

**UNDERSTANDING THE IMPLICATIONS OF
INFORMATION AND COMMUNICATION TECHNOLOGY
(ICT) FOR LOCAL GOVERNANCE:
THE EXAMPLE OF eTHEKWINI MUNICIPALITY,
DURBAN**

BY

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Acknowledgements

I dedicate this work to my son Nkosingiphile N.M. Manyanga (4). This is a challenge for you boy.

I dedicate this work, in loving memory, to the following people: Sibusiso Manyanga, Thokozani Manyanga (brothers) Mduduzi Ndlovu and Nkosinathi Thwala (friends). My soul mates every step I take I will be missing you, thou shall rest in peace.

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List of Abbreviations

Asynch	: Asynchronous
CMC	: Computer Mediated Communication
CIS	: Corporate Information Services
eM	: eThekwini Municipality
E-mail	: Electronic Mail
E-governance	: Electronic governance
E-readiness	: Electronic readiness
GIS	: Geographic Information Systems
G2C2G	: Government to Consumer to Government
ICTs	: Information and Communication Technologies
ICSCs	: Integrated Community Service Centres
ISDN	: Integrated Service Digital Network
IDP	: Integrated Development Plan
LTDF	: Long Term Development Framework
SDF	: Spatial Development Framework
WWW	: World Wide Web

General overview

The new phenomenon of what has been called 'e-governance' is a direct effect of the impacts of information and telecommunication technologies (ICTs) upon the local authority milieu, which has taken place at least during the last two decades. ICTs are injecting new energy as governments realise that a powerful new communications tool can transform the traditional roles of government. In social terms, this promises a closer more interactive relationship between government officials and citizens. This establishes a new citizen right; the right to information which has two angles:

- ◆ The right to inform: generator of information
- ◆ The right to be informed: client of information

According to Gutierrez and Daltabuit (1999: 19) 'the right to inform encompasses research and dissemination, and is the current formulation of the freedom of expression and of the press in a world of ICTs and globally interlinked computer networks.' On the other hand the right to be informed implies the ability to receive information and the obligation on the part of government to guarantee the access of the individual and of the social actors to information on decisions, projects, agreements, etc. that may directly or indirectly affect them (ibid.).

This report aims to understand the implications of ICTs in local governance. We know, as Graham and Marvin (1996), Heeks (2001) and Nath (2002) remind us, that urban researchers and city policy makers, in general, have neglected ICTs issues related to governance. Moreover, up to now, these technologies have been conceived and used as an escape from the traditional communication reality and the real urban problems, and they have been developed in a completely different way without the necessary interplay with social, cultural and economic instances of our urban daily life.

However, recently, many initiatives have emerged in which ICTs are shaped and used in local governance in accordance with social, cultural, economical, commercial and also political issues involving local communities. These initiatives are best known as smart city projects.

In this way, a very important aspect to be explored is how ICTs (e-governance) and Human Resources (Municipal Institution) are related to each other. In other words, this research aims to understand the 'bridge' between human resources development and e-governance and how it is being shaped in terms of planning strategies, access, usage, and universal access.

Moreover, ICTs are becoming a very important issue and some government institutions are addressing it as part of major planning strategies. The implications of ICTs are studied observing existing initiatives and looking at further possibilities of developing countries adopting e-governance. This involves using international case studies as yardsticks for e-readiness of eM.

The importance of this research is supported by the fact that smart cities are shaping and creating new 'forms of communication, which can be accessed publicly, being a powerful tool towards a social construction of planning initiatives.

Thus, this research aims to put some light on these complex relations between ICTs and governance working with a typology for smart cities in terms of users and e-governance applications. Moreover, it also relies on the fact that ICTs are becoming very important within major planning strategies, applying the recombinant concept for planning as well. In this case a more complex understanding is needed, where ICT policies join traditional urban policy to become what can be called recombinant governance.

Chapter 1

The Research Framework

1.1 Introduction

In earlier history, wealth was measured in land, in gold, in oil, in machines. Today, the principal measure of our wealth is our information, its quality, its quantity, and the speed at which we can acquire and adapt it.

(Beaird, 2000: 47)

The penetration of Information and Communication Technology (ICT) into all facets of human existence is leading to changes in the way humans interact within society and the way societies involve individuals in the evolution process. Information exchange is distinguished as a catalyst for human development. McNeil (1995:68) indicates that there is little doubt that the information revolution is sweeping the globe, determining not only how cities will prosper and grow but also how they are governed. ICT is the biggest innovation of the current age. It brings people together regardless of their geographical locations. It follows that ICT provides new forms of development communication.

The information revolution has opened a new chapter in public administration. The restructuring of governance approaches from top-down to bottom up has marked the need for participatory decision making. Governments are tapping into electronic governance (e-governance) initiatives to improve participation and enhance integrated governance. The common belief is that "e-governance" can make governance more efficient and more effective. E-governance programmes aim at keeping pace with the global economy and improving governance processes of communication and data management.

The growing emphasis on ICT use within cities has seen the emergence of the concept of "Smart City". According to Odendaal (2002: 17) 'the concept is intrinsically linked to that of the knowledge-based economy: the use of research and new technology to explore new frontiers in science, industry and commerce'. Herein, 'Smart City' refers to the local government's inventiveness to electronically govern areas under their jurisdiction. This process is called electronic-governance (e-governance). E-governance is one of the components of a smart city, as it will be shown herein.

The existing literature on smart cities so far, focuses on the impact on cities, that is electronic security systems, electronic-service cards. The literature draws its examples from the developed world contexts. There is little that has been said about the developing world's context in terms of planning and governance processes. There is also little if anything, that has been said about the staff capacity in local government to effectively use ICTs and social impacts of e-governance in developing countries.

After all, developing countries have limited access to basic ICT networks. For these countries the goal is to hasten the pace with which their economies can embark upon a convergent path vis-à-vis the leading countries in the networking world. Nevertheless, the mere existence of gaps in levels of ICT practices between rich and poor across and within countries is not an automatic reason to argue that ICTs should be placed near the top of the development agenda. Adjustments to networked governance is not an overnight process, it takes education, significant investment on infrastructure and widespread legal reform.

An example of ICTs in local governance is in Queensland-Brisbane. The Brisbane local council has initiated the "eBrisbane" project. The "eBrisbane" initiative focuses

on opportunities and challenges in information technology and new knowledge-based development. Another example is that of India in the state of Andhra Pradesh. The state of Andhra Pradesh is launching Integrated Community Service Centres (ICSCs) projects as part of e-governance strategy aimed at taking the benefits of ICTs to the common man.

In South Africa the decade of the 1990s has witnessed the growing importance of ICTs in unwinding the legacy of apartheid. Since service provision raises the issue of equity, ICTs are seen as a transformation mechanism from a top-down to the bottom up approach of governance. The common belief is that ICTs has the potential to pull in every human being into governance processes changing the very nature of people-governance interface. Though this has not been documented at a local level of government in South Africa there are cases wherein ICTs are used as a tool for interaction and governance for example in Johannesburg. Durban is also part of the South African cases of e-governance and it is the focus case in this study.

It is the objective of this work to understand the implications of e-governance for eThekweni Municipality's (eM) human development. The components of e-governance that will be discussed in this paper are the use of World Wide Web (WWW), Internet and email, Geographic Information Systems (GIS) and database systems. These components will be assessed (Ch. 4 & 5) against international case studies dealt with in chapter 3.

The review of Durban case study on the city's use of ICTs is interesting because it is in its infancy. This dissertation will focus on what Nath (2000) consider to be pertinent facts to information and governance, those are:

- ◆ Access to information and knowledge as forms of decision-making and concerted action.
- ◆ the quality and timeliness of information
- ◆ Circumscription of information and knowledge.

The foregoing facts are appealing to the understanding of the impact of ICTs in a local governance context and coming to grips with the new local government roles of effective and speedy service delivery. Above all, they grapple with the current advances in technology and its capacity to fast track development planning. The following section looks at the research problem that has informed the selection of the research topic.

1.2 The Research Problem

Throughout history, mankind has passed through several development stages. Townsend (2002) explains these development stages as follows; In the *Agricultural age*, man obtained greater returns on his labour from farming than those realised earlier through hunting and gathering wild products.

In the *Industrial age* workers once masters of their own subsistence production, become workers in factories, achieving greater levels of comfort, land and work allowed accelerated economic growth throughout the world, and important developmental advances in many countries.

In the *information age*, there have been technological revolutions that allow greater closeness between people by facilitating transmission of information, producing a revolutionary transformation in economic, organisational, scientific, technological, cultural, social, and political areas. The information age is one of ICTs supporting and transforming the internal and external

workings of governance by processing and communicating data.

It follows from the above stages that the information age has been the influential age in the knowledge-based economy. The information age requires the establishment of fundamental principles that will transform or strengthening the essential nature of local governance. A modern information infrastructure is the first building block of e-governance.

The South African governance system is at the helm of a massive restructuring process from a centralised to a decentralised form of government. Local government has a developmental role, which is focused on addressing social needs and maximising economic development. Parnell et al (2002: 28) state that in South Africa, the constitution makes local government responsible for social and economic development of communities and, the government has subsequently emphasised the need to nurture a new culture of developmental local government. Odendaal (2002: 18) indicates that on the one hand, local government is best placed to respond to local needs meaningfully and appropriately, on the other hand, it may be worthwhile exploring how well local government is placed to mitigate digital inequalities.

There is a concern about whether ICTs can enable local governments to achieve its developmental role and balance the social needs delivery with technological innovations. The balancing of these needs in South Africa comes up as a result of the urgent need for infrastructure delivery, for example, water, housing and electricity, etc. Woodward (2002: 15) indicates that

...when local governments are forced to choose between providing basic services like water or buying a computer system, they have to provide the

basic services. Still, they also have a commitment to provide the local government staff and citizens with a wide-open door to government information. The challenge, therefore, is the integration of basic needs provision and information infrastructure.

It is a fact that ICT can offer a lot for local governments in the processing of information and effective communication. Thus this dissertation focuses on how well can ICT accommodate the processes necessary to achieve inclusive and democratic governance or any other development goals defined by eThekweni municipality (eM). It uses international case studies as a benchmark for this research, given that eM e-governance strategy is on its infancy. Furthermore it looks at how ICT accommodates the developmental role of local government and, how ICT enables integration and transformation of local government, which entails participatory decision-making.

In Durban, e-governance is still evolving and improvising itself to fully harness the potential offered by the new ICTs. However, as ICTs are the buzzword for the developed world there are constraints in developing countries, particularly in Durban. Developing countries lag behind to some extent in communications infrastructure, technical know-how and information processes about governance. The World Bank report, *Knowledge for Development* (1998) stresses the importance of leveraging new media technologies like the Internet in developing countries for areas like lifelong learning, training and retention of skilled workers and transparency of governments.

In order to understand the implications of e-governance in local government and the relative importance of ICTs in development planning, the eThekweni Municipality (eM) has been selected as the case study. The purpose of this study is to attempt to understand the extent to which

ICTs respond to the developmental role of local government and, if ICTs responds positively, to assess the level of ICT skills within eM staff to effectively interact and govern electronically.

In carrying out this hermeneutical process, the dissertation will avoid the extremes of either exaggerating or downplaying the autonomous role of technology in the governance processes, 'as if technology were either the demiurge of the contemporary world, or an unimportant epi-phenomenon of a much greater force, such as capitalism or human self-development' (Townsend, 2002). Rather ICTs will be seen as an information-driven strategy aiming at easy access to integrated information via multiple channels.

Townsend (2002) states that one must avoid two extremes, which would either belittle and demonise technology in the mode of **technophobia**, or celebrate and deify it in the mode of **technophilia**. The techno-phobic and philic feelings towards technology need to be addressed through careful ICTs planning programmes and awareness of the importance and downfalls of ICTs. The ICTs strategy should avoid one-sided approaches in theorising and evaluating the genesis of the new technologies and their often-contradictory effects.

The research question flows from the above research problem. The question constitutes the analytical framework for the dissertation. The research question is:

Could the use of information and communication technologies enhance integrated governance in eThekweni Municipality (eM)?

The question sought to understand the impact that ICTs have on local governance in Durban. In order to answer the research question the following subsidiary questions were used to guide the research:

- ◆ What are the current ICT initiatives in the eM?
- ◆ Does the municipality have the necessary technology and infrastructure?
- ◆ How is that infrastructure used?
- ◆ To what extent do employees possess the necessary ICTs skills?
- ◆ Is Durban ready to become a smart city in terms of, visioning, objectives, strategies and projects planning?
- ◆ What implications does e-governance have for planning?
- ◆ Can ICTs enable effective governance in eM?

The research question above led to the drawing of the research topic, which is:

Understanding the implications of Information and Communication Technologies for local governance: the example of eThekweni Municipality, Durban.

The primary objective of the study is to assess whether Durban has technological infrastructure and human capacity to become the smart city. In so doing it will look at the current skill levels among the municipal staff to effectively use ICTs for governance.

The hypothesis against which the research problem will be tested is that "ICTs can provide effective and integrated local governance". It is expected that ICTs will shrink space and provide quick information transfer from one source to another in a secure and reliable manner. This includes cost cuts and effective data management. However, in developing cities like Durban, e-governance is still on its infancy, so international case studies were used to outline the path towards becoming a smart city.

Traditionally, planning has been involved with land use issues. Nowadays planners are faced with the technology

revolution in forms of GIS and electronic communication and data capture from the Internet or WWW. With the current change of emphasis to Integrated Development Planning (IDP) in South Africa, the scope of planning now involves integrated efforts to development with people outside the planning departments, for example, electricity, water, roads departments and other stakeholders to mention a few.

Graham and Marvin (1996:345) maintain that

...the old-style planner talked about physical zoning, the balance of employment, housing and open space and traffic flows. The new-style planner has to consider the configuration of electronic systems and local area networks (LANs) and the provision of bandwidth to each urban area. The town planner dealt with the stocks and flows of vehicles. Today'' public authorities have to face the stocks and flows of information.

Planners should be at the forefront in the planning of the ICTs strategies with their analytical skills. An improved understanding of how local government function is a pre-requisite for identifying integrated governance interventions well versed with ICT initiatives. Such interventions entail the balancing of social needs and technological needs in a way that will not see technology advancing at the expense of the social needs.

Therefore this dissertation seeks to understand the implications of e-governance in local governance processes. This provides a basis for identifying human resource implications of the use of ICT and the necessary planning interventions that may promote e-governance and thereby contribute to the development of Durban. The findings and recommendations of the dissertation cover the human resources and ICTs aspects in Durban. But there will also be the brief coverage of the community

component of governance since the term governance also includes the relationships between the municipality and its publics.

1.3 The Key Concepts

This section provides the definition of terms to be utilised in this study. The intention is to provide some degree of consistency in the interpretation of the key terms that will be used during the course of the ICTs study.

The concept of a **Smart City** is used in various ways in different cities e.g. installation of hi-tech security systems and smart cards for services electronic payment without having to be at the pay-points. But in this study it will be used to refer to knowledge based planning and the use of ICTs for governance. In the context of this paper, 'Smart City' refers to the use of ICT by local government in the governance of development and management activities. For example, the use of the internet, email, World Wide Web, Geographic Information Systems and other database (network applications). Mahizhnan (1999: 16) points out that the success of Information Technology cannot be measured just in terms of what the ICT managers are providing. It is equally important that the users take to the facilities with ease and comfort (Smart City).

Castells (2000:28) defines **Information and Communication Technology (ICTs)** as 'the use of scientific knowledge to specify ways of doing things in a reproducible manner.' ICTs plays the role of a key enabler of the modernisation of government. It offers both individual and companies the opportunity to interact (even to conduct business) with government 7 days a week and 24 hours a day, and to do so using different means of communication: desktop and

handheld computers, telephones and cellular phones, self-service kiosks and ATM' s (RSA, 2001: 4).

On the other hand, IT brings endless possibilities for improving the internal operational and support functions within the realm of government. The dissertation will use ICTs to refer to computer hardware, software, databases, electronic message systems, computer networks and any electronic information that is used by eThekweni municipality to process, transfer, store or communicate electronic data. Attention will be given to the following components:

- ◆ The **Internet** is a global "information highway" comprised of thousands of interconnected computer networks around the world (Chief Technology Officer, 2002).
- ◆ The **World Wide Web** (WWW) is a system of Internet servers that support specifically formatted documents. The documents are formatted in a programming language (HTML) that supports links to other documents and files (Chief Technology Officer, 2002).
- ◆ **Electronic mail** (E-mail) is the transmission of messages between computers via a network, including the Internet (Chief Technology Officer, 2002).
- ◆ **Geographic Information Systems** (GIS) is an organised collection of computer hardware, software, geographic data, and personnel designed to efficiently capture, store, update, manipulate, analyse, and display all forms of geographically referenced information (Burke 2002: 2)
- ◆ **Database** is a file created by a database manager that contains a collection of information organised into records, each of which contains labelled categories (San Diego State University, 2000).

Rakodi (2001: 344) points out that **governance** refers to the interactive relationship between and within govern-

ment and non-governmental forces. Governance is thus about relationships between the state and the civil society, rulers and the ruled, government and the governed; it is about the way the power structures of the day and civil society interrelates to produce a civic public realm. For my study on technology in Durban, governance implies interdependence, but does not prejudge the locus or character of real decisional authority, instead being concerned to disentangle the relationships and practices involved in governing. This is specifically aimed at the human resources aspects of governance.

The dissertation assesses the impact of electronic governance on local governance, which is the extension of a face to face governance and incorporates, the notion of virtual places. **E-governance** is 'the application of IT to intra-governmental operations, including the interaction between central, provincial and local government' (RSA, 2001: 4). Electronic interactions includes paperless messaging and reporting, electronic document management and archiving, integrated systems for finance, asset and human resource management (including training/capacity building), as well as systems for real-time collaboration and project management, conferencing, decision support and executive information. The dissertation will use e-governance to refer to the use of the Internet and email, World Wide Web Geographic Information Systems and databases in local governance.

E-readiness is a hard concept to define. E-readiness can be defined in terms of ICTs infrastructure, the accessibility of ICTs to the population at large, and the effect of the legal and regulatory framework on ICTs use (infoDev, 2000). Decision-makers in local governance face two challenges in the assessment of e-readiness. First, they need to understand how ICTs can help their countries achieve economic and social benefits, and to set realistic goals accordingly. Second, they must take

concrete steps toward effective and sustainable ICTs use that will help their areas realise development goals

Beamish (1995: 7) points out that there are two common meanings to the word **community**. The first meaning of **community** 'is a physical place such as a town, city, or neighbourhood. Groups of people who live in that place are associated because they share physical proximity, and live under common rules and shared government'.

The second meaning of **community** is a 'social group of any size that shares common interests, whether those be social, professional, occupational, or religious'. These are the "virtual communities" or "on-line communities" that are often found on networks. There are no geographic boundaries to on-line communities and participants can be located anywhere in the world. An individual can belong to a number of these "communities."

The study looks at **municipal officials (office-based)** as virtual communities who interact on their day to day activities and share information on development and planning of eThekweni municipality. This looks at the types of electronic data management and dissemination. Therefore the dissertation excludes the municipal staff that are below task 04, those are gardeners, cleaners and coffee / tea makers because from observation they do not always use ICTs.

The concept of **sustainability** marks the need for a cost effective and a well-planned ICTs strategy that is self sustaining at the same time, ICTs should improve the internal efficiency and effectiveness i.e. the costs and quality of governance. Generally, the OECD (2001: 2) indicated sustainable development as 'integrating the economic, social and environmental objectives of the society, in order to maximise human well-being in the present without compromising the ability of the future

generations to meet their needs'. The definition is important given that local government in South Africa has the developmental role and they have to equate and prioritise between the social and technological development.

Beamish (1995:7) states that, to survive, the interactive electronic communication, must become institutionalised and self-sustaining in terms of funding, staffing and management and the employees should be given hands-on experience on using ICTs to enhance participatory democracy and capacity building. This will ensure that ICTs strategy is sustainable and it is used to facilitate links and relationships between the local government employees.

According to Johnston (2000: 9) 'there are three important aspects related to information technology and sustainability. Firstly, the understanding of the risks and opportunities for action. Secondly, the commitment of key organisations to work together to maximise benefits and minimise risks; and finally, raising public awareness, not only to ensure democratic support for appropriate policy measures, but to engage every citizen in the life style changes that may be necessary for effective change.'

Integrated governance is a system of sharing information, negotiation and transparency through interactive electronic communication. It is a system that revives the spirit of Batho Pele (people's first) and volunteerism. It revives the spirit of ubuntu (eThekweni Municipality, 2002). Technology may change the way things are accomplished, but information must always be exchanged in a social context.

The concern over human rights came to the forefront in what is referred to as *participatory democracy*. Participatory democracy defines the core objectives of

the municipal actions. Therefore, there cannot be sustainable development without a sustainable society. But this study about ICTs will focus on the employee use of ICTs and the challenge for the eM to provide universal access for its citizens. Though it will not totally discard community networks, it will be focusing on the municipal development towards a smart city. This section on smart communities will form part of the recommendation's chapter on the section for further research.

1.4 The Research Methodology

The research methodology involved both primary and secondary sources of data. These sources of data have been used in order to arrive at a concise, complete and factual analysis of the study. The general approach upon which the research has been conducted is the qualitative approach as it is deemed the most appropriate method of achieving the perceived aims and objectives of this study. According to Struwig & Stead (2001: 56) 'qualitative research attempts to:

1. understand the issues from the viewpoints of the participants, although the researcher and the participants are involved in interpreting the data;
2. understand the participants' thoughts, feelings and behaviours and these are examined along a developmental or temporal continuum. Interviews are useful in capturing this process through the stories participants provide. The data are therefore not presented in a static, reductionist, decontextualised manner;
3. conduct research in a relatively unstructured manner. Prior research or theory generally is not excessively relied on to inform the research process.'

Qualitative researchers try to present the data with 'open minds' but the dissertation will acknowledge that

all data are 'value laden'. It will also acknowledge that the researcher and the study are intimately connected and that the researcher cannot be completely objective. The data for the dissertation was gathered using observation, interviews (primary sources), literature review and the Internet (secondary sources).

Observations

As an employee of the eM, the researcher observed the current utilisation of ICTs in eM for governance. The observations were carried out in all the departments that form part of the interview sample. This was done before, during and after interviewing the respondents.

