

Engaging Communities: Emerging University, Government, Business and Community Partnerships in South Africa

Taylor W*, Erwin G* & Bytheway A*

Cape Peninsula University of Technology, Cape Town, South Africa

Abstract

The practice of democracy in South Africa and the emergence of the modern Internet as we currently know it, have been around for just over ten years. Both are continually struggling with how to best deliver the promises of increased community engagement in decision making for local benefit. After 11 years of effort, the full social appropriation of a continuing practice of governance and modern information and communication technology (ICT) is yet to be fully realised in South Africa. Whilst these two phenomena are vastly different, they are none the less shackled together in relationships that are on the one hand symbiotic and the other potentially antagonistic. Whilst humankind's capacity for justice makes the social appropriation of information technology both desirable and possible, humankind's capacity for the pursuit of individual wealth and power to the disadvantage of others creates urgencies of necessity in even the most undeveloped situations. At the same time, the reformation of the higher education systems in South Africa has placed a greater emphasis on demonstrable community benefit and engagement. Such an environment provides the opportunity for higher education to assume a collaborative leadership position in assisting individuals and communities to maximise self-reliance and participation through the increased use of information technology within a framework of economic, social and cultural wellbeing. This paper examines the theory and praxis of work undertaken by Cape Peninsula University of Technology in addressing the practice of community engagement at the nexus of democratic governance, information society technologies (IST) and the responsibilities of higher education in the South African context. It reports the outcome of an engagement between the university, business, government and civil society, and presents a new evaluatory framework to assess the effectiveness such information technology supported engagement.

Keywords

Social appropriation of information technology, information management body of knowledge (IMBOK), South Africa, community engagement, community informatics

Introduction

The purpose of this paper is to examine the partnerships and community engagement activities that are emerging in the deployment of information and communication technology (ICT) in communities — a process that is now widely referred to as 'the social appropriation of information technology' in order to contrast it with the more frequently researched *business*

appropriation of technology — and to explain some recent efforts that have already significantly improved the level of cooperation and understanding between the major stakeholders: government, business and civil society in South Africa.

South Africa

Democracy in South Africa has a short and recent history. In the apartheid years up until 1992 there was no representation in government of non-whites, who form more than 80 per cent of the population. A government of National Unity was established in 1992, and the first free elections took place in 1994.

Essentially during the same period of emerging democracy in South Africa, the Internet also emerged globally out of the obscurity of the early military networks of the 1980s. With the superimposition of the World Wide Web on the Internet, in the early 1990s, there was a rapid flowering of Internet applications and usage that continues right through to the present day.

South Africa is sometimes seen as a Third World country with a First World infrastructure. This is one of the many reasons why it is such an interesting country in which to observe the appropriation of information technology. It has well-developed transportation and communications infrastructure, and yet it has unemployment that is usually reported to be about 40 per cent; it has advanced industries that have developed world-beating ideas, and yet the larger portion of the population is very poor and derives no benefit from these successes; it transacts much of its business in English, and yet this is the first language of only a small minority of the population and to set against this preponderance of English there are 11 official languages that have been adopted. The effects of this mixture of economic and social infrastructure, culture and governance on the social appropriation of information technology and community engagement in decision-making becomes evident, when one examines the key stake holders: government, business and civil society. Firstly, it is useful to summarise the recent impact of technology on communities and people.

Communities, people and technology

In early work that addresses information technology in the social context, Gurstein (2000) notes that the concept of communities comes to the fore as national boundaries fade and improved communications allows the formation of virtual communities.¹ Hence, the impact of technological developments on society has become undeniable and significant, especially in

¹ But of course, this did not only happen because of ICT. In South Africa during the apartheid years, the imprisoned political activists for many years kept apart in their different groupings. Only as the years passed did it become apparent to them that it would be more useful to work together, and a new community formed around what we still know as the ANC political party. Activists who might have happily shot each other 'outside' were suddenly on the same team 'inside', and as their privileges were gradually improved over the 1970s and 1980s so that they were allowed books and study time, the secret work began to develop the ideas and principles that are now enshrined in the new South African constitution. This is an example of enforced rather than improved communications, perhaps.

allowing communities to engage in new ways. But adoption of technology depends on the propensity of individuals to change their ways in order to use it for some purpose, and this propensity to change will depend on a range of factors, for example culture and gender.

One example can be found in a report from a women’s networking support program, wherein it is argued that we have lost democratic control over technology and that there is a dearth of those competencies and characteristics that would most effectively harness the benefits of technology (APC n.d.).² The report works up to a framework that can be summarised graphically (Figure 1).

A framework for the analysis of gender issues in the adoption and use of information technology

Loosely based on work by the APC Women’s Networking Support Programme
(See APC(undated) in the bibliography)

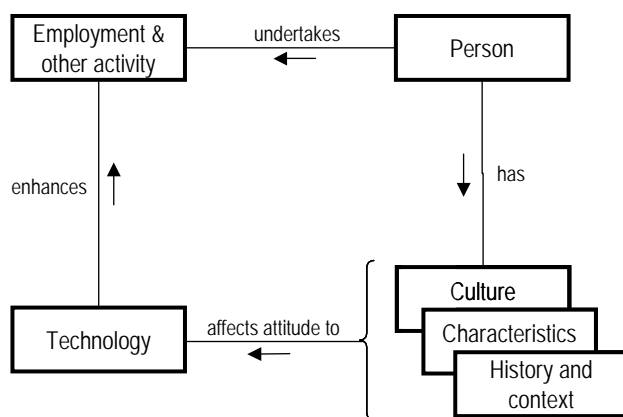


Figure 1. One view of people and their relationship with technology

This framework shows how people’s engagement in employment and other activities can be seen to be enhanced by technology, but only in ways that will be determined by culture, history and other personal characteristics. Culture and history cannot be changed easily, but other important characteristics can. For example, the *competencies* that are necessary to effectively deploy technology can be researched and understood, and they can then be taught. As will be seen later in this paper, information technology-related competencies have emerged as a key concern of all the major stakeholder groups.

