Subnational Governance of ICTs in Limpopo Province, South Africa: Structure and Implications

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Abstract: This paper aims to describe the emerging ICT governance arrangement in a more marginalised, rural province of South Africa. In addition, based on the experiences of subnational ICT governance arrangements in underdeveloped areas of Europe, considers the implications of this arrangement for achieving the intended policy goals. A qualitative analysis of data collected during semi-structured interviews and from public strategy documents in the provincial government suggests an attempt to adopt a network-based approach to ICT governance within the province, rather than hierarchical or market-based. However, the study notes a number of key issues that can influence the outcomes of the provincial ICT governance arrangement: the national emphasis on alignment of policy and action inhibiting provincial policy and governance innovation; a possible contradiction between the province's desire for urgent rollout and replication of successful models, and a slower, active learning process; limited engagement with local actors on policy formulation that could undermine their commitment to policy implementation; a dominant economic orientation to policy goals that may affect the learning and integration process; and the lack of existing capacity and networks that are seen as the basis for provincial policy implementation.

Keywords: ICT, Information Society, subnational, governance, developing country

1. Introduction

The role of provinces and cities in the governance of information and communication technology (ICT) gained significance in the mid-1990s as a number of regional or subnational[1] "Information Society" and "Digital City" programs were initiated, primarily within the European Union (EU). A key rationale for explicit public policies and strategies around ICTs, specifically within marginalised areas of the EU, was the failure of top-down, market-lead, supply-oriented ICT growth that further advantaged already powerful regions, leading to increased inequality. More localised, integrated, demand-oriented strategies were considered as an alternative approach to maximise the development benefits of ICTs in socially and economically distressed areas (Dabinett, 2002; Gibbs, 2001). In contrast, developing countries continue to be characterised by centralised, market or state-lead ICT governance arrangements, largely restricted to an economic and political elite (e.g., Horwitz & Currie, 2007). In addition, most of the research around the governance of ICTs has focused on the relationship between policy formulation and regulation by national ministries of information and communication and independent regulators. As a result, there is relatively little evidence of research on the role of subnational governance of the ICT sector in less developed countries, and in Africa specifically.

On the other hand, in South Africa there is an emerging base of research, primarily within *metropolitan* areas, into financing and operational strategies for local ICT infrastructure (Abrahams, Bakker, & Bhyat, 2007), the link between local development and ICT governance (Abrahams & Newton-Reid, 2008; Odendaal, Duminy, & Saunders, 2008), and the internal and external

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[1] Because of ambiguity regarding what constitutes a region, in this paper we use the term subnational to refer to jurisdictions below the national level.

constraints on subnational programs due to the socio-economic and political context (Esselaar & Soet, 2009; Odendaal, 2006). More recently, public and non-governmental organisations in more marginalised, *rural* areas of South Africa have looked to develop explicit ICT strategies for the region in an attempt to better co-ordinate, integrate and leverage ICT rollout in support of wider socio-economic development objectives (e.g., INSPIRE, 2006). It is not clear, however, whether these strategies will be effective in narrowing the "digital divide" between urban and peripheral areas of South Africa given the unique socio-political context of these areas; and, ultimately, whether they are likely to improve the contribution of ICTs to the development of citizens in these regions.

This paper aims to describe the emerging ICT governance arrangement in a more marginalised, rural province of South Africa. In addition, based on the experiences of subnational ICT governance arrangements in underdeveloped areas of Europe, considers the implications of this arrangement for achieving the intended policy goals. In the following section we present a conceptual framework that will be used to guide data collection and couch the findings in existing knowledge. Section 3 introduces the methodology, Section 4 analyses the emerging ICT governance arrangement in the Limpopo province, and Section 5 discusses the implications of the findings.

2. Conceptual Framework - The Role of Subnational Actors in ICT Governance in Developing Countries

The conceptual framework described below is based on a synthesis of literature on governance in general and the governance of ICTs in particular, at different levels (e.g., organisation vs. country) and in different contexts (e.g., developed vs. developing country). A number of the principles from literature on the structure of IT governance arrangements (Sambamurthy & Zmud, 1999; Weill & Ross, 2005) are potentially relevant to the governance of ICTs at a macro level. However, given the different priorities and increased complexity of the governance situation in a macro-level public policy environment, this framework draws largely on concepts around ICT governance at international, national and provincial levels (e.g., Bauer, 2004; Cornford, Richardson, Sokol, Marques, & Gillespie, 2006; Kapur, 2005; Latzer, 2009; Lyons, 2010; Németh, 2008); and multi-level and subnational governance in developing contexts from the political science and public administration fields (e.g., Olowu, 2003a; E. Ostrom, 2005; Schroeder & Andrews, 2003).

The basis for the conceptual framework used is outlined in Figure 1. This is an abstraction and adaptation of Ostrom's (2005) Institutional Analysis and Development (IAD) framework which describes the basic structure and context of a focal governance system. The IAD and associated theories have been developed in substantial detail to multiple levels of analysis for predicting the outcomes of various governance arrangements. However, in this paper, the IAD is used at a high level to highlight:

1. The generic dimensions or variables of a focal governance situation

2. The external factors that shape the dimensions

3. How the interactions and outcomes of a governance situation shape the external and internal variables recursively

4. How various governance situations are nested so that the outcomes of one situation (e.g. in one country) feed into another (e.g. in another country)

We now provide an overview of the dimensions of the focal ICT governance situation and how they are shaped by the exogenous variables or "underlying structure" (E. Ostrom, 2005, p.189).
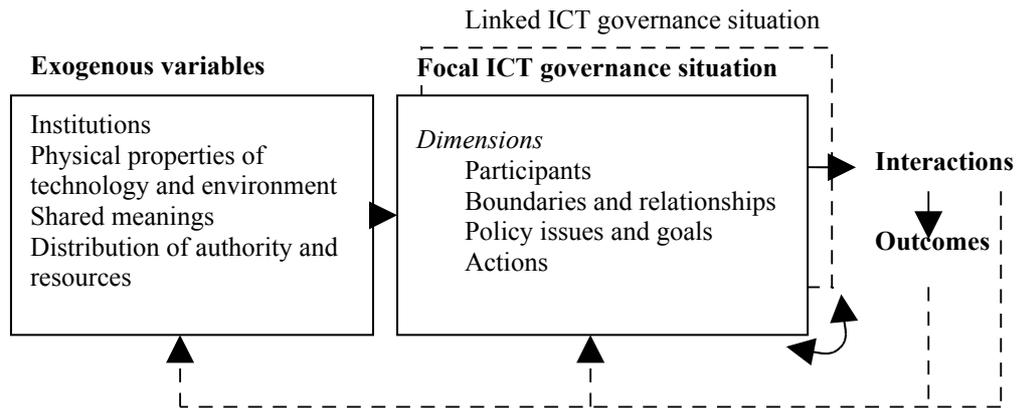
Figure 1: Framework for analysing a focal ICT governance situation (adapted from Ostrom (2005))

In the focal ICT governance situation of Figure 1,

1. Various ***participants*** with relative access to resources and influence over ICT policy issues and actions

2. Are assigned responsibilities according to certain positions or ***boundaries*** and connected to each other through different kinds of ***relationships***, and

3. Make decisions based on what they see as the critical ***policy issues*** to be addressed and anticipated outcomes or ***goals***, and

4. The best ***actions*** to take to address these issues and achieve the intended outcomes based on anticipated costs and benefits of actions.

These dimensions are shaped by four "exogenous variables", including *institutions* (formal rules such as national laws, but also social norms), which specify what actions participants are allowed to take and appropriate sanctions if they deviate from those actions; and the *distribution of authority and resources,* which enables participants to take certain actions by drawing on political, fiscal, and human capital. In addition, interpretivists argue that "…people are likely to form different beliefs and perform different actions even if they occupy the same social or institutional location" (Bevir, 2010, p.59), and that shared or constructed *meanings* are therefore an important determinant of governance action. Finally, the *physical* environment and features of the technology constrain governance action by defining material possibilities. These exogenous variables may be seen as similar to the "contingencies" or "antecedents" that give rise to different IT governance arrangements in organisations identified by Sambamurthy and Zmud (1999) and Brown and Magill (1994).

