementation Methods

Best Practice

The acceptance across many disciplines, professions and industries of best practice as a management idea is evidenced by the proliferation of books and articles on the topic. This approach of a form of continual improvement has been reenergised by e-Government, reasserting that there is always opportunity to better or replace a technique, method, process, activity, incentive or reward with something that is more effective at delivering a particular outcome than any other.

Increasingly the role of arbiter, or defining source, of Best Practice, especially for the public sector, has been adopted by the Improvement and Development Agency (I&DeA), whose strategic objectives are derived from the Local Government Association's (LGA) Performance Partnership themes. For 2004/5, these are:

- improving leadership skills;
- building corporate capacity;
- developing workforce capacity;
- improving service delivery;
- strengthening community well-being and engagement.

In terms of the contribution of e-Government to these worthy themes, the Gershon review of 2004 has continued the striving for continued improvement across the UK public sector through focusing upon efficiency savings. The level of consistency in solutions and philosophy across the e-Government programme is outlined in the following headings which underpin the programme.

Data Format

The collection, processing, storage, sharing and dissemination of information in both internal and external contexts have already provided significant benefits (and also fuelled political debate) for operational aspects of e-Government and interoperability. The development of data structures, formats and schemas (e.g. e-GIF, XML) has arisen to ensure consistency in the exchange and use of data items. There is also a British Standard (BS150000) addressing specific types of information that are particularly common in the public domain, and a National Project, APLAWS, was commissioned by the British Government as part of its e-Government strategy. It contains many features

which are particularly suited for use by local authority websites, such as workflows and generation of metadata, but it has also been used successfully by a range of other public and private sector organisations. APLAWS is a fully featured Open Source Content Management System (CMS).

As an example, the health and social care sector collaborated in deriving the Caldecott data and information management protocols. Agencies involved with related information often appoint an officer tasked with overseeing the implementation and use of the standards on an ongoing basis.

The application of, and adherence to, these formats on a national basis have driven de facto standards for Internet based services and applications in both the public and private sector (notably in the developing situation where private sector companies are increasingly taking responsibility for delivery of public sector services).

Interaction

Information security and confidentiality are mandatory responsibilities of the public sector, for example benefit claims, school records and voter registrations. The relationship between agencies and their systems (electronic or otherwise) is currently provided for at two levels, the first being an interactive electronic portal (the 'Government Gateway') and the Extensible Markup Language (XML) protocol for interaction. It is worth noting that in addition to XML, some sharing of metadata may be required in order to interpret partner information.

Government Gateway

The Government Gateway is the centralised registration service for UK e-Government services. It is an integral part of delivering 'joined up' Government, enabling people to communicate and make transactions with many parts of Government from a single point of entry. The Government Gateway makes e-Government a reality; modernising the way citizens do business with the Government.

Local Authorities are required to subscribe to the Gateway if they wish to exchange secure information centrally. Central Government does not recognise the Internet as a suitable secure platform. The service, Government Connects, is a closed Wide Area Network (WAN) / Extranet, and is the only approved Government standard for sharing secure information. Currently, costs are covered for authorities wishing to connect following concerns in the IT industry regarding value for money and specifications.

Although not mandatory, it is interesting to note that the Department for Health and the NHS are not subscribing, relying on the internal National Programme for IT (Npfit) to provide suitable facilities.

Registering with the Government Gateway enables individuals to sign up for any of the UK Government's services that can be carried out over the Internet. When the registration process is completed, the citizen will be able to use a single User ID or digital certificate to send and receive forms, such as tax and VAT returns. The forms are sent using the relevant Government departmental web site or third party software packages.

In Figure 1.6, the Government Gateway Structure (after the Department for Rural Affairs (DEFRA) diagram) shows how the Government Gateway interacts with organisations and Government departments.

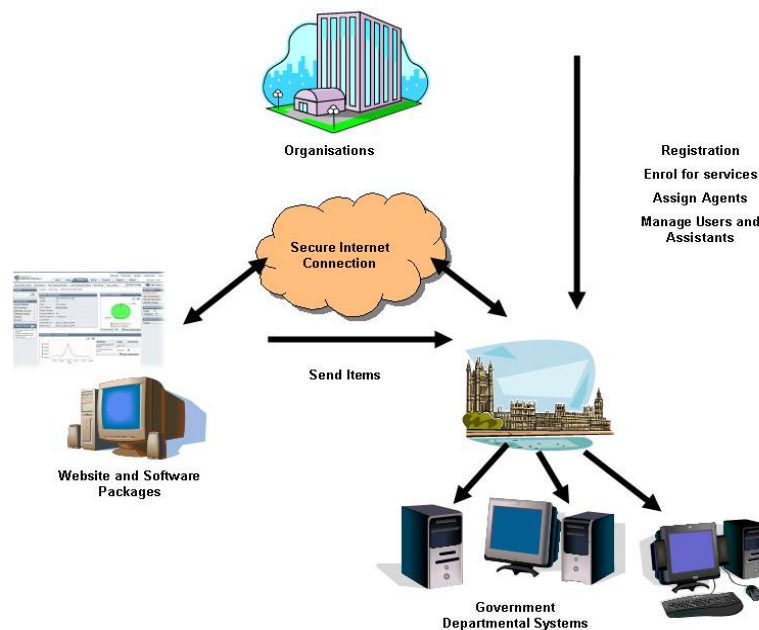


Figure 1.6: Government Gateway Structure (after DEFRA)

XML

XML is a World Wide Web Consortium (W3C) recommended general-purpose markup language for describing many different kinds of data and containing it too, for example in a database. Its primary purpose is to facilitate the sharing of data across different systems, particularly systems connected via the Internet. Languages based on

XML are defined in a formal way, allowing programs to modify and validate documents in these languages without prior knowledge of their form.

With XML, the emphasis is on ‘pipes’ between systems, not storage boxes. An illustration of this interaction is the flow of an updated client record on a Social Services client index module, which through integrated workflow rules initiates an electronic message. The message is received by an Electronic Document and Records Management (EDRM) service within an NHS Trust unit. The message and applications interact using agreed formats, such as XML, seamlessly enabling records to be updated in conjunction with several users being notified and workflow updated accordingly. The key factor is that of agreement between agencies over information structure, such as local information structure implementations, still lead to variations: current NHS national projects still consist of large data migration components at their initial stages to ensure consistency across subscribing agencies.

Commentary

The principle of best practice is not always to achieve. Cozzen (2001) reporting on best practice for the Canadian Council of Scientific and Technology Advisors (CSTA) highlighted that reviewing and reacting to criticism is not without difficulties. Some agencies keep their review reports internal, but those that make them public are more pleased with their results. In the UK, the I&DeA places a special value on best practice to improve agencies and their services. They support implementation through funding initiatives and services to organisations including peer review and challenges, bespoke consultancy and assistance in redesigning services and implementing efficiencies.

The implementation of methods, be they control and management like Prince 2 or having a broader focus like SPRINT are costly in staff and stakeholder preparation time, in training expenses for practitioners, and in administrative terms when they are first used. The time in preparing, planning and using such processes, however, is intended to bring longer term rewards for the investments in the method with substantial improvements in successful outcomes for such major undertakings.

Platforms and Infrastructure

The use of proprietary methods, applications and infrastructure has had a reducing relevance within the public sector marketplace as the connecting nature of the e-Government environment has been prioritised. The services provided, in terms of a requirements definition stage have become, on a de-facto mandatory basis, framed by standards and best practice that forces a philosophy of open systems for e-Government which suppliers need to provide if they are to qualify for contracts.

Transparency of system function and data format enables this in a sector that is subject to formal government control through legislation. This avoids the unregulated shifting of economic trends of technology, a marketplace that can notoriously be subject to monopolisation by major industry stakeholders or overtaking by new developments.

As stated earlier in this section, the corresponding development of methods suitable for the delivery of IST projects has tended to lag behind the take up of new technologies. The IT services industry itself is reflecting this shift in a combined top down and bottom approach to address the organisational and technical objectives of the marketplace. This has taken the form of complementary methods, where an infrastructure solution is designed to cater for the technical platform, supported by a design and implementation method rooted in the component based methods such as prototyping, reuse and RAD.

Enterprise Architecture (EA) is not a new discipline in information systems, and they are being applied across numerous specialisms (such as software, network and systems). The attraction of this approach are in the manner in which they cope with a current and planned totality of information systems – the integration of business, data, information and technology into a coherent whole. Several approaches exist, inspired by the Zachmann Framework first elicited in 1987 (summarily presented in Appendix G).

John Zachmann is the "Father" of the Zachmann Framework for Enterprise Architecture and Information Systems Architecture. This was developed by John Zachmann from observing how established industries, notably architecture, construction, engineering and manufacturing, manage change. He applied the lessons these industries have learned over hundreds of years to the Zachmann Framework for Enterprise Architecture and Information Systems Architecture. It has been designed to allow managers and IT departments of organisations to work together for the design and change of enterprises and the computer systems that support them, to develop a capability for rapid organisational change.

The value of the EA approach in terms of e-Government lies in the cross-organisational and technological aspects. Where architectures have traditionally been developed on a departmental basis within the public sector, EA can provide an opportunity for institutions to work internally and interact with customers in a transformational context. One of the National Projects for e-Government is the Framework for Multi-Agency Environments (FAME). This provided additional facilities to an EA approach in terms of the governance of cross-organisational working, specifically in the area of children's services, social inclusion and shared services where legislation such as the Children's Act 2004 place considerable emphasis on multi-agency working.

Other developments in common frameworks for cross-agency architecting that would apply to public and stakeholder agencies include super enterprise and community driven architectures. These frameworks will focus on decision-making throughout the enterprise life cycle, explicitly showing linkages to the existing architectural models. They are intended to build on the existing frameworks to become a higher-level abstraction to which all others can relate. The move of organisations towards such arrangements is likely to be incremental given the previous discussions concerning the risks perceived in extensive BPR programmes.

Examples of these methods include Enterprise Resource Planning (ERP), a business management system that integrates all facets of the business, including planning, manufacturing, sales, and marketing. This type of method has emerged to help organisations implement ERP solutions, including e-Government in an ESD context, in business activities such as inventory control, order tracking, customer service, finance and human resources.

Appendix C, TRIOLE, IDBM and SDBM, provides an example of a prominent supplier developing a strategic architecture influenced by the shift in infrastructure requirements and design including e-Government, supported by a complementary method, Infrastructure Design and Build Method (IDBM). This enables a component based solution design where elements can be taken 'off the shelf' as part of system builds.

Service delivery is also subject to development of methods and standards to ensure consistency of IT operations. The IDBM approach is complemented by the same supplier developing the Service Delivery and Build Method (SDBM) to ensure a smooth transition from an implementation phase into an operational and service

management cycle. National guidelines from the Office of Government Commerce (OGC) in the UK for delivery of service are provided through the Information Technology Infrastructure Library (ITIL).

The scaling and growth focus presented by these and others in a similar vein reflect the move by private industry to support the trend toward aggregation and shared service, and as such reflect closely the Component Based method outlined previously as well as providing rapid implementations that address the value aspect of the e-Government agenda.

Commentary

The Open Systems Interconnection (OSI) Seven Layer Model provided an ancestry for the component methods model that may well prove to be a long term method for e-Government implementation and development, subject to increased service availability and the corresponding volume of uptake growth.

It has separated function from form and content, through means of a ‘system scaffolding’ where diverse components, on a bespoke or off the shelf basis can be combined to deliver the solution required. This can be perceived as a classic case of abstraction within the computing environment, and can be applied to the differing layers of e-Government from a client or customer layer through to data sharing, application or communication ‘layers’.

Information, defined by controlling standards and protocols such as Caldecott, XML and e-GIF, will continue to provide the public sector with consistent sharing principles and enable control over other foundation technologies in the lower technology levels (e.g. wireless, broadband, messaging and security channels).

Government Through Technology

This section discusses e-Government and other aspects of the technologies with relevance to methods. Here, IST related projects are characterised in a general sense and parallels are drawn with other wide scale technology implementations in the same vein as e-Government. It goes on to present methods as a route to promoting consistency and

other aspects of best practice, noting the relationship between successful projects and the measured application of such tools and techniques.

Delivery

Local Authority projects to implement e-Government have been subject to several constraints since 1997, which have formally included:-

1. Timescales

The target date for implementing Electronic Service Delivery (ESD) was presented in the UK Government White Paper, 'Modernising Government';

2. Financial

Only limited additional funds were made available through the funding round provided by the Office of the Deputy Prime Minister (ODPM), known as Implementing Electronic Government, based on reported progress and planning activity;

3. Skills/Resourcing

The relative dearth of technical skills has subsequently been addressed following the major public investment in ESD;

4. Demand

Take up of service proved difficult to predict and growths in Internet channel usage have coincided with an increased use of established channels, notably telephone access.

To consolidate existing capabilities and in order to maximise value available from limited funds, the use of tools such as Prince 2 has characterised many e-Government projects. The method, which is summarised in Appendix D – Prince 2, provides a recognised and consistent means for overseeing and controlling the process, not necessarily the design and development of solutions to provide ESD.

Technology Shift

The rapidity of the appearance of new applications, services and equipment in the internet field has continued since the early Nineties. The ability of organisations to assess or develop a solution to perceived requirements has been hindered by a lack of method in this space that can track or operate above the changing nature of the technologies that can meet the organisational needs.

Supplier organisations have begun to address this in terms of greater separation of requirements to the solution. The component based methods being applied to support the introduction of e-Government have, in the tradition of methods development, followed in the wake of technology itself. These methods continue to evolve in the categories described below, where the third provides the potential to realistically support in the medium to long term the implementation and subsequent development of e-Government projects.

1. Change Management

The departure in emphasis to improved and electronic service delivery has presented change as a major factor in enabling public sector organisations to introduce e-Government. A wider view, having its ancestry in Soft Systems Methodology, enables less tangible issues to be taken into account including the service user and provider viewpoints in changing access to and delivery of services through increased and widely differing channels.

Routes that facilitate change, in this case facilitated by technology innovation, are explored through techniques like the ADKAR model or Kurt Lewin's 'unfreezing' model. Newer methods such as SPRINT incorporate elements of change management, recognising the need to spot trends in the local environment and initiate suitable activities. Appendix E, SPRINT, provides a high level overview of the technique. In being funded as a National Project by the Office of the Deputy Prime Minister (ODPM), it demonstrates recognition by national government of the need for a mechanism whereby multiple and diverse organisations can implement a centrally driven agenda driven by technology at a local (or increasingly aggregated) level.

2. e-Service Development Framework (ESDF)

The anecdotal stereotype profile of the public sector (especially Local Government) is, traditionally, due to funding and accountability factors, that of a late adopter or

'laggard' according to the model proposed by Rogers (1962), of new technologies. The curve identified by Rogers is presented in Figure 1.7 below.

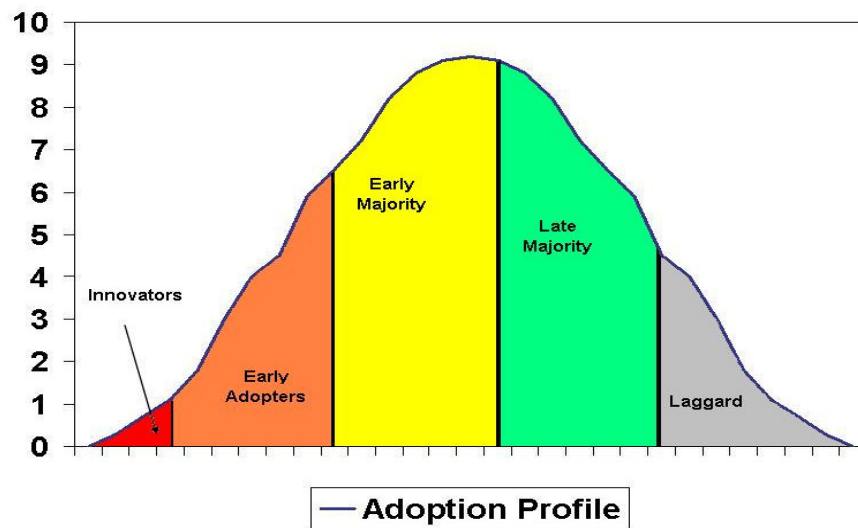


Figure 1.7: Adoption Curve

One factor is that of statutory responsibilities, often represented by the continuity of service to the public. Early adoption is not always an option for organisations unable to countenance the unproven nature of new and developing technologies. Funding does play a different role at different points on this curve, for example as further persuading early adopters or innovators, or providing firm incentives for laggards.

The emphasis and commitment placed on e-Government has had the effect of placing public sector agencies earlier in the technology adoption curve. Central Government has politically and to a lesser extent financially empowered public agencies to exploit different channels and technologies to attain improved public services. This exploitation is typified by the NOMAD project, intended to explore the potential applications and benefits presented by mobile technologies.

These improvements, reiterated by Gershon, are intended to include savings, efficiency gains and wider take up of services. The public sector through e-Government has provided an impetus for the continued development of Internet technologies initially in terms of design, implementation and service growth.

3. Layered/Architectural Models

The delivery of ICT solutions within established design models has been typified through the use of 'layers'. Top layers related to user and business factors or user interfaces, and lower level layers tended to present physical technologies such as communications protocols (e.g. TCP/IP). As an example, the seven layer network architecture (based on the OSI model) is illustrated in Figure 1.8 below.

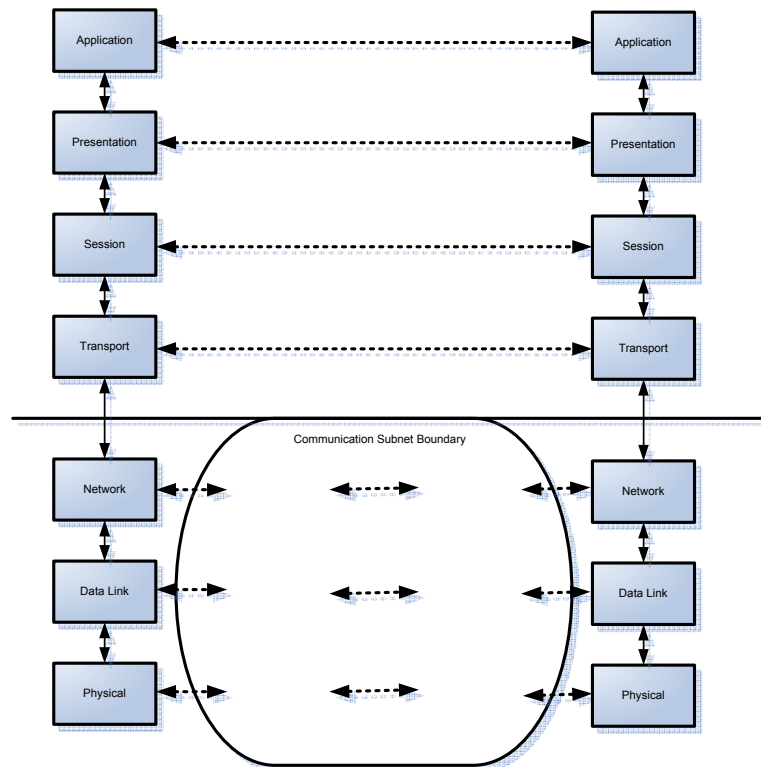


Figure 1.8: Network Architecture (based on the OSI model)

Each layer is defined as providing functionality through different entities, and interacting only with the layer directly below it whilst providing facilities for the layer above it. The layers provide for:

- Application – services in the application, e.g. file system operations;
- Presentation – conversion, e.g. numbers on hosts with differing math formats;
- Session – non communication issue handling e.g. pairing request/reply packets for procedure calls;
- Transport – end to end communication control e.g. how retransmissions are used for data delivery;

- Network - routing information over the network;
- Data Link – error control between nodes e.g. framing, addressing/packet checksums;
- Physical – connecting media, e.g. coax cable, BNC connectors/termination methods.

Thus, the model provides remote host communication capability. It is a hierarchical and mechanistic model, signifying little of the information and relationships involved in multi-agency working.

4. The Unitary Network and Cooperative Architecture

Use of an architecture model for representing the implementation of e-Government is a potential bridge between traditional design and representation methods. Castellano, Pastori and Arcieri (2004) discuss a potential method considered by the Italian agency responsible for e-Government (CNIPA) that offers an alternative to overly high and low levels currently employed.

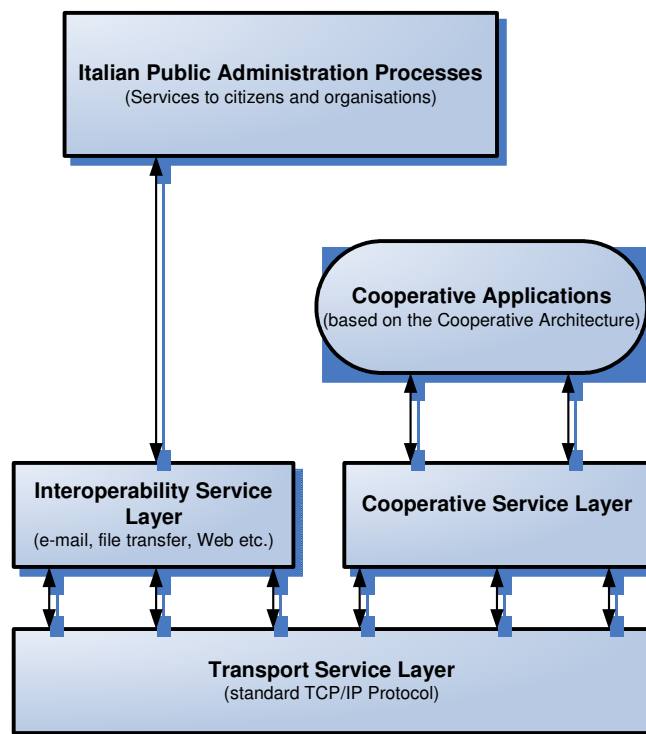


Figure 1.9: Unitary Network Architecture

This provides representation of numerous components distributed over a large computer and communications network. Figure 1.9 above indicates the bridge between the more technical model across to the business applications and processes that form part of the high level description of the Italian e-Government delivery model.

This harmonises the chasm between a technical model and a more process oriented view of services. The Transport Layer shown in Figure 1.9 provides support to standards associated with the OSI model discussed previously. The Interoperability Service Layer provides interconnections services, and the Cooperative Services and Applications include middleware services facilitating inter-agency application deployment.

5. Event-Driven Process Chains

The continued harmonisation of civil laws across Europe in particular in terms of online and offline transactions has not involved inclusion of legal perspectives in methods and modelling tools. Alpar and Olbrich (2004) proposed the use of Event-driven Process Chain (EPC) as a basic method.

Developed in the early Nineties by A.W. Scheer, EPCs describe processes in a semi-graphical form. They are used to define, document and control workflows in business process reengineering as well as software disciplines.

The decision points in processes modeled by Alpar and Olbrich, in this case German public social insurance, illustrate the legal recognition of electronic validation (such as digital signatures) as key to the workflow. However, given recent concerns involving identity theft and related security issues there is likely to be a delay in public and private use of such facilities in the near future.

The Limitations of Established Techniques

The impetus towards a new method of delivering e-Government has been supported through factors inherent in modelling government processes. These were presented by Alpar and Olbrich (*ibid.*) as follows:

- Organisational and technical perspectives are hard to synchronise within a project since changes in one perspective require huge efforts on the other;

- Inner and outer views on the workflow still differ in large amounts. Public online services offered in a portal solution should use a customer oriented workflow, a perspective the state has little experience in;
- Modelling tools have to respect the characteristics of public services. While most of the existing modelling tools were made in order to optimise supply chains and production, there are no clear cut parallels in terms of goals in modelling public workflows;
- Political and strategic perspectives have to be synchronised. Political influence and its dependency on election terms have to be understood and well separated from the long term strategic perspective of modernising the state processes.

National legislation provides a major hurdle in the engineering of public workflows, and reengineering to reflect a virtual representation requires a complex model that reinforces the view that these legal constraints that cannot be minimised or ignored. Policy changes and/or new administrations provide situations where emphasis or processes require amendment or replacement to take account of a new political landscape, in contrast to more lifecycle or user driven factors.

The relative freedom available within commercially oriented tools (for example Enterprise Resource Planning (ERP) characterised by SAP/R3) can in theory be employed. However, agreements and terms of trade do tend to provide more flexibility in definition than government processes allow. The use of systems like SAP will still require mutually agreed protocols to regulate usage and information flow.

Considerations in Development of Future Techniques

The focus on standards that has come to consistently overshadow the development of e-Government solutions takes into account, possibly implicitly, the nature of services provided by public organisations. The differences of public to private organisations in the e-service sphere have provided a major determinant of the nature of the services themselves, cited by Backhouse, Turner and Kuek (2004) include:

1. Nature of Service

Public services are often without choice and mandatory for the customer. They are also applicable to the general populace, in contrast to private market where target markets can be and are selectable;

2. Scrutiny

Coordination between stakeholder agencies is the norm as opposed to private sector competition. Accountability to the public is much more important than to shareholders. The precedence of the process above efficiency is also reflected in the rigorous adherence to processes within the public sector;

3. Public Expectation

Individual privacy is expected in the public sector. This is often traded for increased service in the public sector. Access to services is to all, and not just limited to on-line or other privileged customer communities. The free access to services, paid by forms of taxation, are expected in public sector where the private sector expected to recoup costs or profit through fees and charges from service provision;

4. Political Climate

Executive power determines nature, access and level of public service availability, even where no change of government occurs, unlike market driven changes reflected by private industry.

These factors can be complemented by personalised services and responsibility. This involves the individual citizen in decisions and the processes affecting them, enabled by providing access to personal and progress information.

. Through these service factors, the framework for new methods needs to clearly reflect context and business needs of the public sector. The second point, where multiple agency working is the key template for public sector service delivery, highlights the central role of standards, especially in terms of information storage, representation and exchange.

Subsequent to setting out the organisational and service scenes, the selection of technologies to implement must be subject to suitable criteria shaped by these two scenarios. Backhouse et al (ibid) present a heuristic using four major criteria:

1. Technological sustainability

The maximisation of public tax supported expenditure is key here: the adoption of open standards and a move away from proprietary products is expected to attain objectives whilst leading to longer solution shelf life;

2. Robust and secure

The loss of trust in public systems through technological or security failures from customers or partners, including data privacy are paramount drivers;

3. Accountable

Multi-party involvement in transactions complicates accountability and scrutiny but must provide for as much transparency through scrutiny as possible;

4. Flexible

Multiple jurisdictions and changes in policy require adequate response capability without seriously hindering operational service solutions.

The concept of competition, which can prove a major differentiator between public and private service provision, does not apply in the public sector. Although this may allow for a more considered assessment of technologies to apply, the use of appropriate technology (e.g. WebServices or ebXML) needs to be applied with suitable discipline in a consistent manner. However, is there an artificial sense of competition between local authorities? The answer is a guarded yes, witnessed in the publication of performance data by the National Audit Office. More recent assessment data has shown a widening gap in the best and worst performers in local government circles.

The local interpretation of the Modernising Government agenda in the UK has been encouraged by the tolerance of a continued disparate procurement strategy of e-Government by public agencies, specifically in local government. The allocation by central government of funding on an annual basis on a semi-competitive basis by agencies has added to this situation. This has clearly hindered the cost effective delivery of consistent e-Government services, and has been a contributory factor to the more forceful introduction of a shared services concept by the e-Government Unit.

Commentary

The established methods for design of Information Systems stem from fairly focused and narrow requirements (such as Revenues and Benefits in the public domain) or clearly sequential supply chain or production line environments.

The nature of e-Government, in essence the bringing together of several, often independent, services in a transparent manner for the service user can stretch or exceed the capabilities of existing approaches and tools. The example of a marriage illustrates the activities such as name changes, new addresses and alterations in tax and legal status extend across local and national agencies, requiring different verification frameworks and evidence to put into effect the single event at the heart of many transactions.

The continued progress of e-Government in contributing to improved public services will be derived from the intelligent application of the methods and standards in a measured and targeted manner. The bridging of technical and business techniques will also provide the potential for understanding the applicability of technologies and structures in underpinning the overarching nature of e-Government.

Part II - The e-Government Context

In the UK, the nature of e-Government has been coalescing since the late Eighties around issues such as centralisation of power, cost effectiveness and consistency of service management and delivery. Political and policy factors were major hurdles to overcome in these kinds of topic areas. Into the Nineties, the failure of will to coherently gain agreement in the policy and organisational spheres began to be overtaken by the technical capability to enable the concepts which have come to underpin e-Government.

This section presents a brief overview of the broad subject of e-Government, with the UK as the central focus. The philosophy is outlined, along with the primary objectives underlying the policy of the Government initiating the formal programme. The landscape discussed has proved central in terms of determining the applicability and availability of methods for those tasked with delivering the practical embodiment of the policy. This, in real terms, has shaped the options and development for a definitive method to build the framework suitable to meet the unparalleled nature of the e-Government programme.

Modernising Government

Since 1997 and the return of a new administration in the UK, Information Systems Technology (IST) began to take prominence as a means of enabling public sector reform across local and central government institutions in the UK (known as Modernising Government or e-Government). This was formally issued in a government White Paper in 1999, entitled Modernising Government. The scope of the paper presented the commitment of the Labour Government to a process of modernisation, which will encompass central and local government in addition to many Non Governmental Organisations (NGOs).

The paper covered the thrust of modernisation in addressing:

- The way policies and programmes are devised;
- The way services to individual citizens and businesses are delivered;

- The way the functions of a modern Government are performed.

In looking outwardly from the public sector, the paper drew parallels with the private sector, and rued how advantages through revised business processes used by leading companies had not been translated into similar gains for public sector organisations. The use of networked computers to refocus their activities on the customer, allied with the use of IT to work more closely with their suppliers was typical. This allowed them to be more responsive to customer needs, and they have used this as a starting point to create new delivery channels like call centres and use of the Internet.

In contrast, the established protocol allowed different departments, agencies and local authorities to develop their own IT systems, resulting in duplication, incompatibility or a lack of integration. In seeking to facilitate change and obtain benefits of the order achieved by commercial organisations, the paper laid out ten factors for change, being:

1. The access to electronic services through both domestic channels (notably digital television) accompanied by other widely available public access routes;
2. Exploitation of technology convergence through usable, cheap and multi-function devices including television, telephone and broadcasting;
3. Reducing focus on keyboard skills through provision of alternative controls, which will be introduced in schools, workplaces and community facilities;
4. Future proofing delivery of services through capitalising upon continuing increases in computing and networking power to provide convenience, accuracy, responsiveness and security;
5. Promotion of smartcard technology to enable personalisation of citizen centric services, identification and financial services that are able to grow with new and more powerful technologies;
6. Provide Government forms and other processes as single processes, supported by on-line guidance, to collect all the necessary information in one go;
7. Promote and enable practical knowledge management across the public sector to the end of efficient processes and harnessing of data and experience;
8. Rethink service or function delivery to include voluntary or private sector partnerships in seeking efficiency and service improvements;
9. Enable efficiency gains through the targeted use of technology (with a philosophy of investing to save) and process redesign.

10. Provide a proactive and interconnected set of services around single access routes: the service themes centred on life episodes (birth, schooling, marriage etc.) can act as such service linking.

The convenience of the customer and their needs have been the centre of the Government attention here, with a commitment to making public services available twenty-four hours a day, seven days a week. The responsibility of meeting this commitment was given to the e-Government Group (previously known as The Central IT Unit), set-up and becoming part of the Office of the e-Envoy in 2000.

The e-Government Group was to lead the work on the Government's commitment, specifically that by 2005, 50% of dealings with the Government should be available electronically, whilst by 2008, 100% of dealings should be available electronically. The Office was tasked with:

- Making the UK the best environment in the world for e-commerce by 2002;
- Ensuring that everyone who wants it has access to the Internet by 2005;
- Making all Government services available electronically by 2005.

Restructuring of government is a continuing process, and newer organisations are centering e-Government responsibilities within the Cabinet Office rather than the ODPM. The ODPM has itself become the Department for Communities and Local Government, and the publication by the Cabinet Office of the Transformational Government paper in 2005 indicates the shift in ownership of e-Government.

Government Motivation

A more formalised definition of the Modernising Government paper is presented by Becker et al (2004) in that electronic government entails the simplification and implementation of information, communication and transaction processes. This is intended to achieve, by means of information and communication technology, an administrative service, within and between authorities and, likewise, between authorities and private individuals or companies.

All public bodies are involved, in varying degrees, with the implementation of the Modernising Government agenda and the technologies and disciplines required. The nature of methods and models historically associated with IST projects are subsequently discussed, but the UK has introduced models for e-Government implementation, known as National Projects.

The search for similar benefits derived by the private sector for the e-Government agenda faced the potential pitfall of not providing guidance, collateral and support for agencies that are inexperienced in engineering change. The accountability for services may be a reason for a risk averse culture in terms of process redesign, tied with limited resources and funding to carry out such activities. However following significant contributions in the e-Government programme, government will be expecting to see a return on this investment reflected in recent shared service initiatives that are drawn from the Transformational Government paper.

In order to counter these factors, National Projects were introduced with a view to providing implementations of services or efficiencies leading to case studies and examples of best practice. The projects are wide ranging in scope, but provide particular advantages when applied to complex, unusual or significantly different areas of service delivery, acting:

- As a focus for learning to enable all councils to meet the 2005 Electronic Service Delivery (ESD) target hence the balance by region and type of councils;
- To enable those councils at the leading edge to further develop products and disseminate their learning and good practice more widely;
- To develop products for national roll out, whether by local councils themselves or with private sector partners.

Funding and Monitoring

Central Government in the UK allocated responsibility for electronic local service delivery to the Office of the Deputy Prime Minister (ODPM). Funding and organisation is headed by the e-Envoy, a public official charged with monitoring the progress of the public sector toward an agreed level of ESD delivery across UK public sector organisations.

Organisations were required to notify the e-Envoy of progress through formal reports, the IEG statements. The third round of statements in 2003 introduced a standardised proforma designed to allow self-assessment, benchmarking and measuring progress on key deliverables. IEG3 plans were supported with £350,000 in capital grant for each council. Where progress is deemed to be acceptable, funding is granted in order to support further progress in e-Government. Each review is based on a theme: a later round was based on the progress organisations are making with regard to joined-up working with other organisations, although there has consistently been an emphasis in favour of councils working in partnership or consortia.

The quarterly report of March 2004 from the e-Envoy documents the progress of central government departments in meeting the target of 100% of transactions available electronically by 2005. Figure 2.1 below illustrates notified progress up to January 2004 of overall progress towards ESD based on these quarterly reports.