Purpose of this paper

International organisations have begun to respond to the currently observable issues of inequity and incompetence brought about by new technologies. The United Nation’s World Summit on the Information Society (WSIS) conducted in Geneva in 2003 involved

² This example, taken from a gender context, is equally applicable to other cases of marginalisation and disadvantage.

government, business and civil society in equal partnership, with a clear recognition that without the involvement of civil society, inequity would escalate.

Critical to the involvement of civil society is the role of universities. Many (if not most) universities can be criticised for not grasping their clear responsibility to support and assist the efforts of civil society in practical ways, but through rigorous academic research and effective education based upon that research. This paper explains how one research project investigated the competencies necessary to effectively deploy information technology, beginning with an engagement with business, government and representatives of civil society, and concluding with the launch of new educational programs and research instruments.

The paper reviews the situation of the key stakeholder groups in South Africa: government, business and civil society. It then reviews recent reports about information technology initiatives and the problems of technology-induced change, with a special focus on South Africa. Finally, it describes a research project that set out to deal with some of these issues, and presents key outputs of that project.

Key stakeholders

Government

Government in South Africa is enacted in three layers: national, provincial and local. The national government sits in Cape Town but the principal government departments and ministries are in Pretoria (now renamed 'Tshwane'). The nine provinces each have their own premier and parliament. Finally, local government has constituency at the metropolitan or rural nodes of administration.

Government structures and service delivery in South Africa are still stabilising, even after 11 years of practical operation in the new dispensation. A very large volume of legislation that is largely directed at reversing or compensating for years of apartheid rule has been promulgated in the first ten years, but the processes of public administration are still vibrant. Government at the provincial level is currently experiencing some identity problems because of a lack of experience and a degree of uncertainty about the exact role of the provincial administrations in relation to 'traditional leaders', who are still anxious to maintain their traditional rights and privileges.

With this administrative background, the prospects for the successful appropriation of information technology for useful social processes and community engagement in decision-making are, on the surface at least, problematical. However, in a social context that values community input and direction highly (it is useful to remember that the efforts to overturn apartheid were driven from a community-based perspective), there is a rich mixture of

experience to draw upon. Further, all levels of government clearly understand the need for useful community engagement. In this busy environment dominated by issues of equity, central government policies for the use of information technology for community engagement often lag behind world best practice. For example, it was only in mid 2004 that the minister for communications announced that voice services over the Internet (VOIP) would be permitted, starting in February of the following year (DoC 2004).

Business

Just as with government, there are distinctly different spheres of business in South Africa. There are large established companies that survive from the apartheid era, for example in minerals and mining, financial services, automotive manufacturing, agribusiness, and food. Most now exist with modified ownership structures that recognise the imperatives of the 'new' South Africa. Then there are some new companies of substance — many of them holding companies that hold newly transferred wealth and a degree of control for a new elite of black business leaders.³

The number of businesses of substance that are black-owned is very low, but there is a very visible Black Economic Empowerment (BEE) movement that has the absolute support of the government, and that is establishing new patterns for business activity. There is also the Black Management Forum (BMF), which provides focal point for discussions, networking and recruitment from the universities.

In parallel there are many small businesses that defy easy categorisation. It is at this level that hundreds of thousands of non-white people work, in low-paid jobs and even in 'informal' businesses of one kind or another.

Civil society

Although it is necessarily comprised of many different sectors and special interest groups, civil society can be seen as a specific stakeholder group for two reasons: firstly, it is frequently referred to in a singular way in policy discussions and in research; and secondly because the entities that comprise civil society have shared concerns. For example, they are all concerned to counteract the concentration of power that can arise from appropriation of information technology that has no regard to social needs.

There are a number of large and successful civil society organisations (CSOs) that work to improve the prospects of the peoples of South Africa. In the course of the past 11 years they have had to change to reflect reduced government priorities by refocusing their activities on 'moving forwards' rather than on 'struggling for liberation'. Within this framework there are

³ Not surprisingly, the labour unions are increasingly anxious about the way that new wealth is not being shared amongst the previously disadvantaged masses.

vibrant signs of civil society organisations recognising and advocating for the social appropriation of information technology, directed at self-reliance and engagement with government for policy development and decision-making.⁴ Whilst there is a great energy amongst these and other organisations, they are generally resource-poor and do not have the capacity to continually support research and policy development agendas. The more permanent civil society entities within the country, principally the universities, exhibit similar differences in their positioning 'before' and 'after' the achievement of democracy. The formerly privileged universities are now learning to live with student populations that are representative of the country as a whole; the formerly disadvantaged universities are learning to exercise their equal rights for access to research funding and capital investment.

It is important to recognise the potential role and responsibilities of Universities in civil society. For example, the UN WSIS definition of civil society includes education as the first of the ten Bretton Woods 'civil society families' (CS Bureau 2003). Although universities are only a part of civil society, they are arguably one of the most important in the South African context because of their privilege in times of great change to undertake research, and their obligation to share the results through education.

At this time, when the role of information technology in bringing opportunity to poor people is so critical, society must prepare for the mobilisation of new technologies. This demands understanding and education. At one level, the pace of technological developments is unrelenting and ever closer to the lower socio-economic sections in society, but at another level society and people individually need to develop an enduring capability to deal with it. Learning to use the latest personal digital assistant (PDA) is one thing, but the ability to lead people of all kinds through substantial change is another. The technology itself changes almost every day, whilst effective use at a societal level changes only very slowly. It is not just about *access* to technology, it is the ability to *use it effectively* that is important. Universities have a clear obligation to serve these particular needs of society.