Importantly, the interactions of the participants and outcomes of the governance situation shape the exogenous variables in a recursive way (Giddens, 1986). For example, a new powerful participant (e.g., China) who values a certain action or outcome (e.g., restricted Internet search results) may cause a change to the norms or rules (e.g., government filtering of search content becomes a globally accepted practice) that prevents other actions or outcomes (e.g., unrestricted search results) being considered by other participants (e.g., USA, Google).

2.1 Dimension 1: Participants

The various phases of governance reform (Bevir, 2010) - such as privatisation, regulation, decentralisation, and "joined up governance" - are reflected in both developed and developing countries. This has lead to a fragmentation of governance responsibility, meaning that there may be

several actors, from both public and private sectors, with varying degrees and types of influence over different policy issues and actions within a subnational region. These actors may be physically present in the region or province with direct participation in governance decision-making, such as provincial government departments, provincial branches of national agencies, or local NGOs; or they may have indirect influence through national laws such as the national legislature or independent national telecommunications and broadcasting regulator.

In developing countries, subnational actors typically lack either resources, political authority, or legal support for effective participation in governance activities (Parker & Kirsten, 1995) due to vested political interests in a centralised mode of governance (Olowu, 2003; Rondinelli, Nellis, & Cheema, 1983, p.6). This is often reflected in formal and defacto ICT governance arrangements which are dominated by a political elite (e.g., Horwitz & Currie, 2007). In addition, external policies and norms, such as the global diffusion of deregulation and national regulatory agencies (Levi-Faur, 2005), may discourage public sector involvement, especially at subnational levels. In contrast European experiences with subnational Information Society strategies since the mid 1990s suggest a need for more local, "endogenously-led" (Gibbs, 2001, p.74), publicly coordinated (Cornford, Richardson, & Sokol, 2008) governance of ICTs to maximise the technology's positive impact in marginalised areas. This corresponds with literature that suggests a need for greater local involvement in shaping ICT design and use within developing contexts to ensure that ICTs meet the unique development needs of the target communities (e.g., Puri, 2007).

There may also be physical limits to the influence of the participants because of geographical remoteness or language differences (e.g. the dominant language in ICT governance is English), or technological dependencies that lie outside of the participant's control. The prevalence of low cost and complexity computer-mediated communication and information processing is seen to have reduced the barrier to entry in the production and governance of ICTs, meaning that individuals, local communities, minorities and marginalised groups now have an opportunity to build a more democratic system of control over information and communication resources (Benkler, 1998; McChesney, 2007). On the other hand, the convergence of telecommunications, media, and IT has also supported the globalisation of information and communication networks and, in some cases, the consolidation of regulatory authority, concentrating governance influence at international and national levels. We therefore suggest that technologies also occupy positions as participants in the governance system by physically (or symbolically) restricting or enabling certain governance options (Callon, 1987; Latour, 2005).

2.2   Dimension 2: Boundaries and relationships

The governance reforms mentioned above have also led to a blurring of boundaries and reconfiguring of relationships between the state and society. The dispersion of governance authority beyond state boundaries and to non-state actors means that many governance arrangements are being constructed based on more horizontal, bidirectional, informal and trust-based relationships, rather than strict, vertical, unidirectional, bureaucratic hierarchies. The result is a more multi-level (Hooghe & Marks, 2003) or network-based (Kooiman, 2003; Torfing, 2010) structure. The relationship between actors from both private and public sectors at different levels is based on a recognition of mutual interdependence and benefits of "broader societal coordination" (Hanssen, Johnstad, & Klausen, 2009, p.1738); and therefore lies somewhere between the closed interaction of government hierarchies and the open, anonymous interaction of the market. In line with this network-based approach, research into subnational Information Society strategies in Europe over the past decade highlights the benefits of a dialogue (Németh, 2008), horizontal or peer-level learning (Gibbs, 2001), and network co-ordination (Cornford, et al., 2008) between several sectors of society in the governance of ICTs.

On the other hand, the *Boundaries and relationships* dimension is shaped by other dimensions such as the weight of *Participants* in a governance situation. A large power imbalance between participants often results in a top-down, unidirectional relationship between them. This is reflected

in many developing countries where governance actors in the underdeveloped periphery act as implementation agents of the relatively powerful central government rather than autonomous agents with downward accountability (e.g., Pinto, 2004). The central elite seeks to maintain the vertical authority relationships.

Finally, boundaries in ICT governance are also related to the physical characteristics of the technological system, such as in IP address allocations and satellite services (and wireless spectrum in general (Beard, Ford, Koutsky, & Spiwak, 2008)) which have large network externalities or spillover effects to other jurisdictions (V. Ostrom, Tiebout, & Warren, 1961), and are therefore typically governed at a national and global scale. In addition, physical technological dependencies create governance dependencies (Sandvig, 2003). Bauer (2004, p.6-7) suggests that the degree of dependence or "coupling" between components of the system may be loose or tight, and that the coupling can exist in both horizontal and vertical directions.

2.3 Dimension 3: Policy issues and goals

The different ICT policy issues being addressed in a focal ICT governance situation may be identified or classified in various ways. The layered separation of content, applications and infrastructure is popular in both organisation level (Sambamurthy & Zmud, 1999; Weill & Ross, 2005) and macro-level ICT (Benkler, 2000; Henten, Samarajiva, & Melody, 2003; Kapur, 2005) governance literature. The issues may be further subdivided into societal and temporal layers: information economy level (most durable), ICT sector level, and micro level (most flexible) (Bauer, 2004, p.15). As highlighted above these issues and technologies may be coupled to each other through technological dependencies.

The belief that access to ICTs is a positive development tool has come to be accepted, and the utopian ideals associated with ICTs have permeated the dominant economic development agenda of developing countries (Avgerou, 2003; Moodley, 2005). The priority issues and anticipated outcomes are usually shaped by shared meanings that have developed over time in the wider context, and reinforced by the discourse or narrative of dominant actors (Bevir, 2010). However, this assumption of positive benefit cannot be taken for granted as there are certain rationalities embedded in the technology that may conflict with the values of the context or community that is using the technology (Avgerou, 2002; Walsham, 1993). The relationship between ICTs and socio-economic development is a particularly contentious issue in developing countries where the delivery of basic services, such as water and sanitation, is balanced against the provision of ICTs as a perceived luxury. In addition, the perceived erosion of culture, the potential risk to community values, and acceptable limits to freedom of expression, influence the policy goals. These differences in value may be amplified where ICTs are perceived to redefine existing power relations within social groups. As a result, ICTs may be viewed as more deterministic (inevitable and external) or more instrumental (can and should be shaped internally) (Hrynyshyn, 2008). In addition, characteristics of the technology or policy issue are seen to necessitate more or less local influence. For example, in the USA, wireless telecommunications regulation is argued to be a national federal responsibility because of the large spillover to neighbouring states (Beard, et al., 2008), whilst rights of way and consumer protection benefit from local decision-making (Lyons, 2010).

2.4 Dimension 4: Actions

The various action options available to governance participants can be classified into different types. For example, constitutive governance is concerned with decisions around the appropriate structure and process for making policy or rules. Directive or collective governance is concerned with making policy or rules. Operational governance is concerned with decisions on how policy goals or rules are realised (Hill & Hupe, 2006; Kiser & Ostrom, 1982). Melody (1999) identified three similar activities in telecommunications governance, and advocated for strict separation of these roles to ensure a balance between operational efficiency and achieving social and policy objectives. In addition, governance mechanisms may be direct (e.g., setting and enforcing laws

through regulation) and indirect (e.g., subsidies) (Jayakar & Sawhney, 2004; Lessig, 2006). Direct, heavy regulation is often associated with the physical infrastructure layer and more centralised in its administration, decreasing in heaviness towards the content layer (Mindel & Sicker, 2006).

The types and mechanisms of action adopted by various actors are determined by their valuation of the actions which in turn is based on their valuation of anticipated outcomes from an action, the relative cost of the action, and socio-political norms. As highlighted above, the different meanings attached to ICTs in developing contexts, may require a more cautious and consensus-based approach to the governance of ICTs in marginalised areas using more indirect actions to raise awareness and allow for experimentation by citizens. In addition, it is often considered improper for a subnational government to deviate from national policy, even though it has legally protected rights to make certain independent decisions. More practically, subnational governments are often allocated budgets from the national treasury which may not allow for participation in the ICT sector. As a result they will have limited human and fiscal resources in this area, and the cost of actions in the ICT sector is therefore relatively high compared to other service priorities. They may therefore benefit from forming partnerships with the private sector or NGOs to cover the cost of actions through Public Private Partnerships (PPPs). A popular PPP in developing countries is the Build-Operate-Transfer (BOT) model (e.g., Gillwald, 2005) which guarantees private actors a return on their investment in exchange for supporting certain policy outcomes. In this arrangement, there is, however, more risk for government policymakers that their policy outcomes are not achieved due to reduced control.