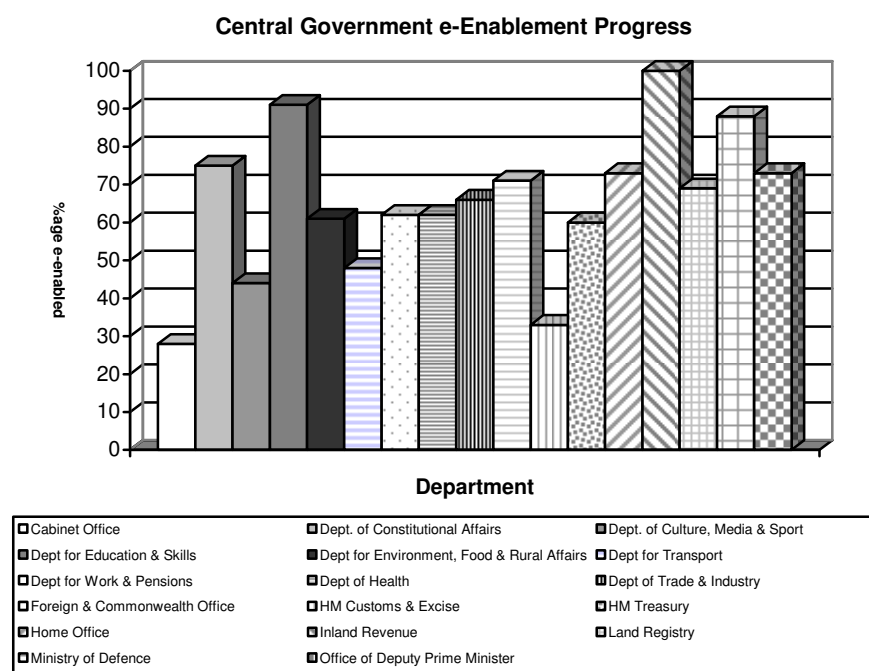


Figure 2.1: e-enablement progress

The chart presents a broadly positive picture of e-enablement at a high level. The slower rates of progress may be due to a wide range of factors that can influence such complex programmes, such as:

- Complex cross departmental processes;

- A lack of clear leadership;
- Limited or incomplete requirements definition;
- Inadequate or unskilled resources.

An Established e-Government Context

The changing nature of public services is certainly not necessarily a new phenomenon, and certainly not unique to the UK. Within this section, the broader landscape of e-Government is analysed. Public sector organisations in the developed states of Europe, Asia and the Americas are at differing stages of implementing joined-up services. The projects and the techniques used to implement the e-Government concept are assessed and contrasted with those applied in the UK.

Does the scope and extent of success of the Modernising Government programme in the UK mirror that elsewhere? Given the clearly ambitious scale of e-Government as a concept, is it realistic to assess and contrast the projects and the techniques used to implement such a diverse set of change and technology objectives with those applied across differing nations? Generally, the answer is yes to both of these questions according to the United Nations. The UN has been assessing global e-Government progress through its Global e-Readiness Report since 2003. The UN publishes ratings in the e-Participation Index, which assesses the quality, relevance, usefulness and the willingness of government websites for providing online information and participatory tools and services to the people. In 2005, the UK, like in previous years, was at the top in global e-participation ranking followed by Singapore and then the United States. There are further assessments in the Report, and comparators are discussed later in this chapter.

Structured paths leading to the introduction of technology and change have existed in distinct forms for some time, and have been applied with mixed results across a range of projects in both public and private sectors both in the UK and overseas. There are two perspectives that may allow for an examination of e-Government in terms of these paths:

1. Considering the existing framework of methods at the disposal of bodies responsible for implementing large IST programmes exemplified by e-Government;

2. Taking stock of the nature of e-Government programmes and demonstrating the value of applying relevant techniques.

In looking back to 1959, the Association for Computing Machinery (ACM) was contemplating the progress of automated data processing (ADP) across the machinery of the U.S. Federal Government. The third and final paper noted that 'progress in developing and installing electronic systems varied considerably between installations'. A number of the issues that were identified in the paper reflected obstacles still occurring in IT projects today, including underestimating risk, time and the planning required.

Comparative Evaluation

The United States has continued e-Government implementation from 1995, where a mere 8.7% of local governments had sites on the World Wide Web. This was projected to increase in 2002 where e-Government offerings will have reached or exceeded 90 percent. As a further indication of the growing significance of e-Government, the Gartner Group projected that all levels of government in the US will increase spending on e-Government from \$1.5 billion in 2000 to \$6.2 billion in 2006. The phases of progress in the US in terms of e-Government have been observed by Holden, Norris and Fletcher (2002) as being:

1. Catalogue;
2. Transaction;
3. Vertical integration;
4. Horizontal integration.

In order to provide an increasingly mature and sophisticated level of service, each phase has to be passed through in order to progress. They note the dearth of information and contemporary literature on e-Government, including both surveys and case studies.

The research of Holden et al did show that larger urban or industrial centers were more likely to adopt new technology. In addition, according to the local government respondents, the five greatest barriers to the adoption of e-Government, in order of

frequency of response, were: lack of technology or web staff; lack of financial resources; lack of technology or web expertise; issues regarding security; and the need to upgrade existing information technology.

Other nations were polled in 2002 for the second year running by consulting group Accenture. A group of 23 nations were assessed on 169 national government services across nine major service sectors being investigated. As a subset of the previously mentioned five phases, services were categorised into three levels - Publish, Interact and Transact - reflecting the maximum maturity at which a particular service could be offered. Canada, Singapore and the US were deemed to have attained the highest maturity level provided for in the survey.

The international aspect of the efforts to provide e-Government programmes provides a fruitful areas for comparisons – of approaches, benefits or otherwise, use of technology, investment, commitment and success. The UK was placed by the Accenture report in the second grouping of nations implementing e-Government. A second parallel lies in the barriers identified by Holden et al to implementing e-Government.

Trends in Implementation Techniques

The realisation of potential benefits to administrative service delivery agencies increases as organisations move through the implementation stages recognised by Holden. The quantifiable nature of these benefits can vary, but cost savings can be derived from New Ways of Working (NWW) that introduces mobile technologies, enabling better use of offices and corresponding reductions in accommodation costs. Increased automation of processes and self service facilities increases staff capacity and productivity, along with changes and automation of procurement handling that have the potential for significant efficiency gains which were commented on particularly by Gershon.

In entering the horizontal and vertical integration phases, the more abstract dimensions of social inclusion, system interoperability, security and ethics enter into design considerations. In order to guide new e-Government projects, new methods can feature topics or themes used in developing mature electronic service frameworks and processes.

Given the recognised paucity of techniques specifically supporting the holistic requirements of e-Government, the focus has consistently been upon the control and management of national programmes. Methods and techniques are evolving to support practitioners, intended to provide a framework for a programme based approach or to address a component aspect such as information sharing or process definition.

One example of a new framework approach embodying topics in this way has been implemented in the Canton of Geneva, the e-Society Repository, and this has been described by Genoud and Pauletto (2004). The Repository is intended to provide a decision-making aid, and enable consistency to be developed over time in designing an e-Government architecture. Three layers have been defined, each layer incorporating core subjects or dimensions pertinent to the complex factors involved in ESD. Figure 2.2 illustrates the structure of the Repository.

The individual layers provide the following capabilities:

- The Project Layer: IT issues involved in practical construction of e-Government services, including security, information policy, applications and platforms;
- The Organisation Layer: the reorganisation of processes and ensuring smooth flows of information and data;
- The e-Society Layer: the evolution of society encompassing the subtle and complex interactions of e-Government and wider society.

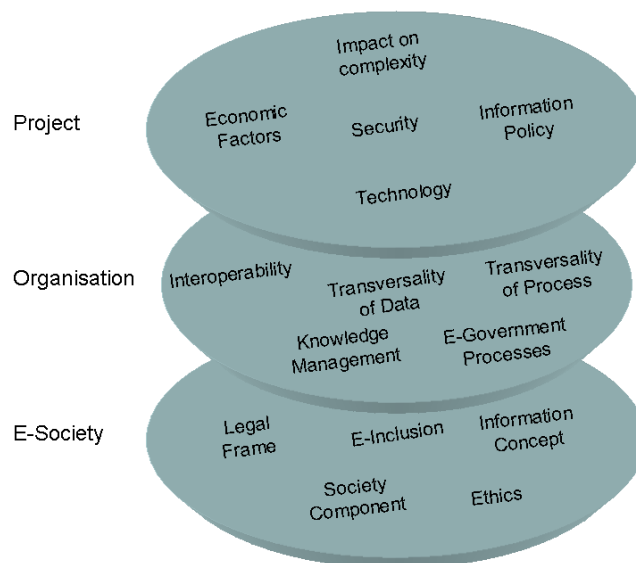


Figure 2.2: The Structure of the e-Society Repository (after Genoud and Pauletto, 2004)

The method, progressing initially from the Project Layer, takes into account preparatory activities, including user needs currently and in the future. Feedback is also available from earlier projects addressed by the method to improve contents, manageability and also relevance in a rapidly changing environment.

Methods and Techniques in IST Projects

There is a growing body of literature addressing the methods and factors associated with e-Government, and the availability of case studies is also increasing covering international examples of practice. In the UK, the I&DeA provides support in practical and advisory terms to agencies tasked with delivering the e-Government agenda. Support and commentary is provided in the on a broader scale by resources such as New Digital South (<http://www.newdigitalsouth.org>) which is not limited to agency specific content.

Although the concept has existed from the mid Eighties and early Nineties, the majority of progress in terms of implementation and maturity has occurred in the UK from the late Nineties onwards. In assessing this premise of the usage of methods and related techniques in this work, this section presents an appraisal of key factors in this field.

The subject matter of the work encompasses several overlapping themes. The holistic nature of e-Government, as agencies have come to realise, requires a managed blend of methods and techniques to enable a consistent and balanced route to enable programme objectives. The following headings discuss a series of topics pertinent to this 'balancing act' in preparing the ground for e-Government, ongoing implementation tasks and the future direction of electronic services generally.

Limitations on Local Government Services, Organisation and Delivery

In the UK, there are contrasting structures of local government providing services to the public. In Scotland, Wales and parts of England, a single tier council is in place for all local authority functions (a Unitary, Metropolitan or London Borough). Local and national government in Northern Ireland is more closely coupled, and Scotland has a

greater level of emphasis on national level provision. The remainder of England has a two-tier system, where responsibilities divide between district and county councils by:

Single Tier Authorities

- Wales: 22 Unitary Authorities;
- England: 36 Metropolitan Authorities;
- 33 London Boroughs (London also has the Greater London Authority);
- 47 English Shire Unitary Authorities.

Two-Tier Authorities in England

- 34 County Councils;
- 238 District Councils.

This complexity has brought with it organisational issues and behaviour that presents major challenges to a programme on the scale as e-Government. One of the most prominent issues has concerned the organisational structure of local government. This has been likened to ‘silos’: individual, self-preserving units not in direct or constructive communication with other organisational units. In many cases, there is limited overlap between back office organisational structures and goals. To add to this, larger or more prestigious departments often have a significant level of individual budgets and autonomy to defend, to the extent the department feels it has to comply with national or corporate guidance, directives and/or regulations.

This individualist perception permeated upwards, to the effect that councils have developed a view that collaborative working or sharing the delivery of service is not appropriate. The supporting argument behind this is appears to be the belief that a neighbouring authority does not share the same requirements as another. This is despite the fact that statutory duties (for example children’s services or highway maintenance) are the same for authority types, and it is just the demographics that alter the scale and scope of the services provided.

As an example of how these issues have been tackled, we can consider a Metropolitan Borough Council from the West Midlands. The challenge for the Council was to recognise the new opportunities that current and emerging technology can offer, and

how that will transform the way interaction with the Council worked. The key drivers shaping the need for a comprehensive and coherent strategy at the time included:

- The arrival of the ‘Information Society ‘ in the new Millennium;
- A need for an overall framework for the management of Council Information;
- Meeting increasing customer quality expectations for all Council services;
- Understanding the Council’s Total Cost of Ownership for IT;
- Understand the implications offered by the available and emerging technologies;
- Conformance with National and European Parliamentary directives including:
 - Citizen Centric and Joined-Up Government;
 - Best Value;
 - Electronic Government;
 - E-Business;
 - Data Protection;
 - Freedom of Information.

Figure 2.3 illustrates an early approach from the council involving e-Government to bridge the seemingly inescapable silo nature of local government through ‘layering’ of information across the organisation. Drafted in 2000, it is interesting to compare the interpretation at this stage to the tenets of the original Modernising Government (1997) agenda published three years earlier.

The approach is broadly similar to many organisations in the public sector, where the silos themselves and their business processes underpin and feed technology based applications. The diagram shows no interoperability at the silo level, the departments and their processes not included in any of the objectives in terms of process change.

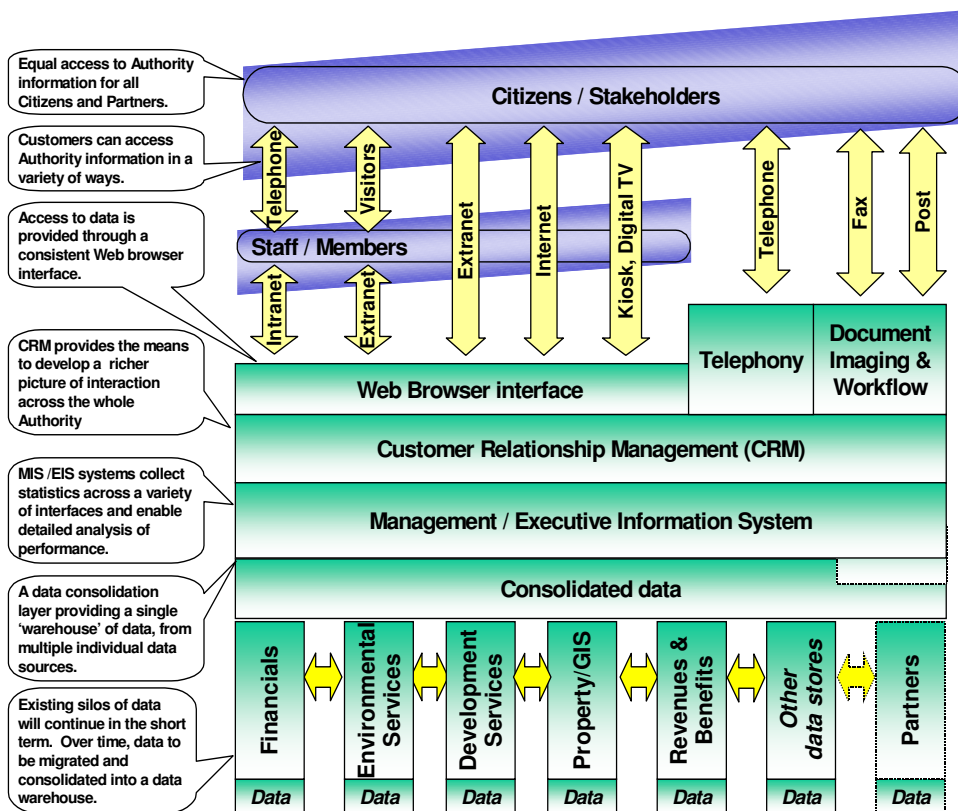


Figure 2.3: An early Information Strategy approach to e-Government

The introduction of private sector managerial and organisational techniques has improved this situation as recounted by Box (1999). However, e-Government requires significantly higher degrees of cooperation between bureaucrats and institutions. This is reflected in immature stages of e-Government, epitomised by electronic complexity mirroring existing institutional missions with scant regard for responsiveness or citizens' participation.

The challenges faced by the public sector are not to be underestimated. Although perceived as a stable environment, this has previously been attributed to a low level of change and a resultant low exposure to external or contemporary ideas. A defensive mentality, although not to be condoned, can be understood in the face of challenges from rival institutions for responsibility, funding and prestige; criticism from the media and interest groups whilst competing and maintaining political support. Where a private sector company can be judged on financial results alone, goals in the public sector are subject to fluctuation and change often driven by political directives from elected chambers.

This can result in maintenance of a status quo, where it is preferable to concentrate on familiar goals and objectives within an organisations sphere of control. This is at the expense of other agencies needs which are sometimes outside their direct control or do not present immediate benefits.

Technology as a Change Agent

The nature of e-Government presents a potential for change across a spectrum of factors, especially around workload, work profile and work content of staff. This primarily involves the use of internet technology as a platform for exchanging information, providing services and transacting with citizens, businesses, and other arms of government. Combined with the technology now available to make a modernising agenda a reality, this broadening of scope and responsibilities presents real issues of loss of control and responsibility in all areas of the public sector.

In the case of e-Government, change can be perceived as being driven by technology in two ways. One, by external pressure to realise potential, which in the case of the public sector is continuing to be provided by government published performance indicators. These indicators are one way of measuring the progress in delivering the benefits of the initiatives, which include improved efficiency, convenience, and better accessibility of public services.

Alternatively, internal pressure from staff or clients can be brought to bear to introduce technologies they have seen elsewhere, which contributed to the rapid expansion of the PC market in the Eighties.

Although contrasting types of organisation will feel effects to differing degrees, organisational change can lead to leveling of hierarchies, an increase of information sharing both internally and to the public which can be perceived as a loss of control and discretion. Change is sometimes accompanied by steps to increase the level of monitoring activity, often linked to accountability increasing for departments or individuals. The resistance to change within the organisation will also be variable, which was shown by Orlikowski (1993) to have a relationship to the level of investment by the organisation in change management.

In order to give a succinct outline of the technology component of the change inherent in an e-Government programme, the following headings present technologies

at the heart or closely involved in related services. The potential impacts are touched upon at either organisational or citizen level. The methods selected to approach the integration of these facets of e-Government would include IDBM or the Zachmann Framework (presented in Appendices C and G respectively).

Infrastructure

This provides basic support services for computing, particularly national networks. For the public sector, the access to such services will require availability of channels for the public to enable electronic service delivery. This covers to accepting queries, payments, documents or other contact the public can make with the provider. Examples of infrastructure elements include:

Legacy systems – many types of council operate systems or applications which have continued to be used because of the cost of replacing or redesigning is not cost effective. There may be incompatibilities with peer systems, and may be large, complex and difficult to modify. Within an e-Government environment, availability of or access to information retained in such systems by users, the public or other applications becomes a high priority. Many agencies have centered a fledgling e-Government programme around a legacy replacement strategy, as external factors have outweighed the cost of replacing both the software and/or hardware concerned.

Technologies gave greater scope for the life of legacy systems to be extended. An example is virtualisation, where the physical characteristics of computing resources are hidden from their users, often making a single physical resource (such as a server, an application, or storage device) appear to function as multiple virtual resources; it can also include making multiple physical resources (such as storage devices or servers) appear as a single virtual resource. The value of this approach does need to be balanced against the capabilities of the services to evolve to meet the demands of the e-Government programme.

Broadband – as a technology, the term has come to be used for any kind of Internet connection that is typically always connected, providing improvements in download speed and reliability in comparison to other connections, generally dial up. In e-Government terms, broadband connections support an inclusive agenda to ensure wider access for all members of the community.

Established connectivity has increased dramatically with some regional variations in the UK, which has facilitated the carrying of large volumes of data needed for e-business, e-government, e-health and multimedia content applications. This has been matched by a significant growth in home connections to broadband, which was reported by the Office of National Statistics in 2006 to have increased to over twelve million of UK homes. The improved channels, many in public places such as libraries, are a prerequisite for e-business, growth and jobs throughout the economy.

The scale of the task of introducing large scale networks have been enabled by public/private partnerships to roll out the broadband technology mix that best reflects local needs and makes its benefits affordable especially in difficult to reach rural areas, often neglected by developments of this type.

Mobile Working – The rapid expansion of facilities and equipment in this area, tied to a subsidising of equipment by manufacturers has led to explosive growth of consumer take-up of mobile services, boosted by both the availability of Internet services and Web access on a mobile phone handset or through a growing coverage for wireless (Wi-Fi) devices. To put this growth into context, the UK Government Department for International Development reflected in its quarterly online magazine in May 2008 that in 2000, the UN set a goal of 50 per cent of the world's population having access to a phone by 2015. This has already been achieved – nearly 80 per cent of people now live in range of a mobile network.

Whether for work or personal use, mobile phone technology provides a high access route for many people in communities, especially in hard to reach groups who may not otherwise have access to electronic services. The e-GIF provides technical specifications for services, and trials are beginning involving secondary school pupils for receiving study advice and exam results, as well as a voting trial in St Albans.

Applications

The channels referred to in the infrastructure section previously are primarily routes for citizens or stakeholders with the capability to reach electronic services. Provision is being made for those unable to access such channels, either in corporate offices or

outreach locations like Post Offices. Facilities to provide a comprehensive set of services from the one point are a central strategy within the e-Government framework.

The electronic channels are provided by applications – generally defined as a complete, self-contained program that performs a specific function directly for the user. Text editors and spreadsheets are common examples of applications. In terms of applications for people seeking services, councils will be presenting easy to use facilities allowing use of electronic forms, searches for council documents as well as facilities to claim allowances or make secure, financial payments. Example application areas are as follows:

Portals – a technology often described as enterprise portals. They provide a range of information, services and links for visitors. Enterprise portals may be referred to by the community they serve, either public or private. They are often referred to by a range of acronyms, such as "B2B" (business-to-business/supplier) or "B2G" (business-to-government). Portals may be based on organisational structure and strategy elements, but utilise a common architectural framework, reusable component libraries, and standardised project methods to deliver consistently against a business case.

Portals can include a number of features which are common to Web services in general, such as:

Content and document management — services that support the full life cycle of content and document creation and provide mechanisms for authoring, approval, version control and scheduled publishing. Public documents, from planning application forms through to council minutes can be managed and published with these tools.

Collaboration — portal members can communicate synchronously (through chat or messaging) or asynchronously through threaded discussion and email digests, online forums and blogs.

Search and Navigation — Content is intended for viewing, so the ability to seek and locate content is essential. As more content is added, the more valuable repositories become. The retrieval of useful information becomes more time consuming unless effective search and navigation methods are used. Searching tools that support a range of ICT skill levels are a prerequisite to ensure users of all ages and abilities are able to search successfully.

Personalisation — the ability for members to subscribe to specific types of content and services with relevance to themselves. Users can usually customise the look and feel of their environment.

Entitlement — the ability for portal administrators to limit specific types of content and services users have access to. For example, a council portal can entitle users supplying a council tax code access to their detailed financial status.

Integration — the connection of functions and data from multiple systems as additional portal facilities. For local government users, one such example is access to the planning department workflow application as well as the Geographical Information System (GIS) to produce a joined up approach to planning.

Single sign-on — most enterprise portals provide single sign-on capabilities to their users. This requires a user to authenticate only once, with credentials being passed from a Web service to underlying applications that may have their own access requirements. Access control lists generally manage the mapping between portal content and services over the portal user base.

Security – The activities involved in enabling a secure environment for electronic services can prove complex, for example creating a certification authority, payment gateways and passing legislation to encourage and protect e-commerce. The security situation is fluctuating constantly and requires constant vigilance to detect and address those seeking to circumvent checks and regulations for criminal or other purposes. Identity management remains a key issue, whether in terms of identity cards for the population, inappropriate information sharing or providing access to personal records.

However, the sense of trust between a user and Internet services is difficult to measure, and a sense does not always relate to the reality. Privacy and security issues have proved less problematic for governments than the private sector. This was illustrated in a Carnegie Mellon CIO Institute report (2003) polling U.S. citizens about where their trust lay in organisations that collected personal data. On top came hospitals, banks, postal and police services. At the bottom of the scale were retailers and communication companies and notably the Department of Homeland Security.

In this context, e-Government issues are often related to the promotion of data and information interchange, and often involve social and ethical issues above and beyond

the technical capacity. In terms of cultural differences as an example, healthcare professionals in the UK are bound by professional and ethical factors regarding patient confidentiality. Balancing this are law enforcement concerns where a patient has clearly been involved in criminal activity (for example assault or drug related activity). How much access or sharing of information should take place between the two agencies is a question that involves policy decisions above and beyond the technical capability of e-Government.

The benefits to be realised from introducing the concept of e-Government are much more in reach given the availability of technology to deliver them. Within this environment, the top down planning of infrastructure change can be controlled to deliver benefits, as the uncertainty of technology has been removed.

The nature of change related to infrastructure was explored by Ciborra (1996) and Orlikowski (1996) in 'improvisational' terms. Orlikowski presented three categories of change: planned, opportunistic or improvisational. On the face of it, e-Government can be presented as planned change. Clear agendas, benefit statements and timetables support this, but the practical nature could be seen as improvisational, where existing systems are slowly updated within existing operational and organisational frameworks.

The Future e-Government Agenda for the UK

Within an agenda to modernise public services, e-Government presents a significant strategic shift in the relationship between public bodies, their responsibilities and the communities that they serve. Taking this long term factor into account, the work considers the future agenda for e-Government within the UK and the manner in which ongoing or future projects or technologies are to be implemented.

The publication of the National Strategy in November 2002 presented local government with a national framework for the implementation of the programme. An earlier section, Funding and Monitoring, introduced the assessment process, and in December 2003 the Government published a review of progress to date, titled 'One Year On'. The publication reiterated the support, methods and routes available to local government but provided minimal practical advice and discussion around best practice in delivering the agenda and technologies.

As the initiative moved on, the value of the term 'e-Government' has evolved into 'Transformational Government' a phrase inspired by the publication of *Transformational Government: Enabled by Technology* by the e-Government Unit (eGU) of the British Cabinet Office in November 2005.

Although this can be interpreted as a rebranding exercise, it does appear to update the concept of e-Government to take account of technological advances. These updates focused on three key transformations. Firstly, services enabled by IT must be designed around the citizen or business, not the provider, and provided through modern, co-ordinated delivery channels. This is intended to improve the customer experience, achieve better policy outcomes, reduce paperwork burdens and improve efficiency by reducing duplication and routine processing, leveraging delivery capacity and streamlining processes.

Secondly, Government must move to a shared services culture - in the front-office dealing with citizens and service user stakeholders, in the back-office where services are controlled and processed, in information and in infrastructure - and release efficiencies by standardisation, simplification and sharing.

Lastly, there is to be a broadening and deepening of government's professionalism in terms of the planning, delivery, management, skills and governance of IT enabled change. This will contribute to in more successful outcomes; fewer costly delivery failures; and increased confidence by citizens and politicians in the delivery of change by the public services.

The emphasis on methods is maintained and there is an acceptance of the predominance of management and control methods recommended by the OGC, including Prince 2. Their value is recognised in this and subsequent commentary on the Transforming Government publication.

Funding Implications

The publication of the Modernising Government agenda by the U.K. government in 1997, was supported by the introduction of a number of changes to funding methods aimed at incentivising successful joint delivery, including the use of ring fenced challenge funding to support partnership working. For example, since it was set up in 1998, the Invest to Save Budget has funded more than 460 partnership projects worth

nearly £450 million. These include the Wolverhampton Bereavement Centre which brings together a one-stop service for those experiencing bereavement and the Talk Don't Walk project in Warrington that seeks to reduce the number of young runaways.

Central Government in the UK allocated responsibility for electronic local service delivery to the ODPM. This was to be through the mechanism of IEG statements and corporate plans which set out how local councils are approaching the task of improving service delivery through e-Government. They help to monitor the progress of councils towards the achievement of 100% e-enablement and priority outcome targets for 2005/06.

The IEG monitoring was supplemented by the concept of Priority Outcomes for local e-Government, published in April 2004. They were intended to provide measures of service and technology improvements within specific functional units, including education, transport and benefits. The Outcomes were intended as an additional means of monitoring and ensuring that local government maintained an operational focus for e-Government implementation and use of IEG capital grant money.

The gradual transition of Modernising Government into Transformational Government sought to draw out benefits from the previous investments across all levels of public agencies. The Comprehensive Spending Review (CSR) mechanism in place at the Treasury sets the scene for medium to long term public spending, and ahead of the CSR the Varney Report (2006) addressed funding within the new public service landscape. In addressing funding for the programme, the author Sir David Varney noted that:

“A number of deeply rooted cultural and institutional factors encourage departments to continue to operate within their silos rather than take a wider view of the changing needs of citizens and businesses. For example, present funding arrangements are perceived as not creating the right sort of incentives for departments to spend money on programmes that are not the core business of the department but which are central to the Government's overall aims and objectives, or when investment is needed by one department to produce savings for another.”

Amongst the recommendations of the report, Varney advises that the Government provides support for service transformation pilots as part of the 2007 CSR, for example through the provision of start-up or match funding. This goes some way to recognising that investment is still required to support agencies implement technologies or processes to underpin longer term efficiency gains originally presented by Gershon.

Evaluation and Monitoring

As e-Government in the UK moved into the latter phases of the programme, increased emphasis has been based on the progress of service presence (not real delivery) as opposed to maturity discussed by Holden. The arrival of technologies capable of delivering the policy – internet, front/back office applications, information exchange and messaging – provided the framework for starting to deliver the envisaged benefits through updating and widening the business processes of government.

The initial mechanism for delivering e-Government was perhaps a little too vague, given the predilection of local authorities and other agencies to selectively interpret the new agenda. This was compounded by a limited assessment and funding regime, the IEG process, whose major limitation was a funding ceiling of £ 200,000 per annual round. This is a marketplace where a key contact centre application alone could potentially cost an organisation considerably more than the grant, not taking into account the additional range and costs of other technologies and the demands of a broader change programme. In this light the level of funding appears somewhat shortsighted, compared to the level of knowledge available concerning the resourcing and cost of comparable projects across the public and private sectors.

Despite funding shortfalls, adherence to established methods for implementation and other limiting factors, progress is claimed against the IEG criteria for presentation of electronic services. The level and nature of scrutiny has led a number of observers to conclude that success can only be judged by recognition of success by agencies involved as there is no evaluation technique adequate to address the e-Government framework (Bhatnagar, 2004). One means of evaluation is based on accountability and how methods have been reflected in making an implementation more amenable to scrutiny in meeting service user needs and expectations, and is discussed in the following section.

Continued Monitoring

In the UK, as e-Government moved progressively through the programme, evaluation became a focus of central government attention. Independent work has considered alternative measures for evaluating e-Government in accountability terms. There are numerous independent commentators, forums and academic bodies contributing to knowledge and measures, including the European Conference for e-Government

(ECEG). The ECEG has provided an annual event since 2001, attracting practitioners alike to address both ongoing and contemporary topics. In consulting practitioners, Griffin and Halpin (2004) developed a five point framework for evaluating Council accountabilities for e-Government implementation. Figure 2.4 illustrates these accountabilities.

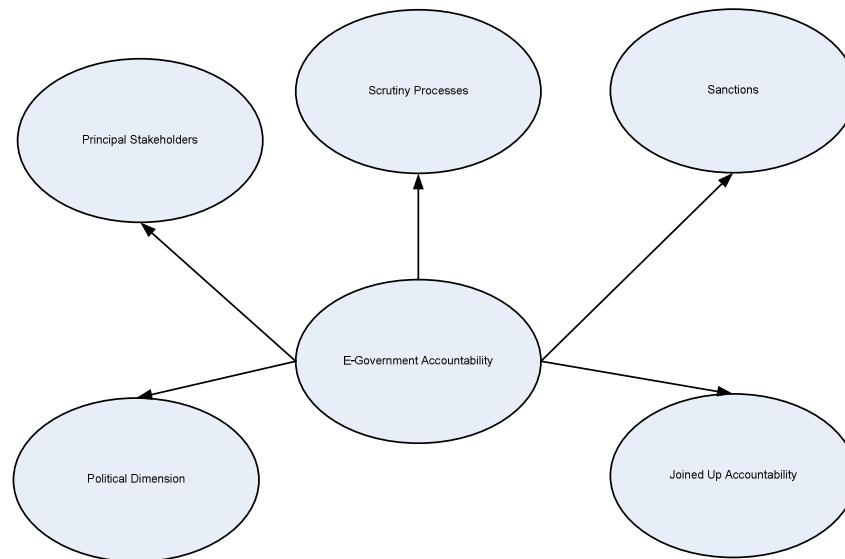


Figure 2.4: e-Government accountability framework

The investment, financial or otherwise, placed in e-Government can be assessed with this framework across tangible and other measures. Although the five aspects (identification of principal stakeholders, scrutiny processes, sanctions, political aspects and joined up or partner accountability) present a broad review strategy, the reality is marred by a number of issues. The users of services, past and present, which Griffin and Halpin identify as the principal stakeholders, have consistently shown low interest in reviewing the delivery and effectiveness of service delivery.

It is difficult to identify the sanctions available where results of investment are judged to be below acceptable levels. Failures in terms of e-Government have not been particularly highlighted, and the IEG process was used to act as an incentive through funding against recognised progress. Scrutiny and political accountability on a local basis varied from assessing available ICT to feature comparison by elected members. Joined up accountability is hampered by the parochial nature of agencies being disinclined to work in partnership without a degree of control, which is discussed later. The focus by e-Government on being subject to measurable milestones also appeared to

soften as the 2005 target neared, becoming more in the nature of a stage in a process, with profile wording changing to phrases in the style of organisations or stakeholders being ‘able to be online’ rather than ‘being online’.

The future evolution of e-Government, starting at horizontal integration and moving towards a transformational or shared service ethos will require a greater focus on performance and accountability. The political dimension is likely to come more to the fore as a reshaping (more accurately merging) of councils in particular is likely to take place. The unification of several Police authorities has already taken place, resulting in debate regarding the future direction of this strategy. The e-Government Unit in the UK is clearly looking to take advantage of efficiency gains and economies of scale for service delivery, in conjunction with the Gershon report of 2004.

The advantage of the technologies lie in the scaling up of network capabilities allied to the applications that are able to provide wide scale information storage and access. This will support lower level granularity for personalisation of services based on records and circumstances of citizens and service users (or customers).

This granularity would typically be provided through several interfaces that would be supported by a master client index. Suppliers in this field have recognised that the maintenance of identity data across multiple systems is currently a time-consuming and inefficient manual process with potential risks involved with the latency of updates and the possibility of inconsistencies within the datasets associated with individuals. This currency and level of data requires a mechanism that allows demographic information to be exchanged and synchronised between the information systems, enabling each connected application to be notified of any trusted changes.

By providing access to an integrated view of trusted customer information historically held in disparate data “silos”, data technologies enable Council personnel to identify an individual’s touch points with the Council. These are illustrated in Figure 2.3, showing a Consolidated Data layer that draws from the individual service delivery silos. In the example of a citizen dying, these could include the Council’s financial, social care and libraries systems. This would be presented to contact Council personnel through the CRM application interface.

This would lead to an improved service to the citizens next of kin, who needs only inform the Council once (through the Contact Centre or Registrar). A notification of the citizen’s death can then be sent to the relevant information systems, via workflow processes and in various formats, as required.