Interviews

The researcher conducted mainly face to face interviews. However, two telephone interviews were conducted with the librarians in Umkhumbane and Durban Central libraries. Interviews conducted were semi-standardised. This means standardised and unstandardised questions were used to obtain information from the interviewees. The reason for using semi-standardised interview was to obtain multiple responses to set questions and to allow detailed responses. However there were standardised questions which were centred on obtaining information on the current status of ICTs in Durban, skills base, training programmes, opinion and attitudes towards ICTs or e-governance and bridging the digital divide versus the community basic needs.

In addition, the Interviewees were selected because of their involvement or expertise with ICTs. Though most of the town planners are not ICTs managers but they use the WWW, GIS and emails for communication, data capture and

spatial data analysis in their planning activities. It is acknowledged that the eThekweni municipality has a range of service units, however the departments that are involved in ICTs and town and development planning for Durban were selected with prior investigation and observation. Both structured and unstructured interviews were conducted with the following respondents to obtain their views on e-governance and its implication on the development of Durban:

- ◆ Dr Mike Sutcliffe (eThekweni Municipality Manager)
- ◆ Mr Craig Allan (Manager, Information Unit - Urban Strategy Department.)
- ◆ Teresa Dominik (Manager, Development Unit - Urban Strategy Department.)
- ◆ Mr Brian O'Leary (Town Planner Information/GIS - Urban Strategy Department.)
- ◆ Thando Magewu (Project Executive / planner - INK Urban Renewal Project)
- ◆ Mr Vishal Ramduny (Planner / Researcher - Urban Strategy)
- ◆ Laura Bedford (Planner / e-home project co-ordinator - Metro Housing)
- ◆ Mr Linda Mbonambi (Communications Manager - Transformation Dept.)
- ◆ Angela Spencer (Web designer - Communications department)
- ◆ Mr Bud Govender (Information manager - Development and Planning Department)
- ◆ Mr Trevor Ireland (Manager Corporate GIS - Development & Planning Department)
- ◆ Mr Lunga Madlala (Director - Corporate Information Services)
- ◆ Mr Danie Steyn (Manager operation - Corporate Information Services)
- ◆ Mr Hlubi Mthimkhulu (Staff member - Corporate Information Services)

- ◆ Sbongile Makhanya (Librarian - uMkhumbane library)
- ◆ John Mayer (Systems Operator - Umngeni central library)

Telephone interviews were conducted with the last two people from the eThekweni libraries. This was aimed at securing data on what Durban is doing in terms of providing information systems to the community, this will be further dealt with in chapter 4 (findings).

On-line discussion

This method was used to obtain the international perspective of ICT application in governance. The discussions were done with TELECOMM-CITIES subscribers. Active since January 1997, TELECOM-CITIES is an email listserver dedicated to exploring the impacts of new information and communications technologies on the growth and development of cities and metropolitan regions throughout the world. TELECOM-CITIES maintains a truly global focus, with over 400 subscribers representing over 35 countries from six continents.

Secondary Data

The researcher has conducted a detailed book, journal and magazines review. The Internet was also used to identify the countries that have implemented ICTs initiatives in their local governance, as it will be shown in chapter three. The Internet was useful for locating papers that were presented on conferences about e-governance and the e-governance publications that are online.

1.5 Scope and Limitations of the Study

The dissertation seeks to understand implications of e-government in local government activities that are related to town planning. Although the study deals with a subject that incorporates a range of topics and disciplines, it will be limited to electronic communication for effective governance and planning. It will also focus on human resource development for local governance, which involves the integration of ICT initiatives and governance initiatives.

In addition the study is being limited by time as a result there has not been a comparative analysis of other departments within the municipality. The scope of the study is further limited by the fact that the community component of governance could only be researched through library personnel not with the community itself because of time and the fact that there has not been much in terms of community capacity in Durban. Above all the study will be limited by the fact that the existing ICT culture in eM is fragmented and there is no integrated ICT policy framework. Simply put, e-governance in eM is in its infancy and this provides a limitation in assessing eM e-readiness. Yet, this is what makes this study useful.

1.6. The Report Outline

This study is essentially structured into six chapters having the following contents:

Chapter 1

Chapter one sets the context for the dissertation by identifying the problem statement, definition of

concepts, research methodology and scope and limitations of the study.

Chapter 2

Chapter two establishes the bodies of literature and come up with a theoretical/ conceptual framework for the research.

Chapter 3

Chapter three will look at international experiences of Smart Cities as a context/ premise from which ICTs can be utilised within Durban.

Chapter 4

Chapter four will present detailed findings on the question of e-government in Durban.

Chapter 5

Chapter five will analyse findings and use the conceptual framework analysis to establish the criteria for e-governance in Durban.

Chapter 6

Chapter six will give conclusions and recommendations drawn from international experiences and the current reality of ICT in Durban. This will pick up on significant themes and make proposals for planning initiatives for e-governance. The chapter will also propose further themes for future research around the e-governance topic.

Chapter two

E-governance Programme in Local Governance: Theoretical Perspectives

2.1 Introduction

The current explosion of new technologies and debates over their substance, trajectory, and effects poses two major challenges to critical social theory and a radical democratic politics (Graham, 1996). Firstly, how to theorise dramatic changes in every aspect of life that the new technologies are producing? Secondly, how to utilise new technologies to promote progressive local governance to create more egalitarian and democratic society in an era marked by rampant technological development and the seeming victory of market capitalism over its historical opponents?

The dissertation wants to suggest some ways to theorise the current technological revolution without falling into "technological or economic determinism, as well as unwarranted optimism or pessimism" (Graham & Marvin, 2001: 33). The dissertation will theorise the spread of new technologies and series of transformations within local governance that are unfolding as a result of democracy and participation requirements. This will be discussed,

- ◆ In the context of the current stage of local government restructuring in South Africa, as a crucial part of the global restructuring of governance, and thus visualising the current development and imbrications of technology and local governance; and
- ◆ As embodying a set of human artifacts and practices, as well as institutional restructuring.

The purpose of this chapter is to assemble a body of theoretical material and international precedents in order to conceptualise the analytical problem of ICTs and its governance outcomes. It is a common belief that e-governance has given rise to a particular set of governance outcomes, for example, knowledge-based development, integrated governance and democratic participation.

The common belief is that, good governance rests on the pillars of knowledge and the recognition of e-governance implications for local governance. According to Nath (2000: 14) 'the digitisation of the entire set of knowledge within a network which links every individual including the decision makers and gives democratic freedom to everyone to access and make use of this knowledge paves the way for e-governance.' To achieve this common belief local government has to ensure that they have the necessary infrastructure in place to guarantee its electronic-readiness (e-readiness).

The first part of this chapter deals with the technology revolution and its impacts on local governance. The following sections deal with e-governance models and their applications. The subsequent section will look at how e-governance initiatives can be sustained from a theoretical perspective. This will be followed by conclusive remarks that will outline a framework for analysis and criteria for effective e-governance.

2.2 The Information Technology Revolution

Hall and Pfeiffer (2000: 7) state that the great transforming force of the twenty first century can already be seen, that is information revolution, uniting previously separate technologies - the computer, telecommunications, television - into a single medium for

the generation, storage and exchange of information. The pre-eminent role of information technology is often confused with the characterisation of the current revolution as essentially dependent upon new knowledge and information.

Castells (2000: 32) states that, what characterises the current technological revolution is not the centrality of knowledge and information, but the application of such knowledge and information to knowledge generation and information process, in a cumulative feedback loop between innovation and uses of innovation in terms of skills. While information technology might be evolutionary, in a sense that all changes and benefits will not appear overnight, it will be revolutionary in its effects upon the society. This will change the way people interact and exchange information.

According to Beamish (1995: 89) 'the rise of the network society cannot be understood without the interaction between two relatively autonomous trends, that is, the development of new information technologies and the old society's attempt to retool itself by using the power of technology to serve the technology of power. This is a developmental stage that policy-makers ought to understand in formulating ICT strategies in developing countries.

Hall & Pfeiffer (2000:16) state that without necessarily surrendering to historical relativism, it can be said that the information technology revolution was culturally, historically, and spatially contingent on a very specific set of circumstances whose characteristics earmarked its future evolution. This suggests that technology revolution is not about big ICT infrastructure or a quick fix to human problems. It is socially dependent it can not be operational on a vacuum. The cultural, historical and spatial characteristics of ICT users determine its effectiveness in human interaction.

The essence of debates about information technology revolution around the world seems to indicate that the critical ingredient in its development is not the newness of the institutional and cultural setting. It is the ability to generate synergy on the basis of knowledge and information, directly related to local governance and e-governance applications. It follows that ICTs revolution will go on, so local authorities needs to plan for e-governance initiatives at the same level with other existing needs in so doing levelling grounds for integrated governance.

There is a broad literature on Information Technology and Cities, however, there is a lack of literature that focuses on the concept of Smart Cities and local Governance. A full understanding of the current technological revolution would require the discussion of the specificity of new information technology vis-à-vis their historical ancestors of equally revolutionary character. This requires the formulation of effective e-governance initiatives whilst not writing off the traditional methods of governance, which might be still helpful among some members of the disadvantaged community within the local authority area of governance. The classical theme of communications literature can be established from that strategy.

Graham & Marvin (1996; 2001), Castells (2000) and Nath (2000) offer a commendable literature for setting the contextual understanding of the Information age. They reflect on interesting ICT issues which includes that; technology revolutionises the delivery of government services. This comprises the automation of services, the flow of information between the ICTs users, impacts of e-governance in government and the idea that e-government provides on-line access to services and information allowing fast and effective interaction between local authorities and the people they serve.

Castells (2000: 13) points out that the new society emerging from the global restructuring of capitalism is informational, while presenting considerable historical variation in different countries, according to their history, culture, institutions, and their specific relationship to global capitalism and information technology. Processes of local government transformation summarised under the ideal type of network society go beyond the sphere of social and technical relationships of governance, they deeply affect culture and power as well.

This is a premise from which the revolution of technology evolves. ICTs are taken as part of the property of the people who have access to them when they should be shared as a knowledge infrastructure. The varying power relations in local governments can be addressed by formulating effective e-governance initiatives, which includes training and awareness of the importance of ICT.

The dissertation will strive to develop a democratic and activist perspective on the new technologies. It will suggest some ways that might be used for such things as "self-valorisation and empowerment, democratisation, and progressive social transformation, as well as strengthening the forces of corporate and local government domination" (Caves & Walshok, 1999: 15). Yet the study will not want to fall into the utopianism of the boosters of new technologies, nor the pessimism and defeatism of those who merely see new technologies as an instrument of capitalism or "information rich".

The discussion of smart city will take on the ideology of integrated governance and opportunities for local governments to adopt e-governance strategies. That is, it will look at e-readiness of the study area and implications for local governance.

2.3 The Impacts of ICTs: Perceptions and Realities

According to Harris (2002: 25) 'both promoters and critics of e-governance are failing to adequately conceptualise social and cultural effects of new technologies which have more to do with the development of new social and cultural spaces and perhaps a new public sphere, and not a new virtual city or community'. There is no one factual method for assessing the impacts of ICTs on local governance. However, there are some approaches that have been followed to assess the impacts of ICT in human interface. Kotval (1999: 34) indicates that the mainstream approach, commonly referred to as **technological determinism**, has been to study the relationship between the technology and urban change as relatively straightforward, linear and direct cause and effect.

Technological determinists tend to see technology as autonomous, with social and cultural transformations being the consequence of a technologically inspired trajectory, not the creators of this path. This argument indicates that technology will inevitably cause governance effects or impacts: decentralisation, the growth of ICTs, the omnipresence of highly capable communication to all, and the shift towards an information-based governance are only a matter of time.

The second approach is the **utopianists**. Kotval (1999: 34) indicates that the utopianists herald ICTs as the quick fix solution to urban society's social, economic and political ills. The universal assumption in utopianists is that access to ICTs networks will be more democratic and equitable than social divisions apparent in today's cities.

The third approach is that of **dystopianists**. According to Kotval (1999: 34) 'dystopianists do not see ICTs as autonomous and somehow separate from society.' This means that they do not consider technology to be to simple determinants of urban change or quick fixes to urban problems. City and technology relationships are seen to be driven by economic forces of a capitalist society and reflect capitalism's highly unequal social functions.

The last approach is the **social construction of technology**. This approach demonstrates that society can influence technology. According to Kotval (1999: 34) the way ICTs relate to urban change is likely to vary in time and space. This implies that ICTs have a dual implication for spatial planning concepts. As technology disregards time and space, it can connect outlying areas to the core, yet by the same token, it can further facilitate the dispersion of activity from the central city.

The differences between these approaches are that, technological determinists and utopianists sees ICTs as the direct cause of urban change. Graham (1997: 22) indicates that this is because of ICTs intrinsic qualities or 'logic' as space-transcending communication channels. The forces that stem from ICTs innovations are seen to have some autonomy from social and political processes. These approaches are unhelpful because they suggest that technological development is somehow separated from society, rather than being designed, applied and shaped within specific political, social, economic and cultural contexts.

On the other hand the dystopianists and the social construction of technology perspectives hold that the design and production of ICTs is clearly socially, economically and culturally biased. However, this bias does not shape all technological effects in all places. Once technologies are available, political and social

struggle and actions can redirect their application and change their actual effects in each case - just as political and social influences can redirect the shaping of urban politics and the built environment of cities (Graham, 1997: 22). These approaches suggest that the effects of ICT in cities depend heavily on how they are socially and politically constructed. The very different ways in which social action blends with technical support in development allow each to have very different governance effects. Therefore, it should be acknowledged that the relations between governance and ICT are complex and indeterminate and that there can be very different effects in different places and times.

2.4 Governance and ICTs

There is universal recognition that an efficient and accessible ICTs infrastructure is an essential prerequisite for government to accelerate social development and economic growth (Graham & Marvin, 1997: 34). Such an infrastructure permits the exchange and dissemination of vital information among citizens' educational, cultural, health, welfare and other institutions. The dissemination of information sets grounds for the informed decision-makers and it enhances democratic governance.

It is the common understanding that access to information plays a critical role in setting up of governance or control mechanisms. This process is founded on extraction and accumulation of information and using it to the effect that creates hierarchical structures on which power gets equally distributed. A comprehensive e-government effort is a mammoth task even for developed countries with huge government resources, good

telecommunication infrastructure, cheap and fast access to the internet, affordable computers and appliances, and appropriate legislation already in place (RSA, 2001: 05). It is important for local governments, therefore, to put in place a policy framework which, (RSA, 2001: 05):

- ◆ Spells out the e-government vision;
- ◆ Defines clearly how progress is to be measured, in other words, what benefits are to be achieved in the process;
- ◆ Sets priorities by identifying focus areas for immediate attention
- ◆ Defines the generic prerequisites (in areas like human resources, research, legislation etc) that must be in place for advancements in the key areas to succeed, and
- ◆ Gives specific recommendations on how to deliver results in each focus area.

Flowing from the above policy requirements is the need for understanding e-governance applications. Nath (2000: 2) states that ICTs can play the following role in local governance:

- ◆ Purely **technical** in terms of automation of tedious tasks earlier done by humans,
- ◆ To a **facilitating / supportive** role leading to more participatory and all encompassing decision-making and implementation processes,
- ◆ To a completely **innovative** role, which involves new services and new mechanisms for communication and to deliver, services.

Having discussed the roles that ICT can play in local governance, the purpose of this section is to identify and quantify the likely developmental benefits that will accrue to the local authority as a whole through e-

governance efforts. Figure 2.1 shows the framework for knowledge networking for e-governance programme.

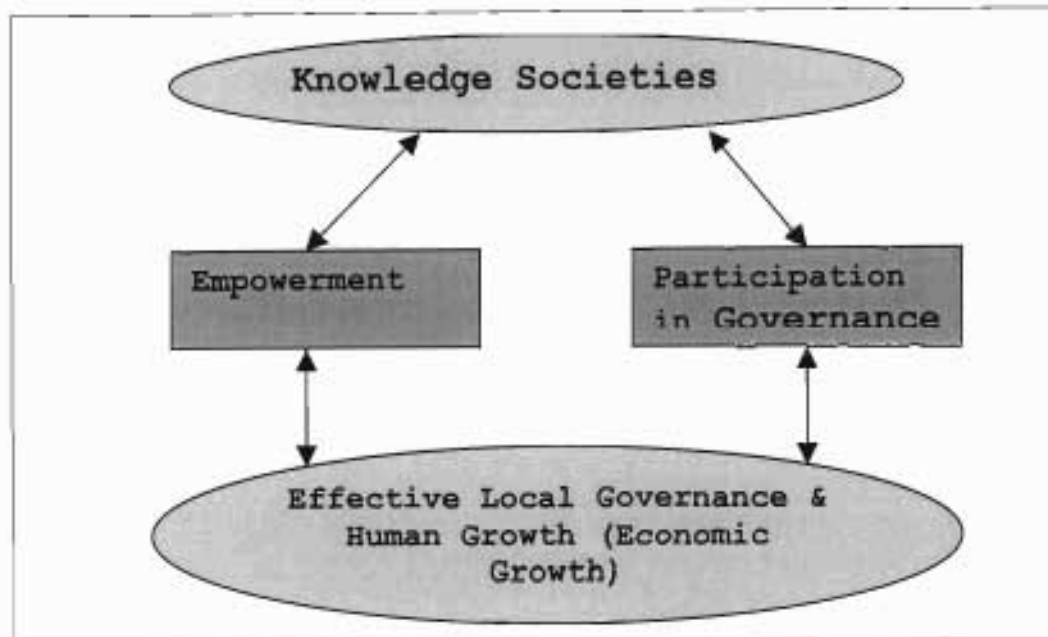


Figure 2.1: Knowledge Networking for e-governance
Source: Adapted from Nath (2000: 1)

The diagram shows the importance of cyclical networking for e-governance. Introduction of e-governance is a way to ensure that municipal staff and common citizens have equal right to be part of decision making processes which affect them directly or indirectly, and influence them in a manner which best improves their conditions and the quality of their operations and lives. The range of literature on e-governance regards it as an act of creating new form of communication and governance (Odendaal, 2002; Nath, 2000; Graham and Marvin, 1996). But this rest on two important facts that is access to ICTs infrastructure and skills to effectively utilise ICTs as part of electronic interaction and data management / sharing.

2.5 The E-governance Models

Information does not reside at any one particular level (or node) in e-governance Models but gets distributed across all the nodes, a fundamental change from the current 'hierarchical' information flow structures which leads to unequal distribution of information and opens up greater possibility of its exploitative use at all levels (Nath, 2000: 4). E-governance models reflect that society and technology shape each other in complex ways. These models are, the Broadcasting Model, Critical flow Model, Comparative Analysis Model, E-Advocacy / Lobbying and Pressure Group Model and the Interactive Service Model.

E-governance models exhibit several variations dependent on the local situation and the nature of governance activities conducted through these models, as it will be shown below.

2.5.1 The Broadcasting / Wider-Dissemination Model

The model is based on dissemination of governance related information which technically is in the public domain into the wider public domain through the use of ICT and convergent media (Nath, 2000: 3). The strength of this model rest upon the fact that a more informed citizenry is better able to understand the functioning of the governance mechanism and is therefore more empowered to exercise its rights and responsibilities. According to the World Bank (2000: 3) 'the widespread application of this model corrects the situation of information failure and provides people with the basic governmental information to make an informed decision.'

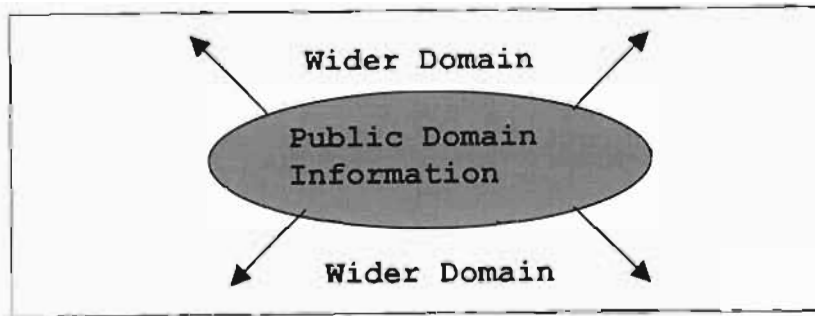


Figure 2.2: The Broadcasting Model
Source: Nath (2000: 03)

Application of the Broadcasting Model

According to Nath (2000: 03) 'the model could be applied in the following possible ways:

- ◆ Putting local government laws or bylaws and legislation online.
- ◆ Making available the names, contact addresses, emails, fax numbers of local / national / regional / international government officials online.
- ◆ Make available information pertaining to local government plans, budgets, expenditures, and performance online.'

This model is the first step to more evolved forms of e-governance. Heeks (2002:3) indicates that in developing countries, this could be useful in minimising occurrences of un-informed decision-making through the correction of information failures at all levels. Therefore local government need to adopt this model if they want to create an environment for enhanced participation in the local government processes.

The model loses its effectiveness in cases where the free flow of information is restricted or is not objective, and in cases of optimal ignorance. According to Nath (2000: 3) 'optimal ignorance occurs when injudicious

decisions are taken not in the absence of availability of enough information but because of disregard of available information by the citizens and key decision-makers.' Tight local government control and bids to censor the content and use of ICTs could prove to be the bane of this model.

2.5.2 The Critical Flow Model

The model is based on the principle of disseminating / channelling information of critical value (which would not be disclosed by those about whom it is about) to a targeted audience such as the media, internal communication departments or into the wider public domain through the use of ICTs and convergent media (Nath, 2000: 4). The model requires a foresight to understand the "strategic use value" of a particular information sector to whom the availability of the particular information set would make a critical difference.

Application of the Critical Flow Model

According to Nath (2000: 14) 'this model could be applied in the following possible ways:

- ◆ Making available corruption related data about a particular official / division / constituency or to the concerned governing body.
- ◆ Making available research studies, enquiry reports, impact studies commission by the local government and the affected parties.
- ◆ Making available human rights violations of the local government or allied authorities online for a judiciary, NGOs and concerned citizens
- ◆ Making available critical environmental information available to local inhabitants such as effluents

discharge, information on the green ratings of the company etc.'

The strength of this model is the fact that ICTs makes the concept of distance and time redundant, and it is used to the advantage by transferring the critical information to its strategic user located anywhere in a critical information set available in the wider public domain. However the model may not work in cases where the governance mechanism does not foster public debates or censures all information of critical nature.

2.5.3. The Comparative Analysis Model

The model is based on exploring information available in the public or private domain and comparing it with the known information sets to derive strategic leanings and arguments (Nath, 2000: 7). The comparison could be made over a time scale to get a snapshot of the past and present situation or could used to compare the effectiveness of an intervention by comparing two different situations.