The stakeholders summarised

This brief overview from three stakeholder perspectives cannot possibly indicate more than a few of the major issues. It has not looked at specific details such as telecommunications infrastructure and information technology implementation capabilities. Nevertheless, the pattern that emerges is of multiple layering in all sectors, and the situation is sometimes summed up with one word: *diversity*.

A country with 11 official languages sets high expectations for diversity, and bringing all layers of South African society into an integrated community engagement process within ten years

⁴ See for example <<http://www.snagonet.org.za>>, <<http://www.ncrf.co.za>>, <<http://www.sacod.org.za>>, <<http://www.apc.org>>, <<http://www.misa.org>>.

was always going to be a challenge. However, there is a deep-seated commitment to community engagement using information technology. We must value this very real testing ground for information technology initiatives, learn from the problems, seize the opportunities that it presents, and share new understanding with other countries around the world.

This paper now proceeds to review briefly the emergence of communities as a domain of study, the application of information technology within those communities, and some specific African and South African aspects of the combination of communities and technology.

A changing world: The emergence of information technology-induced change

With the emergence of the World Wide Web, the early tentative concerns about the social consequences of information technology have become much more apparent and more legitimate.

Castells (1999), who is arguably one of the most respected writers on the social appropriation of information technology, has argued that the world is now entirely capitalist, with no centre, and with serious issues about inclusion within and exclusion from the information society. At that time digital exclusion was already seen to be rising and problematic. With the emergence of concentrations of power — not necessarily at easily identifiable ‘centres’ — the differences between the information ‘haves’ and ‘have-nots’ become a matter of very wide concern. Internationally funded projects were launched to understand how the ‘have-nots’ could be assisted. Concepts of ‘e-readiness’ have become the subject of intense study, and the flow of research reports into e-readiness and the management of technology-induced change is creating increasing interest to this day.

E-readiness

Many reviews of e-readiness have added real substance to the issues of digital exclusion between nation states. The matter of ‘readiness’, for e-commerce or e-government has become recognised as important for success (see for example Lopez-Claros and Dutta 2005; Rohieder and Jupp 2004). Improved efficiency is a powerful argument (IDABC 2005) but not the only one. The ‘Networked Readiness Index’ of countries is used to establish their propensity to exploit the opportunities offered by information technology (see for example IDABC 2003, IDABC 2004; Bonham et al. 2003; Rohieder and Jupp 2004). Most studies reveal the importance of information technology to transform government service delivery, governance processes and community engagement, through improved organisational efficiency, improved access to information and, of course, the provision of *appropriate* information. But success is evidently not easy to achieve without ‘readiness’. Since their inception in 2000, reports such as these show that country size and economic prosperity are not the sole determinants of e-readiness. Governance, policy and civil society inclusion are

also important. The importance of these indicators is not only in motivating internal change but also to signal opportunities for external investment.

Studies such as these have also found that the divide between countries has narrowed over the last four years, even between the most developed and least developed economies. The technology available to us all is essentially the same, and so these differences, and the means to minimise them, must arise from the way that technology is applied and the way that the unavoidable technology-induced changes are managed.

Managing technology change

The speed with which the technology changes is continually exciting us with new ideas and some remarkable things are currently emerging in the domain of mobility and wireless applications (Meinrath 2005). But a recent commentary by Nicholas Carr (2003) argued that information technology in business is no longer strategic, it is a commodity that is now pervasive and universal. He argued that just like with the railways (and with other major new technologies) there comes a point where such technology is no longer strategic. This commentary caused a flurry of secondary comment and argument, but its message is defensible and challenges what is now seen as the traditional information technology management regime. His analysis was directed at conventional business, but one consequence of the ubiquity of technology is that it is not only businesses that have access to it — individuals and society at large have increasing access also. At the same time that he argued for changes in the conventional approach to managing technology, Carr might have pointed out that we do not know how to manage technology in a societal context. The digital divide will not be solved by the chief information officers of large corporations — it will be solved by people ‘with their feet on the ground’ and ‘their hands on the job’ — most likely, by the members of the communities that are on the ‘wrong side’ of the divide.

A failure to recognise the real problem?

Some experts have come to see that the digital divide is not of itself the problem, but a magnification and manifestation of deeper problems. The *Economist* has argued that the digital divide is a *symptom of inequality*, rather than the cause of it (Economist 2004). It notes that the digital divide is almost always described in terms of the *differences* in the numbers of telephones, Internet users or computers per head in rich and poor countries. The far wider availability of technology in rich countries will enable the rich to get richer while the poor are left behind. However, a paper by Fink and Kenny (2003) questions the logic of this argument. These experts conclude that the divide's size and importance have been overstated, and that current trends suggest that it is actually shrinking, not growing.

This failure to recognise some of the critical issues is pervasive. Robinson (2004) highlights the extent of information technology projects with no community buy in, and the fact that

centralised governments, as evidenced by their policy responses, just don't care. Starting from a similar conclusion, Reilly and Gómez (2002) argue that we must decide whether the state is “an interlocutor that should be engaged, or an adversary that must be convinced” and then act accordingly. The role of donor funders and business in addressing the issues of inequity brought about by information technology adds to this mixture of responses and often carries a message of ‘not understanding the real community based issues’ The relationship between different role players such as these is a recurrent theme and needs to be understood.