This particular life event would need to be handled sensitively and efficiently in order to avoid any additional stress and/or anxiety to the family. The relevant technology would be used to monitor and control the progress of the various notifications and an action, updating the relevant systems as the process is executed. At each stage, an update would be sent to the CRM system so that customer-facing staff have an up to date view should the next of kin (or other family member) contact the Council again.

Part III - Fieldwork and Case Study

Fieldwork

Information Systems projects of considerable scale and scope have been introduced in the UK over time, primarily in central government departments, for example the LIBRA initiative. LIBRA encompasses the Criminal Justice system, and involves a combination of application software, extensive equipment delivery and training to a large user population distributed across England and Wales. The project delivers innovation to a large user population distributed across England and Wales in a sector that has been slow to adopt technologies, this being due in many cases to the scale of the task, the complexity and changing nature of requirements and prohibitive costs.

In common with the majority of information systems centered initiatives similar to LIBRA that require delivery by local government and other public sector agencies, the challenges presented by the introduction of the e-Government concept are familiar to professionals delivering complex and large scale system implementations. These challenges were highlighted by the Parliamentary Office of Science and Technology 'Postnote' report summary in July 2003 as including unclear user requirements, overly complex software, advance publicity, rapidly changing technologies and inadequate project management.

How could the extent of how such agencies intended to or applied methods in delivering the services falling into the scope of e-Government be assessed? What methods are actually available to agencies and are they put to use as intended? In order to obtain an indication of how widespread the use of methods in this sphere was, together with a means of gauging the perceived value of their usage, the inclusion of a fieldwork component was considered to achieve two objectives:

- To support the premise of the work;
- To expand knowledge within the subject area through externally acquired evidence.

The rationale underpinning of the application of fieldwork was completed after a review of practice and variants in the field of qualitative research, considering reviews including Marshall and Rossman (1999). Examples of approaches considered included Action Research, survey research and field research. Ironically, in keeping with the

theme of the work, fieldwork itself is a method, scientifically applied to support the study of a specific topic.

Firstly, what was not wanted from fieldwork was a collection of raw data, often the preserve of the social sciences such as anthropology, ecology and geography. In addition, the fieldwork was not intended to influence or become involved in the subject, as outlined by Schein (1987) in his exploration of the clinical perspective in fieldwork.

The fieldwork in this context sought to record the thinking and usage of methods in a setting where they were likely to be assessed or employed. The shape and format of the fieldwork was a blend of interviews and survey based questioning and to a lesser extent observation of individuals, was felt to be able to provide practical insight, moving away from theoretical or idealised explanations of the extent, selection and usage of methods.

The usage of personal interviews to gain insight and experiences it was felt would add value and enrich the subject, one of the objectives. The inclusion of a case study would provide a broader canvas to illustrate the setting under examination as part of the fieldwork.

The exact nature of the fieldwork would be decided after assessing a number of factors, which included a review of established fieldwork methods, the candidate organisations and/or individuals that could provide the insight sought and the type of data relevant and potential collection methods available, given that fieldwork undertaken can incorporate an assessment of data collected from external sources, by means of surveys, observation or direct contact through a form of case study where access is available.

Determining the Fieldwork Methodology

The field of methods in relation to information systems has been developing over time as material in Parts I and II have demonstrated. Given this existing domain, the purpose of the fieldwork was not intended to extend content knowledge of the field. The methodology selected needed to predominantly test the extent of methods usage and the value placed on the techniques by an appropriate group.

Of the broader approaches to fieldwork, an inductive or 'enquiry' approach where issues are introduced, questions raised and methods adopted to investigate them was felt to be too general and expansive. However, there was expected to be an element of

induction, where analysis would include a review of patterns or trends in support of resulting commentary and conclusions. As a general aim had been articulated on the use of methods and their value to a user group, a deductive approach was decided upon where a method could be constructed to collect data and carry out analysis.

This primarily scientific approach would involve data collection and hypothesis testing, where objectives would require definition supported with subsequent analysis and interpretation. The selection of this field-based approach involves the issues of methods usage and value as a result of the issues arising from the work.

Benefits and Effectiveness of the Fieldwork

The values of the work include enhancing knowledge and understanding of the field of methods and to highlight the best use to which these tools and techniques can be put both now and in the future. The benefits of the fieldwork were to acquire a better understanding of the practical selection and usage of these techniques, together with experiential learning through direct and real experiences of methods in a 'real world' manifestation rather than theoretical definition and documented processes.

The effectiveness of the fieldwork was to be maximised through planning and addressing key and contemporary factors relating to e-Government. This was to include opportunities for direct contact and observation in relevant environments that give life to the theoretical material and provide a context for their use and application that can be assessed and interpreted against the premise of the work.

Design of the Fieldwork

To support the premise of the work and expand knowledge in the subject area, the fieldwork would need designing and planning to obtain benefits from the wide variety of established approaches to data collection. Although not a rigid set of stages, the fieldwork design would be designed to follow the general steps of stating a problem and/or hypothesis, design the fieldwork, make observations, interpret the data and propose conclusions.

The issues of methods usage and value as a result of the issues arising from the work are to be examined by the fieldwork - the next step was to assess the selection of a range of data collection methods that could contribute to acquiring information to analyse and possibly investigate further. The techniques to consider here included questionnaires,

which can provide a standard response format that aids analysis if designed well, although response rates can be variable. Interviews are another example, allowing more complex issues to be probed in some depth, albeit they can be more time consuming, reaching fewer respondents and requiring control on the part of the researcher in managing the question format and avoiding bias, which could be introduced through the use of closed questions.

Secondly, thought had to be given to the richness and quantity of information that could potentially be collected from the techniques available and the value that could be derived in terms of supporting the work. The resources and time available to the author also had to be taken account of, especially in terms of having access to individuals for interview during working hours.

The next step was to use these factors in looking at the fieldwork options and developing a firm framework for a suitable fieldwork research component of the work.

Options for Fieldwork

In deciding the approach to be adopted for the fieldwork, a number of factors were considered. The factors taken into account included the characteristics of established methods of undertaking fieldwork, which would be influenced by the time available to the author, particularly in terms of direct contact during working times of any organisation selected for surveying. The next consideration was the nature of organisations affected by the theme of the work and the nature of engagement. Organisations may be reticent in agreeing to be involved in research, which may require a researcher to provide bona fides regarding their purpose and reassurance or statements of intent regarding the use of corporate or personal data in publications.

At a practical level, the type and granularity of details to be assessed requires definition with a close consideration of how the outcomes can realistically be assessed and the resulting implications from findings could be presented to the intended audience.

Established methods that were considered included:

- Narrative Accounts – the use of interviews or personal recording of subject using self-reporting or diaries. The targeted use of questionnaires and interviews was selected as a primary means of collecting data in this case, as they can provide a first-hand account about an individual's experiences, attitudes and

opinions. This required careful preparation, as interpretation of questions and meaning can be subjective, and memories may be impaired by personal factors, time or assessing desired responses;

- Surveys – defining and distributing questionnaires where responses can be analysed, patterns extracted and comparisons made, especially where there is a number of candidates suitable for survey that could provide a reasonably broad perspective and a number of responses adequate to draw conclusions from;
- Ethnographic Observation – although this places a subject in either a familiar or more artificial (laboratory) setting and can provide a more realistic description of behaviours, this was not a focus of the work given the nature of the work and the practicalities of both subject and reviewer timescales and availability led to this being discounted;
- Behavioural Measures - as was the case with behavioural and laboratory assessment, observation of this kind was not a focus of the work and was discounted on the same basis as ethnographic observation;
- Case Study – to provide a more in-depth assessment of a representative organisation, possibly as a case study. This would allow a more detailed examination of the e-Government programme, in terms of motivation, local issues and techniques applied or constructed in order to implement e-Government within the particular agencies remit.

Fieldwork Structure

Of the options outlined, a two tiered approach was decided upon that would provide differing levels of richness of information, which utilised a blend of semi-structured interviews, questionnaires and a case study (where available). This provided for differing perspectives and levels of detail on the topics rather than relying on one method, and where practicable the inclusion of narrative accounts from semi-structured interviews and a case study.

The nature of the external sources would be determined by the organisations and agencies working to address the e-Government agenda. This effectively provided a large group of candidate organisations, ranging in size and responsibility from Parish Councils to Government departments such as the Department of Health. In terms of the external sources, the drafting of a fieldwork project was intended to focus on a

controlled and specific group of agencies having similar scale, responsibilities, demographics and profiles in order to retain a consistency in comparing responses.

In subsequent sections, the premise for introducing fieldwork into the programme of study is outlined in greater depth. The approach to fieldwork is explained, in terms of the strategy, method, scope and anticipated outcomes.

The Case Study

The use of a case study has been made as a part of the fieldwork on the basis of it being an established research methodology commonly employed in numerous disciplines, including the social and medical sciences. There are several variations of the format which have been documented, notably by Yin (2009). The original intention in using a case study was to gain insight into the underlying reasoning behind using methods and especially the experiences of those involved, as well as what might become important to look at more extensively in future research. Yin's work explores the usage and value of case studies, along with assessing situations in which to apply alternate or complementary research methods.

The case study was considered as a form of fieldwork suited to the objectives of the research project, as it enabled an empirical approach that investigated the premise within a real-life and contemporary context – in this case a department or unit tasked with implementing or using the facilities or services concerned without bringing about any changes as a result of the research itself. Yin applied the use of certain questions to determine research methods appropriate to prevailing circumstances, and as in this situation the case study addressed the 'how and why' criteria proposed by Yin, so the interview and questionnaire aspect of the fieldwork complemented this in the more targeted 'what, where, and how many' type questions.

Although case studies can be based on any mix of quantitative and qualitative evidence, the usage of a case study in the work was intended to identify and document individual personal experiences and richer detail concerning the subject matter and to reflect and substantiate survey and interview findings where possible. This was discussed by Lamnek (2005): "The case study is a research approach, situated between concrete data taking techniques and methodologic paradigms." In this situation, findings from the surveys and questionnaires could be illustrated in a general way without focusing on specific causal issues.

Several organisations fitting the profile described below were approached as to their availability or inclination to act as a basis for study. Time constraints would realistically only allow for a maximum of three, which would have allowed for comparisons, but one only was available for study.

Candidate Organisation Profile

As mentioned previously, there is a wide range and type of agencies that can be considered as suitable candidates for case study and supportive fieldwork. The class of agency identified as suitable for the fieldwork were Metropolitan Borough Councils. These organisations are within Local Government, of which there are currently 36 Councils of this type across England. The Scottish, Welsh and Northern Irish authorities were not necessarily subject to the same e-Government requirement and therefore would not provide comparable candidates. A comprehensive catalogue of Local Authorities in the UK, from where the listing was drawn, is to be found at Tagish's Directory of UK Government Offices' Web Sites (www.tagish.co.uk) and included in Appendix B, Profile Organisations.

They preside over predominantly urban environments, and as top tier authorities, many provide key services including housing, education, social services, environmental services and transport. Demographically, populations and densities are comparable and the nature of the urban environment provides infrastructure more conducive to e-Government technologies and related service take up in both the civic and business communities.

The range, quantity and variety of public sector agencies involved in implementing electronic services are significant. In order to identify a study group of manageable numbers and a consistent profile, it was important to determine a classification which was eventually based upon statutory responsibilities, activities and regulations. However, specific local circumstances (e.g. economic, political or geographic) play a significant part in determining the priorities and focus for such organisations in the execution and funding of these duties. It is important to appreciate local factors that will determine certain outcomes regarding service definition and transformation.

Fieldwork Contacts

The fieldwork, primarily through the selection of case study and questionnaire techniques, involved contact with a number of individuals within the candidate organisations or having professional involvement with the definition and/or delivery of e-Government from a business or technological viewpoint. In a number of circumstances, third party providers where the delivery of e-Government was delegated to an external contractor were also selected on this basis.

The nature of the contacts and their roles varied between the questionnaire respondents and the case study. The roles of the fourteen respondents to the questionnaires or interviewed were:

- Head of IT Services;
- IT Manager;
- IT Officer;
- Senior Technical Architect;
- Account Manager;
- Service Delivery Manager;
- Programme Manager;
- Research Officer;

The Council team members who kindly agreed to be involved in the case study were:

- Head of IT Services;
- Finance and IT Director;
- Human Resources Deputy Director;
- Head of Strategic Planning.

Although not specifically included in the results of the fieldwork, the process of the research project included contact with many professionals or individuals closely involved with the topics or organisations dealt with in the work. Their comments or material have assisted in the process of assessing and interpreting the findings generally.

Fieldwork Timeframes

Preparation for the fieldwork component of the work began early in 2002. This initial activity involved the determination and definition of the research questions for both questionnaires and interviews that would constitute the fieldwork. Alongside this activity, there was activity involved in defining the method of approach to the original candidate group selection and confirming which data gathering and analysis techniques would be appropriate, whether as basic questionnaires, a form of structured interview or a case study.

The questionnaire and interview process continued through 2002 and into 2004 as individuals within or involved with candidate organisations were identified and approached to confirm their involvement and arrange suitable appointments for calls and/or meetings.

On a separate basis, the involvement with the case study organisation commenced with an initial meeting with the local sponsor, the IT Director in August 2002. Regular meetings with the IT Director continued across 2002 and 2003 with the study effectively concluding in 2004. The sponsor also arranged interview sessions with the Finance Director who had overarching responsibility for both e-Government and ICT within the organisation.

Separate interviews were also arranged as part of the Case Study with the additional members of the Change Management Team. This senior group, consisting of the Finance and IT Director, the Head of IT Services, the Deputy HR Director and the Head of Strategic Planning, owned the broader change programme within the organisation which was investing in new ways of working and technology led change in order to improve the organisation.

Supporting Research Method

The approach to the fieldwork was planned in order to elicit information that would give an indication of the nature of methods in use and the impact of e-Government upon the organisation (real or perceived) in change and technological terms. This section presents the framework in which the fieldwork was conceived and carried out, in terms of:

- Objectives;
- Information requirements definition;

- Process of undertaking the research;
- Expectations in terms of results;
- Emerging findings and interpretation.

Objectives of the Fieldwork

The framework in which the fieldwork was to be undertaken was clearly defined as being undertaken to ensure consistency with the premise of the work, and results were intended to be on a like for like basis between comparative subjects. Initially, the objectives of the fieldwork were defined as the following:

- Record the extent of methods usage: explore any aspects, particularly ICT related that the organisation may be familiar with, including systems analysis, applications development or project management;
- Identify any activity (planned or current) in development of relevant methods: has the organisation considered SPRINT, for example, or is the organisation developing Prince 2 capabilities within lower or middle management tiers;
- Document any supporting factors central to the e-Government agenda: the adoption of technologies or standards recommended such as National Project rollout and the use of central funding to resource e-Government adoption;
- Note any additional circumstances pertinent to the topic: recognising the shift from a design and implementation phase into a transformational theme where benefits begin to be realised;
- Preferably formalise arrangements to develop an in-depth case study with an organisation that closely mirrors the candidate organisation profile.

Information Requirements Definition

The role of ICT as an agent of change has been examined previously, notably by Orlikowski (1996). Established infrastructure and application technologies form the central plank of many e-Government strategies, and one example is the emphasis on customer service which is being addressed by numerous organisations with Customer Relationship Management (CRM). In addition, techniques involved in the redesign of organisational structures and business processes such as Business Process

Reengineering, examined by practitioners such as Peters (1982) are also fundamental to preparing the ground for the introduction and long term success of initiatives that present major challenges to established institutions.

The fieldwork required the means to provide a level of information that would provide an indication, at a suitable level of detail, to assess the planned or actual usage of methods applicable to e-Government within candidate organisations. The key headings identified were:

1. Technology (influence of methods and systems)

The technology theme was intended to assess the influence of methods in the introduction of ICT systems previously and in the future within the organisation. Were contemporary methods being applied, or was there a reliance on existing methods? In addition, the manner in which projects are delivered in terms of resourcing (internally or through a third party) was explored.

2. Organisation

The effects on the organisation are introduced under this heading. The extent of involvement by individual departments, from instigation of an e-Government programme onwards is checked, in terms of the perception of likely structural change and the role of the third parties in taking responsibility for services in the future.

3. Change

As the ramifications of e-Government to an organisation cross many boundaries, several aspects of change are examined. These include the experience and capability of the organisation in handling change, if a specific transformation programme has been set up and the extent of involvement from staff and other stakeholders. The presence of a progress or benefits monitoring process is also enquired into.

Fieldwork Data Collection

The primary approach adopted in terms of acquiring information from the profile organisations was based around semi-structured personal or telephone interviews. These were targeted at professional staff operating within an ICT department or e-Government delivery programme team drawn from a sample of local authorities fitting the Metropolitan Council profile in England.

As mentioned in the earlier section Fieldwork Contacts, individuals were selected based upon their involvement in the definition and/or delivery of e-Government from a business or technological viewpoint. In a number of circumstances, third party providers where the delivery of e-Government was delegated to an external contractor were also selected on this basis. The role of the researcher as an independent University postgraduate was clarified, and that individual findings were not to be published or shared with third parties.

From the body of Metropolitan Councils selected for the fieldwork, contact was made with total of thirteen authorities. Direct contact, by telephone or through an interview session was made with representatives of six authorities. Indirect contact was made with seven bodies, primarily through the third party ICT services company delivering ICT to the organisation. Semi-structured interviews were held, lasting between thirty and forty-five minutes. Appendix A provides both a basic questionnaire in addition to a detailed topic set. The detailed topic set provided supplementary issues or questions that could be covered during the interviews. One of the Councils agreed to act as a case study, enabling a more in-depth exploration and documentation of the issues raised in the previous section, Information Requirements Definition.

The results of the questionnaires were collated into a spreadsheet format that could be referenced and sorted to allow for lines of inquiry and patterns to be uncovered. This spreadsheet, included as Appendix J, Primary Fieldwork Results, were supplemented by an analysis of Council or other publications intended to provide a further insight into the methods, change and technology topics addressed by the questionnaires. These included the IEG Statements published by individual Councils, which included indications of progress along defined paths by central government, including use of methods pertinent to project control and change.

As previously stated, the purpose of the fieldwork was to find out to what extent similarly classified organisations used methods for e-Government programme design and implementations. This was intended to explore the programme nature and the experiences of the agencies concerned.

Access to Participants

With a candidate organisation profile decided upon, the next step was to identify individuals within the said organisations who could be approached regarding their (and possibly the organisations) willingness to contribute to the fieldwork in some way.

This could prove problematic, as back office services and personnel contacts are not necessarily documented or listed in organisational material available to the public. Local Authority provision of ICT as a back office service can vary in terms of where the services reside in the organisation. Larger, more autonomous departments (for example Finance and Social Services) warrant a dedicated ICT resource team in addition to a central unit supporting the wider organisation.

However, it cannot be assumed that such duplication of function is reflected in similarities regarding the application and practical implementation of professional services involved in the use of methods relating to e-Government and Information Systems delivery. The involvement of one and not additional teams does not necessarily guarantee a true reflection of the organisations formalised position in matters featuring in the fieldwork.

In considering the potential effect this may have had on the findings, several issues became apparent from planning the fieldwork and identifying and enabling access to participants within relevant organisations which are discussed here. The first was planning a contact strategy, which was tiered in terms of increased likelihood of participation. The highest probability of participation was likely to be from personal or professional contacts, where first hand knowledge or an introduction from a trusted individual.

Subsequent tiers involved less direct contact, possibly through a third party or more directly with a more impersonal or 'cold calling' approach with organisations.

Each of these steps also increased the activities involved in identifying individuals within organisations – although ICT and pertinent roles and holders can be discerned from subscriber publications from organisations such as SOCITM (the Society for IT Managers), individuals do move on and checks on personnel still require confirmation prior to contact.

Even with contact with well-disposed individuals, participation is not guaranteed and several factors were drawn up in trying to ensure participation was as simple, productive and as beneficial as possible to all involved. The first consideration was to make the reasons and purpose of the contact as clear and as simple as possible. The next factor was to put across the simplicity and minimal impact on the participants, with the third and possibly decisive emphasis on expected benefits to the participants as a result of the fieldwork.

In addition, there were further factors that needed to be considered in approaching individuals to improve the likelihood of their participating, which included:

- the genuine nature of the researcher – the ability to provide bona fides, in terms of a reference from the Supervisor;
- agreeing the scope or level of detail that a participant was comfortable in providing given local or contextual sensitivities;
- appreciating and setting the terms in how the information was to be used;
- confirming the nature and detail of the content to be published;
- agreeing the level of attributability to an individual or organisation;

The response of many was positive and issues raised above were mitigated by the approach adopted, with one participant agreeing to contribute to a case study.

The reasons behind participant involvement, especially with Council A who acted as the case study, became clearer as the relationship developed over time. In this instance, the IT Operations Manager had an interest in the topic in terms of how the organisation was changing and trying to improve through the use of technology and methods. In an initial interview session, the Finance Director intimated his own experience in research led him to accept any invitation to research participation given his experience in trying to find participants in his own research work.

Effects of Limited Access to Participants

Where access to individuals with responsibilities, roles or expertise pertinent to the fieldwork was negligible or limited, the findings may potentially have suffered in a number of ways which are outlined here.

Primarily, a lack of response could have jeopardised the ability of the work to expand the knowledge in the field amongst practitioners or other interested parties. Ethnographic research in particular can provide richer insight into settings over time, allowing review of practice and process that can be reviewed and conclusions drawn and published that may not carry the same weight without adequate responses.

A low level of response may introduce bias to the results. Individual participants may over-emphasise certain aspects under investigation and subsequently undermine the validity of the findings. Policies or practices may be under or over represented, providing an unbalanced picture of the broader candidate organisations as a whole.

Although provision will have been made within the plan for the research, the time required to undertake the additional contact participation may have lengthened unacceptably in terms of the time available to the researcher. This may be compounded in a situation where the work is being undertaken on a part-time basis with limited time windows for researchers to explore issues with participants.

Where the participation levels were deemed to be unacceptably low, the fieldwork element may have been replaced with a lower level of analysis in preference to a reliance on published or a recounting of personal experiences. These are both, to an extent, unsystematic and potentially unrepresentative or out of step with the original candidate organisations and the trends in methods usage being studied in the context of the work.

Expectations from the Fieldwork

The expectations from the results of the fieldwork are founded on a number of contributory factors. Firstly, the available methods specific to e-Government and related technologies need to be taken into account. Complementary to this is the adoption of such methods by the membership of the body of organisations comprising the fieldwork.

In circumstances where organisations have published tenders for the delivery of e-Government services and systems, the methods required by the organisation can provide an indication of the philosophy and approach to be adopted. This can be in terms of controlling methods such as Prince 2, or ensuring that systems and services conform to systems and information standards such as e-GIF (e-Government Interoperability Format).

The expectations from the fieldwork, taking these factors into account, can be summarised as follows:

1. Focus on planning and management

The expectation is to confirm the application of professional project management methods and tools to oversee the delivery of e-Government programmes. Established techniques such as Prince 2 are being adopted increasingly to ensure prompt and cost effective delivery of major projects, especially where third parties are responsible for delivering major parts of public projects.

An additional factor is the auditing of public projects by the National Audit Office, which can influence the manner in which projects are defined and delivered by public bodies. Public concern, often expressed in the media, has in recent years highlighted the inadequacies of large scale public ICT centric projects, notably the Passport Office in 1999 where a backlog of 530,000 applications built up. More recently, the failure of a £456 million system at the Child Support Agency led to the resignation of the Director.

2. Tick box approach to delivery of e-Government requirements

The anticipation here links to early stages of e-Government maturity, whereby organisations address the delivery of a required feature of service in a literal sense. As an example, provision of an electronic form (e-form) is provided for through a downloadable copy of a word processing document that can be completed manually and posted or completed electronically (given that the applicant has a suitable application) and emailed to a nominated email address within the organisation.

In this way the e-Government requirement of an electronic form may be met. However, where the original requirement may have been loosely specified, subsequent requirements have spelt out the need for a more transactional approach. In this way, evolution in e-Government maturity as discussed by Holden continues.

3. Limited availability or confidence in new methods

The dearth of current and relevant methods is expected to lead to a reliance on known and trusted approaches to large scale ICT and change programmes.

Historically, public sector agencies have maintained considerable ICT departments including extensive software development teams. In the majority of these installations, standards for the delivery and support of ICT operating systems and applications were developed in accordance with focused standards such as SSADM. Projects, including those involving ICT, became the focus of established project management techniques such as Control Program Methodology (CPM) and more recently Prince 2.

The Internet and service technologies underlying e-Government requirements remain poorly served, as did their predecessors have done from a 'lagging behind' of methods that support their implementation. Until the use of methods and techniques focused around the e-Government implementation becomes more widespread, organisations will remain reliant upon established methods and techniques.

4. Delivery by third parties

As delivery of ICT was increasingly put out to commercial tender from the early Eighties, this also initially encompassed the responsibility for e-Government in many cases. Anecdotal evidence indicates that e-Government was initially perceived as ‘an IT issue’ by senior management teams. As appreciation of the scope of the concept altered (and deadlines began to creep nearer) central government formed a specific unit under the aegis of the ODPM to assess progress and fund developments. Increasingly, as organisations also matured in e-Government terms, the contracting out of specific e-Government services was subject to standards based compliance (notably e-GIF, XML and Caldecott in the case of Social Services and the NHS).

As awareness of the cross-functional implications grew in organisations, the emphasis on management of change became more pronounced. The application of proven methods to enact change, such as Macroscopic, was increasingly expected as a differentiator for suppliers tendering for the contract.

5. Longer term or deferred investigation of specific methods

Although work is progressing on more e-Government focused methods, their assessment and application is limited to date. Adoption by public bodies is likely to be on an evidential basis where the results and benefits are demonstrable and the methods are clearly a norm in peer organisations.

How The Data Was Analysed

The objective setting exercise provided a template for both an expectation setting exercise, covered in the preceding section, and how the results would ultimately be analysed. The researcher examined data from questionnaires or interview/case study narrative in order to find linkages between the research objectives and the outcomes with reference to the original research questions.

Especially in the case of more extended interview material, the researcher found it valuable to be open to new factors and/or insights. The case study method, with its use of multiple data collection methods and analysis techniques, was selected partly to allow any triangulation of data in order to strengthen the research findings and conclusions. The information from the case study was also assessed to try and find new

insights and to match or find clear dissimilarities from the objectives and the expected findings.

The resulting information, especially from the core questionnaire format, was categorised, tabulated, and recombined to address the fieldwork objectives, themselves reflecting the initial proposition of the study. This core table is presented in Appendix J, Primary Fieldwork Results.

Activities involving cross-checks of facts and discrepancies in accounts occasioned further contact with participants in questionnaires or in later case study meetings to gather additional data to verify key observations or check a fact.

Analysis included placing information into arrays and creating matrices of categories. The quantitative data collected was assessed to corroborate and support the qualitative data which is most useful for understanding the rationale or theory underlying relationships. The primary fieldwork objectives to be borne out by quantitative material was evidence of methods, the predominant types of methods and if there was any trend towards newer or more contemporary methods usage.

The review of tabulated data contributed to analysis and prompted areas to subject to further scrutiny and/or test with the case study participants, for example:

- Is there a relationship between use of methods and a higher e-Maturity level;
- What is common between higher e-Maturity assessed bodies and types of methods used;
- Is there a uniformity of behaviour in methods usage and selection across organisations.

Where there was an affirmation of expectations or theory, confidence in the findings increased. Conflicting perceptions, on the other hand, caused the researcher to pry more deeply, or notice that there may not be enough coverage of the candidate organisations to take a view or draw conclusions.

Emerging Findings

The results of the fieldwork have provided an interesting insight into the selection and use of formal methods in e-Government programmes. The appraisal of submitted IEG statements from the profile organisations indicates a broad acceptance of methods in overseeing the process generally. The respondents to the survey were primarily

professional staff operating within an ICT department or e-Government delivery programme team drawn from a sample of local authorities fitting the Metropolitan Council profile in England. The contacts were involved in the definition and/or delivery of e-Government from a business or technological viewpoint, being staff or third party contractors.

The responses from the candidate organisations are summarised in Table 3.1 below. From a potential total of 36 organisations at the time, a sampled response of 36% is respectable given an empirically low response of 20 cited by Holbrook et al. (2005) although they were seeking evidence of whether lower response rates are associated with lower accuracy and likely bias.

Contact Type	No. of Responses	Percentage of Responses	Percentage of Full Group
Direct Questionnaire	3	23%	8%
Direct Questionnaire/Interview	6	46%	16%
Indirect Questionnaire	7	53%	19%
Totals	16	-	36%
Case Study (counted as Direct Questionnaire)	1	7%	2%

Table 3.1: Candidate Organisation Response Summary

Given the small sample and fairly advanced stage of e-Government toward the target implementation date of 2005, findings are still from relatively mature e-Government progress standpoints. Anecdotally, it would appear that the results are reasonably representative of the wider Metropolitan Council profile generally.

The consistency of responses, particularly in the use of methods can be taken to indicate that behaviours across the type of organisation are representative of a peer group. As the organisations have mandatory services to provide and are subject to the same auditing and performance measurements this is reassuring to stakeholders that control and management methods are known and employed by the bodies concerned.

The responses summarised here were drawn from the topics introduced in the earlier section, Information Requirements Definition – Technology, Organisation and Change. The complete base questionnaire employed is reproduced in Appendix A, and a full set of responses are provided in Appendix J, Primary Fieldwork Results.

The results of the survey and assessments of published IEG 3 Statements do provide some positive results in terms of the attitude to and the application of methods by the Metropolitan Council bodies. In terms of directly referencing methods, the Statements relate to usage of project control in particular Prince 2. Despite this, the emergent nature of the findings can be summarised as follows:

1. Structured methods are applied as a matter of course to e-Government programmes and/or projects

In keeping with previous development and introduction of ICT technologies, such as mainframe and financial applications, the Councils are using structured methods to introduce e-Government to the communities they serve. Although often of a ‘waterfall’ nature, and a little constraining in terms of the often softer nature of the e-Government requirements, the practitioners are limited by availability of more contemporary methods to apply.

2. Information standards and protocols form a core feature of projects

From a review of literature and policy documents issued from central government units, methods prove to be a poor relation of standards in delivering e-Government. With the agencies surveyed, considerable emphasis has been placed upon standards based services and especially on the capability of interoperability - the e-GIF defines the technical policies and specifications governing information flows across government and the public sector. One concern with requiring e-GIF compliance was the continually changing nature of the standard, which potentially left services already implemented out of step in compatibility terms. They cover interconnectivity, data integration, e-services access and content management. A summary is presented of the e-GIF in Appendix H.

3. Emergent e-Government centric methods were yet to make it into mainstream usage

Consistent with the development of methods relating to ICT presented in Part I, Motivation and Context, relevant methods are following the technologies themselves. The allocation of National Project status to the SPRINT methodology development is

recognition by Government of the value methods have. However, the respondents were unaware of developments, some even only recently coming into closer contact with control and management techniques such as PERT or CPM.

4. Control and management techniques represent a high priority in programmes

The declaration of 2005 as the target for achieving e-Government aims provided an incentive to professionally manage local programmes. Project Management methods, in particular Prince 2, gained in significance as tools to enable this deadline being met.

Although not intended to design and develop e-Government as such, they were able to corral the related components of a Council's e-Government programme in a controlled and visible manner. In a situation where the introduction of change, led by ICT, is increasingly recognised as a core factor, such methods have allowed for a more holistic approach to be adopted in the absence of a more relevant method.

5. Recognition of change and acting upon it were signs of increasing maturity

In realising the limitations that a 'tick box' approach applied to implementing e-Government, organisations had already begun the transition to a higher e-Government state of evolution.

6. Inclusion of user communities and stakeholders represented a significant component of e-Government

Of the lessons recorded (but not necessarily learnt) from major public projects involving ICT led change, the most important relates to the communication with those people most affected. The survey revealed a high level of inclusion where organisational or external stakeholders are core to the overall process. This should provide an increased chance of success for the programmes given work in this area and that of improvisational change by Orlikowski (1996) and others. These investigations showed that a high level of consultation throughout the process provided a sense of involvement and ownership by the stakeholder groups concerned.

7. Third party suppliers were taking significant responsibility for e-Government service implementation and operations

Many councils were opting to contract out delivery of the enablement of e-Government services to the private sector. The emphasis upon open standards and the

rigorous nature of the e-GIF interoperability provided some level of guarantee regarding the longevity of the solutions.

This also avoids a proprietary approach to hardware and software developments, providing a firmer foundation to enable further evolution in e-Government terms towards greater aggregation of services between regional agencies later.

Deriving Understanding From Fieldwork Findings

The analysis of information, particularly from the questionnaires, was assessed in terms of the original objectives and subsequently in terms of issues or points arising as a result of the analysis itself.

At a high level, the analysis of the results is presented in Figures 3.1a and 3.1b, examining methods and change respectively. The types of methods currently or historically used by the organisations are indicated in Figure 3.1a.

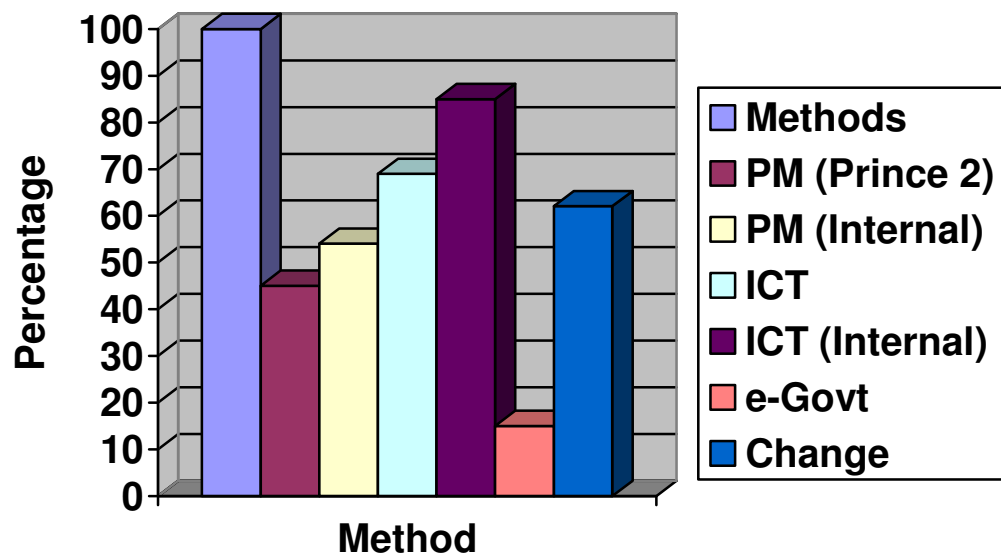


Figure 3.1a: Methods Analysis (Technology)

The respondent organisations all used or operated in accordance with formal methods within projects, especially those incorporating an ICT element. In terms of managing projects, all applied a form of method that was a recognised and documented standard, either internally or a proprietary method. Prince 2 was the primary method, and this is also explicitly referred to within the IEG 3 statement submissions required by central

government. An objective of most authorities was to obtain recognised accreditation across the organisation in Prince 2: many had achieved this to a degree and others had a clear programme to achieve the accreditation.