2.5 Focal ICT governance situation scenarios

We suggest that the interaction of the above dimensions leads to four main "ideal-type" focal ICT governance situation scenarios or modes (Kooiman, 2003) at a subnational level. These categories are analytical distinctions or points along a continuum to be used in guiding analysis and therefore do not represent the full range of governance scenarios.

Table 1: Subnational ICT governance scenarios

Dimensions / *Modes*	Participants	Boundaries and relationships	Policy issues and goals	Actions
Centralised	Low number and diversity of participants in governance. A few powerful participants or actors dominate. A few high profile technologies.	Strong, vertical, unidirectional relationships. Strict boundaries between actors' authority. Narrow hierarchy.	Priorities brought in from outside by powerful actors, and have an external orientation. Focus on redistribution-equality and uniformity. Largely deterministic focus on technology infrastructure.	Constitutive and directive decisions by dominant actors. Operational decisions delegated to local participants. Mostly direct actions.
Partially decentralised	Powerful participants dominate but are accepting participation from subnational participants, diversity of sectors, and technology neutrality.	Mostly vertical, unidirectional relationships but some fragmentation of powerful actors and "bottom-up" engagement. Strict boundaries are contested/ violated. Attempts to establish horizontal relationships	Some customisation of imposed priorities and technologies. Focus on redistribution-equality and uniformity, but attempting to ensure relevance of services.	Less powerful participants are more active and making parallel or opposing constitutive or directive decisions. Combination of direct and indirect actions.

		outside of hierarchy.		
Partially centralised	Large number of participants from different sectors with similar power; but some delegation of authority to certain prominent actors. Diversity of technologies.	Largely horizontal, bidirectional relationships. Horizontal co-ordination through hub-and-spoke. Mostly blurred boundaries.	Partial alignment on certain goals defined by most participants. Desire for increased efficiency and common standards, especially in infrastructure rollout.	Constitutive decisions are relatively new and not used often. Mostly indirect actions through collaborations. Some coordination.
Decentralised	Large number of participants from different sectors with similar authority. Ad-hoc participation, as needed.	Largely horizontal, bidirectional, bilateral relationships. Network with no co-ordination. Boundaries are flexible.	Limited focus on a variety of non-aligned goals of external or internal, private or public orientation.	Negligible constitutive decisions being made. Mostly ad-hoc decisions and actions – not coordinated.

3. Methodology

The *relative* value of ICTs in comparison to other critical services and infrastructure, and its relationship to socio-economic development, continues to be debated within South Africa. The following case study is therefore based on an interpretive paradigm (Walsham, 1993) which seeks to understand the structure and source of the Limpopo province's ICT governance arrangement from the subjective perspective of the governance participants as they enact and engage with material political structures, institutional arrangements, resource constraints, and technologies.

This phase of research focuses on perspectives of the "subprogram" responsible for provincial Information Society development within the Premier's Office of the Limpopo Provincial Government. The subprogram was selected as a case study as it is set to play a potentially significant role in ICT governance within the province due to the strong political backing in the form of the Premier, support for the project by the national Department of Communications, and the relatively important role played by government in the province, evidenced by the relatively large contribution of government services to the provincial economy (Limpopo Provincial Government, 2009, p.12).

The study involved a qualitative analysis of data collected during eight semi-structured interviews with seven managers of the main projects (e.g., skills development, network infrastructure, applications, innovation) making up the subprogram. The data also included primary sources of largely public documentation from the Provincial Government, such as strategies and feasibility studies, and external secondary sources such as national strategy documents, press releases, articles, and websites. The field research was carried out during four visits to the Limpopo Provincial Government offices in Polokwane city between March and June 2010. The study therefore represents a snapshot of the emerging ICT governance arrangement in the province at that time. Six of the eight interviews were digitally recorded and transcribed in full. Interview participants were purposefully selected because of their central role in various programs making up the Provincial Government Information Society strategy. There was a general willingness to participate in interviews, and as a more trustful relationship was established between the researcher and participant, mutually-beneficial knowledge was shared freely. At the point where the same content began to be repeated in later interviews, that is, when saturation was reached, they were ended. The

interview and document analysis instruments asked four broad questions based on an extensive literature review and the formation of an initial conceptual framework described above:

- What critical ICT policy issues does the provincial government seek to influence and why?

- How does the provincial government seek to influence them?

- What role do other provincial, local and national actors play in shaping ICT provision and use in the province, and what is the relationship with these actors?

- What is the relationship to broader development planning processes?

In the following case study we use interview codes denoted by "[LI<number>]" when referring to the various interviews.

Data collection and analysis was guided by the above, high-level conceptual framework that enabled a "mid-range" approach to coding. In this way, through grounded analysis of the data, "more specific "emic" level" codes were allowed to emerge that were "close to the participants' categories but nested in the [higher level] "emic" codes" provided by the conceptual framework (Miles & Huberman, 1994, p.61).

4. Case Study - Limpopo Provincial Information Society Subprogram

4.1 Overview of the Case Study

South Africa consists of nine provinces and over two hundred district and local governments. Whilst generally seen as a unitary state, the national Constitution guarantees provincial and local government a certain degree of independence suggesting South Africa may be seen as more of a pseudo federal arrangement (Shah, 1999). Limpopo is the Northern-most province, bordering Gauteng to the South and Zimbabwe to the North, and consists of five municipal districts, subdivided into 24 local municipalities with Polokwane as the provincial capital. Politically, the province is strongly aligned to the ruling African National Congress (ANC) party, who attained an 85.27% majority in the provincial government election of 2009, compared to a national majority of 69.69%[2]. The region is considered underdeveloped in comparison to other regions of South Africa, with an above average unemployment rate, and approximately 40% of the households are "in areas characterised by extreme poverty and underdevelopment" (Limpopo Provincial Government, 2009). As of 2007, more than two thirds of households "have" a cellphone (70.5% in Limpopo compared to 72.7% nationally), whilst only 1.8% access the Internet (compared to 7.2% nationally) (Statistics South Africa, 2009).

The Limpopo Information Society subprogram was established as a separate unit in 2007 within the Strategic Programs and Projects program of the Office of the Premier in the Limpopo Provincial Government. The formation of the subprogram was an outcome of the National ISAD Plan, driven by the Department of Communications, and supported by the Finnish Embassy in Pretoria who were set to contribute approximately four million Euros. The Finnish funding was largely directed towards local human resources and external consultants to drive the development of Information Society strategies in Limpopo and Northern Cape provinces of South Africa through what was known as the *Information Society* Programme in the *Republic* of South Africa (INSPIRE) (INSPIRE, 2006). The Finnish role was due to end in 2010 with the primary objective being that by the end of their involvement "an integrated, comprehensive and feasible Inclusive Provincial Information Society Strategy is created in Limpopo and Northern Cape provinces and leveraged where applicable to the other provinces" (INSPIRE, 2006, p.64).