Application of the Comparative Analysis model

According to Nath (2000: 18) 'this model could be applied in the following possible ways:

- ◆ To learn from historic policies and actions and derive learning lessons for future policy-making
- ◆ To evaluate the effectiveness of the current policies and identify key learnings in terms of strengths, flaws and policies.
- ◆ To enable informed decision-making at all levels by enhancing the background knowledge and providing a rationale for future course of action.'

The strength of this model lies in the infinite capacity of ICTs to store information in a retrievable manner and transmit it almost instantaneously across all geographical and hierarchical barriers, and the potential of ICTs enabled knowledge networking process (Nath, 2000: 18). Developing countries could very effectively use this model to their advantage as ICTs open their access to the global and local knowledge products at a relatively low-cost. The model however becomes ineffective in absence of a strong civil society interest and public memory that could force decision-makers into making judicious decision based on existing learning.

2.5.4 The E-Advocacy / Mobilisation and Lobbying Model

The model is based on planned, directed, strategic flow of information to build strong virtual allies to complement action in real world (Nath, 2000: 24). It takes up a proactive approach of forming virtual communities which share similar values and concerns, promoting active sharing of information within and between these communities, and linking them with real life groups / activities for concerted action.

Application of the E-Advocacy model

According to Nath (2000: 26) 'this model could be applied in the following possible ways:

- ◆ Fostering public debates on issues of larger concerns, namely on the themes of upcoming conferences, treaties etc.
- ◆ Formation of pressure groups on key issues to force decision-makers to take their concerns into cognisance.

- ◆ Making available opinions of a suppressed groups who are not involved in the decision-making process into wider public domain
- ◆ Catalysing wider participation in decision-making process.
- ◆ Building up global expertise on a particular theme in absence of localised information to aid decision-making.'

The strength of this model is in its diversity of the virtual community, and the ideas, expertise and resources accumulated through this virtual form of networking. Nath (2000: 27) states that the model is able to mobilise the potential of human resources and information overcoming geographical, institutional and bureaucratic barriers, and target them for concerted action. The model enhances the scope of participation of individuals and communities in debates which affect them and build up a global alliance. This model could be used by the government in a positive manner to encourage public debates on issues where the opinion and expertise of civil society is of great importance and could become one of the finest tools to aid good governance practices especially in developing countries.

2.5.5 The Interactive-Service Model

Fundamentally, ICTs have the potential to bring in every individual in an electronic network and enable two-way / interactive flow of information amongst them. The potential of ICTs for the governance is fully leveraged in this model and leads to greater participation, efficiency and transparency in functioning of the local government as well as savings in time and costs relating to decision making (Nath, 2000: 31). The model opens up an interactive Government to Consumer to Government (G2C2G) channel in various functions such as election of

government officials (e-ballots), grievance -redressal, sharing of concerns and providing expertise, opinion polls on public issues etc (ibid.).

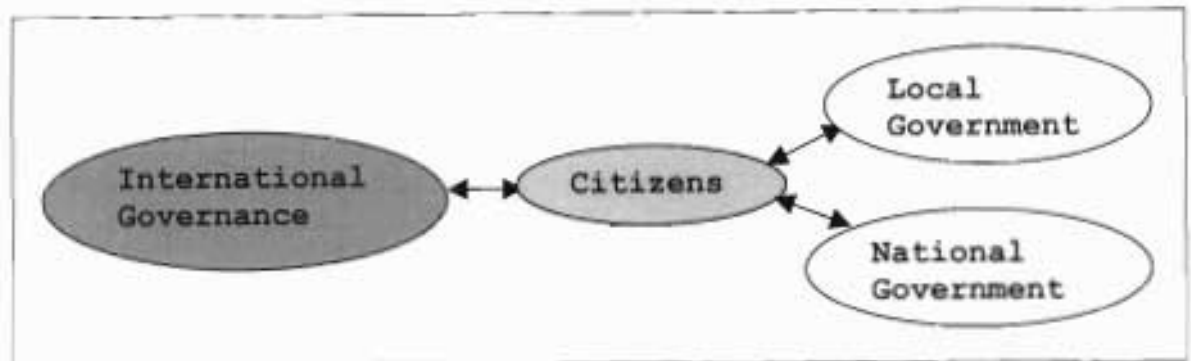


Figure 2.3 Interactive Service Model

Source Nath (2000: 38)

Application of the Interactive Service Model

According to Nath (2000: 35) 'this model could be applied in the following possible ways:

- ◆ To establish an interactive communication channels with key policy-makers and members of planning commissions.
- ◆ To conduct electronic ballots for the election of government officials and other office bearers
- ◆ To conduct public debates / opinion polls on issues of wider concern before formulation of policies and legislative frameworks
- ◆ Filing of grievances, feedback and reports by citizens with the concerned local government body.
- ◆ Establishing decentralised forms of governance
- ◆ Performing governance functions online such as revenue collection, filing of taxes, governmental procurement, payment transfer etc.'

The interactive service model is the essence of e-governance as it transforms the form of governance from

"representative" to "individual based" and from "passive" to proactive" (Nath, 2000: 40). As the model directly connects individuals with officials in the government, the impact is immediate, and puts greater access and control over governance mechanism in the hands of individuals. The model firmly relies on the interactive applications of ICTs and therefore is a technology and cost-intensive model which will require a transition period before being adopted on a wider scale, especially in developing countries, this is coupled with ICTs skills development and the decrease of cost of ICTs purchase.

2.6 A Synthesis of E-governance Models

The e-governance models are based on the inherent characteristics of the new technologies which includes, enabling equal access to information to anyone who is a part of the local government network and deconcentration of information across the entire local government. Graham (1997: 27) states that there is a need to begin viewing the contemporary local government need for ICTs modelling as an *amalgam* whereby the fixed, tangible and visible aspects of life in urban places interact continuously with the intangible, electronically-mediated transaction, operating across wider and wider scales.

E-governance models are still evolving and improvising themselves to fully harness the potential offered by the new ICTs. This points out that there aren't any better models to implement ICTs initiatives. Strategic planning and integration determine the success of e-governance initiatives. This requires understanding of the role of information in governance process, and the link between ICT and governance.

Heeks (2001:2) indicates that a central role for ICTs as governance becomes recognised as-ever more information - intensive. ICT becomes an essential part of more and more governance programmes. ICTs are also recognised as a key to change. They are no longer isolated on the sidelines. So the adoption of one of the models for the sole purpose as shown in their application will determine the kind of feedback and interaction between the local authority and its constituency.

According to Castells (2000: 424) 'the development of electronic communication and information systems allows for an increasing disassociation between spatial proximity and the performance of everyday life's functions: work, governance, public services, and the like.' E-governance models reflects the capacity to make governance easier through increasing disassociation between spatial proximity and performance of everyday life, that is, in their own right they make particular information available for the intended publics.

However, the question remains: how can we influence the development of local governments in such a way that all their inhabitants have a share in economic, technological and social progress, enjoy cultural diversity and a sound environment, and can participate democratically in shaping they work and live? It is commonly believed that e-governance can provides answers to this question by providing a mechanism that shrinks proximity and provides a global village.

E-governance means in terms of the forgoing models using ICTs as servants to the master of good governance. ICTs are no longer seen as an end in themselves and they are seen to work only as part of a wider systematic package. Overall, e-governance is the ICTs-enabled route to achieving good governance, it integrates both the processing and the communication technologies. Since e-governance integrates people, processes information, and

merge technology in the service of achieving governance objectives ICTs has the potential to overcome many of the barriers which people who are socially and economically disadvantaged face in accessing education and training. However this assumes that:

- ◆ People have access to ICTs
- ◆ People are competent users of ICTs
- ◆ There are high quality learning materials and support systems available.

In developing cities like Durban e-governance is in its infancy and the link between ICTs and governance provided by the models needs cautious adoption and implementation in order to balance the social and technological needs of the communities. According to Kurzweil (1999: 56) this should concentrate on 'systems that facilitate the creation of virtual places that are highly usable (provide, intuitive and efficient access to information services); and sociable (support effective communication and collaboration among inhabitants) pointing out how the mediating technology influences the forms that inhabitant interaction takes and a concern with how existing technology can be applied to enhance and extend human capabilities.' In particular, that is, information visualisation, data mining, and virtual reality technology to facilitate efficient collaborative information access and management.

It appears that e-government requires both strategic and in-depth planning, major co-ordination and consolidation of government ICT projects and resources, process re-engineering, introduction of new decision making models and public private partnerships. According to Castells (2000: 79) 'societies are increasingly getting transformed to knowledge societies and its inhabitants into knowledge networkers who are more informed of the events happening locally and globally'. Their actions are based

on the strong foundation of knowledge which is universal, objective, timely and triangulated from various sources (ibid.). People are becoming more aware of their rights and opportunities that lie ahead of them and are developing capabilities to make an informed choice in all areas that influence them, including the sphere of governance. Thus there is a need for a well-planned ICT programme in local government.

2.7 ICTs Applications for Information Sharing in Local Governance

Information exchange is empowering and it leads to knowledgeable societies. Knowledge enables individuals to think, to analyse and to understand the current situation, and the interlinkages and externalities of each communication action. Knowledge empowers an individual to form his or her own opinion, to act and transform conditions to lead to a better quality of life.

According to Seck (1999: 23) 'the capacity to acquire and generate knowledge in all its forms, including the recovery and upgrading of traditional knowledge, is perhaps the most important factor in the improvement of the human condition'. Knowledge sharing is the interactive process of making the right information available to people at the right time in a comprehensible manner to enable them to act judiciously - enriching the knowledge base in the entire governance mechanism.

The following subsections of 2.7 discuss some of the ICTs applications that are useful for information sharing and which forms part of the entire dissertation focus.

2.7.1 GIS Applications

According to Laurini (2001: 29) 'geographic Information is a subset of the information system for urban planning.' The use of spatial data in development planning has become a common practice in day to day local government planning, especially in integrated development planning. This has been seen as another advantage of ICT driven governance process. However, there are implementation failures in developing countries. Burke (2002: 1) indicates that most failures are related to institutional issues, resistance to change, lack of political support, insufficient funding, and the fact that GIS innovation results in a radical change in information flow within an organisation.

These failures can be overcome through effective participation of stakeholders in the use and production of spatial products. Laurini (2001: 30) states that successful GIS application in developing countries is dependent upon good project planning, co-operation, and common sense. Universities and other institutions of higher education must become more involved in GIS. In examining the people to be involved with a GIS project, one needs to consider technical GIS staff and planners, managers, and other end users of the information, for example, people using web-based GIS. Moreover, the geographical database needs to be regularly updated, and sharing information with other GIS is also increasingly important.

GIS can be applied to the following governance processes (Plewe, 1997: 234):

- ◆ City planning: planners forecast of future growth. Based on how population has grown in the past, they predict how it will grow in each area over the next

years. GIS helps in the mapping of this kind of information.

- ◆ Environment: GIS allows the municipality to maintain environmental care services, identifying processes and facilities which requires attention.
- ◆ Traffic engineering: engineers that manage a city's traffic must not only maintain records of traffic light repair, but also history of accidents at intersections in order to justify additional traffic lights. This can be facilitated through the use of GIS.
- ◆ Public works department: public managers are responsible for maintenance of various city properties such as streets, parks, public buildings, utilities, etc, managing numerous programs regarding inventory, repair and replacement of city property. GIS provides all of these types of computerised management for the public works officials.

In summing up, Laurini (2001: 29) states that GIS is the key element of e-governance since it provides information on valuable functionalities which are currently seen as a:

- ◆ a subsystem for geographical data acquisition
- ◆ a subsystem for spatial analysis
- ◆ a subsystem for cartographic presentation and
- ◆ a subsystem for data management.

Therefore information systems for governance requires integration, in a sense, it should be essential part of the global information system of the local authority. This includes the integration of the internet as the information system for governance as discussed below.

2.7.2 Internet, WWW and E-mail Applications.

According to Ho (2002: 1) in the early 1990s, local governments began to use electronic mail, list server and the WWW to deliver information and services. By the end of the 1990s, web-based services were already an integral and significant part of a new "e-governance model". We stand at the dawn of the new millennium. The millennium ushers with it a world of greater inter-connectivity, accelerating flow of data, and shrinking time and national boundaries.

The force fuelling this rapid transformation of isolated islands to inter-connected superhighways is ICTs. Leal (2000: 12) states that over 300 million people are now wired in around the globe and around one billion will be online by 2005. Rapidly falling costs of communications and computing and the extraordinary penetration and accessibility of WWW and email servers is turning the world into a global village (ibid.)

The Internet, WWW, and email are providing new and faster ways of delivering and accessing information, innovative ways for real-time communication, and new ways to do business and create livelihood opportunities (Nath, 2000: 13). ICT is putting more and more information into the public domain leading to re-arrangement of societal forces and governance structures towards greater efficiency, transparency and accountability in functioning. The applications of internet services in governance includes, web information posting in forms of web sites, discussion forums using email servers and internet research.

It is evident that publishing information on the internet is the commitment by local government public accountability. The internet is the archetype of the explosion in network technologies and network

connections. It is the new style of organising societal decision-making and it is prominent vehicle for restructuring the bureaucratic top down governance into two-way governance system.

2.8 The Informational Government, Planning and Governance

According to Heeks (2002: 18) 'the competency of local governments today is expressed as the ability to efficiently acquire, organise, retrieve and disseminate information to support policy making and development processes.' There is a need for greater guidance, enabling policy frameworks, and an open-ended learning approach on harnessing the potential offered by ICT. This could lead to better diffusion, adaptation and effective use of ICTs in development process

Castells (2000: 429) states that the nature of the new society, based upon knowledge, organised around networks, and partly made up of flows, the informational city is not a form but a process, a process characterised by the structural domination of space flows. Urban planners, policy makers and governors should be on the frontline in dealing with the effects of economic globalisation and restructuring, social and spatial polarisation through ICT and its associated knock-on effects on unemployment, poverty and crime, the crisis in urban environments and transport and infrastructure; and the physical restructuring of cities.

Graham and Marvin (2006: 341) state that alongside new policies for housing, transport and education it is becoming clear that the new vision of the city will also emphasise its nature as a means of communications, a place where people can meet, talk, and share experiences, where they think and drink together. But what do the

ICTs based shifts actually mean for the municipal institution and individuals responsible for the management, planning and governance of cities?

Given their limited resources, local governments must concentrate on low-cost initiatives within their capacity. Graham and Marvin (1996:343) point out that the most crucial task before the local government is not one of putting in place the digital plumbing of broadband communications links and associated electronic appliances (which will be obtained anyway); nor even of producing electronically deliverable content. The task for local government is to imagine and create digitally mediated environments for the kinds of strategies that the municipality wants to lead according to its vision and objectives.

Information age reform is seen as a relatively new activity in South Africa's local government that recognises a significant - at times central- role for information systems and ICTs. Information systems change has always been an essential part of all organisational change in local governments. But what is probably new in information age reform is the presence of ICTs, which has been seen to have great potential to contribute to the reform process (Heeks, 1998: 17). Last but not least, the local authorities should be brave enough to explore new pathways and new destinations because there is no one way to go and no one way is the right way.

2.9 Sustainability of E-Governance Initiatives

Eger (1997) points out that the term "sustainability" implies ongoing existence and support for something, whether by nature or design. A version of this idea is now being applied to urban planning and communities. Sustainable cities are cities and towns that prosper

because people work together to produce a high quality of life that they want to sustain and constantly improve (McNeil, 1995: 47).

By definition, a smart city is one that is transforming itself through conscious use of technology. The goal of a smart city is to improve people's choice, convenience and control that is, their quality of life. A smart city has the means to achieve its sustainable community goals through the effective use of ICTs.

The smart city research area is new. The relatively low number of smart city projects and the immature stage of development for most of them make it difficult to generalise about what makes them sustainable. However, Eger (1997) points out that smart cities are sustainable if:

- ◆ the target public feels a strong sense of ownership about the smart city project (because of an ongoing well-planned and well-executed outreach effort and needs assessment).
- ◆ e-governance initiatives successfully address high-priority community needs and problems that would otherwise have gone unmet or unsolved.
- ◆ e-governance is supported by a practical planning process and people who are skilled in adjusting the project's strategic directions to account for the realities of a volatile marketplace and rapid rate of change of technology.

2.10 Conclusion

It appears that ICTs can influence the process of governance in various ways and in varying degrees, from improving the current mechanisms of communication and the delivery of services to transforming the entire mechanism

and the nature of communication and services themselves. It is important to understand that in sustaining e-governance initiatives, the adoption and diffusion of new media should not accentuate existing inequalities nor should it further 'balkanise' the global social field with respect to the possession and access of information or other resources (Boudourides, 2001: 4). The mere existence of a gap in levels of ICT services between rich and poor within developing countries is not an automatic reason to argue that ICTs should be placed near the top of the development agenda.

The quantum leaps in the technological revolution can make it possible to amalgamate local knowledge with information held in remote databases and information repositories, transcending hierarchies, classes and cultures, to bring about a greater understanding of the conditions leading to poverty and the factors propagating it. Nevertheless, the challenge for local government is to narrow the gap and ultimately eliminate poverty and provide equal opportunities of growth to everyone in governance and maximise human development.

Lack of e-readiness contributes to both lack and failure of e-governance initiatives. There are six key questions that can be asked about local governments in developing countries in order to assess how strategically prepared they are for e-governance:

1. Is the data systems infrastructure ready?
2. Is the legal infrastructure ready?
3. Is the institutional infrastructure ready?
4. Is the human Resources infrastructure ready?
5. Is the technological infrastructure ready?
6. Is the leadership and strategic thinking ready?

These questions point to particular e-governance gaps. For example, ICTs are often conceived in terms of machinery and engineering, rationality and objectivity.

The trouble is that many local governments and civil society organisations do not adhere to these hard ideas (Heeks, 2001: 15). When a hard ICTs design meets a soft reality (people politics, emotions and culture) there is a large gap and a strong likelihood of failure. Despite the best efforts of new public management, the public sector remains fundamentally different from the private sector. The gap can be closed by partnerships with the private sector. The last gap is that of country contexts. Designers seeking quick fixes try to pull e-governance solutions off-the shelf from other countries. So there is often a large design-reality gap when trying to introduce in country x an e-governance system designed for country y.

Therefore in forthcoming discussions questions above will be used to assess the e-readiness of the case studies that are explored herein. However, varying contexts and economic strengths of local authorities presented in this paper will be dealt with in accordance and in justice to set grounds for effective governance in varying contexts. The reason behind the review of world wide case studies being to establish whether e-governance is a myth or a reality and to outline ICT developmental challenges for eM.

Chapter 3

International Examples: Lessons for E-governance Programmes in eM

3.1 Introduction

The implementation of e-governance initiatives has received a wide acceptance in and around the world. According to infoDev working paper (2000: 8) 'ICT is the potent tool whose power lies in its ability to support integrated development with long-term social and economic benefits.' This chapter aims to understand opportunities provided by ICTs in governance by looking at cities outside Durban that have implemented e-governance initiatives as their governance tool.

The dissertation aims to understand the implication of e-governance in local governance by looking at:

- ◆ data systems Infrastructure
- ◆ legal infrastructure
- ◆ institutional infrastructure
- ◆ human Resources infrastructure
- ◆ technological infrastructure
- ◆ leadership and strategic thinking

This will be accomplished through looking at the international examples of smart cities. The dissertation will first present the case studies and afterwards test whether the e-governance initiatives in the case studies measure up to the e-governance infrastructure needs and then derive lessons and success factors for eM. It is in this context that e-governance needs to be debated backed up by practical examples of how people and organisations are working to achieve liberation and empowerment through innovatory explorations of e-governance.

3.2 Broad Overview of International ICTs Approaches

Most of the existing literature on Information and Communication Technology and Smart Cities has been written internationally and mostly in developed countries. The positions taken in these cities in the conceptualisation of Smart Cities ranges from the installation of high-tech security systems in buildings to automate security systems in recordable and storable manner to smart cards systems for service payments. It also focuses on the development of community networks. These networks are for community interaction in issues like the payment of services, community bulletins and business transactions. Among the cities that has smart card and security systems are Adelaide, Kansas City, Southampton, Westchester

The case studies that are to be reviewed in this chapter differ from the foregoing thinking in that they focus on two-way electronic communication for, decision making and interaction. Though there isn't any detailed evaluation of the international approaches discussed in this section, they are only used as signpost for planning e-governance initiatives in governance. For example in Brazil, there is the official government website (<http://www.brazil.gov.br>). The website provides comprehensive information on Brazilian government as well as links to integrated citizen services.

In Costa Rica government services are offered online on a web site (<http://www.costarricense.com/ing/servgob.html>). Costa Rica is one of the few countries having a vision to provide all citizens and civil society organisations free access to email, web page and resources through Tele-Centres located in all the municipalities. The web address above belongs to the government in co-partnership

with the private sector and civil society. It enables citizens to get more information about the concerned government organisations and interact with them through the Internet.

In Malaysia there are more than personal details in 'Smart IC'. The introduction of the smart card would bring comfort for the people who would need to carry only a single card with multiple uses. Using chip and biometrics technology, the GMPC contains details on identity and driver's license information, passport details and medical data. The GPMC also has facilities to conduct e-commerce and e-cash transactions. A gateway to Malaysian government information and online services is <http://mcsl.mampu.gov.my/>.

In Zimbabwe, the NGO Network Alliance Project (NNAP) aims to strengthen the use of emails and internet strategies Zimbabwean NGOs and civil society organisations. The NNAP will make human rights and civic education information accessible to the general public from as centralised, electronic source, all this information is on (<http://www.kubatana.net/>).

In Nigeria there is the initiative called the Nigerian Assembly (<http://www.nigerianassembly.com>). This is a civil society led initiative to be a credible, authoritative, and speedy source of information on Nigeria's Legislative houses, for the benefit of new agencies, media organisations, and other national and international public. It aims to act as a watchdog of the Nigerian Legislature and upholds its responsibility and accountability to the people.

According to Heeks (2001: 5) 'the government of Tanzania has recently launched its integrated HR and Payroll systems covering about 280, 000 public servants.' While the capital invested was significant at around US\$6.5 million, the savings already accrued in improved

management - reduced ghost workers, improved control, and accuracy - mean that the project has already paid for itself (ibid.). Internet enabled version of this system will soon be rolled out countrywide.

Finally, in the UK there is the website (<http://www.ukonline.gov.uk>). The site enables individuals to contribute to government policy-making through official consultations, and discuss views with other citizens. Citizens can also find information about their elected representatives and get information on elections, or how to vote and how to make complaints about public services.