The selection and usage of established ICT centric methods (e.g. SSADM or RAD) were or had previously been used by councils, in certain circumstances in relation to projects suited to the method concerned. A significant number had developed internal ICT methods based upon their experience of previous projects and methods that often took into account established council processes and protocols.

Not surprisingly perhaps, very few were operating with contemporary or specific methods developed to address e-Government or technology transformation projects. One, Salford City Council, had been selected as the National Project host for the method development, SPRINT. Ironically, many were in the process of or preparing to address change and process transformation using recognised techniques. Councils contemplating these types of process were in many cases working with or negotiating with third party suppliers to operate ICT or business processes at the time.

The aspects of change involved in the evolution of councils towards electronic service delivery are indicated in Figure 3.1b.

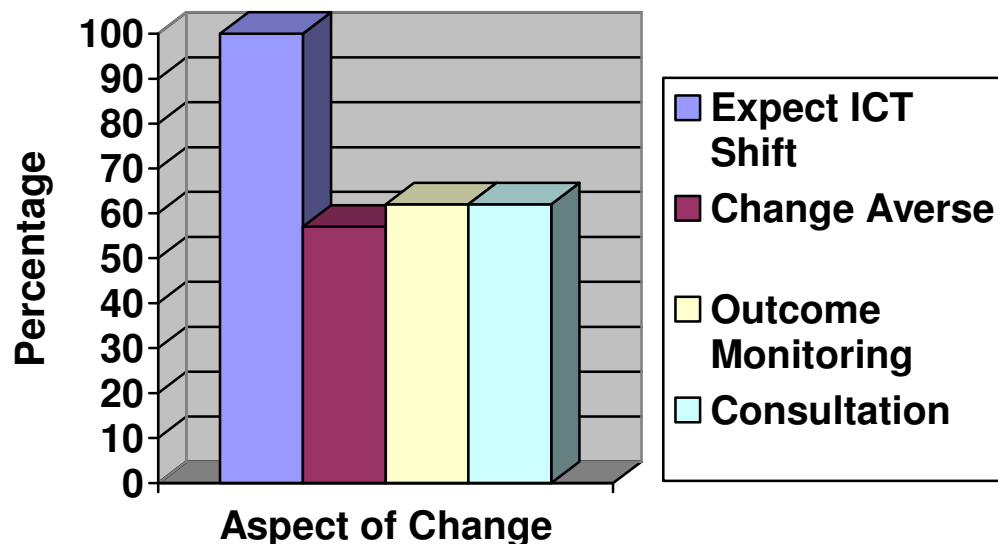


Figure 3.1b: Perception of Change

In terms of the richer material generated through the case study, this was approached with a view to identifying supportive evidence associated with the objectives and

expected outcomes. With a more flexible brief, additional or amended approaches or addition of questions to interviews were felt to be appropriate as the study progressed. Case study research is flexible, but when changes are made, they do need to be recognised and documented accordingly.

The case study primarily involved field notes so that it was readily available for subsequent reinterpretation. Field notes record feelings and intuitive hunches, pose questions, and document the work in progress. In this case they record testimonies, stories, and illustrations which have been used to a degree. The study assisted in determining whether or not the work was valid based on what was being observed and the subsequent value of the work to others and adding to existing knowledge of the field.

The differences that implementation of the Modernising Government agenda and specifically electronic service delivery will make to the profile organisations are considerable. All are expecting their ICT systems and services to radically change as a result of the process, yet many of them expressed the view that as an organisation they do not necessarily cope well with change generally. A number discussed project failures or the length of time involved in the introduction of change prior to e-Government.

The majority, perhaps in line with the demands placed upon them by the IEG process, are actively looking to manage the performance and outcomes from the e-Government process. Scrutiny committees, often populated by a political cross section of members are being instituted to assess strategy, expenditure and above all progress against clear timetables. These are providing a level of transparency unfamiliar at a local government level yet in line with the central government agenda. Although recognition of change is there in terms of ICT, consultation has yet to take place in several organisations with either external or internal stakeholders. Given that many commentators in the field of change advocate consultation as a cornerstone for success in such ventures, many organisations may still be classified as being at an early point on the e-Government evolutionary scale and look to such measures in due course to progress further.

Summary of Fieldwork

The results of the survey are encouraging that methods are in use for the delivery of e-Government within the selected representative group of public sector agencies, the Metropolitan Borough Councils. Their situation is probably reminiscent of the

introduction of mainframe and network technologies, where they await the maturing of methods that are consistent with the unique demands of e-Government.

These unique demands go beyond a more traditional route from an initial user requirement through to a system implementation, where change is a part of the equation. However, e-Government extends to issues such as access to technology, and that only increasing levels of capability within e-Government will allow a realistic assessment or investigation of what the customers/users want or need from e-Government in the longer term.

Overall, progress toward e-Government is uneven, with some local authorities making real progress but many falling behind and making slower progress along Holden's four evolutionary milestones. These milestones represent a credible yardstick of e-maturity in determining the progress an organisation is making in overcoming the complexity of ESP and related improvements for citizens.

In returning to the expectations of the outcome of the fieldwork, it became apparent that the process of delivery itself is a key issue for those bodies responsible for e-Government programmes. The focus on planning and management remains a priority, but a growing concern involves the level of access and usage of facilities by the public compared to the investment made in the services.

The option adopted for many bodies to contract out ICT infrastructure projects in support of e-Government has led to progress away from early stages of e-Government evolution. The 'tick box' approach to delivery of e-Government requirements is very much less in evidence in many cases.

The lack of proven new methods is continuing to be addressed, notably with the new Capacity Building Toolkit developed by the Development and Improvement Agency (I&DeA). This toolkit has been developed to help agencies increase their capacity to deliver change, and is discussed in Appendix F. It is a further response to the demand from local authorities for support in developing the skills required for managing and delivering successful business change. However, the fact that some councils remain poorly rated based upon recent performance measures issued by the National Audit Office reflects that best practice promoted by I&DeA is not mandatory and is being ignored.

In the situation where a sponsoring body can be found to utilise this method, as Hull adopted the SPRINT method, a route may have been found to confirm the value and benefits of the emerging methods supportive of e-Government implementation.

This will potentially be a future requirement of third party suppliers, continuing the trend of standards based systems, providing a common foundation for a further aggregation of services as the e-Government maturity process continues.

The Case Study

The previous section, Fieldwork, presented the process of selecting candidate agencies fitting a consistent group profile. Using the service responsibilities, demographics and related factors in defining a recognisable group profile, one objective was to agree with one of the candidate Metropolitan Councils contacted that the organisation would act as a case study for the fieldwork activity on an anonymous basis.

The intent behind the preparation of a case study was primarily to examine in greater depth the relationship between an organisation and the means they have to introduce a complex project such as e-Government. The case study provides a mechanism for the work to investigate the use of methods within a real life context. This component of the research was intended to draw from several sources within the organisation, and was subject to a number of preparatory activities prior to the contact with the case study organisation which are discussed later in this section.

The premise that methods are key to such an undertaking requires an assessment of the philosophy of the organisation to employing structured approaches to projects or operations. This is explored both historically and currently in conjunction with the use made of any techniques in earlier projects. This organisational outlook may be challenged by the nature of e-Government and may subsequently influence the success and progress of the initiative, given the undoubted introduction of change at organisational, operational and technological levels.

Although a case study provides for a more general investigation of a candidate organisation, it does allow some exploration of the premises of the work. In this situation, the contemporary nature of the subject matter can be assessed in a planned study of a real-life situation along with the associated issues and problems.

This part of the work presents the case study. This includes a discussion of the method of undertaking the case study, a profile of the agency, the means of assessment and a presentation of outcomes from the study. The approach to the case study is a subset of the fieldwork approach adopted which is discussed in the preceding section, and draws upon the experiences of case study researchers such as Stake (1995), Simons (1980) and Yin (1984) in terms of techniques for organising and conducting the research in terms of:

- Method of Approach;
- Preparatory Activities;
- Expectations in terms of results;
- Emerging findings and interpretation.

Method of Approach

Complementary to the fieldwork approach, a case study was developed with the intention of investigating some of the key factors that will have a bearing on the successful introduction of Modernising Government principles within a target organisation. This will take the form of initially gaining an understanding of the anticipated approach in terms of current and emergent methods.

Provision is made for additional contact is to enable a review of the outcomes of any of the strategies put in place. This can include a reassessment of the consideration or deployment of methods within the organisation resulting from the experience of the process of implementing e-Government.

With the closer contact that a case study is intended to provide over a period of time, a monitoring of the organisational progression compared to initial plans can be undertaken. At the close of the case study, a comparison of results and progress will be available to allow a measurement to be taken of the success or otherwise of introducing e-Government against initial plans. The adjustments, issues and factors arising across the duration of the case study having a bearing on the level of success will be noted and taken into account in assessing the outcome of the study.

The supporting fieldwork involves the use of surveys with public organisations of a similar size and nature to the case study. A survey was developed to probe similar areas as the case study in order to compare the salient factors, including goals of the organisation, skills available or required and the technologies available or expected to be introduced. This is discussed in the previous section, and a copy of the survey topics is provided in Appendix A.

The development of a suitable case study involves both planning and preparation to support and aid involvement from the study participants. The schedule outlined in the following section, Case Study Activities, is intended to provide the framework in which

the case study was developed, explain the reasoning behind the content, and set the scene for the follow up work later in the project.

Case Study Activities

Preparation for the involvement of a candidate agency as a case study began with the establishment of the firm research focus of the study. This took the form of the researcher forming questions about the situation of the organisation to be studied, with key headings being identified for examination during the process of the study itself. The investigation primarily took the form of visits and question and answer sessions with representatives of the organisation, intended to produce evidence that leads to understanding of the case and deals with the research premise.

The search for richer information within the context of the case study led to the development of an open form of questioning, generally beginning with "how" or "why." The questions were targeted to a key set of headings and circumstances and their inter-relationships, often with supplementary questions dependent upon the nature of responses. The ongoing review of literature in the subject field supported the targeting and formulating the questions, although a traditional literature review is not presented within the work given the emerging nature of the field of interest.

This ongoing approach to literature review assisted in establishing what projects and research had been previously conducted, and was adopted with the intention of leading to refined, insightful questions about the use of methods by the organisation in the context of previous projects and in addressing the current e-Government requirements it is obliged to meet.

1. Identify potential organisations that would closely match a specific profile

The criteria for identifying the class of agency were presented in the previous section under the heading of Candidate Organisation Profile. All agencies under consideration had the potential to act as a case study, due to the fact that all were subject to the e-Government agenda which contributes considerably to the validity of the study in the subject area.

2. Identify key areas for the case study to incorporate

For the case study, the materials for discussion with the participants were constructed around the full topic sheet presented in Appendix A. The intention was to further probe these high level topics from this final, more in-depth question set as opposed to the summary set used with the broader profile organisations.

3. Generate Terms of Reference for the fieldwork

It was important that any agency approached would need to be aware of the circumstances of the research, and agree the basis on which they would be prepared to contribute to the process. This included the amount of time, level of access to the case study participants and other resources available that required planning and management to take into account participant responsibilities. The overriding concern of the agency that agreed to act as a case study was confidentiality in using any material in terms of the work being undertaken.

4. Approach and Engage the Organisation

The development of the case study recognised the two strands of local government, namely:

- The Executive, comprising Directors and staff;
- Elected representatives and civic panels.

The elected representatives and panels authorise expenditure and may develop an understanding of the benefits of programmes such as e-Government. However, the Executive were selected as primary sources of information regarding methods and their use within the context of designing and implementing ICT centric change programmes. The Executive structures operate at both strategic and tactical levels internally and with other stakeholder groups, enabling them to consider and comment on the implications of methods for e-Government with a deeper insight and knowledge.

A number of senior staff members were to be identified and invited to contribute to the case study. They formed the key management committee chaired by the Financial Director, and represented the core operating units of the organisation. In developing a relationship with the individual components of the organisations, the case study is intended to develop a rounded impression of plans and how the organisation will deal

technically, organisationally and socially with the effects that e-Government were likely to entail.

The expectation was that a number of alternate viewpoints and potentially conflicting motivations will provide wider insight into how the organisations cope with the demands placed by Modernising Government, and the relative success of applying methods and models to the requirements of the resulting projects.

5. Undertake and Schedule Research Activities

The study was intended to consist of an initial phase of inquiry into the existing situation of the Council in terms of:

- Experience and current use of methods;
- A ‘snapshot’ of the projects and plans in place to address e-Government;
- The anticipated role and strategy for methods pertaining to e-Government.

At a later stage, the Council would be revisited in order to assess the role that methods have played in the process of introducing e-Government against initial plans.

Anticipated Outcomes

The expectations from the results of the fieldwork are expected to mirror those of the main fieldwork survey, which was founded on a number of contributory factors described in the previous section. The expectations from the case study, taking these factors into account, can be summarised as follows:

1. Unfocused project definition and slow e-Government evolution

The assessments of the Council are not encouraging at this stage. Rated as poor, the reliance on internal processes may inhibit the adoption of e-Government, as there may be limited experience locally of established techniques such as Prince 2, which is being adopted increasingly to ensure prompt and cost effective delivery of major projects.

2. Tick box approach to delivery of e-Government requirements

Again, given the outcome of Comprehensive Performance Assessment (CPA) reviews, this is expected here to allow the Authority to meet the baseline requirement of e-Government at this stage in a literal manner.

3. Limited availability or confidence in new methods

With the likelihood of outdated or no methods necessarily being employed, the lack of current and relevant methods is expected to lead to a reliance on previous approaches to large scale ICT and change programmes.

Agency Profile

Council A is traditionally a coal mining and industrial (primarily textiles and heavy engineering) area and the decline in these industries led to high unemployment in the 1980's and early 1990's. Its industrial heritage has also been a significant causative factor in its poor health record, with deaths from respiratory disease being amongst the worst in the country at twice the national average. Its landscape also suffered from its industrial heritage with 622 hectares of land being designated as derelict in the 1993 Derelict Land Survey.

Even now Council A is a highly deprived area with 15% of its population of 311,000 living in wards which are in the most deprived 10% in England. On this measure Council A is in the top 60 of the most deprived districts in England. In performance terms, In December 2002, the independent Audit Commission published results of the Comprehensive Performance Assessment (CPA) for the 150 largest councils in the country. Council A was rated Excellent and was also in the top category for performance management.

"...has a strong performance driven culture and has a number of systems in place or under development to manage performance. It has few weaknesses in this area ... Corporate performance management arrangements are developing to meet the challenges of the LPSA and community plan targets ... The Chief Executive and the Chief Officers Management Team drive performance with rigour." (Audit Commission Corporate Assessment)

The Executive Strand

Each strand of local government (elected and permanent) has particular characteristics and drivers in contributing to service delivery and focus. The Executive was to be assessed in order to appreciate a specific delivery perspective in terms of decisions, goals and definitions of service. The permanent officials perform implementation of policy, and a generic organisation chart is presented in Figure 3.2.

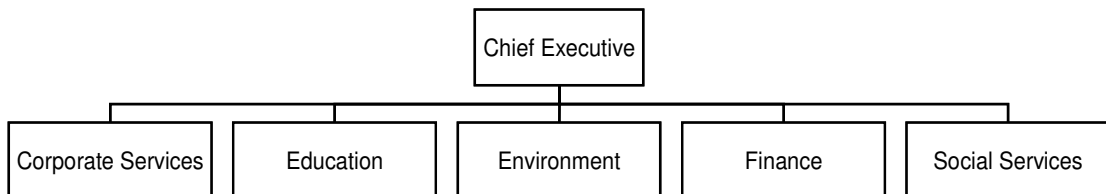


Figure 3.2: Metropolitan Borough Council Advisory Structure Chart.

Council officials are tasked with implementing local Council policy in addition to central government directives and regulations. They will be designing, planning and implementing projects and activities based around the Modernising Government agenda. In addition to advising elected Members, they will be budgeting and preparing for medium to long term changes in organisational and operational ways of working.

A number of councils have decided to adopt a Cabinet structure as part of their modernising government process. This is usually cited as a response to the draft Local Government (Organisation and Standards) Bill of 1999 which outlined the way in which councils will replace their traditional committee structures. This has usually been an interim arrangement until the Bill is enacted which aims to introduce some of the proposals being promoted by central government to separate the executive, representational and scrutiny roles of Councillors.

The full Council will continue to take decisions on policy issues; however, an advisory committee called the Cabinet is to be established to give political direction to the Council and consider matters of policy prior to their consideration by Standing Committees. In many cases an IT department exists at the Corporate Services level, providing guidance and standards to IT units within other departments. Where individual departments operate an IT department, the level of independence in budgetary, procurement and operational terms will vary.

Contributors and Materials

The responsibilities for e-Government in Council A lay with a small executive committee consisting of members of the Senior Management Team. The case study was facilitated through initial contact with the Head of Information Technology Services of Council A.

Interviews were organised with the members of the committee, who were: the Head of IT Services, the Director of Finance and IT, the Deputy Director of Human Resources and the Head of Strategic Planning.

The Head of IT Services at Council A is a direct report to the Director of Finance and IT. This has proved to be a common and often historical arrangement within the many types of council. The officer is an active member of the Association of Greater Manchester Authorities (AGMA). The Officer was the initial contact with the Council and supported the involvement of Council A following an introductory meeting.

The Director of Finance and IT Services is responsible for the fiscal health of the organisation, allied with the supporting services of the IT group. The Director is also closely involved in improving the overall quality and performance of the Council.

Case Study Findings

The case study was intended to retain consistency with the overarching fieldwork questionnaire headings. The resulting findings were intended to reflect the factors at work within the Council that are addressed by methods associated with service transformations driven by e-Government. The sub-headings below summarise the outcomes of exploring the key topics of organisation, change and technology (presented in Appendix A) during the initial phase of the case study.

Organisational Aspects

The majority of Directors were approaching retirement at the time of the sessions. Deputies have not been in place for some time, and the contributors perceived that this is an opportunity for change in a number of areas.

The organisational arrangements reflect the established structure illustrated in Figure 3.2 above, but with good cross-working arrangements in place. This was illustrated by

the debate regarding where the IT and Equal Opportunity functions should sit – in the case of the latter, the Human Resources (HR) group was felt to be too stereotypical.

Early CPA reports undertaken by the Audit Commission in order to assess the effectiveness of government agencies showed Council A to be weak in governance and communities. Although designated as well run and cost effective, a change process was internally commissioned to improve affairs which encompass e-Government objectives.

At the early stages, it is uncertain whether the organisational structure will be revised. The Finance Director remarked on a trend for appointing Directors Without Portfolio who take responsibility for cross-cutting projects such as e-Government. The approach of Council A has been to rely on differing reporting lines across stakeholder departments in such cases. This has been catered for through establishing a core management team, whose responsibilities are distributed across a wider set of divisions than a more traditional structure.

Methods

The ethos at Council A regarding projects, IST project in particular, is ‘evolution not revolution’. Technology implementation is based around assessment of a pilot phase, whereby specific objectives are set and successful attainment of the pilot objectives moves a project into a further phase. Figure 3.3, Council A Phasing, illustrates the progression of pilots from exploratory phase to established implementation project.

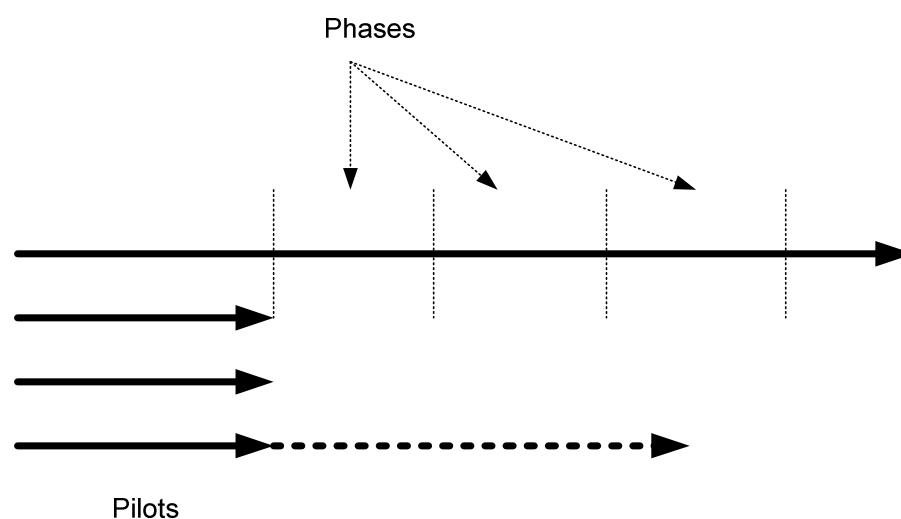


Figure 3.3: Council A Phasing

The discarding of a pilot leads inevitably to a search for an alternative strategy: final business objectives are delayed not ignored. The method broadly reflects a 'waterfall' approach but is more of a 'house style' than a formalised and auditable means of implementing extensive IST programmes. RAD is used by the Council in short term projects where piloting has the potential to deliver a solution in a shorter timescale. A method providing a richer set of features was to be considered. Until such a method has been broadly decided upon, the support of major projects that are likely to fall within the e-Government heading will be provided by a variety of tools. These include project management, process design tools and costing models that have contributed to previous projects with ICT and change elements.

Risk management and control techniques such as Prince 2 have been introduced in recent systems implementations, and are featuring in the legacy systems replacement project. A financial ledger system replacement project is sizeable and complex, and can potentially never reach a conclusion given changes in accounting rules, policy and internal financial management. Stakeholder involvement, in this case user departments, is integral to the local approach to ICT projects. In the ledger replacement example, a series of compromises were agreed rather than face a significantly delayed system delivery.

An example cited was the introduction of electronic forms as a technology and business processes. Council A investigated the experiences of neighbouring Authorities regarding their experiences in this field which indicated a typical implementation period of one month. A proven solution was used to reduce risk in the technical aspect, and in process terms the flow of claims was broadly unchanged. In introducing the change, a neighbouring Council informed staff that paper forms could still be submitted but they would not be processed.

The piloting approach, successfully applied by Council A was used in their electronic forms project. A single department was involved in the process for initial design to implementation. Feedback from the staff was incorporated and subsequently the pilot was introduced Council wide over eighteen months. The implementation may have been swifter but this is not the culture of the organisation.

Using a plan and comment approach, a holistic approach to invest time and money is supported in terms of allocating backfill resources to stand in for departmental experts for the duration of their time in a project. Where departments do not respond within a

previously agreed timescale, informed decisions are made on their behalf to maintain continuity and avoid slippage where possible.

IS Strategy and e-Government

Early in 2002, following extensive discussions with the departments, a new IS Strategy was issued. This centered around a replacement timetable for the legacy Council systems based on three main drivers, being:

- Basing system replacement around business processes and the capability for redesign;
- Technology linking front and back office systems increasingly enabling self service;
- Recording of transaction progress for performance assessment.

This movement of assessment to being a key component of Council systems is presented in Figure 3.4, New Auditing Paths.

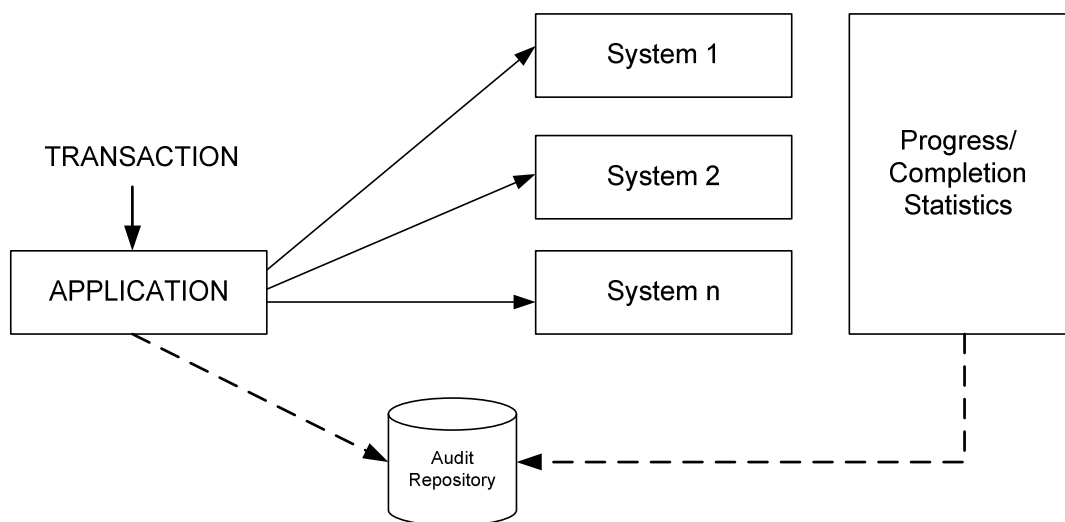


Figure 3.4: New Auditing Paths

The Finance Director expressed the concern that although the transition to transaction based systems centered on Internet technologies is appropriate, the timescales presented by Central Government may be overly optimistic. This probably is a reflection of under funding for such a long reaching programme, although an incremental approach tied to well resourced projects is preferred by Council A. The concept of a shared master plan,

where an overarching, strategic approach with a shared long term vision of what you are trying to achieve is central, was deemed essential.

The e-Government initiative has resulted in a number of existing local bodies and new partnerships being allocated funds, without necessarily a clear remit on how these monies are to be best allocated. The experience of Council A, as a member of many of these local and/or regional groups, was the precedence of policy making over activity. The duplication of projects elsewhere, for instance CRM, was common given the lack of experience or direction in facilitating the bodies to deliver benefits on an aggregated basis.

In contrast, Council A employs a model of shared systems with other Authorities and public agencies which have been proposed as a basis for aggregated services by more recent IEG funding rounds. This provides for a mix of system management, discounts and capabilities. The Finance Director commented that suppliers have encountered hitches in working with such approaches, but benefits have accrued in projects.

An example provided concerned a payroll application, defined, implemented and maintained by a consortium made up of a local Fire Authority, an neighbouring Council and Council A. A notable achievement of the project produced a system that can be operated in the daytime due to the implementation approach adopted, reducing turnaround of three payrolls and reducing out of hours related costs.

The ability of methods and organisations to support the concept of aggregating services is difficult to foretell. Many, including Council A, clearly externalise (either working with other bodies or outsourcing) easier than others. Whether auditing agencies (such as the CPA) will be able to cope with assessing a cross working ethos is another question.

Council A describe themselves as practical and pragmatic in terms of new technologies – they dislike ‘bleeding edge’ examples, and seek practical gains for the organisation overall. The early adoption of thin client technology is cited as their ability to early adopt technology, and an end of year bidding round allows departments to examine or pilot technologies in a practical setting. The Chief Executive is described as ICT appreciative, and the Council has benefited from a close involvement in NGfL (National Grid for Learning) and regional broadband projects for schools in the area evidencing a desire for change.

The Head of Strategic Planning made explicit his view that service is delivered to citizens through a series of business processes – technology can either contribute to this process or reduce the effectiveness. In terms of e-Government at Council A, technology is not there for its own sake, but there for its proven potential to help.

In addition, where ICT is concerned, he made it clear that as an organisation you had to know whether you are delivering. Processes for setting and monitoring realistic targets and outcomes, and mechanisms for ensuring delivery are vital. The Council, due to a dynamic Finance Director, has developed a very strong culture of performance management. The ability to internally analyse progress and targets has been provided for through a Performance Management application. Project targets, progression against strategic objectives and performance against KPIs have begun to be included as a visual and reporting check in many areas.

Change

The executive committee referred to previously has responsibilities beyond e-Government. Where any initiative is deemed key to the Council achieving strategic or key objectives, resources can be subordinated promptly given that the majority of changes are associated with the four Directorates represented on the committee.

The approach to change within Council A in terms of inclusion and empowerment combined with technology and changing circumstances is illustrated through the ramifications of introducing a new cash receipting system across the Borough. The project originally entailed closure of cash offices across the Borough, but the need for this was disputed by officers and members (which brought political interests and pressures to bear). A review was initiated by the committee, which discovered an impact analysis had not been made regarding the closures.

Service demands were for longer hours and Saturday opening. Subsequently, services were made available from libraries and through an innovative relationship where Council service users could access PayPoint facilities in Co-Operative retail stores and Post Offices. Service access was improved in conjunction with savings of over £350,000 from selective office or counter closures.

This approach has been incorporated into a package of measures intended to promote awareness and communication, especially amongst the workforce. An anonymous email service exists for issues, and other methods such as questionnaires and regular briefings

from Directors have been in place for some time. The Directors recognise the continued need for change management, but it is a difficult task as sharing plans and possible changes can sometimes be mistaken for firm projects.

A culture shift in terms of ownership of contact and queries is being gradually introduced. This entails greater availability of information and knowledge to citizens in two ways. Firstly, through printed and electronic sources for citizens, and secondly through an increased ability for customer facing staff to respond and close calls, rather than pass them to back office teams. Both require wider promotion of Council capabilities and changes in the roles to the people who are the public face of the Council, and a considerable transfer of knowledge to technical and human resources.

This approach does call for a level of consistency. The benefits of providing a single telephone number for staff to contact when they are ill or unable to reach work has been diluted by specific departmental numbers being introduced for the same purpose. This entails a greater cost for added lines, as well as decreasing control and management of meeting BVPI measures for absence and sickness in the workplace.

An approach rejected by the Council, adopted by a neighbouring Authority, dealt with introducing another expense handling process intended to replace the established route, which was quite heavily paper bound. Dubbed ‘the Henshaw Hedgehog’, the approach was applied in the example mentioned earlier under the Methods subheading.

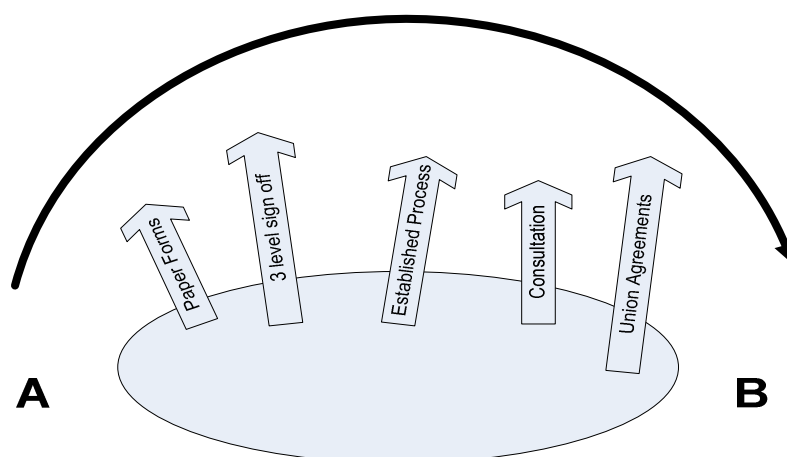


Figure 3.5: The ‘Henshaw Hedgehog’

In the figure above, point A represents the starting point – in this case, the existing process. In order to reach point B, a new process provided for through an updated process and technology, several ‘spines’ barred the way to an implementation in line with an existing timetable. The ‘spines’ represented issues often associated with change management within an organisation, for example consultation and authorisation. The route adopted was to avoid these issues in order to reach point B by putting the automated process in place directly. The current process could still be used, but no work would be done to process the forms, and if staff used this route they would not have expenses submitted in this way reimbursed.

The thinking applied by Council A, which led to a more prolonged implementation than their neighbours, addressed more fundamental questions regarding the wider issues. For example, these included why were two payment runs in place (one for blue and white collar staff respectively), and could a three tier approval system be replaced with a self certification process for the bulk of claims (based on average value of claims)? The value of a complex checking culture and the effect on the relationship with staff were real underlying issues to a change initiative such as this, and the handling by Council A was vindicated by the positive outcome.

Technology Transfer

Council A is unsure of their progress in regard to their peers and the overall government timetable. Comparators are not perceived as helpful or informative, including the Society for IT Managers (SOCITM) reports on e-Government.

The perception of the Deputy Director of HR at Council A sees technology transfer as clearly providing citizens with a greater degree of autonomy in terms of Council services. This is to be facilitated by making much more information accessible, including access to the diaries of relevant Council officers, and the systems and processes for decisions to be made much more immediately electronically or at a remote or central contact point. The philosophy is clearly towards a PUSH of decisions, information and knowledge to citizens on a personalised basis, as opposed to a PULL mindset where citizens must seek out forms and contacts in a possibly unfamiliar and unsettling environment.

This is typified by the project involving welcoming new people to the Borough. This is intended to help with tasks such as providing registrations at local GP surgeries or suggesting primary or secondary school places to parents. The practical challenges to

these initiatives include the physical geography of the Borough, but a broader and deeper provision of information would allow officers to call at a time more suited to the citizen, who would have more information already to hand, or even an interim decision if an application was involved.

No formal strategy exists in Council A in terms of technology transfer to staff or citizens: the adoption of new technologies apparently just happening. Web site usage statistics are increasing daily, and conversely telephone channel contacts are increasing.

Although best practice and comparative information was becoming more widely available, technology projects continued to be commissioned on an ad hoc basis by departments with poor regard to a broader e-Government programme, relevant circumstances and factors. For example, higher demand libraries are to have staff trained and systems installed to allow processing of benefits claims: signoff, approval and verification capabilities would then be at convenient and local locations for citizens. This appears to be a positive contribution to the e-Government ethos, improving service through technology and revised business processes. However, the creation of an independent trust to operate leisure services meant staff were to be transferred over to the new organisation under Government TUPE terms and as such would not be deemed eligible under Government legislation to undertake verification activities at that time.

Technology

Council A published a revised IS Strategy early 2002. This included appraisal of a number of initiatives undertaken by other Authorities, notably Beacon Councils. The Finance Director perceived the Council as flexible in terms of adopting new technologies, but queried the proactive nature of the IT Unit in assessing new technologies alone or in conjunction with business units that could benefit.

In terms of electronic service delivery, Council A determined that it was not prepared for the foundation of introducing technologies. The lead committee was undecided over the appointment of a Service Delivery Manager to oversee such delivery. At that time, the examples they had witnessed did not reflect their circumstances enough to warrant an immediate programme of radical IST led change.