As highlighted in Figure 2 below, the subprogram is embedded within a wider system of ICT governance in the province that is formed by the interaction of a variety of actors from all sectors

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[2] http://www.elections.org.za/

and levels of society who have adopted their own priorities and programmes with respect to ICT provision and adoption in Limpopo.
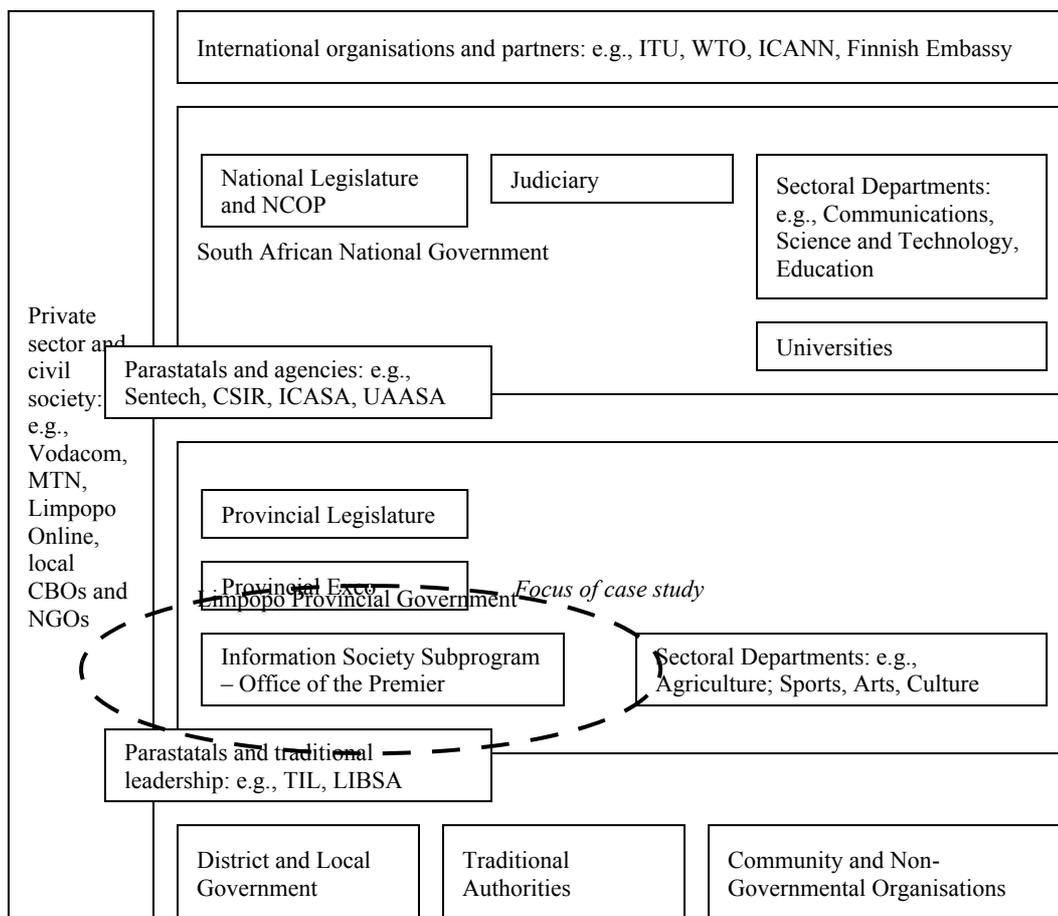
TIL: Trade and Investment Limpopo
LIBSA: Limpopo Business Support Agency
CSIR: Council for Scientific and Industrial Research
NCOP: National Council of Provinces
ICASA: Independent Communications Authority of South Africa
USAASA: Universal Service and Access Agency of South Africa
ITU: International Telecommunications Union
WTO: World Trade Organisation
ICANN: Internet Corporation for Assigned Names and Numbers

Figure 2 Overview of ICT governance participants in the Limpopo province

4.2 Analysis using Dimensions of Focal ICT Governance Situation

This section analyses the emerging focal ICT governance situation in the Limpopo province as viewed from the perspective of the provincial Information Society subprogram within the Premier's Office of the Provincial Government. We use the four dimensions outlined in the conceptual framework to guide the analysis. Whilst there is substantial overlap between the dimensions we nonetheless use them to aid in understanding the situation.

4.2.1 Participants

Dominant national actors

A key influence on the Limpopo Provincial Government's (LPG) ICT policy is the national State Information Technology Agency (SITA) which maintains exclusive control over certain ICT related procurement by government departments over a certain threshold. This dominant position of SITA

has prevented the LPG from forming its own partnerships with the private sector to accelerate the provincial broadband strategy, which is seen as key to the wider Information Society strategy:

...so as far this province is concerned, [the plan to rollout a provincial broadband network] started a few years ago, but then SITA claimed that it's their mandate... you mustn't, you can't go ahead//...//in terms of broadband if SITA feels it is there mandate then we need to see action, [but] nothing is happening, then let us, we will do it ourselves//...//so the stumbling block for this information society to be realised [in the province]: broadband infrastructure is the key and the place where we're stuck now is the key. So that's the reason we are hearing it from the principle, from the [Provincial Government Executive Committee], from the Minister, from the Premier, ex-Premier, right to the [national Department of Public Service and Administration] that we need to unblock this SITA issue [LI7].

This issue is confirmed slightly more diplomatically in the provincial development plan which identifies one of the "key strategic challenges" as:

Lack of consensus between the Limpopo Provincial Administration and SITA on the deployment of a provincial open access broadband infrastructure as a socio-economic imperative (Limpopo Provincial Government, 2009, p.80-81).

The dominance of central actors in ICT governance is supported by the South African Constitution which does not allocate any significant responsibility to subnational entities. Authority is therefore largely distributed between a number of national government departments and agencies, with significant *defacto* influence by large private sector operators (Horwitz & Currie, 2007). In 2001, Heller (2001) identified the source of this centralisation by suggesting that "an electorally hegemonic party, that for historical reasons has developed an instrumentalist understanding of state power, has succumbed to insulationist and oligarchical tendencies" (p.134) leaving little room for authentic subnational governance. However, there is also strong positive meaning attached to this hierarchy of roles when a member of the subprogram suggests that "I would always say there would be one [national] policy//…// we will always rely on national" [LI1].

A formal role for the provincial government

There has been a move towards limiting public sector involvement in the ICT sector as part of the attempted privatisation and liberalisation process (Cohen & Gillwald, 2008). However, there has also been evidence of a desire to set out a more specific and active role for provincial government in the sector since, in a globalising world where national policies are often very similar, "national borders are less important and regional characteristics are becoming increasingly significant" (PNC on ISAD, 2006, p.122). The recent national broadband strategy similarly outlines a policy for coordinated action by all three spheres of government in "direct policy intervention and strategic investment" to improve access and usage (DoC, 2010b, p.5). An apparent outcome of the Presidential National Council on Information Society and Development (PNC on ISAD) process has been the Provincial Information Society Strategy Programme in the Republic of South Africa (INSPIRE) which was established in 2007 (INSPIRE, 2006). This is a nationally sponsored program through a funding and skills partnership with the Finnish embassy that seeks to assist provincial governments in two of the more marginalised provinces (Limpopo and Northern Cape) in developing their own Information Society strategies.

A central role for the provincial government

The fragmentation of authority and lack of coordination by various national actors is seen as problematic, and seen to lead to duplication and wastage of resources. This is particularly important at the infrastructure layer as highlighted by the subprogram

*...advocating for a **single ICT ministry** [at a national level] wherein you will have Telkom, you'll have your ICASA, you'll have your USAASA, you'll have your Infraco, you'll have SITA; but not on the services side, the network components part [LI4].*

The proposed central entity would focus on ensuring more coordinated rollout of infrastructure, whilst the individual departments develop and implement their own services. IT governance authors have often suggested that a hybrid of centralised and decentralised governance can achieve a combination of economies of scale and flexibility respectively (A. E. Brown & Grant, 2005). However, from a socio-political perspective, communications regulation authors (Benkler, 1998; Sandvig, 2003) have highlighted the risks to patterns of information flow (and by implication, democratic participation) of a monopoly of control over communications infrastructure.

At the provincial level, the subprogram seems to be adopting the role of central coordinator. This is reflected in the proposed, revised model for the subprogram which sees it being setup as an "ICT Hub" within the main city, with certain aspects replicated to the surrounding districts. In many ways, the provincial broadband network (and SITA), to be delivered by the provincial government, also represents a physical and symbolic obligatory passage point (Callon, 1999) on which the various elements of the Information Society strategy depend.