It follows from the above approaches that ICTs allow greater access to decision making. According to the infoDev (2000: 10) 'the global transition towards pluralist forms of government relies on adequate social capacity to understand complex policy issues and communicate information.' Through ICTs, non-government organisations (for example in Zimbabwe) are helping to give a voice to marginalised segments of the population, raising awareness of economic, social and environmental issues, and directly influencing local, national and multilateral decision-making.

It appears that through automation and software applications, ICTs reduce administration costs, reduce the cost of service provision, and open the workings of government to public oversight and accountability.

3.3 Case Studies of E-governance Programmes World Wide

This section presents a detailed information on two international case studies, that is Brisbane (Queensland) and Andhra Pradesh (India) and an example of e-governance initiative in Johannesburg, South Africa. The Brisbane

case study shows the Brisbane local council initiative towards becoming a smart city through developing ICTs initiatives together with governance initiatives at a local level. The Andhra Pradesh case study can be a little bit confusing, because this is a state. But the TWINS project is a localised project which is designed to provide citizens of Hyderabad and Secunderabad with access to computerised, one stop Integrated Citizen Services Centres (ICSCs) to handle a variety of services as discussed below. The Johannesburg case study is used herein as an initiative in developing countries to strive towards becoming a smart city. Though the e-governance initiative is still on its infancy in Johannesburg, it shows a reflexive approach of local governments in South Africa in adopting ICTs driven governance.

3.3.1 Brisbane: Towards the Development of a Smart City

The City of Brisbane is located in Southeast Queensland, on the East of Australia. It is Queensland's state capital and is Australia's third largest city. The city is managed and governed by the Brisbane City Council, a centralised municipality that governs the 1 367 square km's that is the Brisbane City Council area. Approximately 1 million people live in the city (Brisbane City Council, 2002).

The Brisbane city council has undertaken to establish what they call "eBrisbane" (ourbrisbane.com). Through eBrisbane, the city wants to create an advanced-technology environment for the community and businesses so that Brisbane will develop as a smart city of the new economy (Brisbane City Council, 2002). It wants to make sure that communities access to and utilisation of information technologies is optimised. The City Council will help Brisbane residents, communities and businesses

access on-line technologies, information and services. This will encourage vibrant and progressive community interactions and networks and let Brisbane residents participate in the information society and economy.

According to the Brisbane City Council (2002) 'the aims of eBrisbane are:

- ◆ developing, hosting and operating an **eBrisbane portal** for all Brisbane services and information - at least **15 new community or business networks** will be established on the portal each year.
- ◆ establishing **on-line community and business forums** for collaboration and the exchange of ideas and information.
- ◆ providing **affordable internet access** so all Brisbane citizens can have an email address by the end of 2001, and 75 per cent of Brisbane households have internet access by the end of 2002
- ◆ establishing community learning centres and training to **teach people how to use information technology.**
- ◆ working with telecommunications companies to **deliver broadband services** to the community.
- ◆ providing **access to all Council services** through the internet, and making all Council transactions available over the internet by mid-2002.
- ◆ finding ways for **every household to have a computer terminal**, desktop or similar access to technology.
- ◆ fostering a move to **wireless technologies.**
- ◆ introducing a way to **request services and make payments on-line.**
- ◆ creating **packages of government services especially for people having major life changes** such as retiring from the workforce, getting married or moving house.
- ◆ providing new and simpler methods for people to **have their say via the internet** and exploring on-line voting.

- ◆ using the on-line market place to **get better value for goods and services** purchased by government for the benefit of ratepayers.'

The aims of the eBrisbane initiative reflect that the city council is committed to merging governance initiatives with ICT initiatives which will see Brisbane growing as a smart city. Free internet access is available in all Council libraries. One of eBrisbane's proposed services is an e-commerce package that in partnership with local businesses will help create a web presence for them to market their products and services locally and globally. Suburban shopping precincts in Brisbane will be able to sell to the world through virtual shopping villages. Smart technologies are already being applied in water reuse management and transport systems throughout Brisbane. Brisbane City Enterprises promotes the city's knowledge and skills and has projects in 20 different countries, selling the council's expertise in call centre technology, water treatment, intelligent transport and city administration systems.

City Governance

Council's primary responsibility is to provide open and accountable local government (Brisbane City Council, 2002). This means planning for the future, putting effective legislation and regulations in place and providing progressive management, financial stability and strong leadership. To ensure that the Council addresses community groups concerns, the encouragement of Brisbane residents to get involved in the Council's planning and decision-making processes. The Council works closely with neighbouring local governments and the State Government to identify opportunities that offer best value for money to the region (Brisbane City Council, 2002). This is

accomplished through the use of ICTs for instant communication and participatory decision making.

The Brisbane city council development sits in the ourbrisbane.com initiative, which is considered the key corporate priority for establishing Brisbane as a Smart City as, outlined in the Corporate Plan. The strategic guideline as stated in the Plan is as follows: "apply technology to improve services, develop networks, promote research and development and high-tech industries and skills for the information economy" (Brisbane City Council, 2002).

The ourbrisbane.com project contains a number of targeted initiatives (Brisbane City Council, 2002), for example:

◆ **Business Online**

Included in this initiative is the development of e-business tools by the council in partnership with local web-service providers, ensuring an on-line presence for small business on the ourbrisbane.com website, and facilitating training.

◆ **Communities Online**

The council in this regard give community groups access to technology through its packages available, access to training, whilst facilitating online interaction through the ourbrisbane.com

◆ **Learning and Development**

Three hundred Personal Computers have been provided in the Library network, with the council partnering with the Queensland State Education department in providing free Internet training in schools.

◆ **E-Government**

The establishment of e-governance is a two-stage process, the first stage enabling Council customer interactions on-line, and the aim being to make it possible to conduct 80% of council interactions on-line within the next 3-4 months. Stage two is interesting - achieving seamless governance through enabling government transactions that involve all three tiers of government (federal, state, local) on-line.

◆ **Your City Your Say Online**

This is intended to conduct and promote discussion and consultation as part of an e-democracy process, enabling individuals and communities to interact with officials and politicians.

◆ **Affordable Access**

This reflects an interesting example of private / public partnerships. In addition to the provision of PC's in public libraries, this project also entails making low cost hardware available to individuals.

◆ **The Technology Region Initiative**

The city has a telecommunications plan, which together with the country telecommunications service provider aims to ensure that broadband capacity is available where necessary - often adjacent to the Universities.

The example of Brisbane suggests that e-governance is about interaction between people and their authorities and that communication should be a two way street. The council uses ICTs for participatory decision making and interaction with its stakeholders. The lessons for eM are that ICTs can assist the municipality to run its business online and also interact with its stakeholders online. This implies that eM should do needs analysis of its different ICT users, that is, business, citizen and government.

3.3.2 Andhra Pradesh: E-Government State Initiative

The state of Andhra Pradesh is located in Hyderabad in India. The state has embarked on an ICTs project called TWINS. Naidu (2002) indicates that his vision as the chief minister of Andhra Pradesh "is to make Andhra Pradesh the foremost state in India in ten years time in terms of standard of living of people ... through the adoption of ICTs in all aspects of development and governance."

Naidu (2002) indicates that the TWINS IT project aims are:

- ◆ To take the benefits of ICTs to the common man
- ◆ To redefine the citizen service through electronic governance

- ◆ To provide efficient, reliable, transparent and integrated services to the citizens of TWINS cities
- ◆ To provide a chain of computerised integrated citizen service centres (ICSCs)
- ◆ To render multiple citizen services through ICSC, electronic kiosks and Internet

These aims are guiding principles for the state's e-government initiative implementation. They are efforts towards bringing technology to the common man through ICT. The basic feature of these aims is that of improving the performance of public servants in service delivery through one-stop service centres.

Integrated Citizen Service Centres (ICSCs)

The TWINS ICTs project in India has established the ICSCs at Banjara Hills, Hyderabad. The ICSCs is a one-stop-shop citizen friendly computerised service centre. The ICSC at Banjara Hills has 12 counters. All the counters can handle 18 services and minimise queues. The service centre offers the following services

Utility Bill / Tax Payments

1. Electricity Bills
2. Water and sewerage bills
3. Property taxes

This service offers an opportunity to normal citizens to be able to conduct online payments of municipal bills. This contributes to effectiveness and efficiency of local government institutions.

Certificates

1. Registration of birth
2. Issues of birth certificates
3. Registration of birth
4. Issues of death certificates
5. Caste certificate
6. Encumbrance certificates

This service shows that ICT are the part of human beings life cycle from his / her birth to his / her birth. So, the availability of the quick service to issue certificates in this regard is a necessity in the government context.

Permit Licenses

1. Trade licences
2. Issues of learners licences
3. Issue / renewal of driving licenses
4. Registration licenses of new vehicles

This service supports the statement that ICT can make business easier and effective in that it can provide a portal for business information. E-governance in this regard helps in decreasing queues in home license issuing offices.

Information

1. Procedures of transport department
2. Details of building permits issued
3. Market value assistance (registration department)

Knowledge is power and ICT have the capacity to make available every important information to the people at the click of the mouse button.

Facilitation

1. Change of address
2. Transfer of ownership of non-transport vehicle

The TWINS project has adopted 3-tier architecture to connect the database of different departments with the Integrated Community Service Centre (ICSC). A combination of Integrated Service Digital Network (ISDN) lines and Asynchronous (Async) lines has been established to connect the web servers of 6 departments in different parts of the city. This is aimed at improving the convenience offered to the public by implementing concepts of electronic payments and electronic filing, etc, which reduce the need for commuting by citizens.

The Andra Pradesh example shows the commitment from the government to provide services online at one-stop shops information centres. The example shows that ICT integrates service delivery and provides a platform for human development. The example shows that ICTs present the opportunity to shrink the geographical boundaries and have virtual communities.

3.3.3 The Johannesburg ICTs Programme

According to Spurr (2001) 'the Greater Johannesburg Metropolitan Council is using innovative Information Technology (IT) approaches to improve service delivery and customer care in the city.' It is important to match Johannesburg residents with the correct people who can address their needs. The council's information management

has three components:

People's Centres

Residents will soon be able to access information via a human interface at a number of People's Centres to be established around the city. Staff at these centres will have access to the council's intranet and the internet and users will be able to obtain information about different municipal services. The council aims to open five centres by the end of this year - 2002.

Call Centre

A centralised Call Centre will also provide telephonic information on services and take complaints, which will be used to track the performance of various service providers.

A contractual relationship will be built into the service agreements that the Metro has with different enterprises providing services such as electricity, water and gas. Customer complaints may result in penalty clauses being applied to service providers that will have a beneficial spin-off for customers. This Call Centre will be operational in three months' time and will be available 24 hours a day, seven days a week. Three telephone numbers, of only four digits each, will link callers to emergency services, the council switchboard and a hotline.

Internet Links

Those residents, who are able to, will also be able to access information through the council's Internet site.

The public should be able to access information about all services through the intranet system, which will also be linked to the website. Personal customer information will remain confidential, though. Business customers will soon be able to pay their regional services levies through an Internet facility, which will eventually be extended all clients. The council has entered into a strategic service level agreement with IT service provider IBM and an empowerment company called Masana.

Because of the rapidly changing nature of IT, it is more useful for a company such as IBM to take total responsibility for software and hardware. All these facilities will rely on the integrated databases and other information located on the Metro's IT backbone, run by IBM and Masana Empowerment Group. Data will also be gathered from the companies providing services to the council as part of their service agreements with the council. In future, the council also plans to introduce facilities that cater for the different language groups predominant in Gauteng.

Although the initial investment for this system is substantial, the Metro believes that the real cost will decline over time as resources can be allocated to those people who need a human interface and information flows to the disadvantaged are strengthened. Peacock (2002) believes that Johannesburg is a market leader in this type of information management practice and he comments: 'if you've got Information Technology that works the city works.'

3.4 Little Engines that did it: Lessons for eM

The foregoing examples show that governance is being transformed by ICT, a profound revolution for transparent decision making and interaction. It is evident that the

key to success is "knowledge". Local governments are anticipated to invest in, and develop, knowledge workers. This is going to mean that budgets must allocate funds for skills development and education.

The shift towards knowledge-based governance involves a shift in organisation away from top-down hierarchical systems to horizontal structures such as networks of semi-autonomous teams (Beamish, 1995: 107). Therefore it is essential for developing countries for their knowledge-based governance, to develop their own best practices based on their history and cultural development.

3.4.1 Data Systems Infrastructure

The case studies show that management systems, records and work processes are in place to provide the quantity and quality of data to support the move to e-governance. However it is not made clear how data is secured and there aren't clear mechanism outlined to address the issue of information privacy.

It appears from the above examples that knowledge is dependent on good information and having access to that information in manifold channels. In the local government environment the degree to which information can be used strategically in the new governance, will become paramount. Therefore it is important to plan the kind of information and services that the local government will have available online. This includes also establishing discussion forums online in relation to the development planning and governance of local institutions.

3.4.2 Legal Infrastructure

The legislation and policy context for local government is important because there are varying rights to information. For example information made available on city intranet maybe confidential and intended for organisational use. On the other hand, information available on the internet is for public consumption. Access to this information requires local government to draw a line between information which is for public consumption and that which is confidential. So to have a standardised law governing electronic communication is good in theory but hard to deal with in practice. Therefore policy and legislation governing information access, firewalls and copyright should be clear to prevent misuse of information.

3.4.3 Institutional Infrastructure

...by sensing and understanding its environment, the knowing organisation is able to engage in continuous learning and innovation. By applying learned decision rules and routines, the knowing organisation is primed to take timely, purposive action. At the heart of the knowing organisation is its management of the information process that underpin sense making, knowledge building, and decision-making.

Riley (2001: 10)

The e-governance examples above show that an effective institutional system is the catalyst for becoming a smart city. This means that there should be adequate institutional capacity to adopt e-governance initiatives. The institutions focus on awareness and act as means for facilitation of e-governance. It is common understanding that for any country to succeed, it must, by necessity,

rely on its own internal understanding and the wisdom of its culture. So, the lesson is the same, for to transform the government into a viable, knowledge-based economy, institutional change will be crucial.

3.4.4 Human Resources Infrastructure

It is not clear from the above example whether they have enough human resources, however, it is assumed that there is average human resources infrastructure to undertake the e-governance initiatives. This includes attitudes, knowledge and skills base to initiate, implement and sustain e-governance.

According to Riley (2001: 4) 'in thriving toward the global knowledge economy it is going to be important to change the whole educational system to ensure a wide base of knowledge workers who understand and use ICTs.' Thus, education is a key, in order to ensure the skills for the knowledge governance exist in abundance. These skills can be determined by how information is created, shared and utilised. These are through (Riley, 2001: 15):

- ◆ the skills and expertise of the staff;
- ◆ their ability to learn and build knowledge;
- ◆ the processes which enable their skills and knowledge to be applied and shared;
- ◆ the culture and values which encourage knowledge building and sharing
- ◆ the infrastructure (ICT and physical), which supports knowledge building, flow and sharing; and
- ◆ the intellectual assets which the organisation builds, maintains, organises and exploits.

It is important that there be an army of skilled technical experts who understand and can apply technical

knowledge. These workers are the underpinnings of e-governance.

3.4.5 Technological Infrastructure

In Brisbane and Andhra Pradesh there seems to be average ICTs infrastructure to implement e-governance initiatives. However, in Johannesburg plans are on the way with partnerships with IBM and Masana companies to install infrastructure that will enable e-governance in the local council.

It is important for government institutions to ensure that they have the appropriate technology infrastructure that fits within the reality of their daily operations. This includes accessibility and capacity of staff and citizens to utilise ICTs.

3.4.6 Leadership and Strategic Thinking

A critical pre-condition in successful e-governance for development is an "e-champion" or small group of "e-champions": leaders with vision who put e-governance onto the agenda and make it happen. Cases like those described above show that such leadership can smash through many operational barriers. Conversely, all the operational e-readiness in the world is of limited value if there is no vision and leadership to give direction to e-governance. Riley (2001: 18) states that if we are indeed entering an information society then it is a society where the right types of people are highly prized.

The leadership infrastructure should also determine whether the national economic policies are conducive to widespread technology use, for example, in terms of

transparency, investment and what changes can be made to create a more conducive environment.

3.5 Conclusion

In summary, the lessons that eM can learn from international cases are action oriented. eM need to:

1. Develop programmes to create a climate to nurture knowledge workers; education is the key in this process. This includes partnerships with tertiary institutions.
2. Invest in online connectivity to embrace as much of the citizenry online;
3. Invest in technology to build infrastructures;
4. Build programs to stimulate innovation and creativity;
5. Enact legislation / policies to create security and confidence for business to operate in the growing knowledge economy;
6. Create and maintain websites within eM with information that will assist business and entrepreneurs seeking to engage in knowledge-based governance activity.
7. Work to bring about cultural change in institutions to adapt to the new economy emerging in the world.

One of the primary tools government needs in order to embrace as much of their citizenry as possible, is wide access to ICTs. This is essential for the development of knowledge workers at all levels of society. Therefore lessons from international cases studies are useful in this regard.

This chapter shows that e-governance has a key role to play in current and future developments. E-governance can offer critical improvements to efficiency and effectiveness of governance, and probably offers critical future legitimacy for government (Heeks, 2001). The issue for developing countries, therefore, is not 'if e-

governance' but 'how e-governance' (see annexure 3). It is important in adopting e-governance practices to, close the e-governance development gaps and to steer e-governance projects from failure to success.

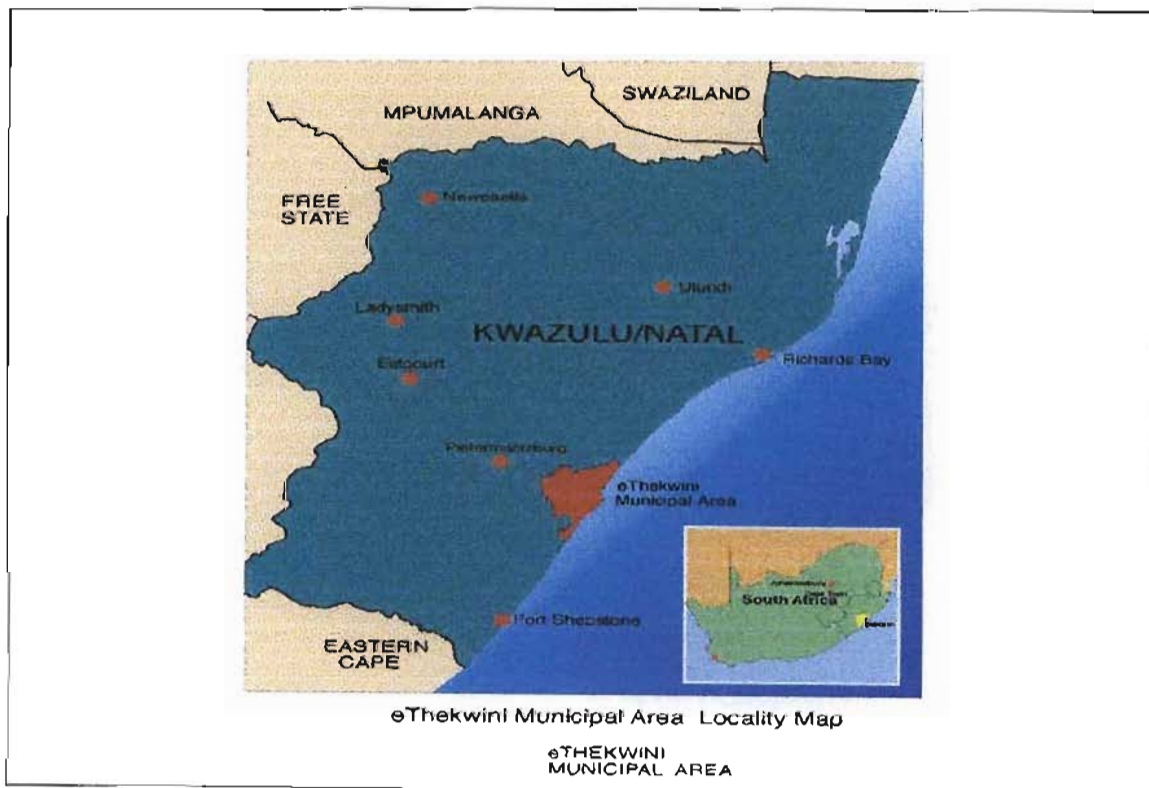
The potential in achieving that in developing countries is very exciting, but also more cumbersome, given the constraints that need to be overcome to ensure access and exposure to the potential empowerment properties of ICTs. Local government, in its role as facilitator of development, would thereby have a key role in facilitating this process. The following chapter looks at how eM responds to information revolution.