The legacy systems replacement programme has proven typical of local authority ICT projects, and Council A was most concerned about the financial ledgers project. An application implemented in the Eighties in a mainframe environment, it had been

subject to a myriad of upgrades and amendments to reflect changes in accounting practices and legal demands. It provided a project key to Council operations, and would be subject to rigorous demands from the Department of Trade and Industry (DTI) e-Commerce framework, the Electronic Commerce Directive.

Emerging Findings and Interpretation

The case study, in extending the depth of appraisal outlined during the wider fieldwork has provided further insight into the selection and use of formal methods in the e-Government programme being undertaken by the Council. The contacts were involved in the definition and/or delivery of e-Government from a business or technological viewpoint, often in senior managerial roles within the organisation.

The responses were drawn from the extended version of the survey introduced in the previous section under the heading Information Requirements Definition – Technology, Organisation and Change. The complete set of topics addressed is reproduced in Appendix A.

The emergent findings, as expected, did mirror those of the main fieldwork survey, which was founded on a number of contributory factors described in the previous section. The results of the more in depth assessment once again provide some positive results in terms of the early attitude to and the application of methods by the Metropolitan Council acting as a case study. Although there are some caveats presented later in this section, the emergent nature of the findings can be summarised as follows:

1. Central Government requirements not detailed enough

The case study with Council A illustrated that although a central government directive is in place, the potential benefits that can be drawn from such a broad initiative need to be assured through the judicious use of meaningful parameters and/or directives. This brings in the later points about local focus, as the presentation of a common specification would no doubt have been subject to criticism by councils of central government taking inadequate notice of local factors.

In discussing the way in which agencies have interpreted the requirements, Wastell (2002) has observed the focus on service, which applies not only to the type and nature of e-Government implementations, but also to the benefits and measurement of e-Government in a 'tick box' approach.

2. Government agenda requirements under funded

The broad sets of projects that are required to underpin the delivery of e-Government requirements are expensive. The funding available through the IEG process is welcomed, but does not contribute meaningfully to the expansive nature of e-Government and its ramifications beyond discrete ICT costs, such as revenue costs typified by software licences and the upkeep of support resources and facilities.

3. Single project focus

A shared interest approach to projects has not typified the early projects involving e-Government. This does reflect the early evolutionary scale of many of the agencies within the profile, although there have been discussions with neighbouring Authorities regarding service aggregation or common projects.

4. Adherence to standards not solutions

The use of National Projects was designed to bring a consistency of solution and method to e-Government. However, their replication has not occurred and where successful, a specific solution has not been prescribed as a national solution. The past independence of local government in funding and implementing ICT systems allowed a plethora of technologies and standards to proliferate. Although standards are core to e-Government, aspects of this situation have been allowed to continue.

5. Distortion of Timescales

This overridingly applies to the flexible interpretation of scope and timelines that many public agencies, in this case local government, have used in responding to the requirements and deadlines of the Modernising Government agenda.

6. Local Focus

The philosophy of Council A has been to assess projects elsewhere and subsequently commission investigation and implementation activities based on the value and benefits to the local situation.

Despite the common profile in terms of statutory responsibilities in most areas of a Metropolitan Borough Council, this agency (and anecdotally many others beside) perceives they are an island with unique needs and requirements to be met. Although the scale and focus of issues may differ, the aggregation of services, economies of scale

and commonality of approach to e-Government appear not to enter in to the planning processes at a local or national scale.

7. Unexpected Outcomes

During the initial phases of e-Government implementations, the Council perceived an increase in take-up of ICT based services, but with an unexpected higher growth in telephone based services. The reasons were investigated, and findings revealed that ICT capability was more widespread in the Borough, and telephone access increased due to wider publicity of services and subsequently a raised awareness and knowledge of services among the public.

Summary of Case Study

The case study followed a subject organisation that had relatively low ratings as an organisation when the fieldwork commenced, with a CPA rating of poor. The situation at the time, based on the headings applied within the questionnaire employed, reflected the generally low level of adoption of e-Government and application of suitable methods to continue such a programme.

As time progressed, the application of change methods and project control has been made to good effect within the Borough, which was rated as excellent. The legacy ICT applications programme has been virtually concluded, and the holistic yet cautious approach has provided both citizens and staff with an e-Government foundation that can potentially be described as further along Holden's evolutionary scale than its peers.

The methodology to have been identified and recommended as a house method has not yet been selected, although reviews of methodologies will continue.

Part IV – Evaluation

The results from the case study and supporting fieldwork are encouraging in terms of evidencing the application by public agencies of structured methods and techniques in implementing e-Government. There are numerous benefits and advantages that underlie the philosophy and strategy behind the selection and usage of established formal methods, including planning, design and communication routes, which are discussed in Part I, Motivation and Context.

In this section I consider the findings from the fieldwork, presenting key issues arising and how these can be of use to policymakers, practitioners and researchers in the field.

The Findings From The Work

Through interviews and questionnaire responses from participants in the fieldwork and case study, the investigation into the availability, use and value of methods has demonstrated key issues affecting the candidate organisations. The following headings explain these findings accompanied by personal observations having undertaken the work and also from a professional viewpoint.

1. Use of Methods

A highly positive finding was the affirmation that all of the fieldwork participant organisations were already using and/or assessing both proven and contemporary methods and tools in their efforts to implement e-Government (notably SSADM and Prince 2 for systems design, implementation and project control respectively). The documented application of these techniques has contributed to the quality and success of IST project implementations to date, which is supported by the case study presented in the work.

However, the work highlights two specific issues. Firstly, the way in which established techniques and methods are being applied. Both the case study and other responses confirmed the widespread treatment of e-Government as a project implementation, consisting of infrastructure, equipment and software. 92% of respondents specifically highlighted PRINCE2 or an internal variant being used in this

way, and given the homogenous nature of the organisations and strong anecdotal evidence it is likely this approach is endemic across their peers.

This strategy, perhaps unwittingly, of shifting the focus of the e-Government effort, removes the emphasis on change and evolution of government services from the delivery level upwards. This undoubtedly acts as a delaying action in allowing organisations to progress through the evolutionary stages of e-Government.

The second issue relates to the nature of methods. The unique nature of the e-Government domain has begun to highlight the limitations of existing IST models and methods. This is of little comfort to current and potential implementers of e-Government. The SPRINT approach, addressing introduction of change and innovation into public sector organisations, may provide a potential kernel for new methods to be developed around. This growing emphasis on standards in a rapidly changing environment in order to ensure interoperability presents a potential shift in IS design. This shift indicates a more technological approach, as opposed to a more user centric view that was discussed by Moen and McClure (1994).

2. Matching Methods To Projects

A broader issue is the selection of process methods or tools that are suited to the task, and ensuring their usage is maintained consistently. This has provided successful interventions, however the actual selection can be critical. In e-Government, the nature of the project may determine this selection and application. Organisations need to question the project profile – is it to improve administrative efficiency and effectiveness or to empower citizens or business – a key areas which will be returned to in considerations for policymakers and practitioners later.

Exploring the nature of projects with participants and reviewing published literature shows that the early emphasis on the provision of information rather than services has also allowed a contrast to be made between design and implementation methods. A mere translation of current provision into an electronic format without reviewing actual needs or consulting with stakeholders adds no value and does not guarantee take-up where potential demand is not assessed. It is a foolish manufacturer who invests in goods or service provision without adequate market testing.

This ‘push’ approach to information provision can significantly contribute to delaying the attainment of e-Government goals, and highlights the need for mechanisms within new methods or selection of established techniques that include participation of or

consultation with service users early in the design process for new service delivery routes. Where possible, all local government processes need to take into account the principles of e-Government, in order to provide consistency and clear relationships between services, initiatives and the e-Government agenda overall.

The development of e-Government as a growing force in the application of IT in public sector circles on a global basis reflects this trend. Organisations, as in the past as far as new technology has been concerned, have had to use a patchwork of existing methods and tools to shape and control technologies until new and specific methods have been developed to reflect the nature of the technology involved. In observing the organisations during the work and professionally, I expect the current use of methods to continue without mainstream acceptance of more substantive methods.

The previous successful application of methods for implementation of e-Government has coincided with a clear national framework firmly supported by the national government concerned. These frameworks have identified specific targets, incorporated the change, service and democratic issues at their heart and been nationally coordinated and well funded.

The issues surrounding implementation of e-Government in the UK has occurred not to a lack of supportive tools and techniques, but to a combination of lack of firm direction and steerage from central government tied to a local dilution of policy resulting in e-Government becoming a set of IT projects as opposed to change agents.

As e-Government approaches maturity as both a concept and a structured capability scaled to differing public bodies, supportive methodologies may well have evolved to further address the requirements of introducing and further developing organisations responsible for enabling e-Government capability.

The increased drive by the UK central government from early 2006 towards service aggregation has correlated with a recommendation of Shared Service Integration, rather than a monolithic methodology. This approach provides a simplified yet staged progression towards e-Government implementation supported by an application of specific methods at appropriate stages. The recognition of the evolutionary nature of e-Government promises to provide both current and future e-Government programmes with a flexible and mixed approach to implementation.

3. Multiplicity of Methods

From the contact with participants during the fieldwork and case study, the candidate organisations, and presumably their peers, involved with e-Government in the UK have begun to progress through the e-Government maturity stages as identified by Holden.

Almost overwhelmingly (92%), the responses from participants indicate that rather than applying a single, consistent methodology to deliver e-Government (which has not necessarily been available), the organisations have selected a range of methodologies and/or techniques applicable to specific aspects of e-Government within their individual remits. Of the remainder, one indicated no methods were in use to their knowledge and one was unsure, neither of which responses ruled out some level of application.

The methods and the level of knowledge available to apply them adequately have also been dependent upon the level of sophistication in traditional ICT terms that the individual organisation has already attained. Larger authorities or government departments tend to have established teams with the capacity to apply suitable methods to technology deployment. These teams have historically provided support on a corporate or departmental basis, often characterised by the budget or strategic importance placed upon the managing body. Within local government, finance, education and social service departments command budgets and resources warranting dedicated IT resources. However, this silo provision has contributed to a number of the issues being addressed by e-Government today.

Returning to the broader e-Government agenda, as a higher priority was placed upon the work and project scope began to broaden, it was inevitable that a different approach and toolsets would be required. Native departmental methods and techniques were sometimes supplanted by more rigid corporate guidelines that ensured compliance with IEG statement standards and assessment criteria.

A number of profile organisations, such as Liverpool City Council, are already progressing with horizontal integration measures. As a part of this step change, these bodies are reviewing business processes and contemplating pan-organisational change or transformation. At the time of writing, 23% of the respondent organisations had adopted change methods. One was the National Project host for the SPRINT methodology, and others were contemplating transformation or change programmes, although specific change management methods were not a high priority.

This transformational type strategy has called for more alternative methods dealing with broader and in many cases much more softer issues that e-Government encompasses. The technique of developing Business Activity Models (BAM) has proved helpful to organisations in drafting the processes that will result from their transformational efforts.

Many are turning to external partners with expertise in these areas to enact the change or transfer skills and knowledge into the organisation. Of the participants, 38% had existing ICT outsourcing partners, of which half had a change or transformational aspect to them. In observing the organisations, it was difficult to assess how they would be able to fully assess the capabilities of suppliers without specialist advice or in-depth references. This strategy, if well managed, does allow for a strategy of knowledge transfer bringing expertise into the organisation.

Liverpool City Council struck an agreement with British Telecom (BT). The Council was one of Britain's worst performing local authorities in terms of service quality, yet it charged the highest council tax in the country. Factors that contributed to this situation ranged from siloed information and paper-based processes to outdated technology. The main functions to be addressed fell within four key service portfolios provided by the council:

- Information and communications and technology (ICT) infrastructure;
- Revenues and benefits;
- Customer contact centre;
- Human resources and payroll.

The ongoing programme was meant to take advantage of BT's expertise in addressing business processes and applying new technology. This was within a framework of methods that encompassed new techniques like BAM along with more established methods. The risk faced by similar agencies in remaining with methods reflecting project management rather than change is a dilution or delaying of the effect and benefits of e-Government.

This is still not proving a simple exercise, as demonstrated by Walsall MBC, who recently decided against an ambitious programme, '*Putting the Citizen First*', which was to have been the largest partnership of its kind in the UK. The project was intended

to revolutionise the quality of council services and set up a regional business centre intended to boost local economic prospects. The Cabinet had approved proposals for a joint venture worth £650 million, but later decided on a smaller programme of discrete projects to be overseen internally.

4. Methods to Standards

The vertical integration phase of e-Government evolution within both the profiled organisations and overarching central government units has been epitomised by emphasising the role of information and data standards. Requirements for systems being replaced or upgraded have increasingly stipulated the usage of technical standards, including XML and e-GIF dependent upon the technical premise of the requirements.

As an example, a County Council recently issued a tender for third party suppliers for a new set of website, intranet and portal services. The resulting services were to blend new and legacy migration requirements. Any proposals submitted had to ensure compliance with relevant Web and Internet standards, including IPSV metadata and W3C AA accessibility standards.

Of the participants, 38% were engaged in projects that were streamlining key business systems that involved compliance with information or data standards. These projects were pan-organisational and to an extent included service user access for transactional activities, such as bill paying or booking services.

The intention behind this approach is primarily to enable the business benefits to be gained from information sharing, such as compliance - reducing the risk to personal and organisational data and supporting the adoption of good Information Security practice. In the UK, there are over 55 million people and around 3.5 million businesses spread across 25 million places, and 80% of public sector data relates to this. The numbers are subject to fluctuation and interpretation, but the message is clear: information goes out of date quickly and it must be kept up to date if it is to be relied upon.

Examples of the projects I encountered during the fieldwork involved the application of standards to information sharing. These clearly benefitted internal and external stakeholders of the organisations, and could be seen to support organisational values that are beginning to be clearly stated in the public sector such as 'Maintain a customer focus' and 'Deliver outcomes and strive for continuous improvement'.

One example is the reduction of the adverse effects of departmental information silos, where variations and currency of information regarding an individual can be maintained independently. The ability to maintain consistent and current information regarding an individual across an organisation will ensure the right decisions can be made based on correct data regarding personal circumstances, improving quality of decision making and reducing the risk of errors

To this and other ends, numerous fieldwork participants were implementing Customer Relationship Management (CRM) systems as a primary information source to address this issue of information consistency and validity. CRM technology is intended to support the strategy of ensuring that new information would be used to update existing records, whilst the validity and currency of existing and perhaps diverse data could be confirmed. This is not an easy task - recently, the London Borough of Newham declined the opportunity to become the National Project owner from the National Project for CRM due to Olympic bid commitments.

In the UK, e-GIF specifies the format and protocols of information flows across government and the public sector. However, many of the profile organisations have demonstrated a tendency to introduce e-Government using a strategy of legacy systems replacement. Of the organisations contributing to the fieldwork, 62% were planning or in the process of a legacy system upgrade to core business systems. These were to employ appropriate data or project standards, but were not necessarily interconnecting the systems with others or providing access to service users.

Council A had made this a central plank in its e-Government strategy, and they are enacting this through the implementation of commercial off the shelf (COTS) applications. Using this approach, a design and implementation method has been replaced by a procurement and project management cycle. This cycle centers on mandating supplier compliance to formal information and data standards exemplified by e-GIF and XML. To a lesser extent, emphasis has been placed upon Open Systems to facilitate associated benefits of interacting software, hardware, and human components.

Although these standards provide a level of consistency, they are in effect a common template for information and data formats. My observations and experience have been that a parochial approach to applications remains, and the scope for variation in detailed data item definition can cancel out the value of the common template that e-GIF is intended to bring. Unless coerced or given considerable incentives, agencies are effectively maintaining independent solutions rather than collaborating with peers and,

despite using such information standards, there is no guarantee that this will reduce the resources required to share information with other agencies at a later date.

Overcoming this approach will be achieved through organisations being unable to ignore the pressing economic and information quality factors that can be addressed through strategies such as shared services, which are explored subsequently. Only through participant and other agencies assessing and applying process and organisational liquidity will the practical benefits of these methods will become more widespread, resulting in common approaches to application services and information sharing.

5. Procurement Route

Of the fieldwork participants, 38% were actively developing the capability to move to horizontal (or even vertical) integration for e-Government through external suppliers. At least one was looking for this relationship to develop into or separately procure a transformational type capability.

As an example, Sandwell and Wirral MBCs have both recently undergone a process to introduce business focused change driven by third party companies, seeking savings and service improvements. However, this is in keeping with the historical nature of ICT provision within local government, which has shifted over three decades from in-house software development through to managed services. This procurement based approach continues this trend, where the capabilities to transform the nature of the organisation and ease this process through change management are not necessarily available internally or are required on a long term basis.

In procurement, a clear contractual arrangement is essential. This type of agreement requires commitment through applying adequate resources and monitoring on the part of the client for the requirements to be successfully implemented in a consistent manner. The case study with Council A illustrated that although a central government agenda addressing a broad spectrum of public agencies is in place, drawing the benefits to best effect in a transparent manner needs specific attention and possibly specialist advice.

Within such a deceptively complex initiative, realisation of benefits needs to be assured through the judicious use of meaningful parameters and/or directives which have by necessity been generated locally. The use of methods in the majority of

procurements discussed with fieldwork participants have dealt with buying activities within a project management context alone, rather than a phase that can add real value and be subject to a more strategic benefits management method.

In interview sessions particularly, participants highlighted the lack of detailed guidelines or rules from central government leading to a replication of effort across agencies with minimal consistency built into the process. An emphasis or even fixation on cost control and value was commented on the fieldwork interviews and case study, leading to both bidders and councils seeking unrealistically low costs. This has occasionally come home to roost in the shape of poor or under engineered solutions that have not successfully addressed requirements or only a partial system has been delivered due to poor budgeting matched with high expectations.

An example was the technology costs for the planned regional Fire Service control rooms which rose by £70m – more than 50 per cent – in just two years. Contracts for the FiReControl project to consolidate 46 local offices into nine district centres had not been signed, but official cost estimates released to Parliament had already reached £190m, up from £120m in 2004. The Department for Communities and Local Government (DCLG), which is responsible for FiReControl, blamed inflation and unrealistic early assumptions.

The process of procurement in the public sector has undergone significant changes of emphasis over recent decades. Compulsory Competitive Tendering (CCT) was introduced in the UK in the 1980s, in an attempt to bring greater efficiency to public agencies through the use of competition. Revisions to CCT involved market testing public services in central government, taxing their efficiency by exposing them to competition from external providers. Not applied nationally, the approach is still in use where agencies are deemed to be under-performing.

The more radical Private Finance Initiative (PFI) was introduced in 1992, where the private sector was engaged to design, build, finance and operate infrastructure facilities. This has not proven to be a popular route with councils: the comment from Council A reflected on the perception of ‘mortgaging the future’.

The frameworks available through the Office of Government Commerce (OGC) do provide a more mature way of procuring e-Government solutions. It appears that the best practice does not yet extend to aggregation at the buyer level, where a group of agencies procure services on a shared basis rather than just a form of bulk buying.

For example, the purchase of software licences for a shared email service between, say, a Metropolitan Borough Council and five nearby District Councils has a number of implications. The table below illustrates the single service contrasted to a traditional ICT procurement, not exhaustively by any means.

Shared Service Procurement	Single Service Procurement
One application instance to be designed, implemented, configured and managed	Six application instances to be designed, implemented, configured and managed
Significant cost savings available to all stakeholders	Duplication of effort and costs can cancel out individual buyer benefits
Single support contract	Six support contracts
Single support needs	Multiple support needs
Single supplier engagement	Potentially six independent contracts
Discounts for bulk purchase	Individually arranged discounts

Table 1: Licence Procurement Comparison

Although the shared service agenda is coming to prominence, it challenges supplier thinking too. The options for a shared email service, the example provided above, can currently be licenced in several ways, including individual organisation purchase, third party hosted individual purchase, a seat by seat licencing arrangement or on a technical basis such as by processor. The opportunity to remove such complications may provide further benefits as suppliers respond to the changing market and demands of future public sector ICT procurements.

Public sector agencies considering the external procurement approach, especially in terms of wider organisational change, will have to be prepared to undergo an in-depth appraisal of internal and stakeholder requirements. After an extensive and costly procurement process to identify a partner to invest heavily in taking over many Council services, Walsall MBC decided that internal resources could support a programme of change, and a large scale deal may be financially unacceptable. External partners as subcontractors were to be appointed in a more fragmented approach to the improvement programme. Was the scale of the strategy ahead of its time?

The sense is more of an opportunity lost here, as several neighbouring authorities were shadowing the Council. At least one, Sandwell, has embarked upon an individual programme of change rather than become a stakeholder in the broader programme envisaged at Walsall. Now, additional cost and effort is being incurred in a separate, equally complex procurement process covering many of the same e-Government and business process issues but on a reduced scale.

The drawbacks of replication without consistency derive from multiple organisations with matching obligations implementing similar solutions. With minor variations, the participant organisations were all focused on them being unique, with even neighbouring authorities not sharing their issues, responsibilities or services. Whilst this mentality continues, even in one sphere of the public sector, shared services as a concept will struggle for acceptance with the resultant delay in operational and economic benefits.

My experience from the work and professionally has shown the added value that external suppliers can provide in terms of e-Government and broader ICT services. The discipline required to draft service requirements on the part of the agency, combined with a stipulation for demonstrable experience, using references, can provide a realistic route for project success. Contractual terms can also provide for a knowledge transfer aspect, where new or supportive skills can be absorbed into the organisation rather than repeatedly (and expensively) called upon.

6. Interpretation

The scope of e-Government includes several key factors, including the levels of information provision, functionality and range of transactions that are implemented by an agency within the e-Government framework. Several of the participating councils reflected on incidences of central government policy based initiatives that have been subject to a literal interpretation of what is required and no more – where the letter of the law is obeyed with least cost and effort whilst still complying. A perennial example of this approach was the initial design and presentation of a Council Web presence - often a single page with a simple alphabetic list of departments and postal addresses.

A number of the profile organisations explained that following the announcement of e-Government in the UK through the Modernising Government agenda, junior officers were allocated the responsibility of overseeing the introduction of the policy based on the apparently low emphasis placed on this policy by central government. Subsequent

assessments by the Office of the Deputy Prime Minister (ODPM) led to formal reviews supported by funding arranged by the Department.

Flexible interpretation, as historically other projects have shown, does not only apply to functional requirements. In terms of timelines, Boroughs within the UK have been required to access funding for providing e-Government services through the ODPM. The funding route, known as Implementing Electronic Government (IEG) operates on an annual basis with a specific theme.

Applicants are required to plan their activities and expected outcomes in order to receive support. Progress reviews have subsequently been implemented to actively measure success, and like many pragmatic agencies in early rounds, Council A openly admitted to interpreting the early IEG requirements to a bare minimum to obtain funding. Not alone in this respect, the Council provided textual information regarding the organisation on a website. The information was not dynamically updated and added little to service levels, yet was used to demonstrate the agency was meeting original e-Government requirements. Thus a clear issue existed with the way central government presented requirements which were unclear and allowed for more liberal interpretation than was appropriate in such a situation.

In response to greater scrutiny of progress, many Authorities appointed Members and senior officers to responsible roles (such as e-Champion) in recognition of this change in emphasis. This was also a determinant of the level of maturity the agency has reached in the e-Government cycle and how many moved on to the subsequent stage of evolution. It was also a first step towards introducing governance into a significant change in organisational context.

Unfortunately, this is not a new phenomenon unique to the Modernising Government service improvement agenda or e-Government generally. This is behaviour traditionally exhibited by public sector bodies in response to central government policy initiatives that are not fully mandated or centrally funded. The vision presented by the paper and designed to be monitored by the IEG process has not been realised in scope or timeliness, and the lack of enforcement has encouraged interpretational behaviour. As the IEG process continued towards its close in 2006, it was treated with reducing priority by management based upon the poor level of funding being provided to councils where projects were considerably more expensive.

Previous examples of such reactions include poor levels of compliance to project control standards and guidance. Despite the issue of project and programme

management standards and related support, considerable numbers of public sector projects overrun in terms of time and budget. Over the last five years this has amounted to over £ 1 billion, based on estimates from Computing magazine in September 2002.

The interpretation applied by organisations which they feel is more appropriate than the centrally sourced recommendations – a ‘not invented here’ philosophy - have led to the kind of problems that were supposed to be avoided by following the guidelines.

On a more positive note, fieldwork participants discussed the use of star ratings for agencies, which combined with high profile projects and additional funding have contributed to this behaviour reducing. Wastell et al (2002) observed the focus on service applies not only to the type and nature of e-Government implementations, but also to the essential drivers of local government including the democratic process. The evolutionary process described by Holden has become a truism for Council A – they have been recognised and commended for their developed and improved services in line with the e-Government agenda.

7. Focus

From the participants, including Council A, 38% were pursuing an IS Strategy clearly emphasising a replacement and upgrade approach. For these types of projects, existing methods for delivery, overwhelmingly Prince 2, were already internalised and in use.

The progress at Council A has to some extent been based on adhering to the recognised procedures as there were no grounds for interpretation, a problem discussed in the previous section. The nature of the task was clearly documented and a programme was in place along with budget and resources.

At this stage, there was no concentration on service improvements for service users or improvements to internal mechanisms through a measured programme of change. This approach has characterised other e-Government projects, where the limitations of existing methods have become painfully obvious, including poor consultation with internal user communities regarding change and new systems.

Given the perceived growing scope of e-Government, the complication of dealing with the public and their expectations at this stage was probably too early in the change management learning curve for the organisations concerned.

The fieldwork also brought out further symptoms, including projects being instigated in isolation. Individual departments were taking action to introduce e-Government

without overarching organisational or corporate parameters, often referred to as ‘silo’ working. Projects are on occasion implemented on a minimalist basis to meet central government imposed targets, with poor business justification and having limited or no joint agency approach to information, functionality or service delivery.

An example of how this service parochialism impacts wider interaction of agencies is in the effects following the introduction of the Freedom of Information (FoI) Act. The Act allows individuals to request information from public bodies, and requests can take an average of six hours to complete at an average cost of £150 per enquiry. Many agencies, including the majority interviewed, spent time and money developing electronic document and record management, CRM and other solutions independently. These disparate systems provide limited information retrieval capabilities, often requiring additional technology layers to boost the facilities. This is another example of a technical solution that contributes to the argument in favour of e-Government evolution of organisations, where service improvement requires renewal due to poor strategic thinking driven by a fixation with local identity.

Recent tendering through central government contract agencies has indicated that significant numbers of agencies are only just commencing procurement of systems and services that are relevant to the core e-Government principles, focusing on the shift from vertical to horizontal integration. Given the well-publicised Modernising Government timetable and targets, such activity does not bode well for clear and rational decisions, and reinforces the use of project management as a tool in systems design and integration.

On a positive note, the fieldwork has shown that this procurement tends to assist in taking agencies into a later stage of maturity. Project management still retains a method of control for the agency, and change management becomes a complementary method to prepare the organisation for the implementation of enterprise wide applications.

The projects being adopted in many profile and other bodies also indicate an increased adoption of best practice and a widening of the poor or inadequate focus that has contributed to poor project performance within the public sector previously. There is increasing evidence that public sector organisations can learn and exhibit signs of maturity, as many organisations approached the Modernising Agenda from a different direction. In such cases, the focus was placed on internal (or back office) processes, where requirements could be assessed from a supposed higher awareness of issues and needs due to familiarity.

Cambridgeshire exemplified this new focus with a project to integrate procurement with financial functions, with an emphasis on best practice and making best value of their application software investment. The project focus included a clear strategy and project scope from the outset, including a wide user base for consultation and design, a proactive approach to recognising, addressing and managing the impact of change on the project and a suppleness of scope to address issues and incorporate them sensibly without compromising the overall scope. This became a National Project for e-Government, and as such is a blueprint for other agencies.

8. Service Users

The findings from the fieldwork and case study clearly place service users at the low end of priorities as far as the participants are concerned. The focus is clearly placed on investing in back office technologies and upgrading systems that underpin service control and management, as opposed to service delivery. This includes the councils who are applying change more formally using established methods, as they introduce organisation wide business systems such as ERP.

There is a consistency of approach regarding service user access to the councils which tends to focus on call centre facilities, sometimes in the same breath as CRM. The call centres appear to be subject to the same philosophy as websites – in this case acting as a glorified switchboard directing calls to officers rather than acting as a single point of contact for callers and maintaining an end-to-end record of a service contact.

Following initial e-Government related projects which included pilot One Stop Shops and a limited scope Contact Centre, Council A noted a slight increase in take up of service access routes. Internet based services were beginning to be adopted, but there was a more marked growth in the take up of more established telephone services. This came as somewhat of a surprise to the Council, but this result is consistent with a narrow and limited approach to designing and planning services, which would usually involve anticipating outcomes and wider results of projects that cross functional and operational boundaries.

Contact with the profile agencies has highlighted that channels of communication have grown in importance as they mature in e-Government terms. The increased use of telephony to provide access to services, primarily through investment in contact centres is one example. Councils have been replacing core business systems as part of

increasingly ambitious legacy replacement strategies that cross organisational boundaries, for example email services.

These convergent technologies are providing increased capability, and in many cases multiple functions. A prime example is network cabling, now capable of transmitting network traffic, voice traffic and also sufficient power for the attached devices as well. These technologies have led to broader contact channels for service users as well as staff and stakeholders being featured in the requirements specification provided in the relevant procurement notices.

The emphasis on communication has also been driven by the central government focus on social inclusion, where differing channels are being explored to contact traditionally harder to reach members of the community. The impact the mobile phone has made on social communication has provided one means of contacting members of these communities. Consistent with an evolutionary approach to innovation, the penetration of this technology has begun with text messages to be sent, for example appointment confirmations. Sterling Council has been commended for allowing citizens to text the Contact Centre on one number with an automated response facility.

Increasingly, Council Residents' Surveys are showing that a growing number of people want to be able to contact their Council using text messages from their mobile phones. A hindrance to this has been the interpretive behaviour demonstrated in web design or telephone directory entries, for example. Many fieldwork participants outlined historical access to services, where they were often listed but no officer details were provided. Service users often had a central number and a process of written contact was instigated which added delay to service delivery.

However, methods of introducing such changes have assisted in drawing in these considerations in reshaping organisational structures and processes to reflect the needs of a wider and more aware service user base in future. Fieldwork participants scoring higher in IEG rounds have particularly focused on this element, innovating service contact processes with a contact centre strategy combined effectively with CRM technology.

9. The Role of ICT

The place of ICT within Council organisations has undergone a radical change over the last two decades. Council A, and many of the other participants, originally

implemented mainframe computers to assist with specific financial and business operations. The facilities were often under the control of the finance department, whose needs were primarily addressed by the systems on offer. In many cases, they developed their own software to undertake complex tasks such as Rates calculations. The disciplines involved were often marshaled into clear teams, working to a structured methodology suited to large scale software development in these environments such as SSADM.

The participating councils share a common heritage in terms of IT usage, and current trends toward outsourcing, packaged software and cheaper hardware have led to a hiatus in methods suited to the evolving nature of ICT in public and private organisations. This mirrors in many ways a similar lull in methods available suited to the introduction of e-Government into organisations today. The interviewees and case study contributors commented on how changing technology continues to alter provision of ICT generally within public sector bodies, particularly the decline in IT departments as large software teams were no longer required.

It is reasonable to assume that these shared experiences within a common organisational framework are mirrored across the candidate organisation population. Individuals interviewed recounted similar 'war stories' as the trend towards the support of users at the desktop began to occur, driven by the individual departments investing in desktop PCs and software to assist them in their work. Software packages such as dBase and Lotus 1-2-3 brought benefits to departments unable to take advantage of centralised IT services focused toward accounting goals, as individuals developed software tools to assist in their work.

The participants also confirmed that this new 'do it yourself' approach to IT capability led in many cases to uncontrolled use of software and hardware tools amongst organisations. Although local productivity and efficiency boosts were usually promoted as benefits in their organisations, many interviewees related how their organisations were losing sight of spend in IT and control of what would become core business assets, where well-meaning and innovative individuals were designing business tools without recourse to or the support of recognised frameworks or methods.

This trend was also reflected in local business processes, which began to alter to reflect these new and innovative tools. At this time, departments within a Council were still mostly autonomous and independent of the wider landscape in which services were delivered. This pre-silo state did not have access to the technologies to provide a

'joined-up' service and facilitate a consistency of approach to service users, and laid the foundations for the transformational requirements required of e-Government.

A user from a profile Council described his experiences with ICT: "The geographical urban spread of buildings and the variety between departments of technical platforms (IBM, Digital and Unix) resulted in a plethora of working procedures and rules under the control of different individuals with varying objectives and agendas. This caused a lack of consistency and reliability of the Council to operate as a unified, collaborative unit in terms of technical standards and methods. The evolution of Windows technology gave further concerns that a means of unifying technology and design was still very much required." This also contributed to the rise in concerns over version control for software and latterly information itself and the currency of data people make decisions with.

The direct capabilities of PC technology influenced the growth of similarly direct methods, such as Rapid Applications Development (RAD) which themselves eventually became mainstream methods. Established 'waterfall' methods were complemented by agile techniques such as Feature Driven Development (FDD) and RAD and which iterated around the development cycle, enabling users to see a working model of the solution at an early point in the development cycle.

In a methodology gap presented by the onset of e-Government, agencies such as the profile councils are tentatively investigating the shape and nature of newer methods such as SPRINT. Only one of the fieldwork participants, the original National Project council, has taken it onboard formally. As in previous situations, existing methods, typified by Prince 2, are being adopted at a technical project level until evolution takes the agencies towards change management issues which expand the nature and focus of the e-Government programme.

The major difference in organisational terms is that adoption of such methods requires involvement of a wide cross section of the Council and its stakeholders. The methods effectively mandate such involvement to ensure recognition of broader needs and the commitment from interested parties to increase the success of key projects. Two others are employing change methods (Macroscopic, in one case was identified specifically) as they indeed recognise the wider reach of change in an organisation.

However, the fieldwork participants looking to engage with 3rd party providers are expecting these suppliers to provide the knowledge and skills that include the methods necessary to successfully deliver ICT services and particularly transformational or

change programmes. This approach will leave a skills and knowledge gap and does not guarantee the optimum or most appropriate redesign of services and facilities that the councils are seeking.

10. Aggregation and Shared Services

The participant councils scoring higher in IEG returns (23% with a 4-5 and 38% with a 3-4 out of 5) reflected in sessions on an indirect aggregation through the use of standards, particularly in information. This has meant that one of the major problems resulting from silo based working, the duplication of information where each instance is not necessarily correct or up to date, can be addressed.

At one Council, it was noted that there were over twenty six different job application forms across the Council. This replication, with limited differentiation between information content, is typical of a situation where aggregation provides the potential for broader benefits to be shared between organisations.