The issues mentioned above create new spaces for conflict, when coupled with the paradoxes of information technology which simultaneously controls and creates chaos, innovates at the same time that it obsolesces, creates efficiency and inefficiency, fulfils and creates needs and provides opportunities for both engaging and disengaging in society. This not only warns us of some of the managerial complexities that will face any organisation that is striving to implement information technology for benefits, it also warns us that if we step outside the discipline and structure of a formalised organisation into the potential chaos that is society, then these complexities may well be much more challenging. The risks faced by a community are likely to be high, and conventional information technology management methods will not necessarily mitigate them. Communities do not work in the same way as business: they work with social processes, not rational managerial processes. This presents real challenges to all those people who believe, from their experiences in conventional employment, that they will be able to deliver information technology related benefits to society at large by the methods of business.

A South African perspective

One might argue that the diverse characteristics, complex history and limited capabilities of African nations further complicate the social appropriation of information technology,⁵ but it is reassuring to find that African leaders recognise the challenges.

President Thabo Mbeki laid out the ground for South African national policies in 2001 (Mbeki 2001). In his presidential address to the nation that year, he promised that the application of information technology to education, health, commerce and government would be expedited. He set up two advisory bodies including representatives of major international businesses and domain experts. Further, he established a national civil society advisory body to develop a position for civil society in the WSIS processes and to be the catalyst for subsequent planning and engagement. In the same year, he instituted a broad program of unmediated dialogue and interaction with the people of South Africa that is known as ‘Imbizo’. Whilst this program has no specific remit to address information technology issues, when one looks at the focus

⁵ South Africa variously ranks in the low 30s in the global e-readiness rankings. This is out of a total assessed sample of approximately 100. However, its position is improving and it is seen as a leader on the African continent.

of specific Imbizo meetings the need to incorporate the *potential* for information technology in discussions is very clear; the most recent meeting focused on strengthening government systems to accelerate service delivery — an area intimately concerned with information systems and technologies. Africa as a whole has the advantage that ‘systems’ for governance and administration are not well established, hence avoiding the problems that come with a firmly entrenched *status quo* for public agency service delivery.

In this context, which some might even see as a ‘green field’ ready to be developed, there is a very strong interest in the use of ‘free and open source software’ in Africa. This is evidenced by a pan-African project that is committed to the development and delivery of new software systems on learning management systems (AVOIR 2004). The engagement across government, donor bodies, business and civil society that is being demonstrated by projects such as this, and the level of collaborative working, is very encouraging. This provides an example where Africa itself is working well, and to its own advantage. The project is based in the Western Cape where there is a concentration of interest in the benefits of information technology in society. Another example is that the CSIR (one of the principal research establishments in South Africa) in conjunction with the national government and some universities is planning a national Institute for ICT to bring together the energies for innovation and development of information technology across the country.

Focus on the Western Cape

The Province of the Western Cape, one of nine provincial governments in South Africa, is situated in the south-western portion of South Africa. Cape Town (the home of the national parliament) is the administrative and business centre of the Western Cape.

The City of Cape Town is progressive and is investing heavily in new information technology in many different areas of activity (City of Cape Town 2004), partly based on an intensive study of the situation in terms of community access and capability (Bridges.org 2002). The Western Cape is equally active at the provincial level and has instituted a major portal (Provincial Government of the Western Cape 2004) that is backed up with a large development team and many specialist experts. Hence we see a willing local government, that is trying hard to appropriate information technology for the common social good and for community engagement. The Centre for e-Innovation has been established with a compliment of more than 400 new staff within the Western Cape Province’s Premiers Department to focus government activity on:

- E-Services
- E-Administration
- E-Information
- E-Society
- E-Research and Development

- E-Business.

This exciting commitment by the Western Cape Government has clearly recognised the value of partnerships and community engagement, facilitated by the social appropriation of newer forms of information technology.

There are also four tertiary institutions in the Western Cape, each of which has different approaches to the teaching of information technology, information systems and the construct of the information society, as well as a variety of other non-government organisations that work to improve the economy and the quality of life through information technology.

The Cape Peninsula University of Technology (CPUT) has begun establishing an international hub for community informatics and an Institute for the Information Society. Community informatics is the academic discipline underpinning the social appropriation of information technology and the focus of the work at CPUT will be in the research, policy development, teaching and praxis of community informatics as a means of increasing self reliance and community engagement in the emerging information society. The strategic platform for such an approach has been described by Taylor (2004).

A strategic decision was taken by the CPUT executive to grasp the community informatics opportunity, and in consequence it was further decided to invest in a new building, new senior academic appointments, new support staff, and new relationships with research partners elsewhere in the world (Erwin and Taylor 2004). The focus of the work will be on the linkages that exist and will be built between civil society, government, business and individual members of society. Specifically, the effort will develop partnerships with the provincial government, the City of Cape Town and relevant civil society groups and programs in order to examine, report and develop best practice for policy, program development and service delivery. A concerted effort by these partnerships has been determined as a prerequisite for business 'buy in' and funding.

Summary

From all points of view — government, business and now civil society — it seems that there is a committed effort to harness the benefits of information technology for local benefit and for community engagement: in increasing self reliance, in preparing the country for the information age, and in increasing participation in policy development and decision-making. However, the reality of the extremely heterogeneous environment adds challenging dimensions to these endeavours. What is certain is that as information technology develops, particularly in ubiquity, mobility and wireless-based applications, the problems of access for places like South Africa will reduce. What is also certain is that the current education system will not be enough to develop the depth of skills required to socially appropriate information

technology and embed it deeply and usefully in communities. Under these circumstances, it is imperative that all the service providers in business, government and civil society work together to maximise the rates of adoption, appropriation, policy development and research that is required to allow South Africa to not be disadvantaged in the next decade.