Chapter 4

ICT and Local Governance: The Case of Durban, South Africa

4.1 Introduction

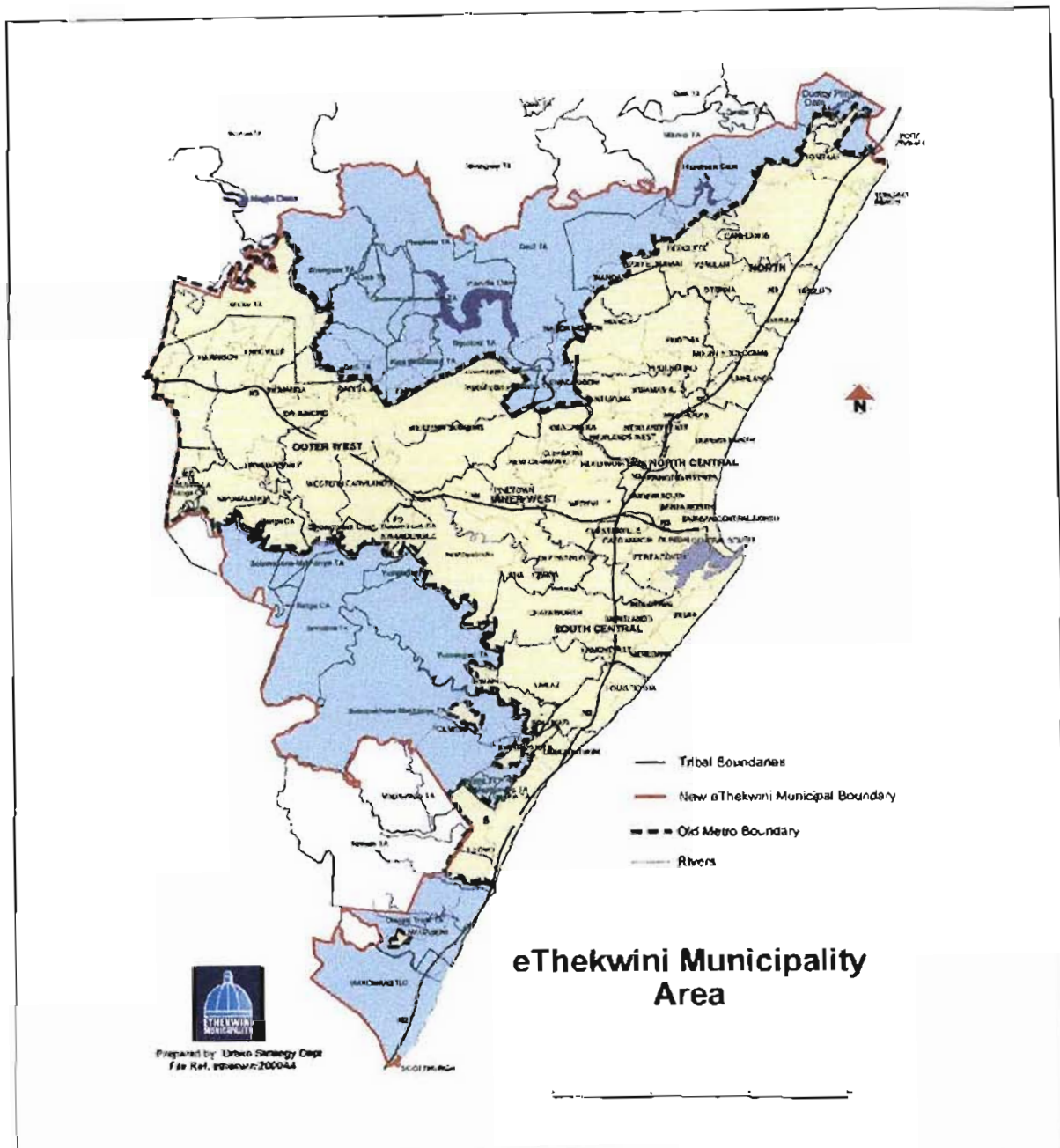
The eThekweni Municipality is located on the East Coast of South Africa in the province of KwaZulu-Natal. It covers an area of approximately 2 300 km² (about 2% of the total area of KwaZulu-Natal) of which 33 % is settled. 18% of the settled area comprises formal households, 5% informal and 10% peri-urban. 22% of the total area is used for agriculture, half of which is used for sugar cane cultivation (eThekweni Municipality, 2002: 09).



Map 4.1 eThekweni Municipality Locality Map

Source: eM (2002)

The map above shows the location of eM in relation to KwaZulu Natal Province. The small insert shows the locality of eM in South Africa. The following map shows the eThekweni municipal area.



Map 4.2 Durban Area - Source: eM (2002)

The eM has the population of just over 3 million and a density of 1202 persons per km². The eM cultural diversity (with its Black 63%, Asians 22%, White 11% and coloureds 3% communities) creates a rich cosmopolitan society.

4.2 Understanding the South African Policy Framework binding the eM Development Programme

The South African local governments are currently involved in the massive institutional restructuring and new form of development planning, that is integrated development planning, which emphasises the integration of governance and service delivery. The restructuring of local government in South Africa establishes the principle of developmental local government.

Little has been done thus far in terms of developing local government e-governance policies in South Africa. The national Electronic Communications and Transactions Bill regulate e-governance in local government institutions. The Bill aims to (RSA, 2002):

- ◆ provide for the facilitation and regulation of electronic communication and transactions;
- ◆ provide for the development of a national e-strategy for the republic;
- ◆ promote universal access to electronic communications and transactions and the use of electronic transactions by SMMEs;
- ◆ provide for human resource development in electronic transactions
- ◆ prevent abuse of information systems;
- ◆ encourage the use of e-governance services; and
- ◆ provide for matters connected with

eM can develop its policy framework using the Electronic Communication and Transaction Bill as signposts towards an enabling localised e-governance policy framework. However, there are issues that are unique to the local level which needs primary attention in policy planning.

For example, community participation and human development.

In South Africa, three Acts determine parameters for the definition, functioning and demarcation of municipalities; the Municipal Systems Act of 2000, the Municipal Structures Act of 1998 and the Municipal Demarcation Act of 1998. These legislative parameters have guided the formulation of the Integrated Development Plan (IDP) and a Long Term Development Framework (LTDF) for Durban.

The IDP and LTDF documents are both policy documents and business plans for eThekweni municipality. The documents are policy documents in that they are binding the municipality to follow the development path they have outlined in these documents. On the other side they are business plans because they guide the allocation and time frames of development budgets in the municipality. The development vision that guides the IDP and LTDF of eThekweni Municipality is:

By 2020 the eThekweni Municipal Area will enjoy the reputation of being Africa's most caring and liveable city, where all citizens live in harmony. This vision will be achieved by growing its economy and meeting people's needs so that all citizens enjoy a high quality of life with equal opportunities, in a city that they are truly proud of.

eThekweni Municipality (2002)

The eM vision is the cornerstone of development programmes in Durban. It drives development direction in eM. For example, the LTDF identifies a set of complex development challenges that need to be addressed both in the short and longer term. These challenges are summarised in a metaphorical image of the three legs of an African pot. That is:

- ◆ *meeting basic needs by unwinding the legacy of Apartheid.*
- ◆ *strengthening the economy by building on eM strengths*
- ◆ *building skills and technology by creating the new technology environment and investing in the future.*

The latter development challenge is of particular importance for this dissertation since it looks at building skills and technology for e-governance. In building skills and technology eM plans to focus on the following strategies (eThekweni Municipality, 2002):

- ◆ Creating partnerships with industry to drive sustained information technology improvements in the economy
- ◆ Creating partnerships with educational institutions to facilitate appropriate skills development
- ◆ Creating partnerships with communities which facilitate local access to excellent information and technology services
- ◆ Ensuring that the municipal institutions are themselves models of high skilled information technology service providers.

It is now a legislative imperative for local government to act in a more developmental way and to provide an enabling environment for all its stakeholders to engage in meaningful partnerships with the Council to ensure that their needs are met. In an age of transformation and restructuring in local governments in South Africa, e-governance can provide easy access to municipal information.

After an assessment of the first round of Integrated Development Plans (IDPs) that was completed towards the end of 1999, the Department of Provincial and Local Government (DPLG) concluded that municipalities needed assistance with the preparation of their IDPs (RSA, 2000). A common pitfall in the first round of IDP

formulation was that limited resources were used to collect exhaustive status quo information as part of the analysis phase in IDPs formulation (ibid.). This meant that the demographic, economic and environmental information gathered for the planning process was sometimes limited or inadequate for thorough and strategic planning.

The new strategic approach to IDP requires that resources be spent on strategy formulation and project planning. In a context where government departments and institutions at all levels are having to meet enormous developmental challenges with limited resources, ICT sometimes seems low on its list of priorities (RSA, 2000). And in an age where ICT has become more sophisticated and far-reaching, many departments and local authorities are working with shrinking capital budgets that simply do not allow for necessary investment in ICT (ibid.). There are, nonetheless, enormous benefits of improved ICT capability with regard to information gathering, planning and resource allocation. As a developing city, Durban must take into account both the needs of its disadvantaged citizens and the capacity of those citizens to interact with government through ICT (Sutcliffe, 2002).

4.3 Understanding eThekweni Municipality's Current ICTs Environment

The eThekweni municipality as a whole is characterised by a function-based mentality where each functional department planned, funded, and executed projects independently (eThekweni Municipality, 2002). Not surprisingly the e-governance initiatives reflects this culture and way of doing business. However, initiatives are on the rollout to deal with the issue of ICTs in an integrated development planning process across the municipality.

4.3.1 The Profiles of Departments Studied in eM

At this point in presenting the findings of the fieldwork, it should be made explicit that the interviews were conducted with office-based staff and the ones that are seen to be using ICTs in their daily activities. The observation method made it easier to identify the following departments for review.

The *Urban Strategy* department is concerned with corporate town planning which foresees and co-ordinates planning activities within the eThekweni municipality. The department has development and information units. The former assists in the formulation of development plans, for examples, IDP, LTDF, Spatial Development Framework (SDF). The information unit deals with GIS issues and web-based information transfer for example the community profile website, the mapping of areas and land-use activities. Respondents were selected from both units to ascertain their level of use of ICTs in their interaction and daily job descriptions.

In the *Development and Planning department*, the study focused on the Corporate GIS department and the information unit. The GIS unit is in charge of the entire municipal GIS application, that is, the GIS information that is online in the council's website is provided by the same department. The GIS data for the whole municipality is found in this department and they communicate it to the departments within the council and people outside the council.

The *information unit* runs the Information Centre. The centre provides electronic information on the website devinfo.durban.gov.za. The website address does not have www or http in the beginning. The website provides information on building plans, development applications process, and the extent of the assessment of the plan

within the municipality. All this information can be accessed outside the municipal electronic network or in the Information Centre located at Durban, Old Fort Road in the Development and Planning department building at ground floor. In the centre there are computers with internet that are freely accessible to the users but for the purposes mentioned above only.

The *Communications department* was selected because of its involvement in the imaging of the city through constant consultation with the entire departments and stakeholders in the municipality so to have informed decisions on the current reality of Durban. They are responsible for the eThekweni Municipality website, METROBEAT (a magazine for the people of Durban), ASIKHULUME (lets talk) publication and other newsletters. These publications focus on development issues around Durban and they are a mechanism for information sharing between the municipality and its stakeholders. The department functions are dependent on quick communication with departments in the municipality and community views on the METROBEAT / ASIKHULUME publications and ICTs to an extent serves them in this regard.

The *Corporate Information Service (CIS)* department is tasked with overlooking the function of the networks and other IT related issues in the municipal area. They recently implemented the GroupWise email system which has the surname@durban.gov.za format. GroupWise is a centralised network for municipal staff to interact and find personal contacts of other people in other departments. However other departments are not yet part of this system for example the Urban Strategy still uses the surname@urbastrat.org.za email system. The CIS department also hosts the municipal websites and runs the routine maintenance of the Internet and Intranets within the council.

The *Housing department* was selected because they are also involved in the planning of the city. In that process they work with various departments, that is water, electricity, etc. They also use GIS for their project planning. There is also the e-home project that is being hosted by this department. This is an electronic database to facilitate best practice interventions in regard to the low income-housing programme in Durban.

The *Transformation department* was the interesting case to form part of this study. This is because the transformation department is the watchdog for the municipality's development. Their responsibility includes prioritisation of development projects, this implies that their actions should be decisive and be informed. ICTs helps them in this regard, for example, they browse the net to see how transformation is done in other local government, and they use the email for feedback on development within the city and electronic communication with other departments.

The *library personnel* were interviewed to obtain data on initiatives by eM to provide universal access to its citizens through having computers, with internet in the municipal libraries. So their response was helpful in areas of community empowerment in the use of ICTs in governance and towards establishing smart communities in a smart city.

The *municipal manager* was interviewed to obtain the overall plans of Durban to become a smart city. The reason behind this was to obtain his views on developing governance initiatives and ICTs initiatives. It appeared that the municipal manager is aiming at establishing sustainable e-governance initiatives through the use of Internet and GIS based programmes. As it will be seen on the new eM organogram the manager indicated that he intends to have a Geographic Information and Policy department within his office. Therefore his selection was

on the basis of his expertise on ICTs development and GIS expertise with the Municipal Demarcation Board of South Africa. Above all the municipal manager has a background in the town planning field.

In the next section the dissertation will give the overview of the new organogram for the governance of the eThekweni municipality.

4.3.2 The New eM Governance Organogram

In the interview with the municipal manager he said:

Our main challenge is to define a specific developmental path and then stick to it. The biggest we face today is that we react to any and every 'problem' that confronts us. This must stop. Once we have a clear set of goals, lets get focussed and make a difference

Sutcliffe (2002)

The new organogram is a new mechanism to achieve effective local governance (See Annexure 2. for the diagram of the organogram). The new organogram consists of the municipal manger, six deputy managers and 27 heads of units. This is aimed at diversifying the use of human resources ensuring and giving the strategic direction to governance. This will promote co-operation and build internal capacity, but also develop partnerships and where needed, outsource functions which are not the core business of the municipality (ibid.).

The administrative reorganisation of eM seeks to address a number of interrelated challenges (Sutcliffe, 2002):

- ◆ International context (ensuring we can respond to the effects of globalisation, racism, sexism, impact of technology and the like)
- ◆ South African Constitutional requirements (providing democratic and accountable government which delivers services for local communities); and
- ◆ eThekweni critical developmental challenges (providing jobs, security, meeting basic needs and so on)

In order to do this there must be a move from an organisation which is largely fragmented, is not strategic, has unclear measures of management performance and has unrepresentative top management (Sutcliffe, 2002). Instead, eM must become organised to achieve common business processes as well as integrate and deliver on a wider range outputs.

In addition to managing the Deputy Managers, four Offices will report directly to the Municipal Manager:

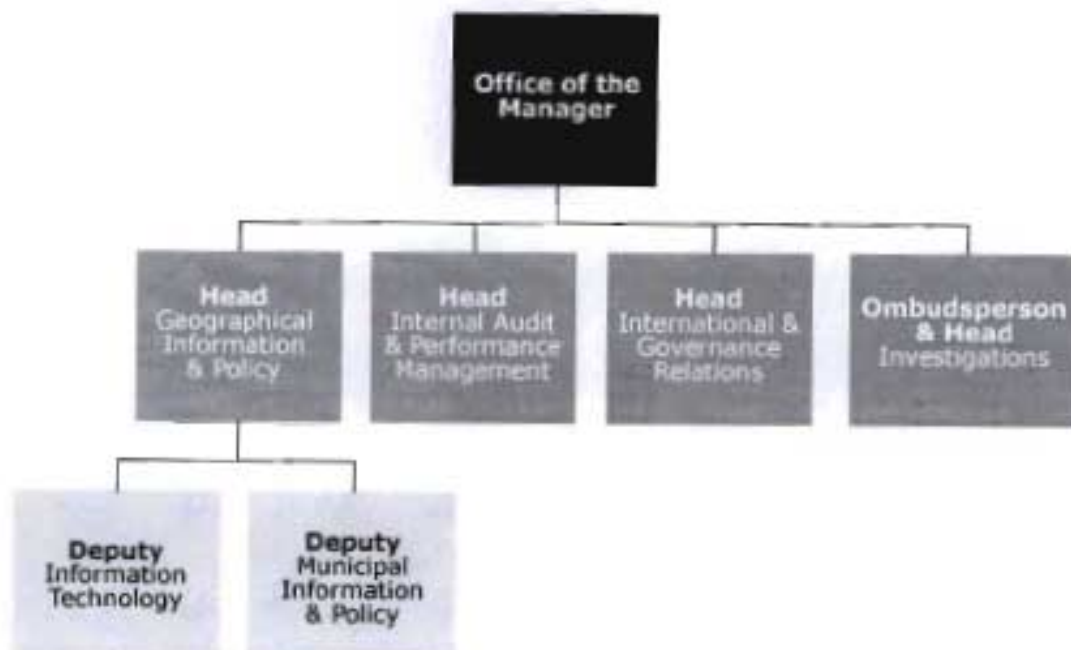


Figure 4.1 Office of the Manager organogram
Source: eM (2002)

The Office of Geographical Information and Policy will drive the municipal geographic and information technology programmes and integrate all policy review programs. The department is seen as the catalyst for e-governance in eM. This includes drawing the ICTs plan and strategies and also implementing the plan.

The personnel in the office of the manager will be instrumental in the formulation of integrated management style and safeguarding the functioning of the municipal officials. This is a restructuring which aims at transforming individual units to integrated systems of governance. It is in this context that ICTs are expected to provide links and create an effective communication environment in the municipality.

4.3.3 E-governance Infrastructure

eThekwini Municipality is at the helm of the information age revolution, which is changing the conventional way of governance in the municipality. However this is still in its infancy. eM is in a process of changing the organisation of governance, its relationships with its citizens, other spheres of government and international relations.

◆ Internet Use

Internet is an international computer network through which computer users all over the world can communicate and exchange information (Mersham & Skinner, 1999: 3). The eThekwini Municipality is at a development level of using computer-mediated-communications (CMC) amongst its staff members. In this regard CMC means the interaction of people using the Internet as their medium of communication either through computers, cellphones, fax machines.

It was learned that at least in every department within the municipality there are Internet resources. However it's not all departments that give access to the Internet to its entire staff members. For example in the Development and Planning and Housing Departments, it is mostly the management that has access to the Internet. This is a result of the shortage of infrastructure to connect each staff member to the net. This is common among professional staff members, who have to use a central computer within the department to check emails and web information related to their work. This has been attributed to the centralised form of e-governance which is expensive and limits the functioning of the net to the services and job descriptions of staff members. For those who have access to the Internet there are strict rules as to the use of the Internet.

On the other hand there are departments wherein each an every staff member has the Internet running in their individual PCs, for example the Urban Strategy Department. This imbalance made it hard to identify whether Durban has a common vision towards developing as a smart city. Some respondents blamed this on the inequalities between municipalities given the Apartheid regime. Fragmented ICTs planning and budgeting, for example, led to Durban's central municipal offices having more developed ICT infrastructure than, for example, Umkomazi and other smaller municipal offices. The incorporation of rural areas under eM boundaries in year 2000 has also contributed to the imbalances in the distribution of ICT infrastructure in municipal offices.

However, as it has been pointed out in the IDP the eM is striving to have a common technology infrastructure, including standardisation of Internet use and connectivity. The extent to which this can be accomplished is still obscure, given the current state of affairs where there is great need to provide services like water, electricity and other amenities to some areas in the

municipality. The run for expensive technology can rob the community its only slice of development that is financial resources. However, since there is the buzzword of 'integration in local governance' the issue of ICTs can form part of this strategic planning objective and be rolled out at the pace that does not rob the community its slice of development resources.

◆ **E-mail**

The email system is widely used in the council for interactive communication. Most of the office-based employees have email address this is dependent on their seniority and job description as mentioned earlier on. Mbonambi (2002) pointed out that:

One of the important steps that the city of Durban has taken is to introduce the GroupWise email system. So that every office based in the council has access to an email, which will allow easy, fast effective communication within the whole organisation. So I think that has been one useful initiative for Durban to follow the trends of what other cities are doing and towards becoming a smart city.

It has been learned during interviews that after the GroupWise was introduced there were intensive training exercises on how the email system works. In the municipality GroupWise is used to set appointments for meetings, passing documents on for feedback, to diarise dates and general day to day working relationships. In the transformation department, the council and citizens are given the email address (eThekwiniTNR@durban.gov.za) where they can write to the email address on anything that concerns them about the way the city is moving or changing or taking decisions and immediate response is guaranteed on this email.

However areas outside the Durban Central governing body, like Outer West and the South operational entities have a lower level of connectivity to the email system. Also the use of the Internet is relatively low within these areas. This is attributed to the fragmented ICT planning and budgeting. Moreover, areas outside the Durban CBD, have non-standard priorities and approaches to the use of ICT.

◆ World Wide Web

There is a significant use of the WWW in the eThekweni municipality. Most of the respondents acknowledged that they use the WWW for research on how other cities are doing things. So the web is their source of information and they have confidence in its reliability and presentation of current data on development and planning issues. However, they did acknowledge that there should be regulations of web site access by employees to avoid too much cost and personal web surfing. eM has undertaken to revamp its official web site. Council employees, citizens of the city, tourists and business people with internet access can now access information online about eM.

The exciting new website for Durban called eThekweni Online (<http://www.durban.gov>) was launched in July 2002. In the home page of this site there are five sections running along the top of the page - visitors, residents, council, business and search. Important council information and key documents can be accessed in this web site by clicking 'council' link. The council agendas, minutes, decision circulars and bylaws can be accessed in this web site by clicking 'resident' link. In eM WWW is used to publish information about Durban.

The following websites contains information about Durban.

Website	Purpose
www.durban.gov.za	Durban's local government structure comprises the Durban Metro Council and six local councils: the North Council, Central Councils, South Council and West Council. This website contains links to the Metro Council and Central Councils.
Devinfo.durban.gov.za	Building plans and applications forms for developers in the municipal area
www.durban.org.za	The official website of Africa's hot city contains links to Durban's art and culture scene, a business directory, information on conferences, a diary of city and sport events, and information on tourism and leisure activities.
www.durban.co.za	The site provides information on Tourism.
www.urbstrat.org.za	The Urban Strategy Department of the Durban Metro Council prepares the Metro's integrated development plan and spatial development framework. It also has extensive information on the area under the Metro's jurisdiction.
Community Profiles Website	Provides the statistical data of all 100 wards around Durban. Can be accessed through Urban Strategy Web.
Aids Web Site	The City Health Department runs this. It provides information about HIV / AIDS related issues.
e-community strategy / information centres	The first one has been implemented in the Cato Manor area, some are in the plans in a short run. Accessible through the durban.gov.za site.
Capital Budget Web	This website will contain information on Councillor projects requests and Budget allocations to implement these projects.

Table 4.1 Information on eThekweni Municipality Websites

However, there are numerable staff officials who know about web technology and who know the worthiness of the WWW. Allan (2002) pointed out that there is an institutional gap, which is driven by lack of understanding and by the lack of skills. This suggests that eM should build capacity for absorption and use of ICTs. Web technology can be used to communicate to various interests groups and to leverage internet technology to provide better services to residents and make city governance more transparent (Spencer, 2002).

◆ **Geographic Information Systems (GIS)**

In the eThekweni municipality GIS is a shared system that has been built up over a number of years and there has been a number of co-operation with individual departments (Ireland, 2002). Each department owns their datasets and they maintain it. They capture it first and they maintain it on an ongoing basis and they are responsible for its accuracy and quality. But all the departments give their datasets to the Corporate GIS unit for integration and publishing in the GIS warehouse that sits in the server in the Corporate GIS unit. The datasets are available for sharing by all other departments. So anybody anywhere in the municipal area can access spatial data, from the Corporate GIS server, across the network if they have PCs in their desks.

GIS is used to integrate all kinds of information and applications with a geographic component into one, manageable system. In Durban GIS is used for analyses purposes for example, slope, access to services, developable areas, fire hydrants, libraries, halls, health service and Municipal Open Spaces mapping.

eThekweni municipality also make use of web-based GIS. Ireland (2002) pointed out that GIS is key to the

planners who are going to make the development decisions in and around eM. They need to see the location of facilities, of land-uses, of ownership. This helps them to have quick and ready available access to all those different layers of information, which is a critical fact of today's planning and decision-making. Therefore in this regard web-based GIS is definitely the future for the eM. This has prompted the municipality to have GIS applications on their website (www.durban.gov.za). However to effectively make sure this data is easily accessed and is fast to obtain, there is a need for powerful servers, good software and it needs skills to set up the applications, to set up the system at the central system and make sure the system is quick and make sure the people can get the system they want efficiently.

eM has also a GIS facility online. This allows one to generate a map of a suburb, road, showing variables like streets, landmarks and floodlines. The site also boasts a user-friendly help page to new users of GIS.