Council A closely assesses technologies as part of a project, although like many of the peer participating councils has disregarded the National Projects which were designed by the Government to bring a consistency of solution and method. What continues is the established independence of local government in funding and implementing IST systems, which has allowed a plethora of technologies and to a lesser extent standards to proliferate based on a parochial view that proven national solutions do not apply to local needs.

More recently, central government has begun to indicate that aggregation will not be an option. A forthcoming Comprehensive Spending Review (CSR) has been pre-empted by comments from the head of the Government's delivery unit, responsible for e-Government, to assume that large-scale shared services were already a reality.

This historic insularity has also influenced the efficacy of shared approaches discussed in the next section. More positively, to a degree, Council A promotes partnership working, intended to ensure a complimentary and joined up approach in delivering comprehensive and sustainable improvements within an area. This has worked well in a project with emergency services for a specific business process where issues around information management and sharing were not involved.

It was clear from questionnaire and interviews that Authorities were anticipating being owners of these services and possibly earning revenue from service provision. The role of junior partner or customer is for other authorities to play.

The insular and sadly widespread behaviour exhibited by many types of Council, including Council A has, in other cases, resulted in reassessments of inter-agency working generally. The tragic cases of Victoria Climbié and the Soham murders illustrated the inadequacies of information sharing between public agencies.

There are in turn ramifications for e-Government projects regarding the quantity, currency and quality of information to be retained and available across enterprise systems. The focus on standards for information sharing, part of the reasoning behind forcing adoption through e-GIF and XML standards is wasted where there is no political will to actually share the information for which standards have been designed.

Implications for Policymakers and Practitioners

The fourth objective from the Introduction was identify implications for policymakers and practitioners through use of substantive fieldwork, illustrative examples and/or anecdotal situations involving e-Government services and delivery. The headings within this section are intended to provide this through acting as key signposts for individuals or organisations seeking advice and guidance in their own e-Government implementations.

1. The Value of Methods

The value of methods has been reinforced by the recognition by all participants in the fieldwork through their adoption and use of analysis, development, management or change methods to varying degrees, with a growing focus on staff gaining accreditations. What is essential to interested parties is the intelligent selection of appropriate methods that reflect the organisational circumstances and strategic plans in order to optimise the results using the tools ultimately selected.

This value placed on methods can be contrasted to that of none or poor application. In ICT projects, the adherence to relevant methods has generally resulted in well balanced and consistent approaches to projects. A corresponding lack of their application has resulted in plentiful, well documented overruns in terms of budget, time and often the

misapplication of the technology concerned, notably by Collins and Bicknell (2000) in an assessment of IT projects that failed.

In public sector projects, the results of poor project standards can make front page news in terms of wasted public funds and the impact of failed systems on the part of the population it was intended to support.

Earlier, it was emphasised that in the field of ICT, the development of appropriate methods and models to best exploit technological innovation trailed the advances themselves. Personal observation and experience during the course of the work has reaffirmed the author's conviction that this trend is set to continue in the field of e-Government in the absence of focused methods.

2. A New Evolutionary Direction

Despite the positive track records of the fieldwork organisations in recognising and using methods, the dearth of contemporary methods has not helped them adapt to the demands of e-Government. Indeed, the priority many of them placed upon e-Government at the outset also determined the approach and resources placed at the disposal of business units or departments tasked with responding to the initiative. This early stage, one of four identified by Holden (2002) (catalogue, transaction, vertical integration and horizontal integration) are reflected in Diagram 4.1 below. This is intended to illustrate the changing emphasis on methods and standards that organisations need to adopt across the stages.

The early stages of e-Government, cataloguing or simple transactional activities, were (or are) addressed by project management and simple applications development methods. Appraisal and application of specific technologies such as Hypertext Markup Language (HTML) were required in mostly small scale and discrete projects, typified by simple websites providing information to the public about the organisation. Although not the focus of specific methods, such projects were influenced more by techniques such as RAD which treated the Web resource as an application. Best practice rather than methods appear to have prevailed, whereby once a site has been launched, the imperative is to monitor its usage and refine the design based on a feedback loop.

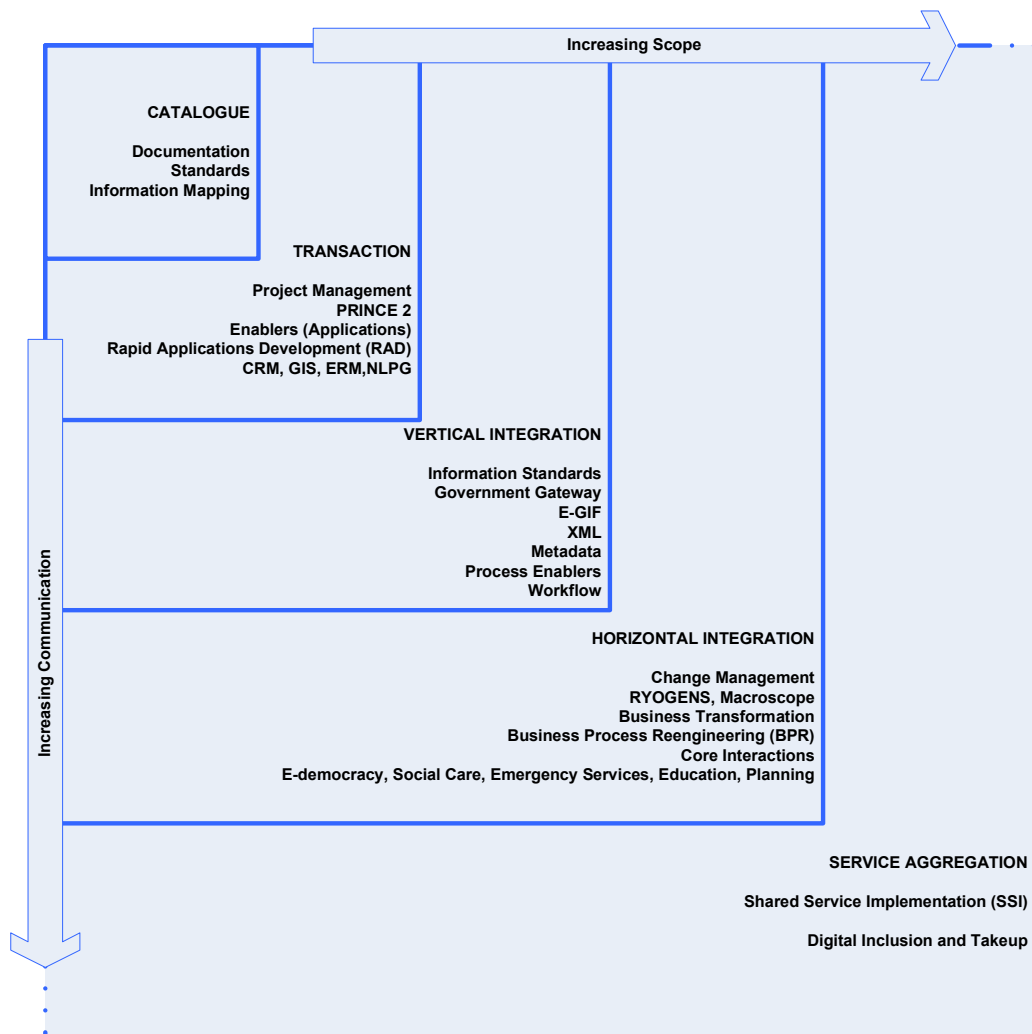


Figure 4.1: Evolution and Featured Elements

A key benefit to practitioners presented in Diagram 4.1 is direction for the further evolution of the e-Government process defined by Holden being extended by a further phase. Service Aggregation (also referred to as Shared Services) is the transition from horizontal integration internally to a larger scale service sharing at an organisational level of complementary services and systems.

A small proportion of the participants (23%) were aware of or using tools that could support change of this nature. Given this is reflected across the wider peer group, foundations are being laid for this horizontal integration supportive of streamlining functions to ensure that services are delivered as effectively as possible.

This often involves the centralising of back office functions such as Human Resources (HR) and Finance but can also be applied to the middle or front offices, and across organisation as the Cabinet Office has found. A key advantage of this

convergence is that it enables the appreciation of economies of scale within the function and can enable multi function working (e.g. linking HR and Finance together), where there is the potential to create synergies.

Similarly to e-Government, a large scale cultural and process transformation can be a key component of a move to Shared Services and may include redundancies and changes of work practices. It is claimed that transformation often results in a better quality of work life for employees although there are few case studies to back this up. Sharing of services is far more than just centralisation or consolidation of similar activities in one location. It can mean running these service activities like a business and delivering services to internal customers at a cost, quality and timeliness that is competitive with alternatives.

3. Methods Selection And Application

Although touched on earlier in this section, a substantive consideration for practitioners facing this evolutionary process is the selection of suitable methods and tools to support them and the organisation.

The process stages present great complexity to the organisations contemplating the changes required along the way. Management and practitioners can use Diagram 4.1: Evolution and Featured Elements as a barometer to measure their own organisational and personal readiness for implementation of what can be a significant programme of work. It can be applied both strategically and tactically as a foundation for identifying appropriate tools and planning for their integration into the fabric of the organisation.

Interviews and fieldwork responses have demonstrated clear gaps in both the national strategy regarding e-Government and the methods currently available to support planning, design and implementation efforts. When this is addressed, there will be a process of equalisation between established methods and techniques and the emerging and dynamic methods being developed or adapted to allow more specific focus on e-Government in terms of more specialised topics, notably change management, which they entail.

Where organisations have evolved sufficiently to determine the nature of e-Government projects in tandem with their readiness, this considerably reduced their risk in making poor decisions in selecting methods to underpin individual projects or strategies.

My recent experience of a specific council involved an infrastructure upgrade project involving their email and Internet systems. The organisation was fairly well evolved in terms of e-Government, and consistent with the fieldwork findings, were familiar with methods and were moving from vertical to horizontal integration. The implications of such a core project were not lost on them, and they addressed the project using a blend of several established methods. They elected to commence using an Enterprise Architecture Infrastructure (EAI) approach, which was intended to establish the infrastructure status and additional requirements since the original email provision was made. This gave them an updated picture of usage and needs, taking both corporate and departmental aspects into account.

Next, the council team applied Business Process Modelling (BPM) to document and potentially amend any business processes were affected by the proposed system change. With a commercial decision to award the project to the incumbent supplier, the council made integral to the contract an aspect of Knowledge Management – a method to ensure that skills and expertise relating to the system were internalised and the organisation captured these for future reference. Overarching the project were corporate project management methods (PRINCE 2) were applied to control the progress of the project.

The selection of these methods was premeditated and supported the successful progression of a key e-Government centric project. The use of a range of tools took it beyond the profile of an upgrade, and delivered a range of benefits which included a decision not to implement the initial release but await a service pack release. This avoided initial product release problems and also saved on subsequent licence upgrade costs, showing the value of selecting methods and how they can add value to e-Government projects.

The evolutionary process also involves a transition between stages, and the selection of methods by practitioners needs to take this into account. Legacy system projects, a strategy adopted by 62% of fieldwork participants, will require suitable assessment and review methods applying to confirm the nature of their implementation in the context of the organisational changes which will not happen in isolation.

This transitional aspect is a key factor that will determine the success of the continued trend in the delivery of public sector services through the use of commercial products. This growth has been given an added fillip by the digression in e-Government evolution in the UK through the emphasis placed on the use of information standards, polarised around e-GIF at the expense of specific methods development.

The constraints in adopting products centre on the integration of the application to the business processes and the extent of change that the organisation can cope with. As a part of its e-Government strategy, an Eastern England council decided to introduce modules from the SAP application as a legacy replacement project. The council strategy was to amend local processes to reflect the standard SAP application business system processes. The application was introduced on a limited budget, and the resulting internal reorganisation caused much upheaval, delay and service interruption through introducing new and unfamiliar business processes to the organisation.

The approach of the council contrasts with a recent and considerably more successful introduction of SAP at a water utility in the region which had impressed the council. The utility invested in a multi-million pound project, and more importantly, tailored the application to fit its existing processes. There was a process of change for the utility to cope with, but this was primarily involving training and upgrading of IT equipment for staff. The business processes used by the incoming application were familiar, and allowed the utility to manage any change to the business. In this way, the organisation could review, devise and more importantly model new business processes on a test system prior to introducing them to both the application and the staff in the organisation.

Systems or projects utilised, and those falling in the e-Government umbrella, will increasingly require adherence to stated codes and standards. The effect of this will be to assist in a continued growth in cross-compatibility between previously often disparate systems used by neighbouring organisations performing similar functions in delivery of comparable services.

4. Project Selection

Fieldwork with the participant agencies has shown that the practitioner does need to understand the behaviour of the organisation. Observed behaviours, discussed earlier, include the interpretation of requirements in a truly literal sense, often leading to 'placeholder' systems implemented as window dressing. This type of behaviour needs countering as it fails to address deeper issues and wastes resources as redevelopment of the facility will be inevitable as more transformational projects get underway.

The value of the findings also addresses those to be affected by the outcome of increased e-Government take up. In development of methods to introduce and develop e-Government, the processes to commission, own, use and introduce systems will

needed to be considered. If aggregation of systems on a regional or national scale begins to take place, the complexity and impacts will also have to be taken into account compared to the perceived benefits to be obtained from the planned investment.

The work has also illustrated that the increased visibility around the changes being brought by e-Government have raised the public profile of council services. Despite the high level of investment and such emphasis on access to all community members, figures recently highlighted by the Guardian in December 2005 are not encouraging. The Department for Culture, Media and Sport at the time had a responsibility for eleven websites at a cost of £43.4 million in the financial year 2004/2005. One site had 77 unique visitors in that fiscal period, possibly the lowest on the Web - reinforcing the need for assessing the return on the investment put into a project. Cross describes such services as 'the websites nobody wants'. For October 2005, he presents an illustration of the number of visitors by percentage of population to e-Government sites as follows:

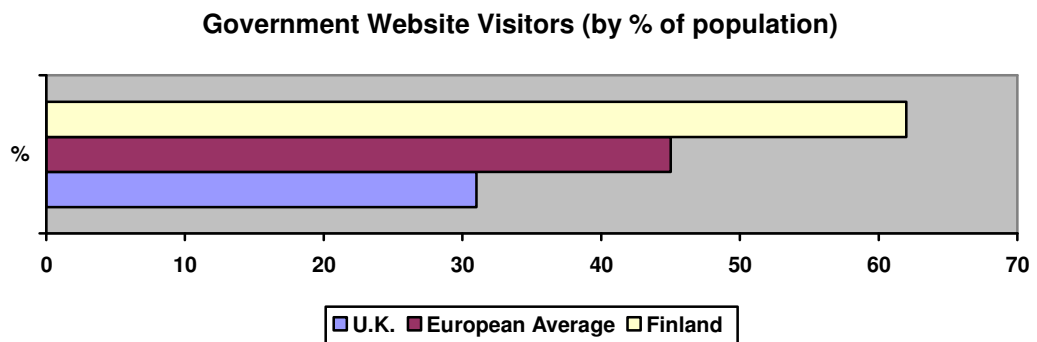


Figure 4.4: Government Website Visitor Levels

Public accountability calls for the scrutiny of value for money, quality of service and delivery of ICT centric projects too. Practitioners need to take this into account when commissioning and managing projects, and the recommendations of Sir Peter Gershon, whose Efficiency Review (2004) sets out the scope for further efficiencies that he expected to be made from back office functions.

5. The Future Role of Methods

Although the fieldwork clearly illustrates the value placed on project control methods by councils in implementing technology, practitioners will need to determine whether to adopt formal methods and if they will benefit from customising them in terms of their own requirements and cultures. The City Council in Manchester, in the course of a major programme to implement or upgrade existing IT services to address e-

Government strategies, undertook such an exercise with programme and project management. However, the resulting method was a recommended approach as higher profile departments refused to have the method mandated on them, resolutely maintaining their own methods.

Fieldwork participants were all at differing stages of e-Government maturity, and were grasping for suitable expertise in established methodologies for organisational change to drive out benefits from organisation wide initiatives. A small proportion (23%0 had already realised that success at this stage is tied to shifts in both developing working practices and the manner in which they deal with their service user base and have adapted to methods that encompass change and transformation.

Practitioners need to consider the wide spectrum of issues involved in the step from vertical to horizontal integration of e-Government, as it is difficult to estimate if one single method can provide the depth of coverage required. The use by 70% of fieldwork participants of PRINCE2 type methods are evidence of the reliance on structure and control within this new environment, further evidence that the full maturity stage of e-Government has not yet been reached in the UK based on Holden's model.

It is significant that emergent methods are being assessed and developed. The refinement of early attempts at suitably flexible approaches (such as SPRINT) continues in a limited number of practical examples. Further assessment has resulted in the Government Office advocating the use of the Shared Service Initiative pioneered in Australia. If the evolution of methods and tools, or the continued combination of usage, within the e-Government space follows the recognised route in trailing the technology, methods will continue to develop and gain wider acceptance and uptake amongst the user community in the e-Government space.

Part V - Conclusions And Future Outlook

This work has considered the value of applying design methods and other techniques in the implementation of electronic public services. These conclusions reflect on the original scope and objectives listed in the Introduction and the fieldwork and case study involving a specific group of public agencies, the Metropolitan Borough Councils.

Are There Methods And Benefits Available?

The tools and approaches available in the early and even continued adoption of e-Government have been assessed both in principle and through fieldwork, and were the focus of the first objective in the Introduction. The results clearly demonstrate that a variety of methods are available for the varying activities that make up a typical e-Government project, but no one example provides a definitive route through the complex path from as-is to a definitive 'joined-up' organisation.

The results of government audits and the contact with organisations through fieldwork show that agencies clearly accept the merit of methods to define, plan and execute a major ICT programme and use specific or variant methods. However, the lack of proven, more transformational methods is constraining practical progression through documented stages of e-Government. Organisational behaviours compound this further as the nature of the e-Government programme changes from implementation through return on investment to a transformational character.

The value to be drawn from the work involves the confirmation that methods as a form of 'common currency' are available to practitioners tasked with implementing e-Government. This value continues on with a new evolutionary stage being identified for e-Government, with the forward direction be to extend a specific, wider ranging methodology such as SPRINT or to provide clear recommendations on the specific method to be applied for the various components of e-Government, from requirements definition through to change management.

Dealing With The Complexities e-Government Presents

The difference with delivering e-Government is that multiple and sometimes unrelated factors have visibly converged to present a complex, multilayered set of

requirements that demands both broad and deep involvement from a range of stakeholders. Organisations adopting a legacy project approach have found this out, sometimes well into a project.

This new shape of broad and deep involvement from stakeholders mirrors the 'T' theory, usually associated with skill development. Specialists do not work in isolation, and the nature of e-Government demands appreciation or expertise of other disciplines.

The message of absorbing the concept of a wider world beyond a departmental silo is inescapable for a professional contributing to an e-Government initiative. The provision of social care will involve internal processes relating to staff work management, financial budgeting and management which the social worker will provide broader input to rather than the deep contribution on professional specialisms for adult care.

It may be that many of these attributes are already dealt with by individuals on an implicit basis. An e-Government programme will involve formalising these interactions, with some or all aspects being translated into process definitions, application functions and/or electronically stored information.

As administrations globally have progressed along the e-Government evolutionary scale, differing factors have gained prominence. The process is akin to the metamorphosis of egg to butterfly, as successfully introducing one of the major phases of e-Government leads inevitably to the commencement of the next phase that requires new thinking or an approach that develops the services as well as the capabilities of the agency involved in a positive fashion. These new considerations however are not necessarily new in terms of information systems projects.

This is particularly exemplified in the eventual recognition by more local authorities of the benefits to be gained through aggregating or sharing services. Anecdotal evidence from those organisations, particularly local authorities, at early stages of e-Government evolution, was that they dismissed such collaboration almost out of hand. On the face of it, this dismissal appears to have been based upon the potential dilution or loss of organisational identity (or brand), together with, and more probably, the diminution of power and influence.

Although these are still strong concerns, the likelihood of them occurring in the short term appear remote. The recognition of greater immediate economic benefits plus the contribution to a shifting range of performance targets is beginning to make joint working increasingly attractive. The irony is that this convergence has presented a

situation where there is not necessarily a method currently suited to the design and introduction of such systems into the public environment, and thus a reliance on proven methods is likely to continue.

Growing Organisational Awareness

Albeit more slowly than central government might like, public organisations are increasingly recognising the complex nature of e-Government. An example of the initial reactive approach adopted by many in the public sector to the demand to modernise services was the adoption of a policy of legacy systems replacement. Although the methods used for the technical development and managerial control of such projects had been available and applied for some time the wider implications were yet to be fully comprehended.

The third objective from the Introduction of identifying gaps in the established methods portfolio is met in this case, given the sometimes narrow focus of individual approaches. The overlapping business, technical, organisational and change factors underpinning, in this example legacy systems replacement, need to be closely co-ordinated for a successful outcome as a unifying method has not necessarily been available to organisations facing these circumstances previously.

A major consideration in this respect was the review and possible redesign of the existing business processes. In many public bodies, business processes had developed organically on a narrow departmental (or 'silo') basis with a vertical reporting path. Resources and assets were often procured in the same fashion and information was maintained local to the department at differing levels of currency about service users. Organisations adopting a legacy replacement strategy found their projects expanding rapidly as they realised that the scope of e-Government was much wider than they (or many others) had anticipated. Keeping control of change and merely automating existing processes can have advantages. Change is minimised, and the application can be reconfigured at a later date when process reviews and the organisation has been prepared for new ways of working.

The recognition of the complexity of e-Government by more organisations appears to have introduced a greater suppleness of approach. This suppleness or improved flexibility is illustrated through the intelligent use of procurement to acquire change management and transformation in providing one means of evolution, and the increased understanding of the potential benefits presented by shared services as a realistic option

offers another. In addition, there is increased evidence of profiled organisations consulting with each other, external organisations and client groups in joint working, for instance with waste and recycling projects and regeneration initiatives.

The Impact On e-Government Methods

Although fieldwork participants are committed to using structured methods in support of technology centric projects, no specific method for dealing with e-Government has yet fully evolved. As such evolution is yet to occur, this has led to a reliance on proven methods for dealing with project management on one hand, with an emphasis on information definition and exchange standards on the other.

This situation has not hindered organisations in the public sector from successfully implementing e-Government using established methods and techniques. Use of PRINCE2, at the Cheshire Constabulary in 2002 in delivering numerous projects was described by a project sponsor as engendering senior commitment to the PRINCE2 as a method which provided a strong business focus and a project mentality in the project team and stakeholders alike.

The second objective from the Introduction seeks to determine this, which can be illustrated through recognition of excellence in e-Government delivery through peer and industry awards across the years, for example the e-Government Awards, sponsored by various bodies including the Cabinet Office e-Government Unit, the Office of the Deputy Prime Minister (ODPM) and KPMG, highlighting senior level commitment to PRINCE2, the strong business focus of IT projects and implementing a project mentality.

Many agencies appear to be moving from the earlier stages of e-Government evolution to service transformation through integrating separate information systems at different levels of government. The capability to make this transition requires new thinking, which is currently being provided by a blend of best practice and existing methods still being added to by central government.

The various factors in the Evaluation stage encompass quite complex sets of issues. Although appearing to come to prominence in a serial manner, none of them has continued to dominate the e-Government agenda. The convergence of these factors may have contributed to the continued development of methods which address these issues. The direction that methods in development appear to be adopting is that of taking a

balanced view of all aspects. The ‘Solution Design’ advocated by the Cabinet Office illustrates this in the following figure from the CIO website.

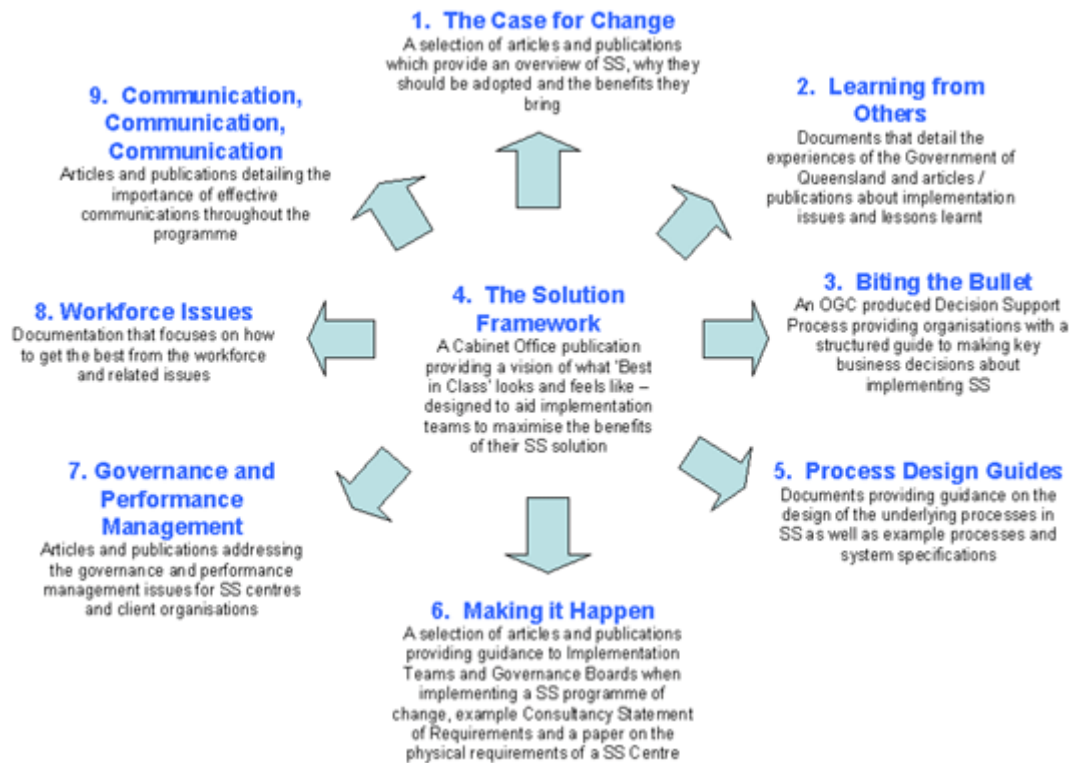


Figure 4.2: Solution Design Toolkit Components

This balanced approach allows varying emphasis to be placed upon the different elements of a multi-disciplinary project as presented by e-Government, on the basis that all of the relevant strands have been taken into account to some degree.

Recommendations For Future Direction

The three key conclusions concerning the convergence of identified factors, recognition of the complexity involved by organisations affected, along with the continued evolution of organic methods indicate that e-Government may not be provided with a specific method.

In addressing the fifth objective from the Introduction in terms of recommendations, the advocated outcome of the work is to continue with an intelligent application of methods appropriate to the evolutionary demands of the e-Government programme phases. This approach appears to be increasingly likely on the basis that e-Government component projects will continue to be delivered using the products and services currently available, within the framework of recognised techniques and methods. The

blueprint for those entrusted with delivering e-Government is likely to be formulated through one of the routes illustrated below.

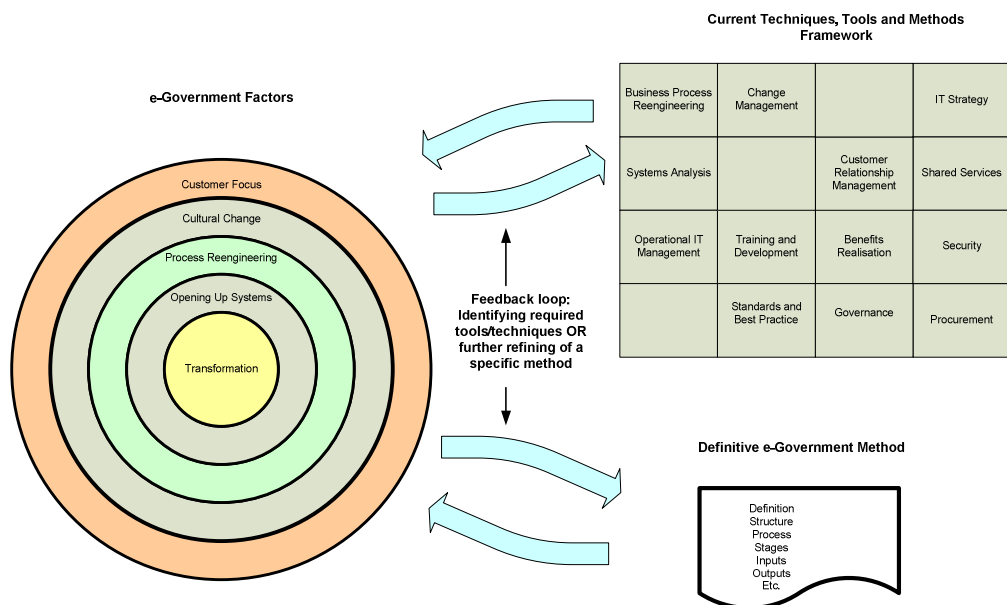


Figure 4.3: Future e-Government Framework or Method Evolution

Part I confirms that e-Government project elements are congruent with corresponding large scale and complex ICT projects. For such projects, the issues and factors to take into account are considerable, although there are readily available solutions or techniques which have been successfully appraised in the UK as blueprints for comparable organisations, for example CRM and document management. E-Government differs in so far as it brings together more of these features on a much larger scale. The Framework in Figure 4.3 above shows that e-Government projects can draw on these existing solutions or techniques.

As a new aspect of the project is encountered, the Framework may not currently include an existing method or tool. This is represented by an empty slot in the Framework. The first step would be to consider what the aspect entails and attempt to locate an existing method that would broadly address the various facets of the new aspect. On the premise that corresponding project requirements have been met previously, the organisation can continue procuring expertise or sharing best practice with a peer or central government agency. The optimum solution will then be available

to shape and scope to the scale of the project in hand. An important factor with the Framework is that although each component requires consideration, the emphasis placed in using each component has to be measured within individual e-Government programmes according to documented needs and requirements.

Alternatively, a specific methodology will be defined to assist in the delivery of the component combinations that are unique to e-Government. The questions to be drawn from either is how best to equip organisations with the capacity to cope with complex change in future, supplemented with a means to gauge readiness prior to undertaking such a programme. The arrival of a trusted method available to agencies is unlikely to happen in the short term.

Irrespective of the eventual outcome, both, in theory, will be formulated from a complete e-Government implementation that has completed the evolutionary cycle. Each will continue to be reliant upon a feedback loop mechanism to ensure continued relevance for future e-Government projects nationally or further afield. The Framework will be populated by further tools and techniques which can be associated with new requirements or circumstances as they arise. The definitive method will be subject to a controlled refinement process, where the objectives, phases, definitions and processes will be amended based upon the output from the feedback loop.

Where Future Research Can Focus

The value of methods is not doubted, but e-Government is still developing and there remains a gap in the availability of methods to address this type of information and business systems project. This gap remains an issue to be resolved, and although the conclusions present two possible avenues for exploration, which of these will reflect the appropriate strategy for future projects?

The answer can be determined by the organisations concerned developing an enhanced appreciation of the unique demands of e-Government. A benefit of this work is that it provides a means to raise awareness of the evolutionary cycle. Interested agencies can draw upon the findings, and the work will have provided practical value beyond the academic forum. This should continue to make the benefits of developing the framework or a specific method more obvious. In order to promote the awareness of documented benefits, a collaborative project grounded in Action Research principles is advocated as a logical continuation of this work.

In keeping with the fieldwork presented in the work, the consideration of a research project would be based upon the selection of a suitable profile organisation using appropriate criteria. Together with an organisation supportive of the project aims, the development of a framework model for e-Government, intended to support an evolutionary cycle to include and extend beyond horizontal integrations, would be the primary objective. This would act to confirm that a framework can provide a suitable organic means of reflecting experience and best practice as it evolves.

The main premise for a research project is to allow the approach to e-Government examined in the work to be refined at a point nearer to horizontal integration than previous evolutionary points. The increased interest in shared services may provide a suitable point to collaborate with an organisation having a vested interest in this initiative and enable a practical platform for future e-Government project.

Introduction

This Topic Sheet is intended to be used in:

- Ascertaining the extent of planning, modelling and forecasting techniques applied in the public sector in achieving the Modernising Government agenda.
- Interpreting the perceived and actual value resulting from the usage of planning, modelling and forecasting techniques within the public sector.

To focus on the outcomes of E-Government implementation in the following topics:

- Organisational Structure and Management
- Change (especially staff, citizens, other stakeholders e.g. suppliers)
- Technology and Enterprise Integration

Principle Organisational Nature Topics

- Goals of the organisation overall and for E-Government
- Skill dissemination and education of staff
- Workgroup planning and operational dynamics
- Processes for internal and external service delivery
- Structure of the organisation
- Technology levels, awareness and strategy

Response Analysis

- To indicate readiness of the organisation in a number of areas; its flexibility; indicate the distance to readiness and gaps to be bridged in each headline area.
- Case study – will track key areas and chart progress over time
- Respondees – track key areas with a longer gap between contacts
- Bracketed text indicates to the interviewer potential prompts or introductory themes to introduce to the participant.

Topic - Organisation

A consideration of the shape and nature of the organisation. How it will develop itself, its people and how it works over time.

Emerging Structures

How is the shape of the organisation to change? What will its physical manifestation be?

Innovation

What are the factors that will shape a new organisation?

<< is there dependence on structure; extent of HR capabilities>>

How relevant is being a 'VIRTUAL' organisation?

<< limited: good deal of physical assets and labour intensive tasks plus lots of direct citizen contact >>

What limits the amount of 'VIRTUALITY' you could achieve?

<< translation of PROCESSES into more automation, ASP based or non-intervention basis >>

Does personalisation/atomisation feature in your thinking?

How far is that away from this point in time?

Improvement

What will be the best outcome as an organisation?

<< reduce turnaround, proactive applications; consistency >>

People

How will the staff be expected to deal with the organisational changes? What will be their role in the process?

Adapting

How will changing roles be introduced?

In what way will contributions be measured and valued?

How will people be involved in the redesign of roles and tasks?

Demands

How will peoples input be determined?

Existing Workload can clash with preparing for change. How to make the balance?

What is planned to help people understand and prepare for the change?

Ways of Working

How will the new setup operate? What will be the 'glue' holding it together? How will it be allowed to grow and change further?

Control

Will the existing management model(s) be retained?

How will the management model be introduced into the new organisation?

What management issues do you anticipate in the early stages?

<< adherence to established models/structures/processes >>

How will motivation differ from the current ones for staff?

How will jobs and tasks be defined in a new environment?

How will a heavily unionised workforce adapt to these changes?

Learning

How is training delivered now?