Civil society and universities in particular can provide leadership in forging partnerships with government and business. Effective partnerships between government, donors, researchers and civil society are beginning to be established and made to work in ways that help people at the community level. What is missing is the collection and analysis of experience in ways that builds more effective policy, a more effective relationship between universities and civil society and the basis for better engagement between business and the social appropriation of information technology. It is the very relationship *between* the role players that is crucial, and that needs to be understood and properly managed. This provides a significant opportunity for universities to provide leadership for South Africa in the emerging information age. CPUT has already commenced a process of data collection with regard to impediments to developing a partnership approach in a partnership with other sister institutions, and this work will now be described.

Engaging the stakeholders

Background

In 2000 the Carnegie Corporation of New York funded a partnership research program that had the objective to deliver quality and equity in the use of information technology in education. The part of the overall program that concerns this paper was focussed on information management competencies, in the workplace, in communities, and at the individual level. The project was undertaken by a partnership between the Cape Peninsula University of Technology (then known as Cape Technikon) and the University of the Western Cape.

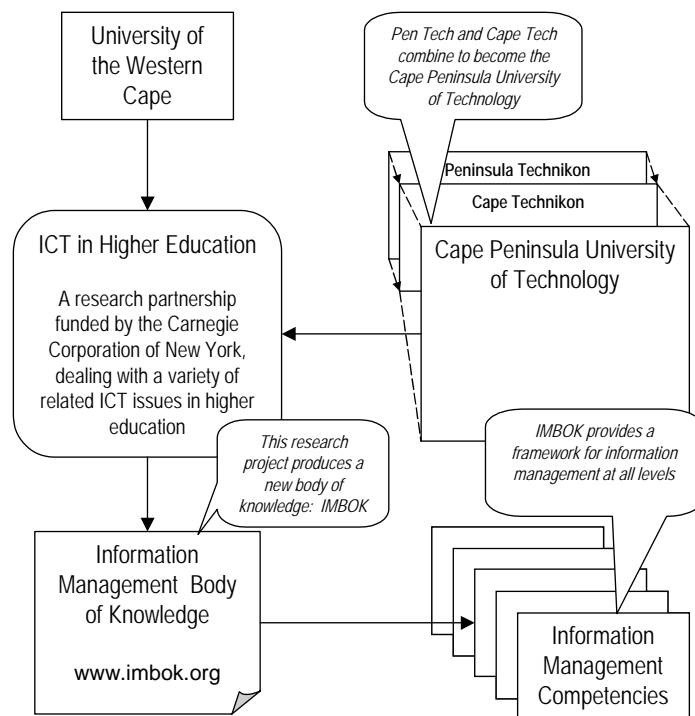


Figure 2. Schematic of the research partnership and the outcome

Engagement with the stakeholders

Representatives of business, government and civil society were brought together in facilitated focus groups to define and scope the initial issues (Bytheway 2002). The focus groups addressed the following questions:

- What are the likely challenges that we face, particularly in South Africa?
- What are we doing well? What are we not doing well?
- Imagine ideal processes for effective delivery, good governance and best practice: how would we achieve them, and with what competencies?
- What stumbling blocks stand in the way?
- What actions must we take to realise this ideal?

It was found that the relationships between business, government and civil society were not usefully cohesive and a list of underlying issues was developed. There is a summary of the focus group findings in Table 1 and Table 2, and they are discussed in the paragraphs below.

Findings

Significant challenges were found in a number of areas, specifically: dealing with strategy formulation and implementation, the development and delivery of new systems, and the successful exploitation of new systems. It was found that key role players — business, government and higher education — all needed to devise more effective mechanisms for cooperation, because the merits of working together became clear in the discussions.

Table 1. Summary of workshop contributions generally, and by role player

Question	General	Universities	Business	Government
Challenges	Lack of skills Competencies are not the same as skills Transformation Changing mindsets Culture gap Managing partnerships Financial constraints	Lack of research Adaptation of ideas	Poor return on IT Business performance	
Current situation (good/bad)	Trying hard Corruption Diversity needs managing Need IM competencies Need change management Difficult to retain skills Fear of change Need specialist IT training, management training	Need best practice PM, QM, SM not enough Poor relations with business Lack of applied research Courses not relevant Need bridges to business	Poor CRM, ERP Acquisition variable Poor relations with Academe Not using resources	Using unqualified consultants Working in isolation
Vision	Relevant education available Knowledge mgt Separation of IT, IS, IM Eliminate digital divide Promote competencies Knowledge management	Working with business Appropriately skilled students	Partnering with tertiaries Africa as a great place to do business	Much more involved
Stumbling blocks	'Old school tie' Unrealistic expectations Access to capital General crisis mgt Quality control	Lack of resources Effective resources Responsiveness to needs Resources Academic arrogance	Sectorisation	No national IM agenda Regulatory environment
Required competencies	Need change management Mentorship Need competent management esp CIO Matrix management Chaos management	Sharing business know how	Manage business performance	