◆ Database

Among the few databases that were captured in eM is the eHOME initiative. This is the housing monitoring and evaluation programme. The overarching goal of eHOME is the set-up of a monitoring and evaluation system which will give relevant information about:

- ◆ The result of the housing policy of the eThekweni Municipal area, and
- ◆ Facilitate best practice interventions in regard to the low income housing in Durban.

The city of Rotterdam has agreed to a funding proposal which includes several visits of experts from Rotterdam to Durban, some internships of experts from Durban to

Rotterdam and a contribution of 50 % of the investment cost for hard and software of the data structure, the surveys and / or a model report (eThekwini Municipality: 2002).

The eHOME initiative will comprise the GIS and the statistical package SPSS, according to the funding proposal. There cannot be much to be said about this database since it is still in its infancy but it promises to accommodate ICTs in housing development.

4.3.4 Human Resources Development

Ireland (2002) noted that there are huge gaps in the use of ICTs by municipal employees. Firstly, employees do not understand how to use computers effectively, they have no idea how to map the network drive, no idea how to log on to different domain to get access to another that has been set up already before them. They have little idea of how to use software they have on their PCs and if something goes wrong they have no idea what gone wrong and why it has gone wrong. It appears that there are isolated cases in eM wherein the people are resistant to change and are not seeing ICT as the new way of doing business.

The findings for this section varied amazingly. It varied according to:

- ◆ Word Processing skills (Microsoft Suite 95,97,98 and 2000)
- ◆ Internet, WWW, E-mail;
- ◆ Geographic Information Systems and
- ◆ Data Management
- ◆ Networking
- ◆ Community Capacity

It has been learned that there are basic word processing skills among the eM staff. This includes, typing in MS Word, Word Perfect and a few have knowledge of Acrobat word processing programmes. O'Leary (2002) indicated that it is common among eM employees to have limited abilities regarding spreadsheet programmes (Microsoft Excel) and presentation programmes (Microsoft PowerPoint). It is a common belief that greater competencies in spreadsheets and presentations would increase the computational capacity of employees. This allows ideas to be communicated in a concise manner. Therefore, there is a need for an integrated effort in eM to capacitate employees to use ICT effectively. This will make it easier for employees to exchange information when there is a planning initiative to be accomplished.

The ICT training workshops in eM are mostly offered to secretaries or receptionists in terms of word processing. This opens a huge gap between managers and their secretaries which leaves the latter with a lot of work to do in terms of typing and preparing presentation whilst they earn less salaries. But, there has been positive feedback from employees at senior level to use word processing programmes there is still room for improvement in this regard.

The findings on the average level on GIS knowledge among the development and planning municipal employees reflected that there are few people in the council who know about GIS. Allan (2002) argued that:

...the city with 3000 000 people, I can probably fit all the people who know a lot about GIS into one office and maybe ten people at the most who know a lot about GIS and some are just operators and just use it.

This points out that council employees lack GIS skills. Ireland (2002) pointed out that employees should learn how to use GIS package to ask questions, analyse spatial information. The eM should assist in this regard by offering training workshops in this regard. This includes partnerships with tertiary institutions, private sector and ICT specialist around town to develop and implement effective ICT plan.

There is an average use of the Internet, email and WWW in the eM by the municipal employees. This can be seen in the number of websites they have. It can be seen also in the installation of the GroupWise email system which integrates the use of this service by all municipal staff. However, it is only few municipal employees that have access to the Internet, WWW and e-mail service. Allan (2002) indicated that there are two or three people, who know web designing, which is crucial tool for reaching people. This is because the municipality is depends on consultants to design council web sites because there is no capacity within the municipality to that job.

In terms of data management and networking applications, the eM has various networks and data management systems which is operated by individual departments within the municipality. Simply put, the electricity department has its own network and data management system, the urban strategy department has its own network, GIS and data management resources, etc. Whether these should be integrated is opened for debate since the interviewees have different feelings about this. That is some thought it is good to have them separate so that, departments can handle their information. In case of computer crashes it cannot be the whole system that is affected but maybe just one department. Above all the cost implications of having a one huge centralised network on the face of the current socio-economic status of the municipality.

On the other hand some thought it should be worthwhile to have one network across the local authority. This will enable everyone, anywhere in the municipality to access information on one network using a data dictionary which will be able to communicate with departmental networks. They believed this would prevent duplication. It will also opens opportunities for the integrated training programmes for the municipal employees across the council.

In terms of e-community in eM the initial pilot projects will located at Umlazi and KwaMashu. This initiatives are called one stop shop or community information centres. These initiatives focus on billing, that is, electricity, water telephone and rates. Sutcliffe (2002) indicated that in short term, there are many communities whose civic leaders do not have access to the web maybe one of the things the municipality should do is to build the skills base. For example the adult-based education incentives, networking of community libraries and providing internet kiosks across the municipal area. There is also the e-community project that has been implemented in the Cato Manor area as a form of democratising governance.

Therefore having covered the understanding of the current status in the eM it is worthwhile to develop a skilled and technology-literate workforce. This includes learning from the international case studies and adapting that knowledge to the issues surrounding Durban. This will avoid developing wish lists that will not be implemantable nor achievable. This includes building partnerships with the institutions of education in curriculum development.

4.3.5 Universal Access

Sutcliffe (2002) indicated that there have been radical developments in providing the community with Internet and ICTs skills. The Carnegie Foundation from the United States of America has supported this e-governance initiative. The project aims at installing one computer with an internet service in all municipal libraries. The uMkhumbane library, in Cato Manor, was the first one to officially open its internet centre in August 2002. The library offers email services to the community for approved transactions, that is application for employment or research. There is also access to the WWW for research by school pupils, students residing in the area. There isn't much that has been done by the municipality to provide interactive communication devices to allow the community to have a say or access some municipal services (services billings and pay points) online from these centres.

Makhanya (2002) states that, the matter which is of great concern about the project, is that 'there are few people using the resources provided because of the lack of skills in the communities'. This requires training and volunteerism among the digitally learned youths and adults on a planned detailed programme. However plans are on its way to deal with the issue of training and increasing the public awareness on the importance of ICTs.

4.4 Problems facing eM in Terms of E-governance

During the course of the study there were problems that were identified. These problems are also outlined in the eThekweni Municipality ICT Strategy (eThekweni Municipality, 2002: 08). The fundamental problems in formulating a comprehensive e-governance strategy in the

council are:

- ◆ Lack of overall vision and strategy for ICTs resulting in business units pursuing their policy agendas independently.
- ◆ Fragmented implementation of applications and systems to serve narrow, project-level goals, resulting in lack of data sharing, integration, compatibility and interoperability.
- ◆ Current IT assets are not regarded as contributing significantly to service delivery or transformation objectives
- ◆ Lack of innovation and pro-activity by the IT organisation
- ◆ Information systems are there to support existing controls and not to serve the customer and liberate the user
- ◆ General lack of standards and central co-ordination
- ◆ Duplication and non-optimal use of resources
- ◆ Fragmented IT planning and budgeting
- ◆ Unacceptably varied and non-standard priorities and approaches to the use of IT

Some other problems that did not form part of the ICT strategy are shortage of ICT skills and infrastructure. It has been discussed on the foregoing sections that ICT skills base in Durban is low. This is a result of intensive labour activities that has been prevalent in eM. Technological innovations have not been receiving priority for planning and implementation. It follows that lack of financial and political support has been the major problem in coming up with an effective ICT plan in eM. However, with the Carnegie foundation injecting finance for community capacity building and the current drive of the eM to establish a centralised ICT governance programme, these problems will gradually disappear.

Other problems that were established by the study are lack of culture adapted to change. This involves the difficulty of integration with the apartheid legacy systems. But these are not posing any threat to the development of the eM ICT plan, which is currently -2002- underway.

In trying to deal with these problems it is important to start understanding that ICTs are not about power, but they are about development. It is worthwhile to build the structure of governance in particular the administration that is effective. The structure should focus on using the power of information, the power of technology, the power of ideas, the power of knowledge based sharing initiatives. This denotes the power of the collective use of ICTs which also includes human resources development.

4.5 Potentials for E-governance Programme

The eM has the potential to grow towards a smart city if there can be a dedicated IT management and trained staff to implement the ICTs plan in Durban. It has been proposed that there should be the Geographic Information and Policy Development department within the municipal manager's office. The office will plan effectively and manage information from the centre. This is an institutional plan that will look at what are the information needs and how they can be accommodated in one system.

Though eM has decentralised forms of networks, it has been learnt that certain departments are functioning well in their current decentralised servers and this is also complemented by some good centralised data facilities. Above all there are pockets of good skills in eM. eM has a number of websites that can be used as the new form of communication with employees and the general public,

locally and internationally. To complement all these potentials is the existence of the numerous institutions of higher learning around the eM, which might formulate partnerships in developing skills for ICTs and service delivery.

4.6 Future Plans for E-governance

The eM is on the edge of finishing its IT Strategy which aims at human resources development and provision of ICTs infrastructure for research, data management and communication. The strategy will acknowledge the differences that are currently existing in terms of networks used by the various departments. But ICTs networking is not the important thing, it is the sharing of the information that is important and getting people to work together. But it will be worthwhile if at least these different networks talk to each other or are accessible from other servers located outside the department in question.

It follows that the responsibility of the Geographical Information and Development Policy department will be to integrate the current fragmented ICT culture in eM. They will also have to draw up the effective e-governance programme, which is people oriented and observes the current financial inadequacies within the eM.

The council has also undertaken to make sure that almost every engineering or planning unit has some form of GIS capacity. This includes training of employees in ICTs fields, so to develop competent employees. Above all the eM is aiming to implement the e-community projects so that they can reach out to the community and engage them in planning activities and also get feedback on current transformation and development within the city.

4.7 Conclusion

It has been learned that eM to an extent has some initiatives that are aimed at becoming a smart city. This is reflected on the municipal IDP and the LTDF. These plans set the context for integrated governance through effective resource allocation and more especially, informed decision making. The ICTs application that has been reflected above shows firstly, the existence of the ICTs infrastructure in the municipality. This is the cornerstone from which the municipality can build on towards becoming electronic ready for e-governance.

In summing up, the case provides three important components of e-governance. Firstly, there is the municipality as an institution which should create an enabling environment for ICTs growth. The developmental role of local government should be the driving force towards merging governance and ICT initiatives. Local government can be a source of a successful e-governance if it has the right plans and vision for developing towards a smart city.

Secondly, local governments should invest on the development of the human capital to assist in governance activities. The employees of local governments are the vehicles for change so they should be capacitated with ICT skills to effectively provide services and manage local governments electronically. Finally, local government's role to address social needs and maximise economic development means that local governments have the mandate to develop the people falling under their constituency. This can ensure future investment in human capital and it can close the digital divide.

Chapter 5

Engendering E-governance: a Myth or a Reality

5.1 Introduction

The buzzword internationally is to create "smart cities". For example, in South Africa this suggests that cities must clearly define the priorities for growth and development while ensuring that they address poverty and the provision of basic services. These twin objectives are not mutually exclusive. These development objectives are realities that cities have to understand in developing assessments of e-readiness in governance. This will determine whether interactive electronic communication takes place in eM.

The participatory decision-making model brings to light that, poverty prevalence in eM should not be seen as a problem. It should be seen as a challenge to bring those previously excluded from the mainstream of eM decision making more directly into the growth and development path. This includes integrating fragmented ICT applications and networks.

This chapter analyses the findings of the research conducted in eThekweni municipality. The result of the study points out that eM is on the edge of e-governance. The case studies that were discussed earlier on will be used to show that e-governance is a current, not just future, reality for developing countries.

Through the analysis of the case studies of e-governance outside Durban presented in the foregoing chapters, it has been learned that:

- ◆ They differ in context

- ◆ They sustain different levels of ICTs advancement
- ◆ They are common in planning e-governance
- ◆ They provide material and theoretical plans and strategies for future planning

The reason for using world-wide case studies as a benchmark of e-governance is to draw lessons from living examples of e-governance initiatives. The lessons will be drawn through understanding the following questions. Can e-governance make available new communication platforms for employees, in their everyday planning and management? Can that be utilised to achieve integrated governance? How can the "universal access" debates be harmonised with the "digital divide" realities?

Case studies were useful in identifying processes that involve planning and e-governance initiatives. This includes looking at funding and political-administrative developments for ICTs, infrastructure provision and management. These lessons will be used to assess e-readiness of eM notwithstanding differing socio-economic contexts and e-readiness levels in the case studies presented herein. The average understanding of implications of e-governance to local governance will be advanced simultaneously with the analysis of individual case studies.

5.2 The Policy Implications for E-governance

The literature review suggests that policy-makers in local government face two challenges in the assessment of e-readiness. First, they need to understand how ICTs can help their area of jurisdiction achieve economic and social benefits, and to set realistic goals accordingly. Second, they must take concrete steps toward effective and sustainable ICTs use that will help their areas realise development goals. However, this study compares

differing contexts of e-governance applications, which has distinctive policy framework to guide the development of ICTs initiatives. In Brisbane this is endorsed in the Corporate Plan. In the Andra Pradesh example this is documented in the TWINS project.

Brisbane is more explicit and more ambitious in terms of establishing itself as a smart city globally. This is reflected on the ourbrisbane.com initiative, which has clear direction and it is well funded. The Brisbane local council has a vision to become "a smart and prosperous city" as well as a "creative city". They intend to accomplish this through permitting 'joined up thinking' and 'strengthening accountability' (Heeks, 2001: 1). In terms of theory this means that ICTs are seen as a catalyst for effective service delivery and an effective way of communication. The policy stance of Brisbane shows ICTs as a tool to promote bottom up decision making. They promote initiatives like "your city your say", which is a transparent form of governance through the use of ICTs.

On the other hand the policy stance of Durban is entrenched in the Long Term Development Framework (LTDF). This document is a policy plan because it binds the municipality to abide by its foreseen developmental strategies, which includes building skills and technology. The document proposes that eM should have an integrated ICTs planning and budgeting processes. This is aimed at embracing high tech in the management of city services (eThekweni Municipality, 2002).

The courage to use ICTs as new form of electronic interaction is apparent in Durban. This is entrenched in the strategic planning initiatives (LTDF & IDP) wherein the development of technological skills among the local peoples is seen as part of facilitating e-governance initiatives. However, this is still in its infancy. The current e-governance initiatives in Durban are mostly in documentation, for example in the LTDF there is less that

has been done in terms of implementing the integrated governance system, which use ICTs as another tool to administer local governments.

The application of e-governance in Durban is at the level of providing information to the recipients and this provides a one way of communication. For this reason e-governance models presented in chapter 2 suggests that communication should flow on a two-way system. The sender and recipient of information should equally participate in development communication. The declaration of this is on formulating an e-governance policy framework that can sustain human development and enhance electronic interaction among ICTs users.

Therefore the power of ICTs is in ensuring that both the communicator and the recipient of the message interacts in a cheap, fast and reliable mechanism. This is the virtue of e-governance as presented in the following diagram:

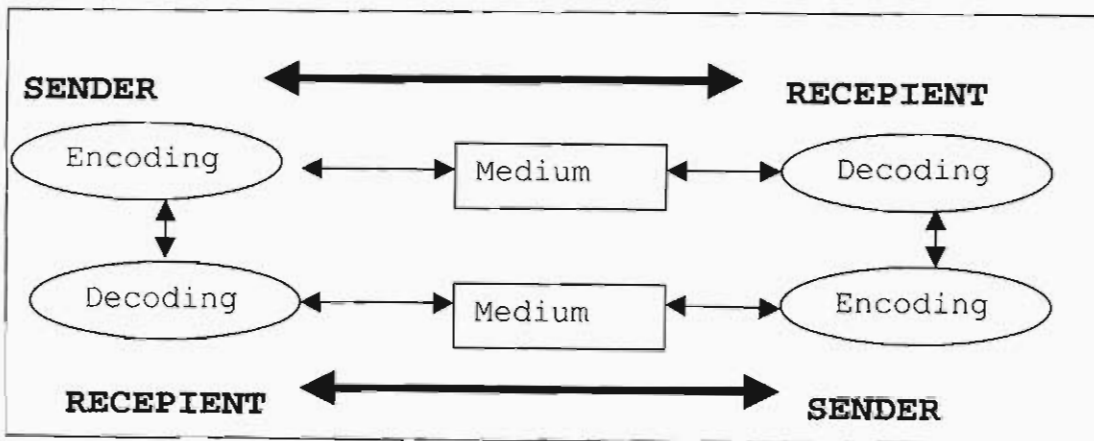


Figure: 5.1 Two-way communication model

Fundamentally, the foregoing diagram is used to show how the e-governance policy draft should be orientated. That is it should encompass both the sender and receiver's characteristics. In the example of Durban, the policy framework should acknowledge the existing technological divide. In so doing, establish a vision for effective

information exchange. This will institute the effective medium that is accessible to the people within the city especially the employees in their mandate to deliver services and manage the local institutions in all its functions.

Figure 5.1 presents a communication action that involves both the sender and receiver. This is of fundamental importance when looking back at the literature review of this study. It is said that ICTs provides effective two-way communication system. So, the diagram presents how the message can be encoded by the municipality and passed on through a particular medium to the recipient. On the receiving end the recipient can also be able to communicate or provide feedback on that message back to the municipality. This also affirms the interactive service model which establishes decentralised forms of governance which opens up Government to Consumer to Government (G2C2G)

When it comes to developing the policy for human resource development within the local government context, the diagram presents an opportunity for establishing information from the receiving end (employees / community) back to the sender (local government institution). This points out that ICTs can provide an environment wherein both parties communicates their needs and interactively agrees on the way to accomplish those needs.

However, one question keeps on coming up in the whole e-governance discussion. How can Durban implement e-governance initiatives in the face of gross poverty and lack of services in some of the operational entities (for example Umkomaas area, KwaXimba rural areas and a dozen of informal settlements)? This question can be addressed by taking into account that e-governance adds value to delivery of services and collaborate resource allocation and management. This can be accomplished with ICTs in

that, they are capable of presenting spatial information about the municipal area. For example, among other e-governance applications, it is easier through GIS to map areas of greatest needs and the ones that are already serviced through different layers of information. ICTs provide ready information for policy making.

When it comes to e-government eM has an advantage over the developed countries which manages mature economies and sophisticated democracies, the eM can leapfrog technological developments. eM has the advantage to adopt the latest technologies, with the latest information security systems ahead of developed world. This suggests that eM should formulate sound e-governance principles and policies supported by appropriate ICT governance structures, for example, the Geographic Information & Policy department.

Therefore a modern information infrastructure is the first building block of knowledge-based development. In this context a proper ICT regulatory environment is fundamental. Thus, without strong commitment to well-designed policy programmes of reform that incorporate appropriate rollout of ICTs, it is likely that local governments use of the new technologies will remain limited. This suggests that ICTs plans in Durban should be implemented in an integrated fashion with other needs in the municipal area to ensure that ICT supports development and advances the service delivery in eM.

Concerning the spectrum of public processes that can be mediated by new ICTs, Bellamy and Taylor (1997: 39) distinguish in general the sets of relationships lying at the heart of the information policy:

- ◆ Internal relationships in the machinery of local governance, employee vs. employee relationships

- ◆ The relationship of service units to the consumers of their services (Local government vs. people)
- ◆ The relationship between existing information systems, patterns of communication and technical infrastructure to the polity's "appreciative system" (e-readiness assessment)

It is important to understand differences / relations between e-governance and digital democracy in terms of whether they are 'top-down' (e.g. service provision) or "bottom up" (e.g. socio-political interaction) initiatives (Boudourides, 2001: 18). These approaches provide orientation of an ICT policy; they show whether decisions are taken for or with the stakeholders.

It is also important to understand that in sustainable development of the smart city, adoption and diffusion of new media should not accentuate existing inequalities nor should it further 'balkanise' the global social field with respect to the possession and access of information and other resources (Castells, 1998: 37).

5.3 E-governance for Development

As it is true all over the world, local governments in the developing nations costs too much, delivers too little and is not sufficiently responsive or accountable (Harris, 2002: 01). This is a multifaceted problem which includes, limited resources, human resources incapacity / lack of skills, spatial orientation of areas of jurisdiction and differing needs between the rich and poor. This requires the local government institution to assess the quality of life of its constituency and thereafter determine how ICT can assist in human development and in integrating service delivery.

The example of Johannesburg local council shows that

implementation of ICT initiatives can provide access and support to the community to interact with the government. The council's information management system offers "people's centres", "call centre" and "Internet links". This is one form of crossing the digital divide through what the community can afford at a particular developmental stage. These can be seen as a graduating model from which people can start working at these call centres and later on they can run their internet services in their living rooms, thus closing the digital divide.

Kulchitsky (2001: 08) indicates that the digital divide can be said to consist of the following dimensions:

- ◆ Access - closing the digital divide requires far more than merely improving physical access to ICTs (see below).
- ◆ Support - it is important to provide help from time to time to ensure competitiveness and meeting the current trends.
- ◆ Availability of services - not everyone has access to e-governance systems that help people acquire information, therefore there is still a need for traditional forms of communications.
- ◆ Motivation - there is a need for incentives in the use of ICTs so that people are encouraged to use ICTs effectively for local governance and democratic participation on development issues.
- ◆ Awareness -the suspicion that hundreds of thousands of the people in the hinterlands throughout the developing world do not have the faintest idea of what a computer connected to the Internet is capable of, require awareness.
- ◆ Content - there is the challenge to translate the information resources into something the people can use effectively.

These dimensions of digital divide can be attained through a clear vision and strategic e-governance planning. This includes establishing an integrated effort to plan and implement ICTs strategy. Hence it is worthwhile to engage communities in the planning of ICT strategies.

The example of Andhra Pradesh shows that ICTs can play a cost-effective role in the integration of governance. The initiative aims to provide services such as utility bills, issuing of certificates, permit licenses and information. Ho (2002: 23) maintains that ICTs are potent tools whose power lies in their ability to support integrated development with long-term social and economic benefits. It should be acknowledged that except for Brisbane, the other case studies have limited literature that shows how e-governance initiatives are envisioned and how they have accomplished their intended mission of interactive communication.