Will training be provided for new jobs OR for the ways of working?

How would training keep up with a perpetually changing workplace?

How would you see the organisation becoming a learning organisation?

Communication

How empowered are staff now and will this change?

How would people be involved in designing this type of transition?

What channels would you see as helping the process?

What routes back inwards are available to staff for feedback?

Topic - Change

A generalised approach to investigating how change is perceived within the organisation. Theory and practice, likely approaches and potential outcomes are examined under this heading.

The Situation

How is the organisation placed to embrace change? How has it occurred before and with what results?

Are there organisational plans covering the next 5-10 years?

How are these estimated, agreed and amended in the meantime?

What fundamental change has the organisation had to face within the last 5-10 years?

What typified the introduction of these changes?

How would you assess the success of the changes?

Where would you expect most change to due to E-Government?

<< structure; skills; ways of working; flexibility; training; politics (formal/informal) >>

How involved do you see members or the public?

Structure

What sort of shape would you see the organisation having?

<< hierarchical; network >>

Do you think that the organisation has any of these following characteristics?

Creative Disruption pioneer spirit, trying new things

Capacity for Conflict constructive argumentativeness

Sense of Belonging “Us”, as a whole not be departments

Sense of Meaning common philosophy and goals

Communication widely and in the right ways

Communication

Does the organisation interact and value input from staff or other stakeholders?

Are there any recognised strategies for introducing change to the organisation?

How are staff views gathered (formally or otherwise)?

<< surveys; employee reps; individual/group meetings >>

How are things notified to staff?

<< notice boards; newsletters; meetings >>

What value is placed on feedback from staff or stakeholders?

Generally, how are decisions reached in the organisation?

<< top down; inclusive process >>

Leadership

How will management and leadership develop in order to support and build on changes resulting from E-Government?

What mechanisms are in place for deciding the skills necessary for management?

What shifts do you foresee in tasks usually associated with management?

<< secure the future; leadership; coping with constant change >>

What do you expect to be the core skills of managers?

<< strategic; social; personal skills >>

What sort of roles do you see for managers?

<< work 'on' not 'in' the organisation; organising learning; coaching to support autonomous staff; build team working; social competencies >>

What might be constraints in adapting to E-Government?

<< past experience; neatness & tidiness; manners & conformity >>

Routes

What is the likely journey to change? What preparation or strategy can be applied?

Where would you expect change to be targeted?

<< individuals; groups; whole organisation; relevant environments >>

What sort of intervention factors would you anticipate?

<< SOFT – information, ability, attitude, behaviour; HARD – structure, processes, systems, rules >>

Which of the following would you feel have priority?

Structures organisation, processes, working conditions
Behaviour motivation, atmosphere, management style, collaboration
Culture ‘rules of the game’, communications, cooperation

Would you say e-Government would involve any of the following?

Cuts across the board or selective

Targets realistic or otherwise

Taboo on hierarchy management decide and are unaffected

Partner involvement

Implementation decisive and complete or otherwise

Responsibility for all or just general staff

How will these be determined in detail?

Outcomes

What will the final result be? Will it be final?

Is this a short term activity?

Is this a BPR exercise or a transformation that will endure?

Topic - Technology

In what way will technology drive or respond to e-Government demands.

The Landscape

To set the context for the overall technology topic. Review how changes in IT have left a ‘tidemark’ on the organisation. Consider what the pressures were, and how basic assumptions about work and/or operations were affected.

At what level are systems usually introduced?

<< environmental, enterprise, BSD, departmental, workgroup, user >>

What issues or business drivers are dealt with by legacy systems?

What has been the success criteria for such systems?

<< lower costs, improved processes, automation >>

Are information stores for legacy systems shared with other systems?

What is the age profile of systems currently in use?

Are systems developed and maintained a) centrally b) by internal staff?

What types of business change has affected systems over the last 5-10 years?

Have system choices been on a make or buy basis?

<< aspect specific may need to move these >>

What aspects of data warehousing have been considered?

<< data stores, extraction, sources >>

In what way has e-commerce influenced overall designs?

<< business processes, tracking, verification >>

What emphasis is placed on voice/data integration and related technologies?

What importance is placed on applications being Internet based?

<< access, authorisation, remote working >>

How has the organisation been tackling workflow management?

<< process definition, links, ties to application definition >>

Where would you expect to look for security risks?

<< wider accessibility, unknown partners, proof of identity >>

Is there a policy of recording/application of enterprise knowledge?

Objectives

How will E-Government define and reach strategic objectives?

What are you looking to achieve from E-Government integration?

<< adaptable systems & processes; streamlined processes; management information; support for e-commerce; integrated security; replaceable components; reliable/recoverable systems; economies of scale >>

How will the scope of these projects be determined?

<< volume/workflow/transaction/demand analyses; Cost/Benefit analysis>>

Is there a management view of integration?

<< (in a pyramid – top = virtual enterprise, corporate domain, business system domain, business processes, business applications, application components - bottoms >>

What are the local factors influencing any plans?

<< legacy investment, other funding sources, staff/unions >>

How is risk being identified and quantified?

Architecture

To consider the key components deemed essential to support a shared infrastructure giving connectivity and economies of scale.

What would be the goals of an E-Government infrastructure?

<< integration, economies of scale, flexibility, security >>

What factors will influence the Enterprise Architecture?

<< general characteristics, business system hierarchy, integration infrastructure model, network model, workflow process model business system domain model, enterprise data storage model, knowledge access model, enterprise integration scenario >>

What do you expect to make up the infrastructure?

<< intranet; PCs; messaging; system management; security services; organisation directories; archiving service; metadata repository; knowledge management; portals >>

How will the scope of the projects be determined?

How will Knowledge Worker needs be measured?

<< current status, exceptions, historical records, relevant knowledge >>

What is being taken into account in developing an enterprise storage model?

<< business applications; document management; operational/master data stores; document archives; metadata; data warehouses; data marts >>

At what level are these factors being addressed?

<< environmental, enterprise, BSD, departmental, workgroup, user >>

Is “personalisation” a key factor in design?

What will underpin enterprise integration?

<< inter-BSD messages; events and requests; reliable communications; coordinated activity; possible outsourcing; supply chain integration; CRM; management information; legal records >>

What are seen to be core network facilities?

<< email, ftp, messaging via middleware, web access >>

Is there a common Groupware strategy?

<< Office, Notes >>

What Internet access policy is planned?

What support services are planned for Knowledge Worker PCs?

<< technology refresh, virus checks, help desk, volume licencing, software updates, Web connectivity >>

How relevant is a consolidated server operation?

<< security, reliability, shared operational/support personnel >>

Do you expect support service needs changing for the following?

System administration	Change control
System maintenance	Pre-production testing
Application support	Disaster recovery

Help desk

How will authentication be addressed?

<< ERP type application, Gateway middleware >>

What other security concerns are likely?

<< unauthorised access, corrupt software, denial of service >>

Do you see application services becoming centralised?

<< backup, restore, software distribution, messaging, organisation directories >>

Implementation

How is integration to be delivered in practical terms?

To gauge the means to build a positive business environment supported by information systems. How are the four layers of organisational domains addressed by strategies (top – users, business processes, applications, infrastructure – bottom)?

What are the strands of strategy regarding e-Government?

<< shared vision, business objectives, business processes, timetable for change, information (FoI, DPA, maps) >>

Is there a shared set of factors for the organisation united through E-Government?

<< virtual enterprise, event driven operations, rapid change, continuous improvement, web presence, harmonised enterprise >>

How are the above factors being addressed now?

What objectives are strategies supporting?

<< new business, increased market share, cost reduction, quality improvement, increased responsiveness >>

How linked are business processes now (through IT systems or otherwise)?

How is business process reengineering seen as useful?

<< linkages, not localised; workflow process development >>

What distance will the strategy stretch?

<< 3/5/10 years; move to continual transformation >>

What are the key change issues from an IT perspective?

<< literacy, education, automation, ownership (data/system), information sources >>

Management

How will the new systems be overseen?

How important is IT perceived to be to e-Government and how is this characterised?

What is the approach to standards?

<< infrastructure foundation; data (xml) re-usage discipline; design reviews; integration testing >>

What will be the key factors in managing the infrastructure?

<< investment; unification; ownership; evolution; change control >>

How will a success be determined?

<< productivity, return on investment, customer response/service ratings >>

What do you expect to be change issues once e-Government is up and running?

<< configuration management; defined processing (capacity planning, upgrades, deployment, software upgrades/amendments); business transformation (management commitment, planned staff/role changes, transition planning); risk management (limited time/scope, timing, contingency, user preparation) >>

What would the Critical Success Factors (CSFs) be?

<< shared vision, standards, service orientation, shared infrastructure, accessible data and knowledge >>

Appendix B

Profile Organisations

Barnsley Metropolitan Borough Council

Bolton Metropolitan Borough Council

Bradford Metropolitan Borough Council

Bury Metropolitan Borough Council

Calderdale Metropolitan Borough Council

Coventry City Council

Doncaster Metropolitan Borough Council

Dudley Metropolitan Borough Council

Gateshead Metropolitan Borough Council

Kirklees Metropolitan Borough Council

Knowsley Metropolitan Borough Council

N Tyneside Metropolitan Borough Council

Oldham Metropolitan Borough Council

Rochdale Metropolitan Borough Council

Rotherham Metropolitan Borough Council

Sandwell Metropolitan Borough Council

Sefton Metropolitan Borough Council

Solihull Metropolitan Borough Council

South Tyneside Metropolitan Borough Council

St Helens Metropolitan Borough Council

Stockport Metropolitan Borough Council

Tameside Metropolitan Borough Council

Trafford Metropolitan Borough Council

Wakefield Metropolitan District Council

Walsall Metropolitan Borough Council

Wigan Metropolitan Borough Council

Wirral Metropolitan Borough Council

TRIOLE

TRIOLE is the Fujitsu Group’s strategy for optimising IT. TRIOLE aims to provide opportunities for cost avoidance that will provide a differentiator in the IT market. TRIOLE is often seen described as the “Industrialisation of IT Service”. TRIOLE provides for this by re-use of proven, standardised solution and service components called Templates. These Templates identify solution components that have been tested and verified to minimise the total cost of ownership when used in a customer solution.

A key feature of the TRIOLE approach and of the “Industrialisation of IT Service” is continuous improvement and continual learning through the feedback cycle. Here, the focus is on the ‘Execution’ element of the overall cycle, and its part in feeding the cycle. The overall ‘Monitoring’, ‘Analysis’, ‘Adaptation’ and ‘Execution’ process provides the TRIOLE components that may be used within the ‘Execution’ element.

The TRIOLE Process

“Rows” is the terminology used within TRIOLE to describe the main activity areas that the TRIOLE process is designed to address.

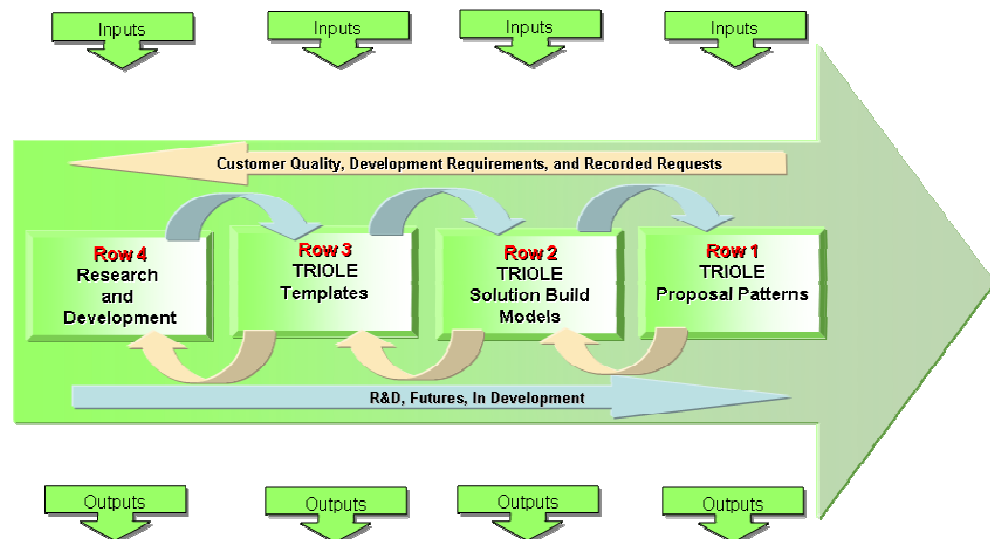


Figure C.1: TRIOLE Row Structure

The figure C.1 above shows the overall TRIOLE process, with the Rows identified across the middle. Although there are many ways to describe these activity areas, it is

important to talk in terms of Rows when discussing the TRIOLE programme as this creates a common understanding.

Activities within the Rows are designed to make available, utilise and continually improve TRIOLE assets, to enable the re-use objectives set out earlier in the document. Different assets are used, or are used differently, in the activities within these different Rows, as described below.

Row 1 – Sales and Marketing Activity

This process area aims to identify commonly occurring business opportunities and match IT solutions and service offerings to them. It also looks to identify and track those opportunities where requirements cannot be met so that, after some number of such occurrences has been tracked, an informed decision can be taken on whether to invest in developing capabilities to meet these requirements. Row 1 covers activities related to Sales and Marketing.

Row 2 – Design Activity

This process area encompasses the provision of sales support to Row 1 and the design activities necessary to create customer solutions utilising TRIOLE components. Row 2 covers activities related to solution design and serviceability. The re-usable assets being developed for this row are TRIOLE Solution Build Models. Such models are comprised of a document set that provides advice and guidance when designing a solution for a specific part of an IT system. As such, they may be explicitly referred to as design guides. Some of the Solution Build Models will be for solutions to be built using one or more TRIOLE Row 3 Templates Other models will capture guidance for repeatable solutions that do not have an associated Row 3 deployment model.

The documentation will also provide re-usable content for customer deliverables such as Requirements Specifications, High Level Designs and Low Level Design, Test Plans and Test definitions all documented to IDBM standards. Where TRIOLE deployment models are to be used, standard costing models will be provided for those particular components, with the remaining elements of the overall solution being costed in the standard way.

Row 3 – Deployment Factory Activity

This process area encompasses the verification and certification of TRIOLE Templates and their use in live operation. It also interfaces the Templates into an ITIL compliant TRIOLE Service Management Framework (TSMF) used to manage the

delivery of customer contracts. At Row 3 the TRIOLE principle is to define the architecture as a set of building blocks and then develop and test Templates that deliver that block. A **Block** is an element of specific functionality, or services, within an infrastructure solution, e.g. in the 3-tier J2EE architecture there are seven blocks defined: Web presentation layer, Application layer, Database layer, Systems Management, Back-up, Intranet Front-end and Internet Front-end. There may be one or more Templates associated with that Block, e.g. The Web presentation may be Windows, Linux or UNIX based.

A **TRIOLE Template** is therefore a re-useable design that defines a component using a specified technology solution. It consists of documentation that describes the various functions that make up a solution and the technologies and components within the design. Each Template defines the operational and performance characteristics for that function, based on the extensive testing and verification programme that Templates undergo (where appropriate). Each TRIOLE Template will have a configuration tool and cost model, enabling Solution Architects to:

- Follow a logical process to specify the design they need using the Template configuration tool
- Produce a simple list of the required TRIOLE part numbers they need to order
- Produce the detailed “Bill of Materials” that shows the actual components within a Template
- Produce a simple cost model that shows:
 - the up-front (procurement) costs
 - the associated maintenance and ongoing software support costs
 - the associated Core Services ongoing support charges

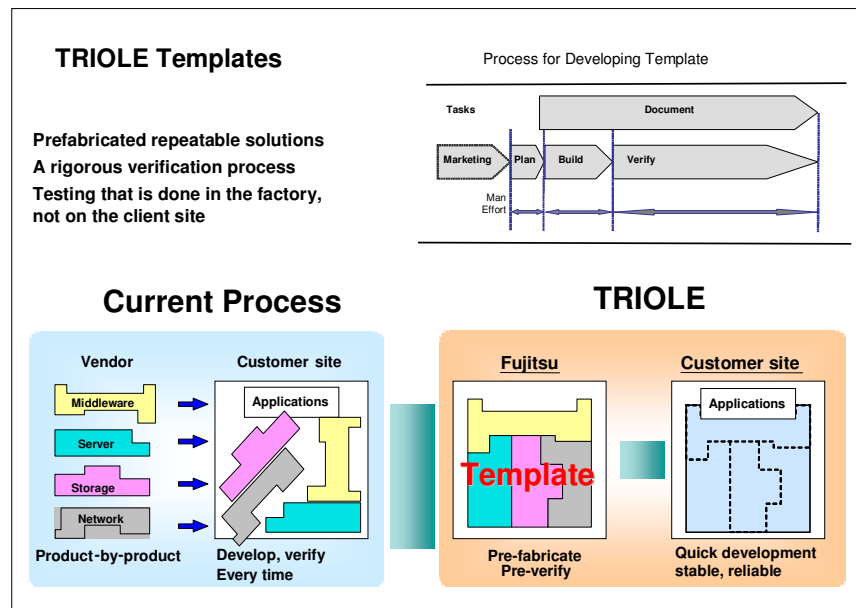


Figure C.2: TRIOLE Templates

A **TRIOLE Combination Template** is an approved set of Templates that have been predefined and combined together to make up part of a solution. Example 1 of a combination Template might be the core of the 3-tier J2EE web service solution where the presentation tier is based on Windows, the application and database servers are based on UNIX with Oracle. Example 2 might be a complete end to end UNIX solution with Oracle as the database. In each example the company has built and tested the combination together to determine operational and performance characteristics, just as with an individual Template.

A **TRIOLE Solution** is a design based around one or more TRIOLE Templates, possibly with other components added to complete the overall solution. For example, in a 3-tier Web Service solution there could be several Templates for the presentation tier, the application server, the database server, system management, system back-up and the Internet and Intranet front-ends. A TRIOLE solution should always cost less than a standard or traditional solution.

Row 4 – Futures and New Programmes

This process area encompasses the Research and Development of re-usable assets either in the form of TRIOLE Templates or new developments within a Service based on TRIOLE principles. It includes creation of the business case and the subsequent development of all TRIOLE related assets. Row 4 covers activities related to creating new TRIOLE based assets.

New developments will be undertaken based on one or more of three possible “triggers”:

1. Outcry: where development is justified on demand from clients, or internal quantifiable evidence for a requirement or set of requirements
2. Roadmap: a development is justified based on some clearly business-justifiable event on the roadmap, e.g. Microsoft release Vista to replace XP client
3. Corporate directives: from the overall Group – a business investment based development activity is undertaken

TRIOLE in Context

A TRIOLE solution must adhere to other company standards and methods. TRIOLE is not an alternative to these other standards and use of TRIOLE components does not obviate the need to follow the standard methodological procedures. These include:

ADBM – Applications Design and Build Methodology

BMS – Business Management System

CMMI – Capability Maturity Model Integrated

IDBM – Infrastructure Design and Build Methodology

ITIL – IT Infrastructure Library

BS15000/ISO20000 – Standards for Service Management

SDBM – Services Design and Build Methodology

CSLC – The Customer Solution Lifecycle

The **TRIOLE Service Management Framework (TSMF)** will support the usage of TRIOLE within the context of these standards. The company will be working with the rest of the Group to develop a common ITIL-compliant service architecture, based on the new Service Design and Build Methodology, to manage TRIOLE solutions. TSMF will become the standard for the Group and will:

- Enable pro-active management to increase reliability
- Enhance to provide Virtualised and Automated systems
- Improve Service Quality and reduce costs via a re-use Service Design.

TRIOLE Template Localisation - All Templates, from whatever source, will be verified for use in the UK. The TRIOLE Template documentation will highlight items

that **may** need to be changed. The responsibility for actual substitutions rests with the local architect who will be more familiar with specific local requirements. These substitutions will need to be validated by the appropriate TRIOLE governance body.

Benefits from the TRIOLE approach

The table below identifies stakeholder benefits of using the TRIOLE approach.

	Stakeholder – benefits			
TRIOLE enables us to:-	Customer	Sales	CSA	FS
Produce designs faster	Agile deployment	Reduce Bid Cost Faster response React faster than the competition	Saves time More efficient use of scarce, highly-valued resources.	Better Win/Loss ratio. Win more business, raise reputation
Exploit accuracy of reuse	Better level of service = less cost and better service to internal clients	Increases reputation	Reduced errors at design stage	Reduce cost of fixing faults
Implement solutions faster	Quicker availability = agile deployment	Increases reputation	Less involvement at implementation times	Reduce cost increase reputation
Lower procurement costs	Lower price	More aggressive bid price	BOM – less time. Accurate, less price haggling	Lower prices = more wins or better margins
Reduce product variety	Better service reduces complexity of support	Fewer suppliers to deal with, increases image of company brand	Reduced learning fewer chances of error due to lack of product knowledge	Few diverse skills sets = reduced costs & cheaper spares holdings.
Improve reliability	Better service via greater business continuity	Easier to sell because we can take more aggressive SLAs.	Confidence with tested solution	Fewer calls = lower cost easier to achieve SLAs less red alerts.
Exploit economies of scale through shared services	Significantly lower prices	Better margin or lower prices to clients		Move away from “silo” approach to service delivery
Exploit best thinking	Better solution -> better service	Easier to sell – track record	Use best – learn best approach	Retain staff, capture IPR
Align to use of recognised standards through TSMF	Embeds compliance to standards/ methods e.g. ITIL	Demonstrates compliance in Government bids	Increases professional integrity	Cost reduction; improved service via standards and automation.
Shared infrastructure	Lower costs	More aggressive bids	Ready made service offerings	Cost reduction faster to market.
Where the market is going	First step to IT industrialisation	Maintain / improve opportunities Reputation improvement	In the mainstream – job satisfaction peer group leadership	First step to a Utility model

Infrastructure Design and Build Methodology (IDBM)

As modern businesses have become increasingly dependent on their IT infrastructures, it has become more important that IT infrastructure projects are managed and delivered so as to minimise the impact and deliver the benefits promised. One way in which this can be achieved is the application of a consistent approach to these projects, which captures the best practices from previous projects and ensures that the teams involved in delivering these projects are agreed on the way forward.

The Infrastructure Design and Build Methodology (IDBM) builds on company experience of successful infrastructure projects going back more than 40 years, from small projects through to some of the world’s largest IT projects.

Process Overview and Scope

Technical Planning and Management is one of nine processes within IDBM, and is responsible for the coordination of technical activities within the projects. This process will normally be owned by the Infrastructure Architect working with the Infrastructure PM. An overview of the whole process is presented in Figure C.3 below.

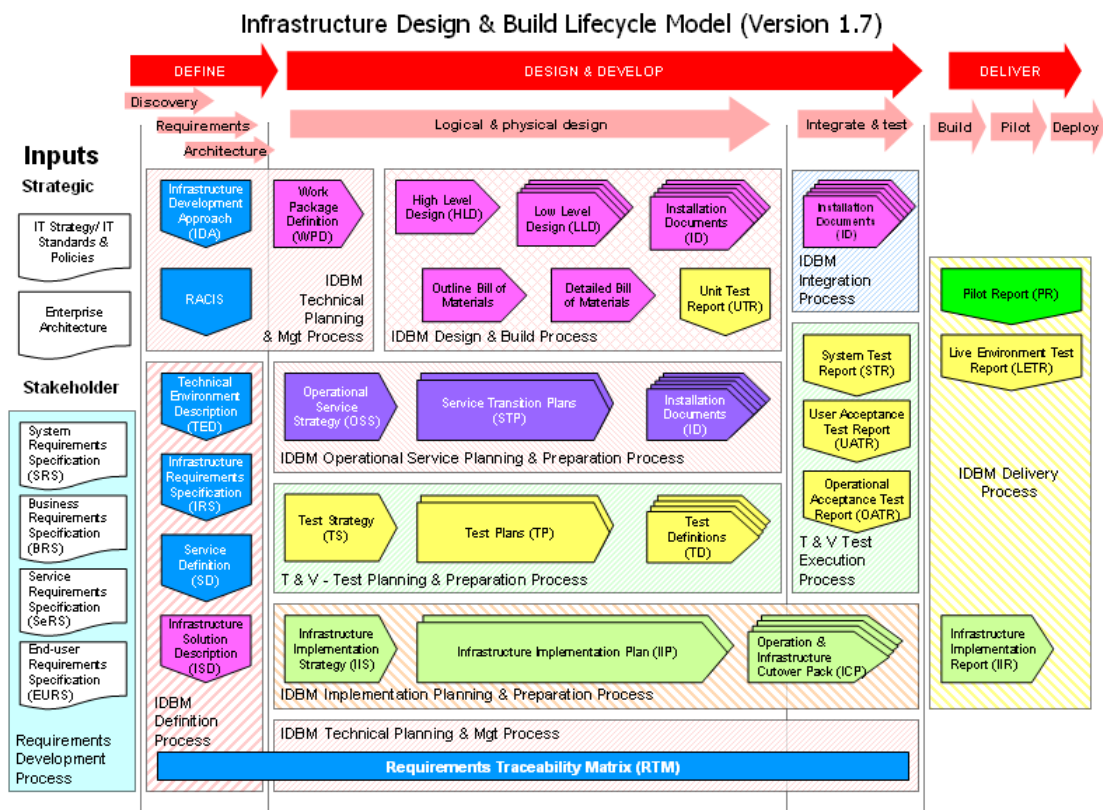
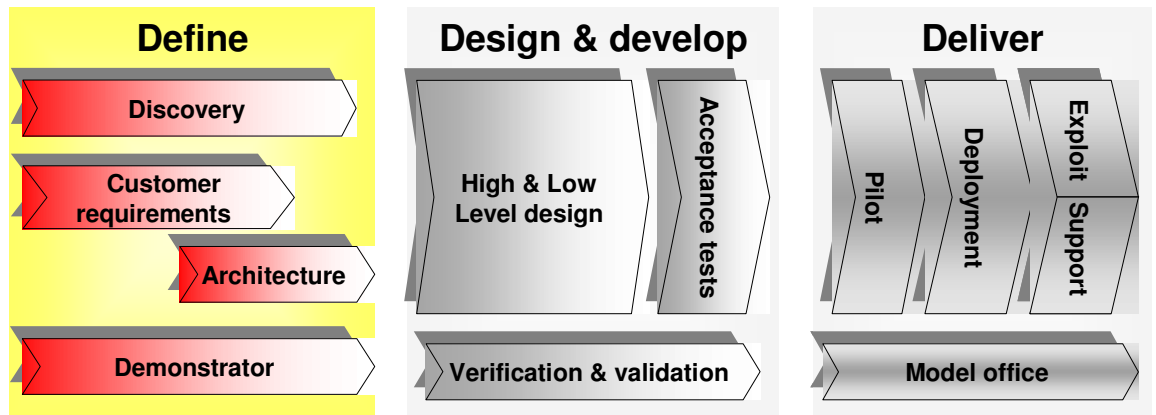


Figure C.3 - Diagrammatic overview of IDBM

Key Stages of the Methodology

IDBM defines a three stage approach to infrastructure projects.

DEFINE – maps out the requirements, the environment and the shape of the solution



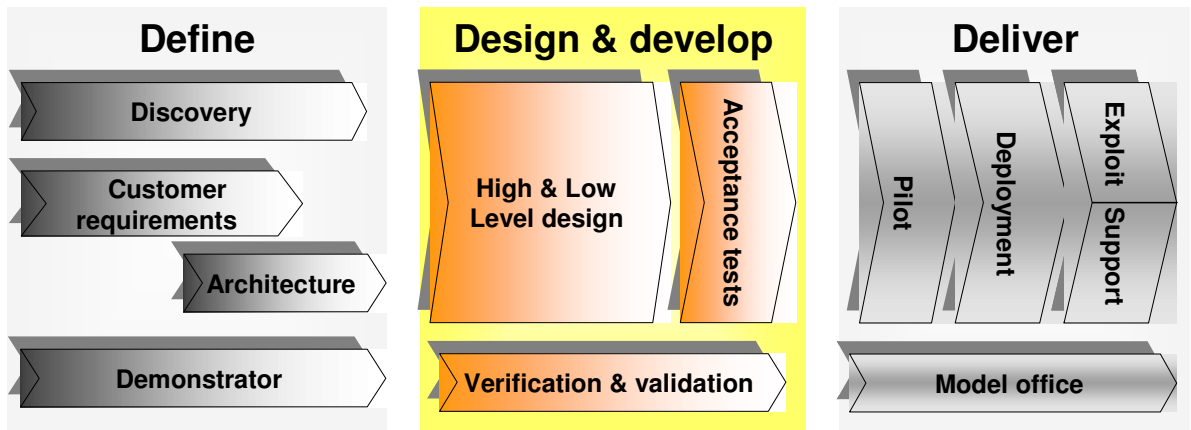
Demonstrator – provides an opportunity for customers to see the potential of new technology which can inform the decisions made about requirements and architecture.

Customer Requirements – a suitable statement of requirements is fundamental to the overall success of the projects. This activity looks at the key stakeholders in the project and ensures that their requirements are understood and documented.

Discovery – a detailed knowledge of the existing infrastructure estate is essential in setting realistic plans and understanding the journey involved in deploying any new solution. Infrastructure projects frequently founder by emphasising the target solution at the expense of understanding how the migration will be made.

Architecture – provides the highest level description of the solution to be deployed which will not date rapidly and will provide a framework for more detailed design tasks. For small projects, this may be implicit or be no more than a single paragraph – for larger projects a formal architecture is frequently required.

DESIGN and DEVELOP – carries out the detailed product designs needed for infrastructure solutions, as well as the integration of the components making up the solution and the final system testing. Verification and validation is an ongoing activity throughout this stage.

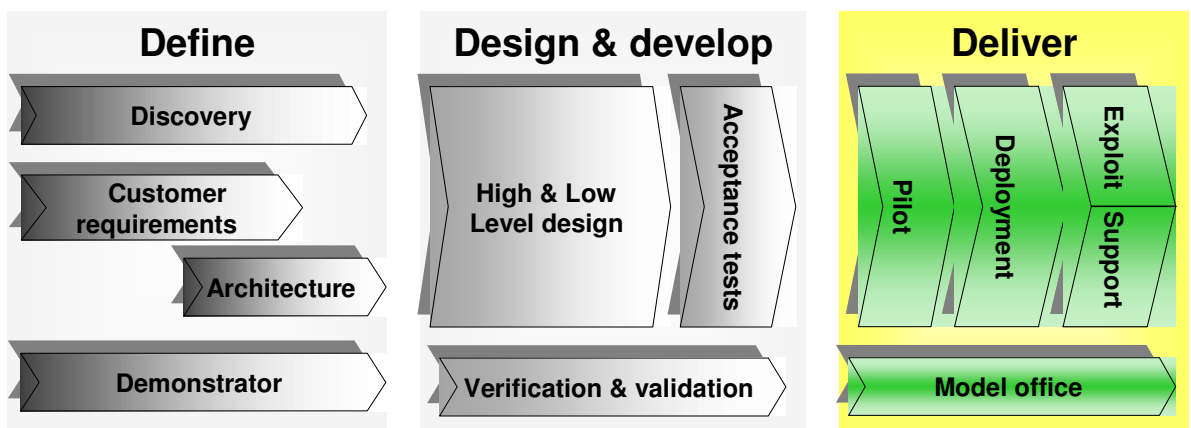


High and low level design – the architecture outlines the target solution and the high and low level design activity converts this solution into detailed product designs of the different components making up the solution. This activity also looks at the migration from old to new and the processes that will be needed to effect a successful migration.

Verification and validation – verification ensures that the final solution “can be built right” whilst validation ensures that “the right solution is built” and meets customer requirements. Both of these are ongoing activities through the “design and develop” and into the “deliver” stages.

Acceptance testing – prior to introduction into a live environment, some level of acceptance testing is required leading to what is frequently the first formal sign-off by the final customer/end-user.

DELIVER – describes the deployment of the solution within the live environment, including initial pilot, full deployment and ongoing exploitation and support.



Pilot – it is rare that a new infrastructure will be deployed without some feedback from a sample group of users. This pilot provides a further level of confidence that the design meets the initial requirements. It also allows the deployment and support processes around the new infrastructure to be tested, and ensures that the new infrastructure co-exists successfully with any existing systems.

Deploy – once the pilot has been completed successfully, the projects moves into “rollout” mode involving detailed planning of the logistics in making the move to the new system.

Exploit and support – typically infrastructure projects will closedown after the deployment is complete. It is important that consideration is given to how the new systems will be supported as well as to the people, processes and organisation that may be needed to gain maximum value from what has been deployed.

Model office – also sometimes referred to as a development rig, this provides an environment where proposed changes can be tested prior to being introduced into the live environment.

In addition, the high level process identifies some of the parallel activities that will be taking place involving senior managers, project management, service management and end-users. The methodology outlines best practices and outputs for each stage as well as the gateway criteria for moving between stages. A number of principles have guided the development of the methodology:

Reuse - to build on the best of what already existed as well as capturing existing best practices;

Flexibility - to be applicable to a wide range of types of infrastructure projects;

Scaleability - to be applicable from the smallest to the largest customers and projects;

Lightweight – to provide a standard approach, language and a set of tools and templates but without the need for large amounts of training;

Evolution - to be able to incorporate tools and best practices as they are developed in the future;

Comprehensive – to cover the end-to-end process provide an infrastructure solution from original requirements through design and build to ongoing support.

Overview

Prince 2 is a widely recognised standard methodology for management of projects. The methodology provides a framework designed to ensure the successful management of the delivery of business products to a specified business case. The Prince 2 methodology was developed as best practice by military and government agencies and it is the recognised standard for project delivery in central and public government.

Description

The method is composed of project components, processes and techniques, being:

- Organisation
- Planning
- Controls
- Stages
- Risk Management
- Quality
- Configuration Management
- Change Control

The processes of a Prince 2 project are:

- Starting Up a Project
- Initiating a Project
- Directing a Project
- Controlling a Stage
- Managing Product Delivery
- Managing Stage Boundaries
- Closing a Project
- Planning

The Prince 2 techniques are:

- Product-based Planning
- Change Control
- Quality Review
- Project Filing

Output

A successfully managed project.

When To Use

In principle the methodology should be used for delivery of all projects undertaken by FS. In practice the methodology is a toolkit and the elements appropriate for the client environment and individual project should be selected by the project manager on a case by case basis. The elements selected should be sufficient to ensure proper control and management of the required product delivery. Within Business Change Methodology:

- Build the Capability (BCM7)
- Implement Change (BCM8)
- Ongoing Service Provision (BCM9)

Additional Comments

Use of the method and it is normal for all assignments requiring Project Managers and above to be delivered by qualified and experienced personnel.

The qualification requires attendance at a five day course and successful completion of two examinations.

