From Simulating Citizen – Government Interaction to Facilitating Service Delivery through ICT use: Experiences from the web-based collaboration and thinkLets project

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Abstract: The first aim of this short paper is to demonstrate that despite the many constraints facing ICT4D researchers in developing countries, it is possible to conceptualise, design and execute an ICT use study that is well grounded in both theory and practice. This we do by presenting a high level description of the web-based collaboration and thinkLets research project. The main findings of this longitudinal study thus far is a mechanism or an approach that could be used to scale up the study using a repeatable and predictable process that has the potential to be transferred to participating communities and government departments to run on their own, following the principles of collaboration engineering. The second aim is to show that networks of audiences get created along research pathways which build research, development and innovation credibility that others seek to leverage in various areas of potential ICT use to facilitate service delivery in South Africa.

keywords*: Government-Citizen Interaction, Policy Implementation, Service Delivery, Information and Communication Technology, thinkLets, Collaboration Engineering*

1 Introduction

It is acknowledged that research, development and innovation in all aspects of ICTs are led by people from the developed world. In addition, by their nature, ICTs and their uses induce a sense of urgency in their user environments. Within a development context, they are generally accepted as enablers of the development process, enabling organisational processes to be fast tracked and better managed. The result is that scholars from developing countries readily join the journalistic approach to ICT4D research as they generally do not have the time, the resources and sufficiently supportive environments to develop empirically grounded theoretical models that would enable them to over time, gain deeper understanding of the

value and relevance of ICT uses for socio-economic development. Often, the benefits that accrue from these ICTs are assumed to be well known and studies aimed at enhancing understanding are not easily supported.

This problem of how research studies on ICTs in developing countries could be undertaken is not new. Walsham and Sahay (2006) suggested a conceptual framework of four questions which *all* research studies on ICTs in developing countries should address:

> What is the 'development' to which ICTs aim to contribute?
> What are the key issues being studied related to ICTs?
> What is the theoretical and methodological stance?
> What level and focus of analysis is being adopted?

Recently, Avgerou (2008) undertook an extensive critical research review of information systems in developing countries. We share her argument that information systems research in developing countries has a great deal to gain from studying theories pertaining to argumentation of development in economics and political science, in a similar way that it gained strength in its argumentation about the nature of information systems innovation from studying theories of technology in sociology (Avgerou, 2009).

Our main aim in this paper is to demonstrate that despite this induced sense of urgency as well as the dominance of the ICT research agenda by the developed world, it is possible to conceptualise, design and execute an ICT use study that is relevant and well grounded in both theory and practice. We report and share our experiences about a six year longitudinal project, this being the fifth year; involving several researchers, several students, several communities and several funders. The key message from this report and the experiences is that a credible voice appears to be possible, with innovative ideas such as local government service delivery through ICT use being currently solicited and explored.

The rest of the paper is organised as follows: We next discuss the citizen-government simulated interaction, followed by a discussion on the benefits of a good theoretical model to guide a research programme. Just before the concluding discussion, four examples of service delivery through ICT use are presented, which collectively indicate the level of trust and confidence that the South African public is according to the work that we have undertaken over the years.

2 About Simulating Citizen-Government Interaction to Aid Implementation of Legislation

The experiences we share here emanate from our involvement in a longitudinal exploratory study over a five year period, with the sixth and final year of the study in 2010. The study is conducted within the Informatics discipline, specifically within decision theory and group decision-support systems. It explores innovative ways in which web-based group support systems (GSS) tools could be used to enable ordinary South African citizens to effectively

engage with each other, government administrators and managers. Group Support Systems are specialised type of ICT designed to facilitate people working together (Nunamaker Jr et al., 1997).

The requirements of South Africa's Promotion of Administrative Justice Act – PAJA (Act 3 of 2000) (Republic of South Africa, 2000) provided us with an opportunity for anchoring the research project, the design of which involved the creation of a framework from a series of field studies in urban and rural areas in South Africa in support of the implementation of the PAJA.