The Brisbane example shows that the internet presents numerous opportunities to increase the efficiency and equity of local government services and improve the administrative and data management systems. This can be seen on 'ourbrisbane.com' initiative wherein the council offers the opportunity to business and community to interact with them online. This incorporates the affordability component of software and hardware, through library Internet kiosks and partnerships with local web-services providers.

If ICTs are to function as tools for development, in developing as well as developed countries, then skills development and improved access are key to achieving this. eM has shown a great enthusiasm to train and to provide necessary skills to its employees and the community in general. This is also reflected on the municipal LTDF, which spells out the development challenges for the city of Durban. The lessons from

countries like Brisbane can assist Durban to leapfrog the current digital divide and technophobia among its employees.

The lessons that eM can learn from world e-governance examples are making the ICTs infrastructure available to the community, in a cheap and accessible manner. This includes establishing electronic forums for discussions and feedback on the development of Durban. But at the core of all these lessons is to have a corporate plan that will guide the implementation of ICTs initiatives in line with the governance initiatives. For example, Brisbane has embarked on the ourbrisbane.com initiative as a driving force behind their ICTs initiative implementation. This projects Brisbane as a people-centred local council.

The outstanding thing in Durban is to make the existing website interactive. This would allow the community to contribute on issues impacting on their quality of life. Secondly it has been learnt that training is useful in the development of e-governance initiatives and creating awareness about the importance of ICTs in local governance. The processes of e-governance as discussed in chapter three reveal the capabilities of ICTs. This can be a point of reference for developing the eM ICTs strategy and Plan.

The success of Durban in striving towards a smart city is dependent upon the new Geographic Information and Policy Development department drawing an implementable ICTs plan for the city. The department will be tasked with looking at the current fragmented ICT initiatives and use in eM. This will be aimed at coming up with a centralised ICT e-government policy and implementation. In terms of theory this can assist the municipality to come up with one system of electronic governance.

Nevertheless, the theoretical framework is way ahead of the current situation in the eM. The way theory on e-governance is presented it assumes that in every context there are ready infrastructure and technological skills to utilise ICTs. In eM the e-governance initiatives are on its infancy and the establishment of Geographic Information and Policy Development department might speed up the rollout of ICTs initiatives.

As Brisbane has done, eM can be in partnerships with the national government, the private sector in developing skills and providing competitive ICTs infrastructure for electronic communications and data management. Heeks (2001: 45) indicates that this will combat the tactical challenge of closing design - reality gaps, that is, adopting best practice in e-governance projects in order to avoid failure and to achieve success. This requires a vision for change, this includes providing financial support and building social and economic development to establish the enabling environment for e-governance.

5.4 The Applications of E-governance

The Brisbane e-governance initiative offers a new way forward, helping improve government processes, connect citizens, and build interactions with civil society. This enables the community within and outside the council to interactively communicate with their council officials. The initiative shows that the "myth of local powerlessness" when it comes to ICTs is flawed.

Graham (1997: 26) indicates that the stress on autonomous technology, positive scenarios, and future cities, suggests that analytical and policy debates centre around how society can adapt to and learn to live with the effects of ICTs-based change, rather than focusing on the ways in which these effects may be altered or reshaped

through policy initiatives. There is a need to accept that society and technology shape each other in complex ways. Among these ways is the recognition that ICTs has the potential to bring in every individual in an electronic network and enable two-way flow of information among the users.

The e-governance theory shows that ICTs provides automated functioning of local governance. However this is not what ICTs are about. They are the medium to transfer information created by people rather than a substitution of the people activities.

The Andra Pradesh example shows that e-governance applications can help government employees to execute tasks that were beyond their capabilities. This can provide efficient, reliable, transparent and integrated services to the citizens. The interactive service model opens up Government to Consumer to Government (G2C2G) channel to performing governance functions online such as revenue collection and payment transfer.

During the time of study, it was not clear whether the eM is using ICTs, for example WWW, as part of a marketing strategy or interactive mode of communication. That is in the current web sites there is only information, which markets the city, there is nothing designed to engage employees and online policy dialogues or organisation to strengthen participation. Some basic features of public accountability and citizen empowerment, such as performance measures of public services, online discussion groups, or information about grassroots organisation activities, are seldom found in the municipality's website. However, these gaps, can be dealt with though formulating a Corporate ICT plan which, covers infrastructure human resource development and providing universal access to the community.

The Brisbane example manifests itself as a living example of establishing interactive communications online. The lessons that can be drawn from the example is that of establishing:

- ◆ Business online services
- ◆ E-governance
- ◆ Communities online and
- ◆ Public and Private partnerships in developing e-governance initiatives.

The application of e-governance in the municipality needs to be advanced from a mere marketing strategy on the WWW to a developmental programme wherein the employees can obtain skills to best serve the community. On the other hand to prepare the community to be able to deal with the complexity of ICTs.

The convergence of technology and economics; the technology of GIS and computers, and the economics of universal access are redefining geographical boundaries - of local governments. This requires an ICT plan that is planned according to the size and geographic limits of the local government area. The theoretical discussion in chapter 2 shows that GIS applications can come forth in this regard by mapping environmental resources for virtual spatial orientation. Only by understanding the needs and then developing a sense of priority can a well-rounded smart city initiative be developed.

5.5 Integrated Governance and E-governance Initiatives

ICTs help in the integration of governance processes. This is achievable through an initiative to share and engage communities in decision-making. Only after understanding the interests and concerns of a community

can a broad vision and mission statement for e-governance be developed. Models of e-governance discussed in chapter 2 provide the guiding principles for e-governance planning and implementation. Models are hereby proven true by case studies, in that ICTs provide integrated governance.

The case studies shows that e-governance improves the internal and external functioning of the public sector. This includes:

- ◆ Cutting process costs
Improving the input-output ratio by cutting financial costs and / or time costs of the communication activity. This is part of fleet management.
- ◆ Managing process performance
Planning, monitoring and controlling the performance of process resources (human, financial and other) through participatory decision making and accessible electronic services.
- ◆ Making strategic connections in local government
Connecting departments, agencies, levels and data stores of local government to strengthen capacity to investigate, develop and implement the strategy and policy that guides integrated governance processes.
- ◆ Creating empowerment
Transferring power, authority and resources for processes from their existing locus to new locations, Brisbane and Johannesburg especially.

In transforming the eM it is worthwhile to reduce the costs and increase the speed of processes and decision-making and to create more flexible and responsive processes. The integration of the current fragmented ICTs initiatives can provide the suitable environment for an ICT strategy and plan that will see eM graduating to a smart city.

5.6 Enhancing Knowledge and Information Capabilities

Traditionally, ICTs have been used within local government in 'automation' mode, replacing clerical labour processes with their digital equivalent. These are essential building blocks for e-governance. However, their achievement of financial cost cutting is questionable.

Heeks (2002: 22) states that in the North, replacing costly humans with cheap ICTs may cut costs, though even here evidence of productivity gains is limited. In developing countries, replacing cheap humans with costly ICTs is unlikely to be justified on financial cost grounds (ibid.) As time replaces money as a more critical global resource, ICTs' ability to increase process speed may provide some justification for automation. Therefore ICTs need to be justified and understood in the context of a broader vision and necessity for e-governance.

The adage "knowledge is power" has never been more true than in the Information Age. Modern information and communication technology (ICT) makes it possible for all kinds of information, from business transactions to scientific research to entertainment, to fly through cyberspace at the press of a button (Graham and Marvin, 2001: 244). The South African Government accepts that ICT is a powerful tool that can be used to streamline the economy, and it has adopted policies to pursue economic growth through the use of ICT that is in the *Public Service IT Policy Framework, February 2001*. The document focuses on how the ICTs strategy can encourage to the greatest possible extent the use of local knowledge, expertise and technology.

eThekwini municipality is on the edge of transforming its former governance system which is based on line

departments functioning as separate entities. Transformation is aimed at coming up with an integrated management system through realising the city's full potential of improving the quality of life for its people. In this regard e-governance can encourage vibrant and progressive networks in planning, so that Durban will develop as a smart city of the new economy.

5.7 Making New Technology Work for Human Development

Human development is also an important means to technology development. Technological innovation is an expression of human potential. The Brisbane case study indicates that higher levels of education make powerful contributions to technology creation and diffusion. According to the UN Human Development Report (2001) more scientists can undertake research and development, and better-educated employees and clerical workers can learn, master and use new techniques with greater ease and effectiveness. In addition, social and political freedom, participation and access to material resources create conditions that encourage people's creativity.

Human development is about much more than the rise or fall of national incomes. It is about creating an environment in which people can develop their full potential and lead productive, creative lives in accord with their needs and interests. People are the real wealth of nations. Development is thus about expanding the choices people have to lead lives that they value. And it is thus about much more than economic growth, which is only a means—if a very important one—of enlarging people's choices.

(Castells, 2000: 78)

There are three basic points that are considered essential in local governance and human development.

Firstly, the local influences and its future strategies and development thrusts for growth, social and economic development must be identified and put in place. Secondly, important management processes must be developed to achieve effectiveness and efficiency in the transformation of inputs to outputs. These processes must be linked to specific workflow and procedures, and the Performance Management System, which is required under the legislation. Lastly, the use of cyberspace technology to support the provision of better information, improved communications, co-ordination and document flow, and the establishment of standard operating procedures. This is especially crucial where numerous nodal developments within newly created administration areas, sometimes comprising hundreds of square kilometres, require development and service delivery.

Information technology offers the opportunity to improve the flow of information between citizens and the local government, thereby building dialogue and participation. For example, the Johannesburg and Brisbane examples shows that ICTs offers access to information and the opportunity to comment on issues, policies and laws that impacts on the daily living of people. Information is empowerment. Without information people have no course in life. ICTs are a critical tool in the expansion of public participation and effective administration of the public offices.

In the case of Durban there has been a fragmented system of ICTs applications. This poses problems because it is hard to measure the current levels of ICT skills in employees of the eM. This is further complicated by the reason that responses were varied in terms of the preparedness of eM employees to use ICTs. This also covers the preparedness of the communities to use

Internet resources installed in eM libraries. However there is the potential to build, from the existing fragmented applications of e-governance and institute a corporate e-governance plan.

The lessons for Durban are that human resources development is an important assessment of e-readiness of the local government institution. Employees should understand the potentials of e-governance in public administration.

5.8 The Criteria for Effective E-governance and Integrated Governance

If we consider the general impact of ICTs on local governance and municipal staff, there is a drive towards ICTs ahead of traditional communication models and the emergence of new interactive electronic governance. Interactive electronic governance allow everyone equal access and participation in communication, planning and management of the government institution thus favouring stakeholders to freely express themselves and get information in an all encompassing source, ICT.

According to Carter (1997: 136) 'the priority, especially for city councils, is to ensure that ICTs become a means for generating economic growth, employment and an enhanced quality of life through the provision of local access to the facilities and services available on the developing information superhighway.' Carter outlines the strategic importance of exploiting the opportunities offered by new ICTs. This suggests that part of effective e-governance involve formulating public policies that guarantee universal access to information systems.

As suggested in chapter 2 there are six key e-governance elements which can provide an effective criteria for

assessing e-readiness of local governments. The following diagram shows the schematic representation of this criterion:

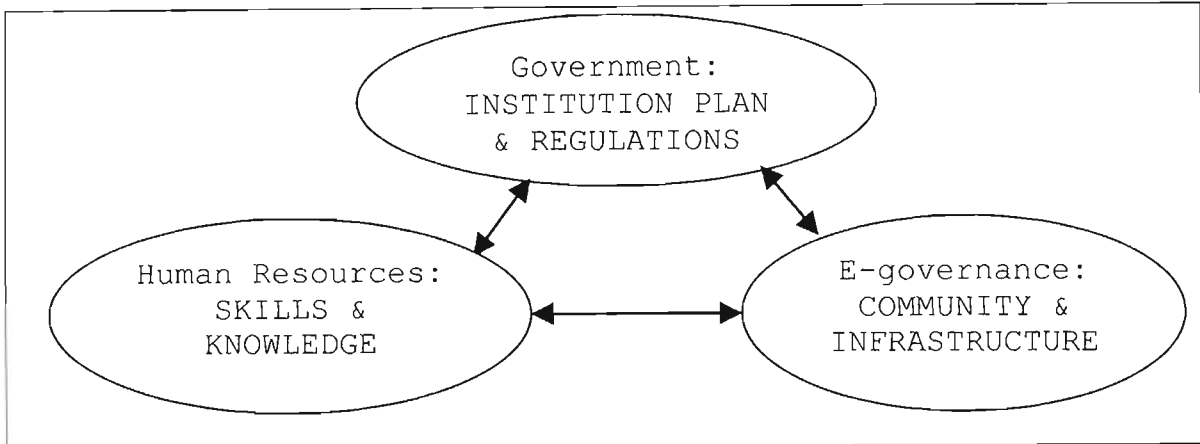


Figure: 5.2 Integrated governance model

The municipality as an institution can play a major role in creating enabling environments for ICTs use in local governance. This includes regulatory frameworks in terms of legislation and data processing, accessibility and accountability. ICTs can play a significant role in improving the efficiency, transparency and responsiveness of local government services (infoDev, 2002: 24).

The history of introduction of ICT into local government services suggests that while the potential benefits are large; the process is highly complex, time and resource consuming, and frequently unpopular with stakeholders. Thus without a strong commitment to well-designed programs of governance reform that incorporate appropriate rollout of ICTs, it is likely that government involvement in e-governance will remain limited (Shadrach & Summers, 2002).

The human resources component of e-readiness requires that there should knowledge and skills assessment among the municipal staff. The growth in ICTs and the growth in e-governance do not go at the same speed. The growth in ICTs is pushed by multifarious factors. But the growth in

e-governance can be pushed only by the political leaders supported by the bureaucracy at all levels. Online methodology of interaction between the users requires 100% accuracy and up to date database. This is why there should be a competent human resources capacity within the municipality to effectively use ICTs maximum support from the political whirlpools.

According to Heeks (2001: 47) 'the criteria for e-governance should establish (1) enabling policy environment resulting in efficient governance, (2) equal access to local authority institution for all, (3) speed responsiveness, and (5) responsible and measurable local government.' Brisbane e-governance initiatives show the example of on line interaction between government institutions and its stakeholders and it is deemed the best example to develop the criteria for e-governance.

E-governance devolves power and decision making to any one who has skills, infrastructure to interact on governance issues on line. Because power has devolved, every individual must be persuaded, indeed enticed, to change the way life and work take place within their community. E-governance must not only be understood but stakeholders throughout the (virtual) communities must understand that they will participate in the process and they should have necessary ICTs skills.

Toward that end, a new decision-making mechanism - "collaborative" - involving all of the stakeholders, is established. This mechanism is capable of connecting people in different spatial locations. Among stakeholders there are businesses large and small, academics and junior to secondary educators, non-profit organizations throughout the community and government itself. The stakeholders should have their hands on the new electronic governance initiative and join forces with the local authority in development. Such collaboration will greatly influence and enhance the ability to create a

smart city. This on the other hand will promote public, private partnerships for ICTs development.

5.9 Public and Private Partnerships (PPPs)

It is important to establish relationships between the various groups that will foster technology use; to facilitate productive local use of technology to generate demand for content and services developed and delivered through technology; and to demonstrate this demand to the public and private sectors to cultivate a self-sustaining governance environment (infoDev, 2002).

The Brisbane, Johannesburg and Durban case studies shows that partnerships can help in ICT infrastructure provision. For example, the Brisbane Council is partnering with the local internet providers in providing universal access for the community ICT small business development. In Johannesburg the city council is partnering with IBM and Masana Empowerment group in providing ICT infrastructure for community services. Finally, in Durban the Carnegie Foundation is providing a systematic partnership to close the digital divide by providing computers and internet resources in all eM libraries. The Rotterdam exchange (eHOME) also shows the partnership between one city (Durban) and another (Rotterdam) in development planning and ICT use for planning.

To achieve the PPPs government institutions should fully understand the benefits and opportunities that ICT can offer. According to Heeks (2002: 34) 'stakeholders in private sector, in academia, in community organisations, and in local governments should be encouraged to get involved in the process and start the e-governance initiatives within the context of the national strategy, drawing on their own expertise and perspectives.' It is

this commitment and the development of strong partnerships with the educational, private and voluntary sectors which will enable eM to ensure the sustainability of being a centre of excellence for ICT.

5.10 Conclusion

One of the most striking conclusions is that more local governments consider themselves to be governing according to e-governance than is actually the case. An important distinction that emerged is that local governments in the Developed world seem to think e-governance is about rolling out community e-governance initiatives ahead of developing the human resources capacity.

The Brisbane case study presented itself as an average example to display e-governance planning and implementation. Brisbane's commitment to maintain transparent relations is shown in the "your city your say" discussion forums.

The Andra Pradesh case study exemplifies e-governance initiatives aimed at providing quick service on "one stop shop" facility. This is enabled by ICTs. This is also common in the Johannesburg Metropolitan Council case study where "call centres" and "internet links" are being orchestrated for information management practice.

Finally, some of the interview respondents in eM envision that ICT will enhance integrated governance and local democracy by allowing for more stakeholder input in policymaking, expanding the scope of policy deliberation, and reducing intermediate barriers to information dissemination (Sutcliffe, 2002; Allan, 2002; Mbonambi, 2002). Reflecting this perspective Sutcliffe (2002) remarked:

The new technologies will allow the citizen new access to the levers of power in government. As more information reaches the citizen, the greater the potential for them to influence and make informed choices regarding how the municipality touches their lives. The potential gives new meaning to a 'government of the people, by the people and for the people.'

Unfortunately, except for Brisbane, the web analysis in this paper shows that many city governments have not yet actualised this potential. So far, Internet initiatives have primarily focused on customer services. Although other examples seek citizen input on how they should design city websites, only Brisbane engage citizens in online policy dialogues or partner with community organisations to strengthen citizen participation.

It is overt that eM lack an integrated ICT plan and a capable human resources to deal with the current trends of ICT. This is because of its current - year 2002- fragmented ICT culture. The municipality downfall has been that it did not have a central ICT planning department to overlook e-governance processes. However, the establishment of the new governance structure which has seen the inauguration of the Geographic information and Development Policy department, will prove as the advantage for developing the integrated ICT strategy in Durban. This is because eM has the infrastructure and networks it is only that it needs integration and a responsible champion to steer it to a smart city programme.

Overall, it appears that engendering e-governance can be a reality rather than a myth. This suggests that the very basic guiding principle in engendering e-governance is ensuring that ICTs are accessible and useable by the municipal staff and the community at large. However, this

is a challenge to develop a successful ICT plan for local government institution. Above all using ICTs in governance is a commitment to public accountability.

Chapter 6

E-governance - What does it mean for Local Governance: the Planning Implications

6.1 Introduction

Current innovations and restructuring of local governments activities in South Africa, offers a chance to explore ICT capabilities in, human resources development, development planning, data management, network application, service delivery and stakeholder participation. E-governance is profoundly changing the way public administrators communicate, plan and manage their daily activities. It allows communication over distances.

The topic of ICTs and local governance creates a candy effect by providing license to deal with a range of phenomena. The result is an effort to cover far too much with no logic or theory offered to explain why some consequences are discussed and others are not and why some evidence is presented and other findings are not. This leaves an analysis which lacks any theoretical base and explicit methodology, gives more attention to marginal than primary effects of ICTs, and, in many instances, is in conflict with significant body of research.

Nevertheless it has appeared in this report that the application of e-governance theory to local governance depends on the e-readiness of the local government. E-readiness entails readiness in terms of human resource, infrastructure, political commitments and enabling e-governance policy framework for long-term planning and management.

Accordingly this chapter aims to take up some of the important and interesting themes that have emerged from the literature review (chapter 2), the international precedents (chapter 3), the research findings and analysis (chapter 4 & 5) in order to comprehend the implications of e-governance in local governance. Recommendations are made as a point of reference not a fixed idea of necessary interventions to facilitate the implementation of e-governance initiatives in local governance especially in eThekweni municipality. This involves formulating the ICT plan with long-term goals within the scope of the LTDF and IDP for the eThekweni municipality. Finally, the chapter will outline topics for further research.

6.2 The Links between E-governance Theory and Findings

The concept of e-governance (Ch.2) and the case studies (smart cities) (Ch.3) and that of eM (Ch.4) are linked together by information and communication technologies. ICTs are hailed to reform governance. However, to establish a smart city one has to have governance policy which explains the short and long-term strategies of ICTs applications. The premise to this is establishing a working theory that will guide the development of e-governance practice. This is a challenge in the case of eM when one considers problems facing eM in formulating an integrated ICT plan (section 4.4).

E-governance theory has shown that establishing a smart city is a process that requires a detailed strategic ICT plan. The plans should be informed by the current developmental status of the local government institution in question. This includes understanding the educational levels, ICT skills training, infrastructure availability and more importantly what the stakeholders identify with.

The findings of this study shows that eM e-governance programme is in its infancy but the recent -July 2002- developments of revamping the municipality's website are signposts of what is to be expected of eM electronic governance.

Basically, the findings shows that smart cities are cities that undertake to use technology in their governance processes. Chapter 3 shows that Brisbane, Andra Pradesh and Johannesburg are following suite into the smart city project. The findings presented in chapter 4 on the current ICTs status of eM shows that the municipality is ready for e-governance. However, this is disadvantaged by the fragmented applications of information technology. However, this made this study interesting because it offered the opportunity to assemble findings that will be the cornerstone of future ICT strategy and research in eM.

The fragmented ICTs culture in eM creates a hegemonic monoculture among individual service unity within the municipality. Service units have varying regulations and applications of ICTs and varying capacity to deal with current ICTs innovations. With the renewed emphasis on e-governance in eM social and economic development policy, there is probably considerable room to become more systematic about the development of tools to help recruit, train and support successful human resources ICTs skills. In so doing eM will be heading towards the theoretical perspective which outlines six necessary infrastructure developments to become a smart city (see section 3.4).

The e-governance theory points out the necessary organs of formulating and implementing effective ICT strategy. That is dedicated (1) local government institution, (2) the human capacity and (3) the merger of governance and ICTs initiatives, which includes incorporating general public in governance. The findings from both chapter 3 &

4 shows that the examples that were examined have these components in their plans to develop as smart cities. However, the commitments vary according to the country context, it has been learned that institutional dedication and availability of ICTs skills are the pillars of effective e-governance.

The findings cannot be said to have covered the whole theory of e-governance because of limited information and initiatives. It can be said that eM is on the right route towards establishing itself as a smart city. This can be seen in their new Information and Development Policy department establishment. Secondly the revamp of the city website shows that the municipality is aware of the new requirements of information. Information is made available online, for easy and quick access by the people within and outside the city. The ETHEKWINI ONLINE website will soon offer online billing and discussion forums for citizen's participation.