In general, a strong role for the provincial government in ICT development within the province seems to be based in the perceived failure of the market in this more marginalised region [LI2, LI4], national actors being slow [LI4] and disconnected from the rural "masses" in their city offices [LI1], and a perceived need to customise ICT policies for the unique challenges of the region [LI3, LI5]. The provincial government also contributes an unusually large portion to the Limpopo GDP (Limpopo Provincial Government, 2009, p.12) and therefore has relatively significant influence from a procurement perspective. The role includes formulating policies and facilitating collaboration, but also direct intervention as an anchor tenant on the new provincial broadband network. It is therefore looking to leverage its large internal IT procurement power in driving external ICT programs. This financial leverage is complemented by some degree of political leverage, especially because of the subprogram's current position within the Premier's Office:

> *[Being in the Premier's Office is] useful because of the authority… you could go to other departments or even to mobile operators and they will be responsive …it seems that you're coming directly from the Premier so you get a response [LI8].*

Including multiple stakeholders

In realising the Limpopo Information Society objectives there seems to be a drive to adopt a multistakeholder approach, evidenced by the use of a "triple helix with government, business and university" [LI2], known as the BUG model; but also including communities to make BUG-C (INSPIRE, 2006, p.14), as well as sharing with and learning from other provinces (Northern Cape, Western Cape) working on Information Society or ICT strategies (ibid.). The BUG model seems to be connected to the involvement of Finnish consultants who will build on European experiences with regional Information Society strategies from the 1990s which emphasise the participation of multiple stakeholders from various sectors (Cornford, et al., 2008; Gibbs, 2001; Németh, 2008). However, the Limpopo innovation strategy (Cartwright, Gastrow, Lorentzen, & Robinson, 2009) notes a significant risk in transferring a "Scandinavian" model due to the low capacity within the relatively weak networks of Limpopo (p.150).

Nonetheless the subprogram is seeking to engage with private partners, largely due to the lack of finances allocated to ICT projects by the national treasury or provincial government:

> *If [the national treasury] doesn't allocate money it's up to the province to see to come up with innovative ways … to achieve whatever goals that we set [LI4].*

> *The legislature has endorsed that the province must rollout broadband. There is no budget, so using a PPP. There are lots of private companies interested [LI3].*

Private partners, and specifically multi-national enterprises (MNEs), because of their industry awareness, long-term outlook, and ability to stimulate smaller local ICT industry (Limpopo Provincial Government, 2009), are therefore seen as critical for realising Information Society goals.

The private sector is viewed as responsible for the actual delivery of services, as "it's not within the competencies of government to provide telecommunications services to citizens" [LI4]. The inclusion of local actors in the formulation of the provincial strategy seems to be largely ad-hoc, usually when a pilot project is being initiated in the jurisdiction of a municipality. They are seen to lack resources, however, members of the subprogram identify a number of roles that local governments could play such as negotiating with network providers to expand their capacity in exchange for access to servitudes [LI4], obtaining network and services licenses [LI1], providing internships for ICT graduates in the region [LI6], and facilitating engagement with communities and integration of ICTs into local development planning processes [LI5]. This role does not seem to extend practically beyond implementation to participation in formulation or enforcement of policy other than suggestions that ICTs should form part of the local development planning process.

4.2.2 Boundaries and relationships

Rigid boundaries and top-down alignment meets bottom-up engagement

As a political party the ANC subscribes to a model of "democratic centralism" (Zuma, 2009) which means that once a decision has been made through wide consultation and a majority vote, all members are bound by that decision. As a result, implementation of policies involves top-down alignment with the collective decision, as well as clear lines of authority and boundaries of responsibility. The National ISAD plan is therefore careful about outlining the legal and fiscal limitations of the provinces and suggests that they focus on certain key pillars of Information Society development "based on their constitutional mandate" (PNC on ISAD, 2006, p.122). For example, the provincial responsibility for ensuring broad access to network infrastructure is limited to supporting national regulation of the telecommunications sector and assisting municipalities in establishing municipal area networks (PNC on ISAD, 2006, p.89). The recent national broadband policy suggests that provinces may only define requirements and request "the required services from the relevant [State Owned Enterprises (SOEs)]" (DoC, 2010b, p.17) such as SITA and USAASA. Meanwhile, the subprogram sees a critical need to establish a provincial backbone network which lies outside of this definition of responsibility. The rigid enforcement of boundaries and positions is seen to inhibit provincial initiatives such as SITA's strict interpretation of the SITA Act which is preventing the province from developing a broadband network:

> *...if one interprets the Act in another way, like SITA, the Act says if you implementing this as government you must do it through [SITA] //...// in terms of the Act its a mandatory service to [SITA] [LI4].*

Whilst the subprogram recognises the authority of national government and the need to ensure that "whatever we're doing at provincial level we have to make sure that we align with the national" [LI5], it does query the effectiveness of national SOEs, the validity of certain laws, and the success of the consultation processes (specifically in the development of the national broadband policy) as it is not clear that the voice of the provincial government is being heard:

> *The only time that I would believe that [our voice] was heard is when I see my comments incorporated in the [broadband strategy document], but now, it's not there yet... maybe it's still a draft or, still, for me, if I've made comments you have to come back to me and say listen this is your comment are you agreeing with that or modify....but after that broadband policy conference I didn't get the feedback [LI1].*

As Mueller highlights in his analysis of participation in Internet governance, "There is an important distinction between "making your views known" and "making your views count"" (Mueller, 2009, p.1). In addition, the province perceives a history of marginalisation by the national government, and therefore views the reliance on national government with some scepticism, suggesting that Limpopo has been on the

> *...worst end of the politics of the nine provinces in terms of sharing the cake //...// We have*

been getting…the remains. We have been picking up the pieces off the ground for quite a long time since 1994 [LI2].

There is a suggestion that the new government, since 2009, is more open to consultation, but the subprogram recognises that they need to drive their agenda from the bottom-up:

I think [the new national government have] got now a sense of saying let the people talk...then lets see how best we can assist them...[but] it's not easy it's very tough you must push because there are competing interests [LI1].

The subprogram suggests that the somewhat distant national policy makers would do well to develop better "linkages" with the provincial actors as a way to assist with real rather than perceived challenges:

...if you don't understand the challenges in localities such as Limpopo province sitting at national there is no way that they can be able to assist us //....// you need to engage with this people and say what is it we can do, what are the programs Limpopo is focusing on and how national can actually leverage on that and assist those programs going forward //...// [those] linkages I've not yet seen yet [LI1].

On the other hand, this is the first subnational ICT strategy or policy program formally supported by the national government, with national representation on the project steering board and committee; in contrast to a number of provincial and city level strategies which have been developed independently, and often in opposition to (e.g., Esselaar & Soet, 2009), national policies. Whilst subnational initiatives may emerge from the "bottom-up", "top-down" political, institutional and fiscal support for subnational or local involvement is critical for their sustainability (Sahay & Puri, 2007). In some cases, working for change incrementally within the top-down hierarchy is more productive than attempting to effect radical decentralisation (Pinto, 2004), as suggested by the Finnish approach to Limpopo.

Informal, collaborative, horizontal relationships

In contrast to the hierarchy between levels of government, within the province there is a culture of equal relationships around governance of ICTs as well as on "bottom-up" [LI2] involvement by communities. Related to this is the rejection of unnecessary hierarchy [LI7], and the importance of "networking and collaboration" [LI3] between different Information Society programs in the province (e.g. e-Health and e-Education), and with other provinces. The ANC even extended an invitation to other parties to contribute to the development of the ICT strategy section of the provincial development plan. Collaboration is seen to facilitate a number of important outcomes such as sustainability (e.g., "if one partner leaves then there are others to take on the role" [LI2]), mutual benefit for all stakeholders (e.g., "the universities produce skills that the market needs" [LI5]), easing access to servitudes for telecommunications operators [LI4]), and ensuring that ICT programs meet the needs of the target communities [LI2]. By establishing relationships with MNEs and universities from outside of South Africa the province is effectively bypassing the national hierarchy (Bache & Flinders, 2004, p.35).

The success of the BUG-C model is however impeded by the exclusivity agreement with SITA that prevents partnerships with business, as well as the limited resources available to form consistent relationships with local communities. The emphasis is on removing the boundaries and developing relationships with people to get the job done, rather than getting bogged down in government regulations and bureaucracy that restrict participation:

...if you go to Rwanda and say listen this is what I want to do and they can understand that you address some of their challenges they set you up and you run. Rwandan's have cleared the path. [They] say we want to develop Rwanda, if you are part our train we will ride with you [LI1].

This suggests a shift away from the traditional government emphasis on structure and process

largely based on existing hierarchical, political and geopolitical relationships and boundaries, to more functional or outcomes oriented arrangements (Hooghe & Marks, 2003).