Table 2. Summary of workshop issues by domain

Question	Strategy	Supply	Use
Challenges	Understand value of IT Non-financial measures Access to information Business-IT integration Strategic alignment Proper planning IT feed to strategy Assure relevance	Understanding service Understanding needs Process integration Lack of skills & training Correct infrastructure Awareness of options Rapid change in IT HR/skill problems Need bandwidth	Understanding IT IT service delivery Operational costs (TCO?) HR/skill problems Managing expectations Need to understand user benefits Access (to public services?)
Current situation (good/bad)	Capabilities not shared Old attitudes prevail Need to bridge the strategy-operational gap Don't align business and IT objectives	Poor project mgt IT does not communicate Integration of information needed Need standards for IT Corruption and kick-backs Poor needs analysis and scoping Poor PM and svc mgt Box drop problem IT people need business skills Poor planning	Poor service access Don't understand service Duplicate services Poor feedback Good literacy training Don't understand costs Too much democracy
Vision	More innovation Create value not manage costs Partnerships Business driving IT Fully aligned strategies Risk management Performance measurement Build in outsourcing	Effective project mgt Needs understood Buy-in from all IT delivering De-regulated comms Application of standards in open source Effective DBMS Motivated staff Adequate resources System integration Proper planning Supplier management Deliver solutions not products	Available information Effective decisions from quality information Deliver ROI, profit Deliver measurable service Adequate user support Literacy in place Accountability Service integration
Stumbling blocks	Measures are on the wrong criteria	Avoid the search for perfection	
Required competencies	Business modeling Systems thinking Leadership Horizon management Innovation Scenario planning	Business analysis Data management	Business measurement Project management

There was widespread concern at the general lack of appropriate capability to deal with information technology, and the failure of universities to deliver appropriate the competencies that would create it. Some critical management competencies recurred several times in the

analysis: *strategy* management, *information* management, *project* management, *change* management and *service* management.

Although the challenge of financial constraints was evident it was not dominant. Compounding the problems in South Africa (when compared with more fully developed countries) were difficulties with diversity, cultural differences, and fixed mindsets emanating from traditional attitudes. These issues undermine partnerships and cooperative working. In some situations there was corruption and nepotism.

There was agreement that competencies were *not* the same as skills, and the prevalent preoccupation with skills training would not, by itself, solve problems. Competencies were argued to be more enduring than skills, and without appropriate competencies the best skills in the world would not deliver the required structural changes.

The value of information was not generally understood. Access to information is a benefit in itself, enabling actions that were previously impossible. It followed that the ability to take a strategic view of information systems was critical. Information technology-related opportunities must be accommodated during strategy formulation as well as merely supporting strategy implementation. Strategies were not well managed.

The question of strategy in a community context is of course potentially quite difficult. When examined, many community 'strategies' have been found to be no more than a list of actions. The discipline and accountability found in organisations is often missing in communities and reliance on community leaders is substituted.

Knowledge accumulated in these important areas needs to be organised and shared but it was found that it is not, in practice. At the heart of much difficulty is the problem of communication between information technology specialists and their clientele, whether they are in business or in the community. This familiar problem is still widespread and seriously inhibits the effective use and appropriation of information technologies. Participants found that needs were not properly understood and analysed, community activities and ambitions were ignored, and that IT suppliers tended to 'drop the boxes and run'.

The ongoing cost and burden of operating installed systems usually exceeded the cost of acquisition and implementation. The costs of operation were often hidden, or not easily related to the cost drivers that caused them, and were therefore difficult to manage. Funding for community development projects often completely ignored the question of ongoing operation and maintenance, hiding all of this in a search for 'sustainability', without ever establishing exactly what this word implied and involved.

The key to successful exploitation was to understand users needs and expectations, and then to proactively manage the delivery of the intended benefits. Too often, the intended benefits that were so forcefully argued at the start of a project were never delivered in practice. There needed to be evidence that organisational performance (or the quality of life in communities) really has improved, and to feed the results of improvement initiatives to those who need to know, in government and funding organisations. Experience with complex business systems (such as CRM and ERP) suggested that the benefits were not just difficult to evaluate, they might even be 'dis-benefits'. Many organisations found that business performance actually suffered as a result of new systems. Exactly the same problem occurs in communities, although community members can simply opt not to use the system whereas a business is critically dependent on its core systems. If however a community-related system is large, complex, and attends to the needs of the relationship between government and citizens, then the consequences of failure would be economically and politically severe and waste large amounts of money.

Analysis of the focus group discussions clearly identifies problems of partnership and co-operation, not all of which have been subjected to useful academic research. Whilst some of the problems were specific to South Africa there is also a continuing lack of understanding of best practice as the rest of the world sees it. In order to deal with the problem of successful information technology investments, a critical requirement that emerged from the discussions was the matter of *measurement* and *evaluation*: if there is no agreed framework for measuring successful outputs and outcomes (not just financial measures, qualitative measures are needed as well) then success is hard to demonstrate to the paymasters, whether they be in government, business or civil society.

Summary of issues

It was found that universities must carefully review their syllabuses for relevance to the information management needs of modern society, in all its aspects. Current portfolios are pitched at specific technical learning — at the *skills* level as much as at *competencies*, but the gap between real needs and the education that is offered needs to be investigated. It is even possible that insufficient teaching and learning material exists with which to teach the requisite competencies — this highlights the need for pragmatic, applied research. The role of tertiary institutions as the originators and disseminators of new knowledge needs to be reviewed: there are clear problems (and some opportunities) that require quite specific work to be done in order to understand them, and develop the means to deal with them.

New knowledge might be simply a collation of 'good practice' as it is seen elsewhere, or it might be more fundamental in some theoretical sense, but those that are facing these problems do not want to wait longer than necessary in order to begin to deal with them. Consultants were found to be useful in facilitating business improvement and developing new

systems. However, some of the evidence revealed during the workshops suggested a level of unhappiness with consultancy companies that are considered to learn at the *expense* of their clients rather than addressing problems for their clients' *benefit*.

It was clear from the discussions that the most effective measures to use in evaluating projects were simply not understood. The disciplines of systems thinking, situation analysis and information management are critical to the achievement of innovative solutions to problems and the identification of new opportunities.