Therefore, the adage "knowledge is power" is proven and it follows that ICTs can provide better alternatives for information. However, it was learned that in the case of eM ICT can be an alternative because of the current development status in Durban, wherein there are still people who needs some help on other needs ahead of technology. There are people who are still technophobic and believe traditional forms of communication are still the best medium of communication. But ICT can even provide access to information even to those poorest people in different forms and mediums, driven by computer technology.

6.3 Responses to Research Question (s) and the Hypothesis

The report has shown that ICT can be useful in governance. The question that this work has been trying to answer is "whether ICTs can enhance integrated governance in eM"? Fundamentally, this question can be answered by looking at how are e-governance initiatives drawn and applied. In the case of Durban, there is a massive restructuring of the current fragmented ICTs culture. So it can be concluded that eM recognises that ICTs can enhance integrated governance and that is the same reason they are restructuring their governance structure to harness the possibilities that ICT offers.

For example, the city's website has been revamped to a new interactive and informative site about the city development and management. This responds to the sub-question of "how is the ICT infrastructure used in eM?". The city has since established the Department that will look at the implementation of e-governance, including ICTs skills provision, integrated communication networks and data management systems. The skills that need to be presented especially to all employees are that of GIS. The GIS system that is online in eM website is user-friendly and it reflects eM commitment to reach out to the people who are not GIS specialist but are connected to the net.

Secondly, there have been partnerships with the private sector especially the private donors to provide universal access to the communities. The Carnegie e-community internet project partnerships shows that the city is committed to providing infrastructure and developing its people in the ICT discipline.

Therefore it can be said that eM is still in its infancy in implementing its e-governance initiatives. However,

there are signs that when the ICT plan and strategy comes out the information and development policy department will ensure that e-governance enhance integrated governance in eM. The ICT plan and strategies contains a vision, objectives and projects to be implemented to ensure integrated governance and integrated network facility across the eM. This answers the sub-question that asks whether "eM is ready to become a smart city in terms of visioning and strategies...?"

Finally, at the time of writing this paper it was clear that eM is committed to citizen development and a new management style to govern the development processes. This is aimed at combating problems presented in section 4.4. and to explore the suitable technology to develop eM towards a smart city. This put eM in an advantage to install advanced ICT programmes ahead of the developed world that has gone online long ago. However, this requires the clear understanding of the benefits that technology can yield. Flowing from that understanding could be the feasible vision and strategy to ensure integration and efficiency of an e-governance programme.

6.4 Extent to which ICTs can be Implemented in Local Governance

What exactly has e-governance got to offer in local governance? At root, e-governance has the power of ICTs, which provide three basic change potentials for good governance and development.

Firstly, automation: replacing current human-executed processes which involve accepting storing, processing, outputting or transmitting information. For example, the automation of existing clerical functions by online payments for services like electricity and water.

Secondly, informatisation: supporting current human-executed information processes by providing a multifaceted communication tool to support current processes of decision making and decision implementation.

Lastly, transformation: creating new ICT-executed information processes or supporting new human-executed information processes by creating new methods of public service delivery and participatory decision making.

Automation, informatisation and transformation in turn, can bring, singly or in combination, important benefits to local governance (Nath, 2000: 30):

1. Efficiency gains

- ◆ Governance that is cheaper
- ◆ Producing the same outputs at lower total cost.
- ◆ Governance that does more
- ◆ Producing more outputs at the same total cost.
- ◆ Governance that is quicker
- ◆ Producing the same outputs at the same total cost in less time.

2. Effectiveness gains

- ◆ Governance that works better
- ◆ Producing the same outputs at the same total cost in the same time, but to a higher quality standard.
- ◆ Governance that is innovative
- ◆ Producing new outputs

The applications of e-governance go beyond bringing the above benefits. Internally, e-governance benefits are better staff motivation or greater political control or an improved public image. Externally, it delivers cheaper, better services to those who depend on local government. Therefore as pointed out above the

application of e-governance has three main domains, that is, improving government processes, connecting citizens and building interactions with and within civil society.

Therefore, e-governance is useful in interpersonal communication, mass communication and public context. This can be either in making information available on website (models - Ch. 2), emails, 'your city your say' (Brisbane) online forums and discussions and GIS spatial data exchange on printed formats or web-based GIS. Local governments can make this a possibility by adopting IDP and making sure that each and every person has their say in development planning, as legislation requires.

6.5 Local Government Institutions as means to Promote E-governance

Local governments have to restructure political-administrative developments enacted by uses of new ICTs by transformations of internal and external organisation, operations. Local governments can use ICT as an instrument for its internal organisation, for its operations, for transactions, for the development and implementation of policies, for monitoring and disciplinary ends, for the provision of information to politicians, citizens and societal groups and organisations. This incorporates the creation of independent intermediary agencies for development and implementation of public policies.

In this context a proper ICTs regulatory environment is fundamental (infoDev, 2000: 21). In order, however, to fully engage in the networking revolution, local governments have to go beyond traditional regulatory reform, addressing the challenges of convergence and setting the rules needed for the expansion of e-governance (ibid.). This should include issues like

integrated governance, transparency in local governance, efficient decision-making, efficiency and effectiveness of service delivery and technology skills development.

In South Africa local governments have the developmental role to maximise economic and social development. ICTs can provide a systematic innovation to deal with communication issues and information sharing between the local government employees themselves and between them and their constituency. So there is a need for the formulation of feasible strategies and plans to support ICT development and to form part of integrated development planning. The most important question for local government will then be whether the structure and processes of existing local governance are still adequate to deal with the reality of e-governance.

6.6 Rethinking the Education Systems to Meet the New Challenges of the Information Age

It takes a long time for local government, people and businesses to learn the full potential of e-governance. Old practices and ingrained attitudes make it hard to usher in the profound change technology enables. Such resistance still exists today in local government environment, because change is hard. It's easy to install technology—to place a computer in a learning centre—but it's difficult to change what people do in order to apply and benefit from that technology (Mbonambi, 2002).

Local government goals should be nothing less than cutting to the heart of social divides. And if the path to closing those divides runs through the community infrastructure that is the lifeline for people living in low-income areas, they must go through that lifeline too. According to Beaird (2000: 78) 'the local authority can make the community infrastructure stronger, more highly

effective and more sustainable by exploiting the potential of technology to achieve better outcomes for the people it serves.' This points out the need for educational programmes to promote ICT use from junior levels of education to the tertiary institutions. In so doing the government will be preparing students for the business world which nowadays requires ICT skills.

Local governments should focus their efforts on the social outcomes, a technology-enabled community infrastructure can make possible and move beyond just ensuring that the technology's there. They must seek purposeful use of the technology. Making sure technology is in place is only the first step on a long and challenging journey. Again, such change is hard. There is no guarantee that access to technology will produce better social outcomes like improved integrated governance or participatory decision making. Therefore ICT training remains the path towards developing a smart city.

According to Mantovanni (1996: 202) 'today too many people, afraid of being left behind in this increasingly technology-enabled world, blindly support and accept that access to technology is key to their economic future'. But that is a leap of faith. There is a great need to make ICT part of the curriculum in the education system of South Africa. There is also a need to make sure that social issues are considered and that ICT is not seen as a quick fix to urban problems, as advocated by the utopianists and technological determinists (See section 2.3).

But people and local governments can be empowered to achieve improved outcomes with technology. It should always be remembered that the power of technology is not the computers, the complex of networks or the vast databases of information. Rather, it is people and their imagination, knowledge and resourcefulness that bring

about change. Technology enables people to apply their imagination and knowledge and to do so more effectively, on larger scale and, most importantly, in ways not otherwise possible.

Therefore, training and education are the pillars of effective e-governance and they ensure that users are at ease with the new mode of communication and management. It follows that the education institutions should start to unwind the legacy of the past wherein different kinds of education was given to different schools and communities. There should be an integrated education planning system so that ICTs users are bred from lower levels of schooling.

6.7 Managing the Risks of Technological Change

Every technological advance brings potential benefits and risks, some of which are not easy to predict. The benefits of technologies can be far greater than what their creators foresaw. From this perspective, most developing countries have the disadvantage in the face of technological change because they lack the regulatory institutions needed to manage the risks well. More specifically, local governments in developing countries should prevent the hype of technological determinism which might lead them astray. The responsibility of local government is to ensure that it rolls out its ICT plan in a manner that favours its development and above all in a manner that stakeholders identify with.

The development plans for local governments should try to establish the mechanism to close the digital divide. The unbalanced access to ICTs can be a result of income, education, geographic region, race, gender and age inequalities. So local governments, especially, eM has the responsibility to address these inequalities through

is integrated development plan. ICTs can be resourceful especially the GIS applications in mapping these inequalities for analysis and knowledge-based development planning. Also the WWW and email can be useful to provide quick information and quick feedback on either community or municipal messages.

Nath (2000: 28) holds that there can be advantages to being technological followers. Unlike front-runners, followers do not incur the first-mover risks of using new technologies: they can instead observe how those risks play out in other countries. They can also learn from others in designing their regulations and institutions. Moreover, for some technologies they may be able to establish low-cost regulatory systems that build on, or even rely on, the regulatory standards of early adopters.

6.8 Recommendations and Possible Interventions

The eM is currently - year 2002 - undergoing massive restructuring of the governance processes. This includes departmental integration. It has been learned that the ICT culture in eM has been fragmented establishing different management systems. The integration of ICT programme in eM is recommended. This intervention can be possible through an effort which encompasses all the stakeholders in the eM. Secondly, there is a need to integrate network facilities for communication and management processes. This suggests that eM should establish a network facility that can be able to communicate with all the existing networks in eM that are currently unable to talk to each other.

The impetus for this should be on the integration requirements. For example e-governance can integrate planning, implementation and monitoring and evaluation of development. So it is important to integrate the

resources that provides that information to a system that is user-friendly and understood by its users.

It is fundamental that eM review yearly the preparedness of its employees towards becoming a smart city. This should include training and setting key performance indicators to understand the extent to which employees utilises ICTs. The indicators can include improved service delivery, fast decision making and informed personnel and communities, to mention a few.

eThekwini municipality should use e-readiness assessment to plan and implement e-governance initiatives (see annexure 3). Assessments of e-readiness assist the municipality to focus its efforts from within, and to identify areas where external support or aid is required. But an assessment alone is insufficient, and decision makers face two key challenges in making effective use of this tool. First, they need to understand how ICTs can help their municipalities achieve democratic participation benefits, and to set realistic goals accordingly. Second, they must take concrete steps toward effective and sustainable ICTs use that will help their municipalities realise development goals. It should be acknowledged in this regard that developing human resources for e-governance is the fundamental recommendation for eM to become a smart city. Based on the case studies discussed in Ch. 3 & 4, the following proposals are made for interventions at local level of governance:

- ◆ eM should fund a project to undertake an assessment of the human resource needs and gaps for ICTs in the various service units by rotation. PPPs will be useful in this regard.
- ◆ arrange local workshops for experience sharing, as it is necessary in the fast-changing scenario to have a

deeper understanding of experiences of different service units' initiatives.

- ◆ identify willing partner municipalities, e.g. Johannesburg or Cape Town, which wish to collaborate for the creation of high-quality interactive digital content for ICT and non-ICT training and fund a pilot collaborative project

In terms of recommendations for further research on this topic, it has appeared that the e-governance topic is broad, so the following can be recommended for further research in order to understand eM e-readiness:

- ◆ ICTs networks applications in local governance
- ◆ E-governance and the concept of physical vs. virtual spaces
- ◆ Developing smart communities through the use of ICTs
- ◆ Quantitative studies of the current levels of ICTs skills and users in the eM.
- ◆ Assessment of the current service providers for the human resources training eM.
- ◆ The importance of partnerships in developing e-governance programmes

There are many other topics that can be established for further research in this regard. This provides the opportunity to advance this kind of knowledge on Durban so to support the city's commitment to become a smart city.

6.9 Implications for Town Planning

The development of an e-governance strategy will have a huge implication for town planning. For example, in eM, building plans, GIS information, and community profiles statistical data can be accessed online. Firstly,

planners will be able to get basic information in an electronic form. They can have GIS data, community profiles data anywhere that they are and that can make their life easily and it will cut cost of travelling and decrease time delays of projects implementations. Carter (1997: 150) states that creative use of planning powers can put pressure on cable operators to connect up community facilities, for example schools and libraries, at low or even no cost, and to include poorer areas of the city in build plans. Secondly, planners will have flexible mechanisms to deal with special consent applications and rezoning issues online. This will save time for developers and local government institutions. The eM case study is the best example in this regard with their, devinfo.durban.gov.za website.

6.10 Conclusion

In concluding, we have seen that e-governance has different applications and it encompasses so many topics some discussed in this study and some proposed for further research. The following quotation provides an exciting challenge for the notion of e-government (Carter, 1997: 151):

The ability of small-scale initiatives in cities and regions to use advantages of the technologies, to use cyberspace, to create communication and activity networks free from the usual spatial and temporal constraints is a crucial element in providing a democratic counter-balance to other technological and global trends... It is in this context that the 'the governance of cyberspace, needs to be debated backed up by practical examples of how people and organisations are working to achieve liberation and empowerment through innovatory explorations of cyberspace.

To this end, it appears that technology is a potentially powerful lever for change in three important ways. First, the application of e-governance enables the individuals and local government institutions to transform and improve the way they work. Second, the technology enables these institutions and individuals to work together much more effectively, to share resources, benefit from each other's strengths, gain a collective voice to better advocate their needs, and in so doing to help build the sense of virtual community. Third, a stronger, more robust community infrastructure can, in turn, encourage and enable the people it serves to learn and apply technology in ways that improve their own lives—educationally, economically and socially. However, this is all dependent on the following e-readiness infrastructure:

- ◆ Data systems Infrastructure
- ◆ institutional infrastructure
- ◆ human Resources infrastructure
- ◆ technological infrastructure
- ◆ leadership and strategic thinking
- ◆ Legal infrastructure

The new "e-governance" paradigm, which emphasises co-ordinated network building, external collaboration, and one-stop customer services, contradicts the traditional bureaucratic paradigm, which emphasises standardisation, departmentalisation, and division of labour (Ho, 2002: 15). Based on content analysis of city websites, this dissertation suggests that many cities have started to move toward the new paradigm in their web-based services and ICT management.

However, socio-economic and organisational barriers to the transformation remain. Insufficient staff, lack of funding and the problem of digital divide among communities are major hindering factors in developing

countries like Durban, South Africa. Future efforts to reinvent local government through ICT usage need to go beyond purely technical concerns in shaping ICT management (Dawes, et al. 1999). Rather, information technology management requires a new vision and determination by local government leaders to prioritise resources for technological change, a new approach toward organising departmental operations that can be more cost effective, an a greater social concern with the economic and racial disparities in the digital society.

So eM will be in the right road towards becoming a smart city if they can ensure that infrastructure is existing and is integrated to the whole management processes. As the case studies has shown e-governance programmes should involve the stakeholders and public and private partnerships. Carter (1997: 151) holds that the essential starting point for this must be a commitment to creating services and applications that are easy (and cheap) to use, that grab people's interest and imagination so that they want to use them and that they would fight any attempt to limit them or take them away.

Overall, whatever the term employed to describe it, e-governance is increasingly seen not merely as the latest management fashion, but as signalling the development of a more organic and holistic way of understanding and exploiting the role of knowledge in the process of managing and doing work, and an authentic guide for individuals and local governments in coping with the increasingly complex and shifting environment of the modern government requirements.

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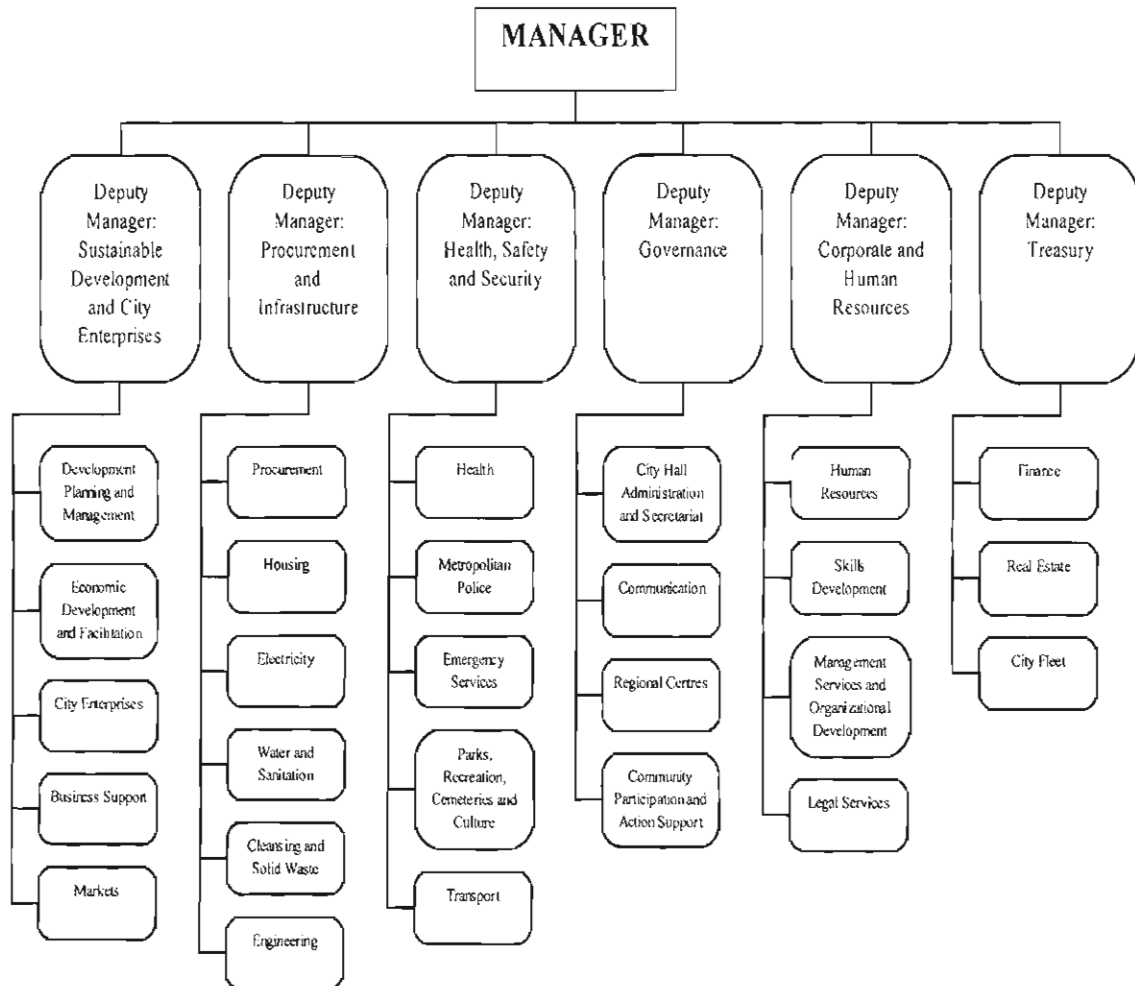
Annexures

Annexure 1. Interview Respondents

1. Dr Mike Sutcliffe (eThekweni Municipality Manager)
2. Mr Craig Allan (Manager Information Unit - Urban Strategy Department.)
3. Teresa Dominik (Manager Development Unit - Urban Strategy Department.)
4. Mr Brian O'Leary (Town Planner Information/GIS - Urban Strategy Department.)
5. Thando Magewu (Project Executive / planner - INK Urban Renewal Project)
6. Mr Vishal Ramduny (Planner / Researcher - Urban Strategy)
7. Laura Bedford (Planner / e-housing project coordinator - Metro Housing)
8. Mr Linda Mbonambi (Communications Manager - Transformation Dept.)
9. Angela Spencer (Web designer - Communications department)
10. Mr Bud Govender (Information manager - Development and Planning Department)
11. Mr Trevor Islands (Manager Corporate GIS - Development & Planning Department)
12. Mr Lunga Madlala (Director - Corporate Information Services)
13. Mr Danie Steyn (Manager operation - Corporate Information Services)
14. Mr Hlubi Mthimkhulu (Staff member - Corporate Information Services)
15. Sbongile Makhanya (Librarian - uMkhumbane library)
16. John Mayer (Systems Operator - Umngeni central library)

Annexure 2. The First Page Organogram of eM

FIRST PAGE ORGANOGRAM FOR ETHEKWINI MUNICIPALITY



Annexure 3. E-readiness Assessment Questions - Ensuring that ICT is Accessible and Useable

Decision-makers can approach the e-readiness assessment by considering the factors that determine whether people in developing countries can truly access and use ICT in their daily lives. The following questions can serve as guideposts to help decision-makers decide what they need to do and how to plan their e-strategy (infoDev: 2002)):

- ◆ *Physical access.* What can we do to make technology available and physically accessible to our citizens in their communities and workplaces?
- ◆ *Appropriate technology.* What can we do to ensure that the available technology is appropriate to how our citizens need and want to put technology to use, and that it fits within the reality of their daily lives?
- ◆ *Affordability.* What can we do to make technology access and use affordable for our citizens?
- ◆ *Capacity.* What can we do to help our citizens understand how they can use technology in their lives, and what can we do to ensure they receive the training they need?
- ◆ *Relevant content.* What can we do to ensure that content is developed that is locally relevant to our citizens, especially in terms of language?
- ◆ *Integration.* What can we do to ensure that technology is not just a further burden to the lives of our citizens, and how can we help them integrate technology into their daily routines?
- ◆ *Sociocultural factors.* What can we do to ensure that our citizens are not discouraged from using technology or limited in their use because of their gender, race, or other socio-cultural factors?
- ◆ *Trust.* What can we do to help our citizens trust technology and how can we help them understand what happens "behind the screen" so that they will feel

confident and be informed about things like electronic privacy, data security, and cyber -crime?

- ◆ *Legal and regulatory framework.* What can we do to determine how our laws and regulations affect technology use and what changes can we make to create an environment that fosters its use?
- ◆ *Local economic environment.* What can we do to foster local economic development that can and will sustain technology use?
- ◆ *Macro-economic environment.* What can we do to determine whether our national economic policies are conducive to widespread technology use, for example, in terms of transparency, deregulation, investment, and labor issues, and what changes can we make to create a more conducive environment?
- ◆ *Political will.* What can we do to gain public support for our e-strategies—and to fortify our government's political will so that we can make tough decisions and drive the change needed for our country to achieve its goals?