Whilst there is an emphasis on equal participation and networking, by viewing ICTs as a largely external, technical project the Provincial Government favours a central, coordinated hub that can host technical experts and "initiate, facilitate, and co-ordinate" (LI6) the development of applications within sectoral departments and pilot districts, then replicate successful models across all districts. The desire to coordinate and replicate connects with an emphasis on minimising duplication, reinvention of the wheel, and wastage of resources. The desire for coordination and cooperation is associated with a rejection of wastage, duplication and also competition [LI1, LI7].

4.2.3 Policy issues and goals

The inclusion of a section on ICTs in the Limpopo Employment Growth and Development Plan (Limpopo Provincial Government, 2009) is seen as a key step in achieving wider recognition of the importance of ICTs within the province [LI3]. Increasing use of ICTs is clearly seen as a positive development, and is most often associated with economic liberation.

Economic and employment orientation to goals

The recent provincial ICT strategy suggests focusing

>*…its ICT interventions towards the achievement of broad-based development goals in diverse communities in key areas including health, education, economic opportunity, empowerment, participation and environment (Limpopo Provincial Government, 2009, p.82).*

However, a dominant economic thread emerges from interviews in which it is suggested that "there is a very strong economic development focus... [you're] building that creative class or the knowledge economy" with the aim of "ensuring the "attractiveness and competitiveness of the workforce that you have as you race towards the, what you call the, "knowledge economy"" [LI2]. The race towards the knowledge economy suggests inevitability in the arrival of ICTs with the risk of becoming a loser in the race. The ability of businesses and citizens to compete in or "take on the market" [LI5] at a provincial, national and global level is a recurring theme, and has a strong overlap with the overarching provincial development goals for which "employment is the biggest issue…it's a ticking bomb" [LI3]. This orientation is underlined by the likely move of the subprogram to the Department of Economic Development in the province.

A focus on economic outcomes has been criticised by development theorists who have argued for a broader definition of development (Sen, 2001). More specifically, experiences with regional Information Society strategies in Europe suggest that

>*…when projects and local activists start to aim for economic results (such as number of jobs, income, new enterprises), the process itself seems to disintegrate, as the actors try to reach these aims directly, via shortcuts and effective tricks (Oksa, 2004, p.12).*

This experience suggest that the focus should be on more intermediate goals of developing networks and learning processes around ICT adoption, and that resources will be brought in as new people are attracted to the network. Nonetheless, these intermediate goals would need to be embedded in or clearly linked to overarching socio-economic targets given their socio-political importance.

In general, the orientation of Information Society goals is primarily external: external knowledge transfer for grasping the opportunities in external markets. There is a risk in this external orientation that citizens and communities may resist the external as it is perceived to (and does) affect internal social structures.

Risks

The risks of associated with the Information Society (Tapper, 1998) are not mentioned often,

however there is a recognition that

> *[Privacy is] for me the most critical one, because if I take my status measure I'm HIV positive I want that information to be between me and my doctor //...// government needs to be secured, citizen information needs to be secured [LI1].*

Whilst it is seen as important, the management of security and privacy of information is seen as a national policy issue. In addition, new ICTs are seen to have a potentially negative effect on culture, although there are plans to manage this through the inclusion of "cultural sensitivity" units in ICT training. They also can "affect the togetherness of communities and families especially" [LI6]. However, the benefit of finding a job in the future knowledge economy is seen as an acceptable risk:

> *So this is like investing in education. Look at the Finnish, the Irish economic turnaround. They invested so much within their education system, and even in the process even forgot their language. No, the Irish [are] focused they don't think, don't speak Irish, they speak English [LI2].*

Infrastructure and e-skills as key issues

The critical policy issues to be addressed to achieve the envisaged goal of participation in the knowledge economy are universal access to infrastructure and necessary e-skills:

> *If you are going to rural areas //...// and you want to say people should have access to information. First you have to deploy affordable communication infrastructure, but that communication infrastructure would look for the skills... [LI1].*

ICT infrastructure, and specifically broadband, is therefore promoted as a "normal utility like water electricity", and a necessary catalyst for development [LI1].

The focus on broadband infrastructure is of special importance to the subprogram which feels that provincial and national "...priorities are different. National might not see broadband as the key thing. Limpopo is rural. For us broadband needs to bridge that gap." [LI1]. The provincial broadband network is therefore a gateway to participation in the knowledge economy, complemented by a broadening of e-skills. The focus is therefore more on inclusion as a general enabler of economic participation, rather than on leveraging ICTs in specific sectors of the economy or society.

Local relevance and spillover

The special focus on broadband is seen as a customisation of national policy to the provincial needs, and is a clear dependency for other policy issues. This is reflected in their arguments for a "value chain" approach to ICT policy [LI4]. Meanwhile, there is also a general awareness that the focus of the strategy should be on social innovations to utilise existing technologies rather than striving for high tech innovations since research capacity is low in the province [LI2] and technology "relevance is key" [LI6] for the largely rural population [LI2]. Relevance is clearly critical and aligns with the argument of Cornford et al. (2008) who suggest that "...European and national priorities also have the potential to handicap regionally generated innovation [in the adoption and integration of ICTs], through prioritising policies which are not in line with actual regional requirements" (p.49). There is a specific interest in local content as part of the strategy (INSPIRE, 2006, p.42) because of language diversity in the province, however it is not clear to what extent local actors will be empowered to shape its development. In contrast, network infrastructure is seen as having substantial positive externalities as long as it reaches all citizens in the province. This could not be funded by individual municipalities and private companies cannot internalise the long term benefits to the wider economy (V. Ostrom, et al., 1961), so the provincial government must drive it and support it financially as an anchor tenant [LI1].

There is also a more subtle recognition of the spillovers *between* policy issues, such as the

connection between ICT skills and innovative, entrepreneurial ability to effectively "deploy ICT for development":

> *The fact that the province has an extremely low skills base reduces its ability to innovate, to be economically productive and to implement productive ventures. In building ICT skills, the strategic place to start is in early childhood classroom.* **ICT skills are life skills**. *In order to deploy ICT for development, it is important for the province to develop a critical mass of knowledge workers, technology users, and motivated entrepreneurs (Limpopo Provincial Government, 2009, p.81).*

The provincial innovation program and strategy are therefore a central element of the subprogram's activities. This awareness is important for ensuring a coordinated approach to various policy issues as advocated in similar European strategies (Cornford, et al., 2008).

Reconciling motives of various players

Whilst the private sector is seen as critical to the success of provincial ICT programs it is nonetheless seen as exploitative if not guided by government towards supporting wider development goals:

> *... private sector players they are still very much I would say selfish //...// I suppose you will agree with me if I say there is an obvious market failure in which case justifies the involvement of government [LI2].*

There is therefore a more general expectation on various actors in the province that they will cooperate to achieve a win-win scenario. For example MNEs will be welcomed in the province (and can benefit from government procurement) but should look to draw in the large marginalised population, by, for example outsourcing a portion of their "business to the small businesses so that the small businesses //…// have something that they can thrive on" [LI2]. Students that have been trained on ICTs are expected to "give back" by mentoring other students in future [LI6]. The provincial government will assist private operators with rolling out networks:

> *We [are] trying to push [the private operators to expand their services] and the other one is to help them. In some areas they are looking at expanding and they have challenges; when they apply for servitude and all those other things [controlled by the municipalities]. Now I try to liaise with the municipalities so that we'll [accelerate] that process [LI4].*

The emphasis therefore seems to be on aligning the incentives of public and private sectors through more a more cooperative, coordinated relationship, rather than through the more anonymous legal system.

4.2.4 Actions

The subprogram's range of preferred actions reflects a skepticism towards the market and alignment with the national philosophy of a "developmental state" (Gillwald, 2007). However, due to the lack of government resources and perception of government ineffectiveness, the strategy is based on a strong role for, and partnership with, the private sector in implementation. As a result, the subprogram favours actions or mechanisms by the provincial government that can firstly stimulate private investment, such as through reducing risk or guaranteeing revenue for private partners as an anchor tenant. The second main element of the strategy is to create awareness, and coordinate or guide the actions of different stakeholders such as through PPPs, workshops, and multi-stakeholder forums.

Provincial action within a national framework

Whilst national departments and agencies dominate formal constitutive and directive decision-making, the subprogram attempts to develop its own governance structures and rules (e.g., through supporting provincial ICT or innovation forums) and collective policies (e.g., Information Society

targets and strategy) that are embedded within the national policy-making system.