Primarily SPRINT offers a series of techniques and tools for reengineering. However, a SPRINT practitioner must recognise that the methodology does not provide an exact recipe for success. The cornerstone of any SPRINT project is the freedom to think radically and adopt new ways of working. In this respect SPRINT offers a well-balanced view of the world, following a methodology but adopting creativity and innovation with the following themes:

Breadth of vision: The methodology is inclusive. It seeks to identify different stakeholders in a change programme. The stakeholders are included in the change programme in order to appreciate the complexity of the problem and the different views that people have of it.

Depth of vision: The methodology promotes informed decision making. It encourages the development of a clear and rigorous understanding of processes. It is important to understand what goes on now, why things are the way they are and what the important contextual factors are.

Radicalism: The methodology seeks to encourage radical thinking based upon the exploitation of new technology. The idea is that the business should think radically about alternative solutions. What can technology help you to do?

Rigorous Assessment: Business benefits should be rigorously assessed through measures taken before (if possible) and after implementation. The measures should be derived from the goals identified in stakeholder studies.

Flexibility: The methodology is not prescriptive but relies on its users to interpret and adapt it. SPRINT is designed to aid learning. Users should become familiar with its structure and the tasks within them but, equally, should be encouraged to develop it according to the particular circumstances of the project they are undertaking.

Open-endedness: Constant regeneration and improvement is the hallmark of modern service delivery. Users of SPRINT should recognise this condition. Hence, use of the methodology should be open-ended. The type and range of changes that occur through the operation of the BPR project will all be determined by the context of the project itself. Moreover, the permanence of the changes will also be negotiable. The BPR

project may be used to engender an ongoing culture of change as much as it pursues any particular goal.

Who Takes Part?

BPR is a joined up change initiative in which a number of specialist disciplines work together in a coherent way. The following diagram illustrates this.

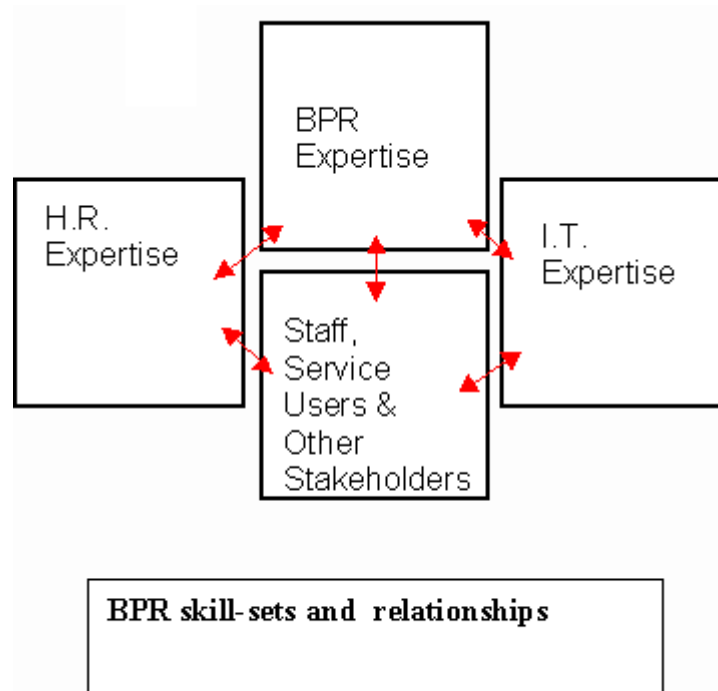


Figure E.1: Skill Sets

Figure E.1 above illustrates four "skill sets" which are vital for any BPR project:

BPR experts - individuals with extensive prior experience of BPR projects, within local government and within other organisations and sectors.

H.R Experts - for identification and management of human resource issues.

IT Experts - to comment on technical feasibility and potential, to manage implementation of technical issues.

Service Users - those with an in-depth knowledge of the business areas to be impacted by the initiative.

Phase I

At the start of a SPRINT project, the following tasks need to be done:

1. Set up a steering group for the project;

2. Set up a BPR project team;
3. Identify the scope of project ("terms of reference").

The Steering Group

The Steering Group should include the following roles:

1. Head of service area(s) - director (or similar) of the service area affected by the BPR project. This person should be able to push through higher-level organisational change within the service area;
2. BPR project manager - where there are a number of BPR projects, the BPR project manager should be on each steering group;
3. Lead BPR consultant - the lead BPR consultant attached to the project (may be the same person as 2.);
4. Head of Human Resources - either the HR manager or the person who is able to take on the HR role for the project (e.g. this may be the same person as 1.);
5. Head of IT - the IT manager who is able to provide the necessary IT resources for the project;t
6. 'Joined up services' manager(s) - this should be a person responsible for 'cross cutting' issues across the organisation, e.g. head of Information Society, director of Customer Services, head of marketing.

The steering group consists of high level leaders within the organisation able to drive the project and implement the required organisational change. This is likely to be a small, focused group, and it is important that those involved are able to provide the required time commitment - and that the steering group and its work are closely linked with the existing management framework.

BPR Project Team

The BPR Team is responsible for the day-to-day work of the project, for reporting back to the steering group, and for organising and coordinating the work schedule - including co-opting additional expertise where necessary.

The BPR team should include the following roles:

1. Senior User - from the service area affected by the BPR work;

2. Lead BPR Consultant - the lead BPR consultant attached to the project should also be (one of) the project team's representatives on the steering group;
3. Other BPR Consultants - as necessary, given the scope of the project and resource availability. The BPR consultants will undertake the actual work in Phases I and II;
4. Practice Representative(s) - 'seconded' from the relevant business area;
5. Human Resource Expert - responsible for human resource issues;
6. IT Expert - responsible for IT issues.

Effectively the project team has two roles:

1. to manage the operational side of a BPR project;
2. to undertake the actual BPR work.

Because a BPR project may include many component pieces of work, it is likely that certain project members will only undertake certain operational tasks. However, all members of the BPR project team should be involved at some stage, and all should be kept informed of the project progress and participate in various 'landmark' components, e.g. workshops. Clearly, a dedicated core of BPR experts will be able to bring their expertise from project to project, and a 'core team' should remain active throughout the project.

Phase II

Phase II of a SPRINT project is about understanding process context.

Aims

The primary aims of Phase II are:

- to understand the business context in which the target process(es) operates by considering all relevant perspectives;
- to analyse the effectiveness and efficiency of processes in a broader context and generate initial ideas for process improvements (technical and organisational);
- to help develop the business vision on which BPR proposals will be founded.

The emphasis on understanding the business context is crucial. This emphasis forces the BPR team to stand back from the original remit which may focus narrowly on a particular process or processes. "Zooming out" in this way will assist in identifying and understanding the real business goals that are pertinent to the situation and will lead to the elaboration of more radical reengineering opportunities.

Deliverable

The deliverable for Phase II will be a report summarising the results of the investigation. It will have the following sections:

- Initial scope: this will describe the starting remit of the BPR investigation. It will identify the initial target process(es) and any specific business objectives;
- Method: this will provide a simple summary of the conduct of the investigation, including a list of the stakeholder perspectives that were investigated, an indication of the particular individuals interviewed and of the observational work that was executed;
- Current Process Descriptions;
- Summary of benchmarking/best practice investigation;
- Critical Goal Analysis;
- Initial recommendations;
- An Appendix including interview summaries and observational notes.

Phase III

Phase III of a SPRINT project is concerned with Radical Process Redesign.

Aim

The aim of Phase III is to devise a set of radical process design proposals. These will underpin new processes aimed at dramatic improvements in an organisation's performance, in relation to its overall strategic objectives, and in line with the e-Government agenda.

Deliverables

A Phase III report sets out the vision and the reengineering proposals with supporting outline plans and business cases.

Phase IV

Phase IV of a SPRINT project is concerned with embedding, lasting, process change.

Aim

The aim of Phase IV is to deliver *successfully* all the innovative ideas and redesigned systems into the day to day operations of the organisation, moving beyond the written word to actual implementation. However, delivering successful, permanent change is no science. There are a variety of pitfalls that can lead to project failure.

To increase the chances of a successful implementation, Phase IV provides a change management capability matrix consisting of nine change management components. Neglecting some components risks making the change project slower, harder, less timely, more costly, less sustainable, and much more stressful for all stakeholder groups.

Deliverables

The central deliverable is the successfully implemented system. By successful we might propose the following factors:

1. A smooth change effort;
2. On time and to budget;
3. Fulfilling the quantitative and qualitative benefits set out in the business case;
4. Legacy system completely disbanded;
5. Engaged users who are motivated to offer further suggestions for improvement.

Toolkit

Throughout a SPRINT project, practitioners will need to develop expertise in various techniques, documenting findings, and producing reports. Each step of the Methodology provides practitioners with both an overview of specific tasks and related 'tools' to help them be completed. These include "How to Guides", "best practice models", sample forms, and document templates outlined in the table below. Proformas supplied with SPRINT should be used as examples or modified to fit local requirements, they are not meant to be prescriptive.

Tool	Type	Description
Role Activity Diagrams	Guide	How to draw a RAD. Used to map processes - existing processes in Phase I, reengineering proposals in Phase II.
Multi-Channel Analysis and Design	Guide	Guide to multi-channel analysis and design, may be used in Phase II to explore reengineering opportunities
Metrics Study	Guide	Guide to conducting a metrics study; A metrics study may be undertaken as part of Phase I: Observing process in action
Design Studio	Guide	Guide to invoking a Design Studio at any point during a SPRINT study, or as a standalone task
Ethnography	Example	An example of an ethnographic study in an Ambulance Control Centre
PID	Proforma	Project Initiation Document
Interview and Observation Schedule	Proforma	Used for planning your work schedule for interviewing stakeholder and/or workplace observation
Observation Form	Proforma	Use for telephone or front desk observation - complete one form for each caller or visitor
Phase I Report	Proforma	A sample blank Phase I Report - adapt according to needs
Phase II Report	Proforma	A sample blank Phase II Report - adapt according to needs
Project Checklist	Proforma	A checklist for keeping track of your project

APPENDIX F I&DeA Capacity Building Toolkit

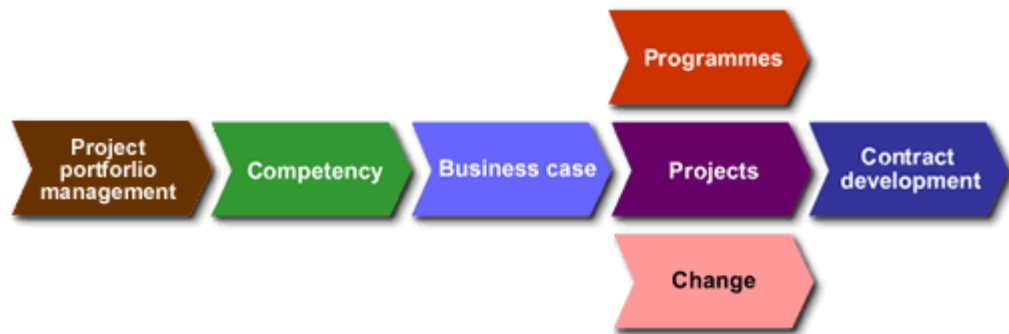


Figure F.1: Capacity Building Toolkit Components

The tools and information provided by this technique include guidance, case studies and methodologies and are all available for download and adapt to local needs. The products will help your local authority in the following six core areas:

Project Portfolio Management - With the emphasis on demonstrating value for money, the introduction of the Annual Efficiency Statement and the CPA scoring on “Use of Resources”; authorities are now looking to develop and improve existing capabilities as a foundation of establishing structured and robust methods of investment decision making so its resources are directed at the changes that will contribute most effectively to its strategy and objectives.

Competency - This section provides the tools needed to assess current skills and capability for delivering change. It also introduces a maturity model that can be used to illustrate how well established these capabilities are in the organisation.

Business case - The business case guidance highlights the essential role of the business case in planning and implementing change programmes. It steps through four key stages of the business case process in a local authority context.

Programmes - A range of products suitable for different maturity levels that define programmes and programme management, explain their importance and how to raise awareness of this within the organisation and offers meaningful guidance and proven approaches from other local authorities.

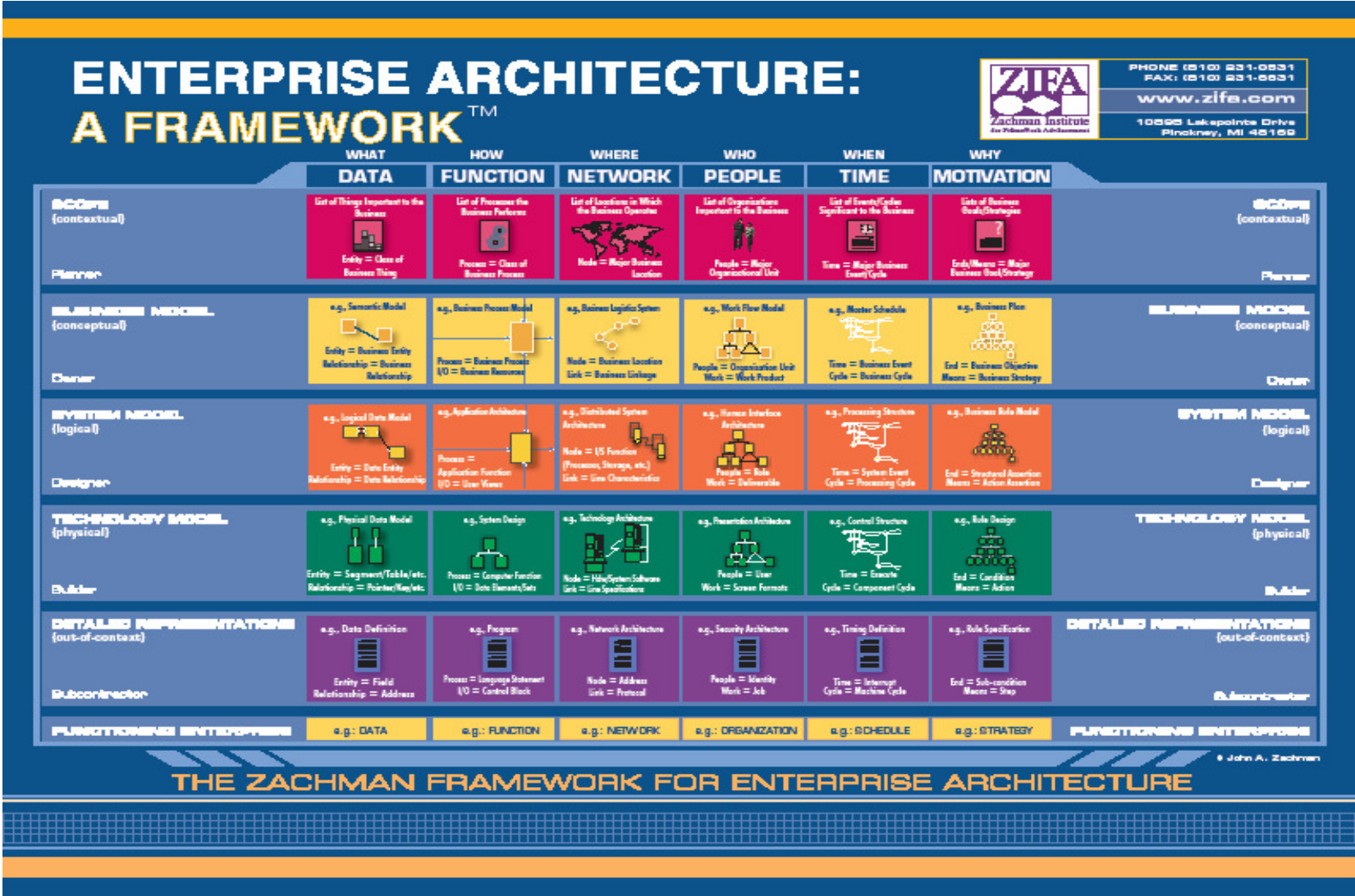
Projects - This section offers a number of alternative approaches to project management that have been developed and adopted by local authorities. These

approaches draw on proven methodologies and techniques but have been tailored according to each local authority's own real-life experiences of managing local government projects.

Change - Guidance, toolkits and case studies that explain what change management really means and why it has become such a critical factor in the successful delivery of business change programmes and projects.

Contract development - Information, examples and a glossary that will help inform a manager's discussions with procurement and legal services by providing the building blocks for legal agreements with both partners and suppliers.

APPENDIX G The Zachman Framework



APPENDIX H e-GIF: A Summary

This summarised information is sourced from the Cabinet Office publication, e-Government Interoperability Framework Version 6.0 dated 30 April 2004.

The e-GIF defines the technical policies and specifications governing information flows across government and the public sector. They cover interconnectivity, data integration, e-services access and content management. Version 6 contains the high level policy statements, management, implementation and compliance regimes.

Modern joined-up government demands joined-up ICT systems. Interoperable systems working in a seamless and coherent way across the public sector hold the key to providing better services, tailored to the needs of the citizen and business and at a lower cost. Clearly defined policies and specifications for interoperability and information management are also key to staying connected to the outside world and aligned to the global information revolution. The e-GIF provides these. It is a fundamental framework policy for the e-Government strategy.

Government information resources are not only of value in themselves. They are valuable economic assets, the fuel of the knowledge economy. By making sure the information we hold can be readily located and passed between the public and private sectors, taking account of privacy and security obligations, we can help to make the most of this asset, thereby driving and stimulating our economy.

About the e-GIF Architecture

The e-GIF architecture contains:

- the Framework, which covers high-level policy statements, technical policies and management, implementation and compliance regimes;
- the e-GIF registry, which covers the e-Government Metadata Standard (e-GMS) and Government Category List (GCL), the Government Data Standards Catalogue (GDSC), XML schemas, the Technical Standards Catalogue (TSC) (previously e-GIF Part 2: Technical policies and specifications) and the e-Services Development Framework (e-SDF).

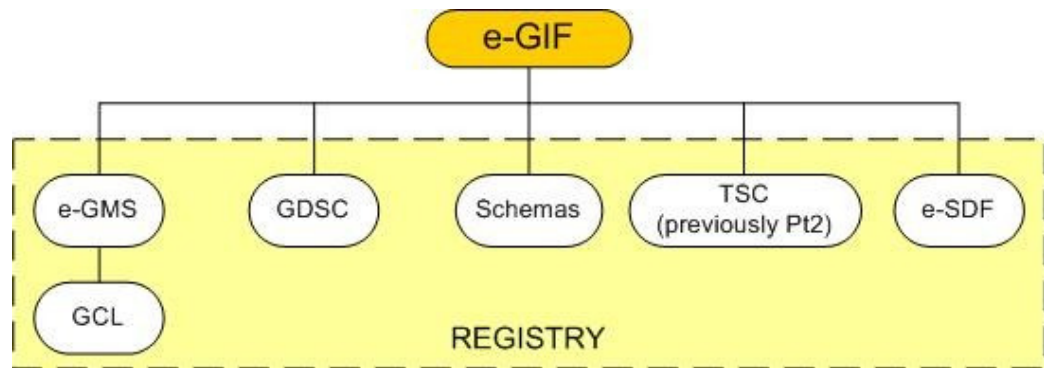


Figure H.1: The e-GIF Architecture

The e-GIF (illustrated in Figure H.1) defines the minimum set of technical policies and specifications governing information flows across government and the public sector. These cover interconnectivity, data integration, content management metadata and e-services access. The government is committed to ensuring that these policies and specifications are kept aligned to the changing requirements of the public sector and to the evolution of the market and technology.

Key Policies

These are the key policy decisions that have shaped the e-GIF:

- alignment with the Internet: the universal adoption of common specifications used on the Internet and World Wide Web for all public sector information systems;
- adoption of XML as the primary standard for data integration and data management for all public sector systems;
- adoption of the browser as the key interface: all public sector information systems are to be accessible through browser-based technology; other interfaces are permitted but only in addition to browser-based ones;
- the addition of metadata to government information resources;
- the development and adoption of the e-GMS, based on the international Dublin Core model (ISO 15836);
- the development and maintenance of the GCL;
- adherence to the e-GIF is mandated throughout the public sector. Section 6 provides more detail;

- interfaces between government information systems and intermediaries providing e-Government services shall conform to the standards in the e-GIF. Interfaces between intermediaries and the public are outside the scope of the e-GIF.

The selection of e-GIF specifications has been driven by:

- interoperability – only specifications that are relevant to systems' interconnectivity, data integration, e-services access and content management metadata are specified;
- market support – the specifications selected are widely supported by the market, and are likely to reduce the cost and risk of government information systems;
- scalability – specifications selected have the capacity to be scaled to satisfy changed demands made on the system, such as changes in data volumes, number of transactions or number of users;
- openness – the specifications are documented and available to the public;
- international standards – preference will be given to standards with the broadest remit, so appropriate international standards will take preference over EU standards, and EU standards will take preference over UK standards.

Scope

The e-GIF covers the exchange of information between government systems and the interactions between:

- UK Government and citizens
- UK Government and intermediaries
- UK Government and businesses (worldwide)
- UK Government organisations
- UK Government and other governments (UK/EC, UK/US, etc.).

'UK Government' includes central government departments and their agencies, local government, the devolved administrations as voluntary partners, and the wider public sector, e.g. non-departmental public bodies (NDPBs) and the National Health Service (NHS).

The e-GIF specifications are mandated on all new systems that fall within the scope defined in the paragraph above. In order to take advantage of services being provided through UK online (www.ukonline.gov.uk), the Government Gateway, the Knowledge Network or other systems which are part of electronic service delivery targets, legacy systems will need to comply with these specifications. For systems that fall outside the scope and mandate, the e-GIF is recommended in all public sector procurements and in major upgrades to other departmental legacy systems.

The e-GIF does not standardise the appearance of information on the human interface, which can be provided by various user channels, e.g. Internet, public kiosks, digital TV, WAP phones. The e-GIF standardises interchange requirements for the delivery of data to such interfaces and tools for the management of the presentation of such data.

The technical policies for interoperability across the public sector cover four key areas: interconnection, data integration, content management metadata and e-services access. This is the minimum set necessary to support the range of transactions and services provided by government and to integrate information systems within government.

APPENDIX I National Projects

The National Projects were intended to be at the heart of local e-Government, designed to help local councils improve services, increase efficiency and to help create sustainable communities.

The Programme consists of 22 projects supporting different aspects of e-Government. The projects have produced a range of local government developed solutions to meet councils' needs. The National Projects assist local authorities to deliver against:

- BVPI 157 / the 2005 ESD targets;
- CPA;
- The 2004 Efficiency Review;
- The National Strategy;
- Priority Service Outcomes.

Further information is available for the projects at www.localgovnp.org.uk. The projects were:

- Customer Relationship Management (CRM);
- Digital TV (DigiTV);
- e-Benefits;
- e-Citizen (Take-up & Marketing);
- e-Fire;
- e-Pay;
- e-Procurement (NePP);
- e-Trading Standards National (e-TSN);
- Environment and Community Online Residents' e-Services (ENCORE);
- Framework for Information Sharing in a Multi-Agency Environment (FAME);
- Knowledge Management;
- Local Authority Websites (LAWs);

- Local e-Democracy;
- Local e-Government Standards Body (e-Standards);
- School Admissions: e-Admissions and Pan London School Admissions;
- Planning and Regulatory Services Online (PARSOL);
- Project Nomad (Mobile Technology);
- Reducing Youth Offending Generic National Solution (RYOGENS);
- Smartcards;
- Valuebill (Council Tax/Business Rate Valuation);
- Workflow;
- Working with Business.

Appendix J Primary Fieldwork Results

Organisation	Current e-Maturity Level	Use IT Methods	Use PM Methods	Use Change Methods	Questionnaire/ Case Study	NOTES
Barnsley MBC	2		I Prince2		C Fujitsu bid	Had to resubmit IEG3
Birmingham CC	3		I Prince2		C Fujitsu bid	
Bolton MBC	3		I Prince2	E Macroscope	C Fujitsu	Major programme underway from one stop shops to wider service delivery.
Bradford MBC	3		I Prince2		C Fujitsu bid	
Bury MBC	1/2		I			Had to resubmit IEG3
Calderdale MBC	2/3	Y Prince 2	I			
Coventry CC	1/2		Prince 2			
Doncaster MBC	2		I Prince2		C Fujitsu bid	
Dudley MBC	1/2					
Gateshead MBC	2/3		Prince2	No	Q	
Kirklees MBC			Prince2	No	Q	
Knowsley MBC	3/4		I Prince2	Yes	Q	Pack leader well up in e-Government
Leeds CC	2/3		I No Prince	No	Q	
Liverpool CC	2/3		I Prince2			Major programme underway from one stop shops to wider service delivery.
Manchester CC	2/3		I	N	C Fujitsu Bid/Projects	Major programme underway from one stop shops to wider service delivery.
Newcastle CC	2/3		?	?	C Fujitsu	No IEG3 available Legacy centric project
North Tyneside MBC	2/3		I Prince2			Small scale Prince.
Oldham MBC	1/2		I Prince2		C Fujitsu	slow and using open platform web servers (Apache)
Rochdale MBC	1/2		N	N	N	Slow, no e-gov rep appointed, legacy centric project
Rotherham MBC			N	N	N	
Salford MBC	3/4		Prince 2	Y SPRINT	Case Study	Advanced and pilot for government methodology SPRINT

Organisation	Current e-Maturity Level	Use IT Methods	Use PM Methods	Use Change Methods	Questionnaire/ Case Study	NOTES
Sandwell MBC	2/3			n	n	Currently procuring major partner and in negotiation with Walsall MBC regarding aggregation
Sefton MBC	2/3		Y Prince2	n		
Solihull MBC	2/3		Prince 2		C Fujitsu	Left open as planned outsource to ST Water collapsed.
South Tyneside MBC	3		Prince 2			Early example of best practice.
St Helens MBC	1/2 (originally)		Prince 2			New ICT partnership look to give savings will adopt Prince2; recently adopted supplier for major ERP programme but not change programme
Stockport MBC	2/3		I			
Sunderland CC	1/2 (originally)					no details easily accessible
Tameside MBC	3/4		Y Prince2	n	C visit	Pack leader well up in e-Government
Trafford MBC	2/3		I ASAP	n		no Prince2 plans
Wakefield MDC	1/2 (originally)		Y Prince2			
Walsall MBC	2/3		I	N	C Fujitsu	Dropped major change programme. Aiming to aggregate with other Las
Wigan MBC	1/2 (originally)	I	I		CASE STUDY	The Wigan Way for methods - needs revisiting currently undergoing major ERP programme with change programme
Wirral MBC	2/3		Y Prince 2 Y selectively use Prince	N	C Fujitsu	
Wolverhampton CC	2/3			N		

Notes

Maturity – This provides an indication, based on evolutionary scale of 1-5, of the progress made towards e-Government using the results from the ODPM statement returns made by public bodies including Local Authorities. The scale reflects progress as follows:

- 1 = Availability of some IT based facilities (e.g. text web site);
- 2 = Project Management driven and/or application driven services;
- 3 = Change programme enabled by a recognised method e.g. MACROSCOPE;
- 4 = Wider aggregated e-government agenda with local /national partners;
- 5 = Highly geared e-government service focus, likely to be using updated methods e.g. SPRINT.

Method Use – If there are any in use and their source – in-house Project Management for instance can be based upon PRINCE2.

I= In House

E=External i.e. outsourced or integrator (e.g. Fujitsu, Deloitte)

Appendix K A Sample Interview

The notes reproduced below were transcribed from one in a series of meetings with the Finance Director of Council A, who agreed to contribute to the research as a case study, which is presented and discussed in Section III, Fieldwork and Case Study.

Session 1 – Initial Questionnaire Responses

Objectives	Step through questionnaire Provide BCM matrix Acquire comments
Outcomes	Will be passed CPA (Corporate Assessment) report, housing stock details, leisure details and issues paper for information
Actions Next Meeting	Date to be agreed Amend BCM matrix based on results and comments

Summary

Has been with Council 3 years. Was a PhD too – analysed how and why Councils spend grants differently. Now on a committee determining how it is spent!

ORGANISATION

1. Will the shape change?

Outsiders often see a traditional departmental structure, but there are good cross working relationships. For instance, the Council debated where the IT function should sit (as a Council wide service). An open mind was in evidence, as was for the Equal Opportunities responsibility which sits with the Director of Finance, not with HR as is the stereotype.

The CPA report showed Council A to be weak in governance and communities, needing to improve relations to individual communities and wards. CPA report also showed Council A to be well run and cost effective. The Chief Executive produces an “Issues Paper” annually which is what Council A wants to achieve via change – e.g. invest to change.

2. Will department structure remain?

Uncertain. The trend elsewhere is to appoint Executive Directors without portfolio (Example – advert in “The MJ” for such roles – for Business Connections, Urban Living). Council A prefer differing reporting lines for cross cutting business units.

Council A has a small core with a wider set of divisions.

EXAMPLE – housing stock. Gone to 3rd party company. Leisure – run by charitable trust. Both run at ‘arms length’, but Council A still own housing stock and run IT (until Christmas – outsourcing ITT issued) for the housing management company. Leisure Services are still a statutory responsibility, but savings made can be ploughed back into the libraries.

PEOPLE

3. Plans to introduce new roles?

There has been transfers before, e.g. Housing who were consulted over the move and OK'd it.

HR doing a review of the balance at a central/departmental level. E.g. Finance and IT have no HR officer, but Health & Trading standards, a smaller department do.

4. Will there be a clash of workloads?

Currently doing a Reviewing Access of 2 services; when, where, how etc. Part of this means that there will be change. EXAMPLE – had a lot of cash collection offices. Opening hours were staff not public friendly. Closed most and used Post Offices – staff either moved or left.

For past systems implementation, those legacy systems, try to use risk management e.g. risk logs and PRINCE 2 principles. EXAMPLE – ledger replacement project underway. Many such projects are too big and basically never end. Many aspects have been compromises which user departments have been OK with as opposed to a late system delivery.

Used a state plan and comment approach, allowing departments time and money to backfill key people needed for system planning etc. If departments do not contribute in the agreed time, they have to live with decisions taken on their behalf – e.g. Leisure have not responded in time.

Failures – more due to personalities than the technology. One example was CAPSA at Cambridge University. As for shared applications, it is a common model for Council A. The Ledger was a shared project with Gtr Mcr Fire Authority, based on Blackpool BC specifications.

Work well at co-operative approach to projects.

EXAMPLE – Payroll and HR (Rebus). Joint effort – Council A, Fire Authority, Trafford and Stockport. 2years, joint tender. Opted to manage own services but bought same application for higher discount, got a better product (says DS).

Supplier was small and underestimated the needs of local government: sometimes a few chewed nails at the start, but too much now automated? However, can now run payroll during the day rather than overnight. Better management reports too.

EXAMPLE – benefits prosecution – expertise shared across Mcr agencies.

EXAMPLE – Freedom of Information – lawyers across Mcr got together. Tameside provided lawyer, Fire some metrics. Produced joint statement.

Some Councils can externalise (outsource) easier than others (or agencies)

Will the CPA cope with a cross-working ethos? RDA approach may help.

5. Will the management model be kept?

No change in the short term – have had opportunities. Got a good performance management culture, use IT well for this.

EXAMPLE – use Performance Plus package with data from CTAX etc. Put against targets, map to progress/ strategic objectives; see how KPIs are progressing.

6. Involved unions/staff associations?

Got good relations e.g. UNISON, but not all staff represented by them. HR review underway – accept feedback e.g. from questionnaires, spent money improving offices after complaints.

Do appreciate need for better change management, better communications. Will tie internally to Charter Mark for Revenues and Benefits service.

Have set up a anonymous email service for comments, moans.

DS tries to have regular briefings with his staff which is appreciated.

Change management – don't want to cause panic by saying possible plans, people often take them as reality. Difficult line to walk.

Political situation means also need to approve with members and leaks do happen esp. to press.

10. What will core skills of managers be?

To be more effective: know more of the services Council A offers and manage risk better.

Find more innovative ways of working with people: esp. in relationships with the voluntary sector. Councils have to avoid a 'Council Knows Best' attitude.

Hopefully the HR review will assist a 360 preview appraisal approach e.g. we are looking for better Internet interfaces – but what is the point?

16. How IT aware are Council A?

Practical and pragmatic. Not 'bleeding edge' and dislike call centres 'scriptland'. Look for practical gains but will use new technology e.g. first adopters of thin client technology.

Allow departments to 'bid' for remaining end of year funds, Chief Executive appreciates IT and its value to the organisation.

Involved in NGFL, IEG for LAN improvements like Broadband.

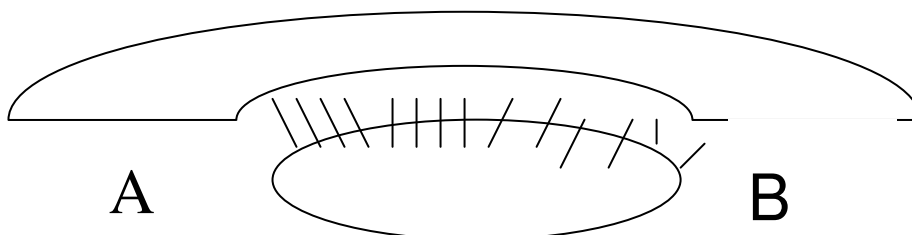
17. What looking for from e-Government?

Movement away from the technology 'bubble' to a realisation of what can be achieved.

Information provision approach to transactions: but takes time. Resources – business cases can be difficult to justify. It may take longer than the Government thinks. MG came about around the dot com boom – so may be to optimistic given the boom became bust.

Need a realism for citizens – the 'Council A Way' – incremental, good progress with adequate resources.

Look at the David Henshaw (Liverpool) 'Hedgehog' picture – just go over the spines!



TECHNOLOGY

How are IT projects usually initiated?

On his arrival, DS knew of ledger system issues. Sustained by programmers, from the 80s, bolted on features over the years. DRIVERS – from a push for framework flexibility, problems implementing accounting codes of practice and new e-commerce model for Modernising Government agenda.

Looked to package solution. AGGRESSO – new supplier. Tied to e-procurement, looked at SAP (Bolton, Salford used), Oracle but expensive. Wanted to address ‘doubling up’ accounting practices, especially around Commitment Accounting (e.g. in Social Services).

EXAMPLE – differences between white. blue collar payments. White = salaried around fixed hours, Blue = paid on recorded time. Still relevant? Why need checking? Chief Executive tasked DS with changing car expense claim system, now operational and used a more self certifying approach.

Does a checking culture add value? EXAMPLE why do managers have to check if there are vacancies in a re-deployment scheme?

EXTRA – are the IT group proactive in suggesting new technologies or projects?

IT can be proactive but need to ensure business units own projects.

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