Proposed actions

The focus group evaluation defined specific actions that were needed. They can be summarised as follows:

- Inculcate a learning culture
- Develop standards for effective information management, that can be used to guide and improve information related operations and activities
- Devise effective performance measurement and other indicators, supported by appropriate systems that will generate and organise the measurement data
- Research how to integrate the information that is the lifeblood of information systems, and how to integrate the information systems themselves
- Investigate and understand the risks and benefits of contracting and outsourcing
- Develop and support means of cooperation between the key role players — business, government and educators
- Undertake pragmatic, relevant research work in order to develop a deeper understanding of information technology-related problems and opportunities
- Develop new modes of educational delivery, possibly based on more short courses and new combinations of formalised longer-term programs. Education must be seen as a life-long phenomenon, and education in information technology-related matters must recognise the international nature of the subject.

A new evaluatory framework

This project provided a basis from which to develop a new framework for the analysis, planning and evaluation of appropriated information technology. It has been tested in communities by application to entrepreneurial activities in the Cape Town township tourism industry. It has been tested and well received in business, in a large financial services organisation in Cape Town. Finally, it is being evaluated (at the time of writing) for application in the health administration of the Western Cape.

This new framework is now introduced and briefly described.

A new framework for managing and evaluating the appropriation of ICTs in communities, governments and businesses

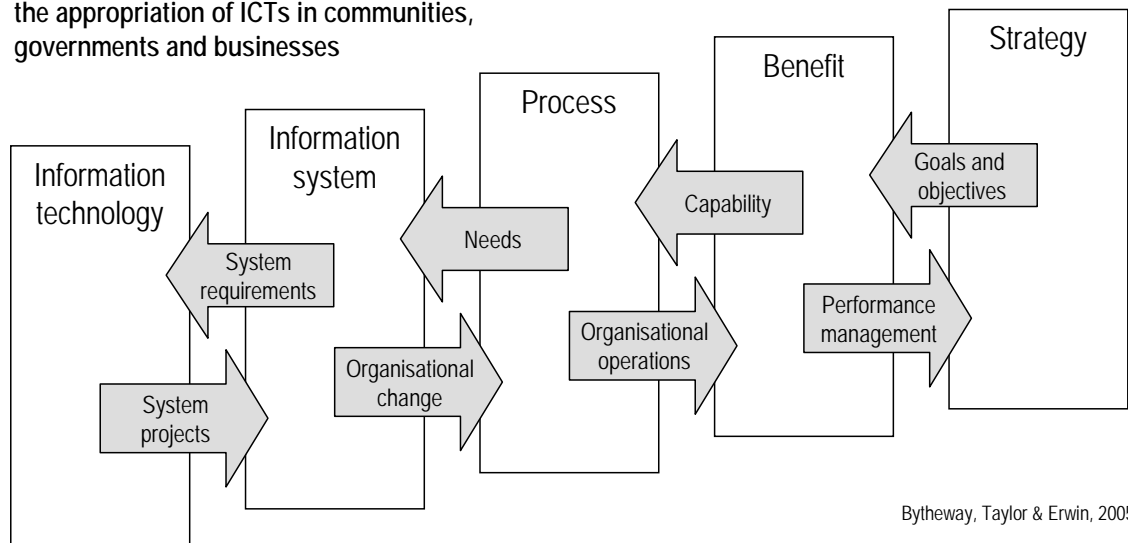


Figure 2. The Information Management Body of Knowledge

Given the overriding need for tertiary education institutions to direct their energies at new, more appropriate programs of learning, a search for best-practice thinking was undertaken and a new body of knowledge has been established. The ‘Information Management Body of Knowledge’ (IMBOK) (Bytheway 2004) gathers together the best thinking that was available and organises it in a way that helps to manage the difficulties outlined above.

The complexity of successful information management often defeats well-meant objectives. IMBOK organises this complexity into nine areas of concern that align information technology with organisational strategy. The nine areas are of two kinds: five that are primarily concerned with distinct domains of *knowledge*, and four primarily concerned with the *processes* that migrate an idea from one knowledge domain to the next.

- **Information technology:** The world of information technology is constantly changing and presents special challenges to those who would wish to understand it. It is not the same as the system (see below) because it is concerned with the technology components that are used in the engineering of a system — communications equipment, database software, operating systems, and physical infrastructure, for example.
- **Information system:** The system is what begins to be sensible to users, because its application to a user need is immediately apparent. Systems are now available as packaged solutions that avoid the need for users to have any special regard to the technologies used, but that do require that the capability of the package to meet actual needs is assessed. The performance of an information system is normally seen at the level of *inputs and outputs*.

- **Process:** Information systems are applied to organisational and community processes in order to improve them. A simple view is that a process is something that extends from one boundary of a domain of activity to the opposite boundary, for example 'customer order fulfilment' in the case of a business, or 'manage community assets' in the case of a community. A process delivers outcomes that are of interest to stakeholders, and hence the performance of a process is seen as an *outcome* rather than an output.
- **Benefit:** It is important if we are investing money or effort in information technology to see the benefits that are sought. It is only then that the investment can be justified, and that the means to evaluate the investment can be agreed. This complex area needs to be understood and managed if we are to all work to a common end.
- **Strategy:** Strategy that guides organisational activities and in the case of a business is usually the outcome of senior management deliberations. Often strategy is tacit rather than explicit, as in the case of a community. Strategy formulation is easy; strategy implementation is extremely difficult. People worry about how strategy will affect them and if there are no benefits then they may obstruct implementation.

Each of these five areas is quite distinct in terms of the management skills that are required. It is the failure to recognise the multiplicity of skills that leads to failure in many projects.