It is clear that the national Department of Communications aims to ensure coordination and alignment of the actions of provincial and local government, such as through the "Broadband Intergovernmental Implementation Committee" (DoC, 2010a, p.20). However, the province is contesting the laws that prevent it from driving the development of its own broadband network instead of relying on national SOEs (or the market).

Direct and indirect actions

In general, the majority of public funds allocated to ICT governance within the province have been directed at sustaining activities by the small group of well qualified policymakers within the subprogram, rather than creating a service delivery company. Their goal is therefore to provide strategic direction through a focus on "policy development" and to facilitate a network of "foot soldiers" to implement policy [LI6]. By staying small, the subprogram also aims to remain flexible and responsive to the rapidly changing ICT sector [LI1].

At the same time, the lack of legal authority and resources has prevented direct action, such as regulating telephone rates or building and operating a provincial broadband network. As a result the subprogram has pursued more indirect actions, such as PPPs and political lobbying and pressure (within both private and public sectors), to drive their policy programmes. For example, they have actively lobbied for provincial interests at national policy colloquiums, and sought policy directives from national ministers to obtain necessary network and service licenses and to resolve the SITA issue mentioned earlier. In addition, during the 2010 FIFA World Cup the subprogram looked to pressure national mobile operators into providing or extending network coverage as a way to leave a positive legacy from the tournament. The planned PPP model for provincial broadband network rollout involves a BOT agreement with a private partner, in which the provincial government will "take a lead in terms of an anchor tenant, to say build it as private sector, we'll fund it" [LI1]. PPPs, such as BOT agreements, provide a way of sharing long-term investment risk (Fredebeul-Krein & Knoben, 2010) whilst achieving public interest goals. However, BOTs are dependent on "well-structured licenses, regulations, and transparent processes" (Gillwald, 2005, p.5), and the subprogram will therefore need to manage the high risk of a somewhat opaque national regulatory environment. These indirect actions correspond with a more informal, cooperative approach and relationship with partners based on mutual benefit, characteristic of network governance (Kooiman, 2003); rather than through isolated, individual action and more anonymous market regulation.

Coordinated action and leadership

The key strategic interventions of the subprogram are based on a recognition of the interconnectedness of policy issues and the need for "aligned" actions through

> *...a holistic and multi-dimensional approach to strengthen synergies between the components of the development dynamic, leverage spillover effects, and directly address rural development imperatives by aligning interventions in a number of strategic areas (Limpopo Provincial Government, 2009, p.82).*

The importance of integrated actions has been recognised in the European regional ICT strategies and there is a suggestion that "...continued 'silo' thinking at the national level can distract from integrated policy approaches and integrated leadership at the regional or local levels" (Cornford, et al., 2008, p.49) and also that the "effective use of ICTs at the regional scale because they have important threshold effects and first-mover disadvantages – in short, the effective use of ICTs is a collective action problem" (Cornford, et al., 2006, p.40). This reflects a similar earlier observation within the subprogram that fragmentation at a national level is seen to be undermining development of the Information Society within the province. A member of the subprogram suggests that "there has been a lot of activities [related to ICTs] happening but they were not consolidated or coordinated thoroughly in the provinces when they were building information society" [LI5]. In

addition, one should "remember [the subprogram] is not a subject matter expert, [the subprogram] is playing a coordinating role" [LI7].

This coordinating role suggests a leadership position. However it need not involve technocratic, hierarchical or heroic leadership by the subprogram which could become top-down delivery by "subject matter experts", but rather through developing a common framing vision and creating incentives for integration (Cornford, et al., 2006; Stiglitz, 1999).The value of leadership - and specifically coordinated leadership by the public sector (Cornford, et al., 2008, p.49) - has been highlighted in European regional Information Society practice. However, leadership and a holistic perspective do not necessarily imply rigid or heroic (Stahl, 2006) coordination or management (Cornford, et al., 2006, p.10). The authors acknowledge a shift in leadership from an individual to collective approach, that uses principles instead of rules and suggest developing a more nuanced understanding of leadership in subnational regions that is appropriate to a knowledge-based society (Williamson, 2007, p.299-315).

More practically, the various project managers within the subprogram fall under the same department within the Premier's Office and the majority are physically co-located, allowing for regular interaction between the members and a suggestion that "we're working very closely together" [LI6] where "he can walk into my office and I can walk into his office" [LI5]. The various members of the subprogram can therefore play a potentially important role in integrating the actions of various national actors. However, we did not observe clear structures, processes or relational mechanisms to ensure integrated actions within the subprogram (Peterson, 2004), and it seemed to rely more on informal interaction. It is also clear that national departments are not always willing to be guided by a provincial actor with limited political and legal authority.

Active learning versus designing

At the same time as these attempts to integrate actions; there have been some initiatives by the subprogram to facilitate local participation in the development of applications and content. In general there is recognised need to consult with local actors:

> ...[our methodology is] bottom-up, because if you see all these service delivery protests it's because government has been parachuting development onto the community and communities have been saying no, that's not what we want we want [LI2].

The aim of the subprogram is therefore to facilitate pilot applications or projects within departments and communities to demonstrate the value of ICTs, with the aim of stimulating investment in the ongoing development of the program by the partners:

> So you pilot something in a particular working group which is championed by a particular department. If that concept works the department can see in terms of how it wants to implement it //...// but it must come from the department because INSPIRE doesn't want to impose something whereby the department is not interested. [That] doesn't make sense. The department must take this idea forward and implement it and make sure it's happening [LI7].

Therefore, rather than designing and implementing applications for the target beneficiaries through a participatory consultation (e.g., Sahay & Puri, 2007), the subprogram seeks to facilitate an active learning process based on "indigenous and endogenously-led regional development" in which the partner experiments and integrates ICTs into its existing practices (Cornford, et al., 2008; Gibbs, 2001). It is likely that this model of ICT adoption has been brought in by Finnish consultants who are looking to transfer certain elements of successful active learning based approaches adopted in rural areas of Finland (Németh, 2008; Oksa, 2007).

Replication

A further element of the strategy the replication of successful models:

...whatever we do in Polokwane it will be more like a testbed from which we monitor, evaluate, and learn, and incorporate the best practices, then replicate [LI2].

The desire for replication seems to be connected to the urgency for increasing participation in the Information Society and saving scarce resources by reusing "best practices". However, replication seems at odds with the active learning approach unless there is a selective transfer of certain elements of the engagement process rather than wholesale replication of institutional and technological blueprints. The process of joint problem solving builds commitment to the common vision. It involves a "continuous process of reconstructing future perspectives" which gives "larger meaning and deeper motivation to the practical everyday work" (Oksa, 2004, p.11).

In this conceptual framework we are not transferring or copying models of action from one place to another but we may transfer ways of learning, ways of increasing capacities for learning, modes of action that support creative problem solving (Oksa, 2004, p.10).

In addition, local learning supports local innovation which allows for the emergence of new ideas. Stiglitz (1999) argues that, in the knowledge economy, the opportunity cost of rejecting an idea that turns out to be good is higher than accepting projects that turn out to be bad.

4.3   ICT Governance Scenario

As expressed through the experiences of the subprogram, the Limpopo ICT governance scenario exhibits a number of characteristics typical of the *Partially decentralised* scenario in Table 1. The provincial government is seen to play a significant role in the future. However, there are entrenched institutional, political and fiscal arrangements that undermine its position. These constraints are resisted and contested without breaking alignment with national policy. The provincial government is also seeking to establish a wide network of partnerships beyond the boundaries of South Africa (and therefore outside of the national hierarchy of relationships) as a way to ensure sustainability of its ICT programs. There is a strong desire to customise and even reprioritise national policy issues to better suit the development goals of the province. However, due to limited resources and political or legal authority, the province will depend largely on indirect actions (such as PPPs) to achieve these goals.

The case of the Limpopo ICT governance scenario highlights various nuances of the emerging provincial role in ICT governance – as viewed from the perspective of a specific group of participants. We therefore attempt to infer some tentative implications and recommendations for practice and theory.