The intervening processes are largely concerned with managing projects that build systems from technology components, managing the changes to the way we work in order to incorporate new systems, dealing with routine operations and activities, and monitoring and measuring outcomes to assure the delivery of the intended strategy.⁶

This framework has been developed through extensive study of the literature and consultation with experts, and it is populated with 144 specific competencies that can be the basis of an assessment of organisational or community capability to succeed with information technology. At the time of writing, a survey instrument based upon this framework and the 144 competencies is being refined and deployed in order assist organisations and communities to see their weak spots, undertake remedial actions through education, and generally improve their approach to information technology management issues. This framework, developed through a university-led engagement with representatives of business, government and civil society, promises to be a valuable contribution to the successful future appropriation of information technology.

⁶ There is a detailed discussion of IMBOK at <<http://www.imbok.org>>, largely in the context of its application to businesses. The adaptation of the framework and its application to community informatics is work in progress.

Conclusion

This project has described the context for social appropriation of information technology in South Africa. In doing this it has highlighted the benefits and challenges of emerging community engagement within an emerging democratic process. The deep cultural aspects of this society when coupled with the diversity of economic and social parameters adds specific dimensions to community engagement enabled through information technology.

Further, this paper has described some initial research in a partnership approach to appropriating information technology for effective use. A major output of this work has been the development of an evaluatory framework (IMBOK). This framework has been successfully tested at the community level, in government service delivery and within business. It is also providing foundations for new postgraduate programs and for South African government funded research. Its relative simplicity, combined with a great deal of substantiating detail, promises well for our future capability to invest well in information technology.

Acknowledgments

The authors wish to acknowledge the support of the attendees at the workshops and the facilitator, Peter Thomas; also Grafton Whyte and our colleagues at UWC, and the Carnegie Corporation of New York, whose generous financial assistance made this work possible.

References

APC n.d., *Gender and information and communication technology: Towards an analytical framework*, viewed 20 November 2002,

<<http://www.apcwomen.org/resources/research/analytical-framework.html>>

AVOIR 2004, *African Virtual Open Initiatives and Resources*, viewed 2 April 2005, <<http://avoir.uwc.ac.za/>>.

Bonham G, Seifert J & Thorson S 2003, *The Transformational Potential of e-Government: The Role of Political Leadership*, viewed 2 April 2005,

<<http://www.maxwell.syr.edu/maxpages/faculty/gmbonham>>.

Bridges.org 2002, *Taking Stock and Looking Ahead: Digital Divide Assessment of the City of Cape Town*, viewed 2 April 2005, <<http://www.bridges.org/>>.

Bytheway A 2002, *Managing information in times of business uncertainty*, viewed 2 April 2005, <<http://www.uwc.ac.za/ems/is/hicte/>>.

Bytheway A 2004, *The Information Management Body of Knowledge*, viewed 2 April 2005, <<http://www.imbok.org>>.

Carr N 2003, 'IT doesn't matter', *Harvard Business Review*, pp. 3-10.

Castells M 1999, *Information Technology, Globalization and Social Development*, United Nations Research Institute for Social Development.

City of Cape Town 2004, *City's Chief Information Officer wins IT award*, viewed 2 April 2005, <<http://www.capetown.gov.za/press>>.

CS Bureau 2003, *Proposal*, Civil Society and NGO Open Ended Bureau.

DoC 2004, *South African Government*.

Economist 2004, 'Canyon or mirage?', *The Economist*, 24 January, p. 69.

Erwin G & Taylor W 2004, 'Social Appropriation of Internet Technology: A South African platform', *The Journal of Community Informatics*, vol. 1, no. 1, pp. 21-9.

Fink C & Kenny C 2003, 'W(h)ither the digital divide?', *Journal of policy rgulation and strategy for telecommunications*, vol. 5, no. 6.

Gurstein M 2000, *Community Informatics: Enabling Communities with Information and Communications Technologies*, Idea Group Publishing, London.

IDABC 2003, *UN publishes global e-government report*, viewed 2 April 2005.

IDABC 2004, *UN publishes Global E-Government Readiness Report 2004*, viewed 2 April 2005.

IDABC 2005, *World Economic Forum releases Global IT Report 2004-2005*, viewed 2 April 2005.

Lopez-Claros A & Dutta S 2005, *Global Information Technology Report 2004–2005*, viewed 2 April 2005.

Mbeki T 2001, *South African Parliament*.

Meinrath S 2005, 'Community Wireless Networking and Open Spectrum Usage: A Research Agenda to Support Progressive Policy Reform of the Public Airwaves', *The Journal of Community Informatics*, vol. 1, no. 2, pp. 174-9.

Provincial Government of the Western Cape 2004, *Centre for e-Innovation: Overview*, viewed 2 April 2005, <http://www.capegateway.gov.za/eng/your_gov/14311>.

Reilly K & Gómez R 2002, *Connecting to Public Policy: An exploration of ICTs and Public Policy in Latin America and the Caribbean*, viewed 2 April 2005, <<http://katherine.reilly.net/docs/connecting.pdf>>.

Robinson S 2004, 'Towards a Neo-Apartheid System of Governance in Latin America – Implications for the Community Informatics Guild', *The Journal of Community Informatics*, vol. 1, no. 1, pp. 74-5.

Rohieder S & Jupp V 2004, 'E-Government Leadership: High Performance, Maximum Value', *Accenture*, viewed 2 April 2005,

<http://www.accenture.com/xdoc/en/industries/government/gove_egov_value.pdf>

Taylor W 2004, 'The e-Volution of i-Society in the Business of e-Government', in *Future Challenges for e-Government (Vol. 2), The consolidated research papers of the Business of e-Volution of Government Conference*, Canberra, 26-27 May, Paragon Printers, Canberra, pp. 108-22.