5.   Implications and recommendations from the case study

5.1   For National Policy

For national policymakers the study describes the emerging ICT policy priorities and governance arrangements of provincial actors. In general the subprogram envisages provincial (and local) actors taking a more active role in the shaping the provision and adoption of ICTs, largely due to the perceived urgency of ICTs to provincial development goals and lack of national progress in this sector. This tends to conflict with an entrenched national ICT governance arrangement (e.g., SITA Act, ECA) which inhibits provincial governance. Due to the limited legal, political and fiscal support from national government, the provincial government aims to leverage the involvement of private companies and, eventually, local actors as a way to realise its policy goals.

Whilst the subprogram recognises national authority and the need for alignment, a key theme from the case study is a desire to adopt a unique approach to addressing the unique challenges of the region. National policymakers are seen to be disconnected from the reality in the province, and the subprogram therefore seeks to customise or reprioritise national policies to meet the provincial development challenges. This customisation extends beyond reinterpreting policy priorities to

include adopting a specific governance arrangement (e.g., parastatal) or approach (e.g., active learning) that is perceived to be more suited to achieving the policy outcomes. National policymakers may therefore choose to support "endogenously led" innovation by provincial actors in the development of policies and governance arrangements rather than looking to develop institutional and procedural blueprints that can be replicated in other provinces. This could free provinces to develop innovative governance models to drive ICT provision and adoption. The concern over wastage and duplication may be outweighed by (1) the benefits of unexpected innovations and (2) local buy-in and commitment to the program. More generally this suggests a shift in focus away from formal structure and process to achieving outcomes through a variety of possible governance arrangements. This also suggests that national (and provincial) government should be careful that the adoption of stronger top-down accountability mechanisms does not undermine or override bottom-up definition of policy priorities and accountability. Finally, given the number of competing priorities (e.g., education and health) in provincial treasury, national government may need to provide a strategic fund specifically targeted at ICT or Information Society development in the provinces as has been achieved through the Finnish grant in Limpopo.

At a macro-level, the Information Society subprogram within the provincial government has been positioned to play a potentially valuable integrating role by leading and coordinating the provision and adoption of ICTs across the departmental silos of the public sector, but also including private partners. However, it is likely that an increase in subnational government involvement will further cloud the national regulatory environment as the pricing of services could become affected by subsidies (at a wholesale or retail level) that can vary between and within provinces. This will add to transaction costs for service providers, and favours those that are able to develop long term relationships at the subnational level (which seems to be one of the goals of the province).

5.2 For Provincial Policy

For provincial policymakers the arrangement and approach is by no means a complete puzzle with possible contradictions between the pressure and urgency to achieve results through aggressive infrastructure rollout, and modeling and replication across the districts; and a methodology that seems to be based on a slower, active learning process derived from experiences in Europe. It is possible that certain "contingencies" or factors could dominate others in shaping the governance arrangement: for example, the desire (and explicit targets) for rapid, widespread adoption of ICTs may encourage greater centralisation of decision-making and participation in Information Society governance processes to increase efficiency. This (re)centralisation could undermine the relatively immature active learning taking place within sectoral departments and at a more local level. The experiences of regional ICT or Information Society strategies in more marginalised or rural areas of Europe during the mid-1990s suggest that the Limpopo province would benefit by maintaining a balance between the obvious need for improving physical access to infrastructure and basic awareness of ICTs through a more "centralised" governance arrangement; and the more "decentralised" active learning processes. This may also reflect a contradiction between the active learning approach brought in by the Finnish consultants (with support from the national Department of Communications) and the urgency of the provincial government to achieve results around infrastructure and e-skills.

Several differences (and similarities) between the Finnish and Limpopo contexts may influence the transferability of the European approaches: first, since the mid-1990s, ICTs have come to be seen as a human right in many countries and therefore suffer (and benefit) from growing political pressure to achieve uniform or equitable access rather than allowing for locally defined strategies. Second, Finland benefited from a relatively high level of education across the country, whilst Limpopo is characterised by areas of very low literacy which could affect the local integration of ICTs in some cases. Third, traditional authorities and hierarchy continue to play an important role in many aspects of Limpopo rural life and could affect the development of networks of active learning which are based on empowerment that may threaten existing power structures. Finally, as noted in

the provincial innovation strategy, the low capacity and connections in the provincial networks are a significant risk to the partnership model. A large amount of effort therefore needs to be invested in developing the network and its participants.

The impact of these provincial arrangements and policies depends on their ability to form alliances with the private sector. This will be done by leveraging the large incentives in internal government IT procurement (e.g. "anchor tenant" on provincial broadband network) to drive external ICT programs. However, the ability of the province to leverage government's internal IT procurement depends on an uneasy relationship with SITA. This issue therefore continues to be a major risk for the strategy.

In addition, the active learning process could benefit from a more explicit recognition of a municipal or local assets by incorporating asset-based methods to community development (Kretzmann & McKnight, 1997). Assets identified in the above case study include EIA support for network operators, access to municipal network licenses, facilitating access to servitudes, and providing internships for ICT trainees; however there are probably numerous others that need to emerge through participatory engagement with the various groups.

In many ways the provincial broadband infrastructure has been rendered "indispensable in the network" (Callon, 1999, p.69) of actors planning the provincial strategy – and therefore a potential physical and symbolic stumbling block for the whole strategy. Whilst this may be seen as a possible "single point of failure", given the lack of human resources within the province, establishing a high-profile, symbolic project with a strong positive narrative attached to it may be useful as a platform for enrolling various actors from government and the private sector into supporting the Information Society strategy.

In general, for both national and provincial policymakers, there is a need to balance the benefits of coordination and alignment of goals, and allowing for variable definitions of outcomes and approaches to the governance of ICTs by different jurisdictions. This may require an acceptance that greater local influence over defining and achieving outcomes that can maximise the opportunities for development without necessarily leading to equitable development.

5.3 For Theory

In this case a simplified version of the IAD framework has been used to guide the analysis of focal governance situation dimensions and exogenous variables. It has limited predictive ability in the way it has been applied, but has been appropriate as a high level, "mid-range" coding framework for developing a more in-depth understanding of the governance arrangement.

At a lower level, the case study has reinforced a number of observations concerning regional ICT or Information Society governance. For example, as highlighted by Cornford et al. (2008, p.32), "the past hangs heavily on the present" where the entrenched hierarchies are slow to accommodate governance networks. At the same time the authors identify a "new individualism" in the aftermath of command and control-based state socialism. This independence has come at the expense of cooperation. A similar situation is identified in Limpopo where the subprogram envisages greater cooperation with private companies in what is seen as the "selfish" market. More generally, there is a similar recognition of the need for leadership (usually emerging from the private sector), and specifically political leadership; as well as networks that extend to the end-user (through Limpopo's "bottom-up" approach). Whilst this previous research highlighted the benefits of a "clear story" outlining the ICT vision, the Limpopo subprogram seems to do similar with its economic development goals, but also establishes a more tangible broadband network (and ICT hub) as a central actor around which various initiatives can assemble (Callon, 1999).

Lastly, in a similar way to the conflicting contingencies identified in the organisation-level case study of "Corporation C" by Sambamurthy & Zmud (1999, p.275), the increasing provincial knowledge (through the formation of a specialised Information Society subprogram) around ICTs is

conflicting with the ANC preference for democratic centralism leading to a more decentralised governance arrangement.

6. Conclusions

This paper has highlighted the emerging role played by provincial actors in ICT governance within a relatively marginalised, rural province of a developing country. Importantly, the current arrangement suggests an attempt to adopt a network-based approach to ICT governance within the province, rather than hierarchical or market-based. European experience with this approach suggests largely positive outcomes. However, the study notes a number of key issues that can influence the outcomes of the provincial ICT governance arrangement: the national emphasis on alignment of policy and action inhibiting provincial policy and governance innovation; a possible contradiction between the province's desire for urgent rollout and replication of successful models, and a slower, active learning process; limited engagement with local actors on policy formulation that could undermine their commitment to policy implementation; a dominant economic orientation to policy goals that may affect the learning and integration process; and the lack of existing capacity and networks that are seen as the basis for provincial policy implementation.

However, the current high level theoretical framework and level of analysis mean that the predictive value of the study is low. More in-depth research is needed to gather a broader picture of ICT governance in the province from the perspective of other actors inside and outside government. As time progresses the Limpopo case study will present an interesting example of a nationally recognised, subnational strategy. This may be compared to subnational governance and strategies that have emerged independently or even in opposition to national policy.

7. References

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