The PAJA seeks to overcome the historical apartheid injustices by empowering the public to expect from government a reasonable opportunity to make representations before receiving a negative decision (an administrative action), to ask for written reasons and/or challenge the government. In the PAJA Act, an administrator is any person who has the empowering provision to make decisions on behalf of government, which such decision (or the failure to make a decision) can negatively affect an individual or the public. The PAJA promulgates the constitutional right to lawful, reasonable and procedurally fair administrative action. By lawful, the PAJA Act stipulates that a government administrator should have the empowering provision to make decisions on behalf of the government. By reasonable, the administrator should give potentially affected individuals or the public an opportunity to make representations before the negative decision is made. By procedurally fair, the negative decision should be free from any real or apparent bias by following a set of procedures.

The aim of the study is to identify and harness opportunities for sustained collaboration and interaction by communities who would use web-based GSS tools within e-government context. The main research question concerns the features needed in web-based collaboration tools and how interfaces could be designed to enable citizens to interact effectively with government and public bodies in South Africa.

There are two key outcomes from the various outputs (masters and honours dissertations, conference papers, a journal paper, special reports and invited presentations) of the study. The first is a mechanism or an approach that could be used to scale up the project using a repeatable and predictable process that has the potential to be transferred to participating communities and governments departments to run on their own, following the principles of collaboration engineering. Following a theoretical framework (see Fig 1) that underpins this research together with the principles of collaboration engineering, the 'TurnStormer' thinkLet was developed in 2006 through simulation in three field studies of the PAJA requirements and processes (Twinomurinzi and Phahlamohlaka, 2006). The fundamental role of Collaboration Engineering is in training practitioners in the relevant facilitation skills on technology that facilitates group work and group dynamics necessary for them to use the technology to create a repeatable collaborative process (Briggs, R.O. et al., 2003). For successful Collaboration Engineering efforts, there are three critical requirements; a low technology related skills conceptual load (easy technology steps to follow); the technology related facilitation skills need to be packaged such that different practitioners using the same packaging will get similar predictable results from their groups; and the

technology facilitation skills must be packaged in blocks that can be reused easily to create a new collaborative process by re-organising the package blocks to achieve the group goal. Briggs et al. (2003) identify thinkLets as the most appropriate CE building blocks. ThinkLets are "the smallest unit of intellectual capital required to create one repeatable, predictable pattern of collaboration among people working toward a goal" (Briggs et al., 2003:46). A thinkLet (Briggs, R. O. et al., 2001) encapsulates three components of a GSS stimulus: the tool, its configuration, and the script. The tool is any artefact that can enable people to work together. The configuration refers to the way the tool is set up to focus the group in any one of five generic patterns in which people work together: increasing ideas, reducing ideas, increasing understanding, evaluation or building consensus. The script details the step by step instructions that need to be followed to achieve the goal of collaboration. By varying the basic patterns of a thinkLet, it is possible to create repeatable, predictable patterns of thinking among people making an effort toward a goal (Kolfschoten, 2007).

The second key outcome is a PhD thesis soon to be completed that spawned from the study. Space limiting, it is not possible to do more than this high level description of the study, but nearly all previous outputs have been published in readily available outlets.

2.1 On the benefits of a good theoretical model to guide a research programme

Although it was initially conceived as an area for further research from a PhD thesis completed by the first author, the web-based collaboration and thinkLets study within which the PAJA research is conducted now qualifies to be described as a research programme wherein many other projects are conceived, defined and executed. The theoretical framework that guided and continues to guide the work is shown in Figure 1.

The steps prescribed by the PAJA were intriguing and attractive to research from a decision theoretic and Information Systems point of view. There were striking similarities between what Phahlamohlaka (2003) called 'prerequisites of decision justification' and the steps prescribed by the PAJA process. Figure 1 provides a high level illustration that served as the theoretical basis for the longitudinal exploratory study. It was the framework procedures, their close relationship to the logics of decision justification, and how their implementation could best be supported through the use of ICT that were identified as areas of further research.

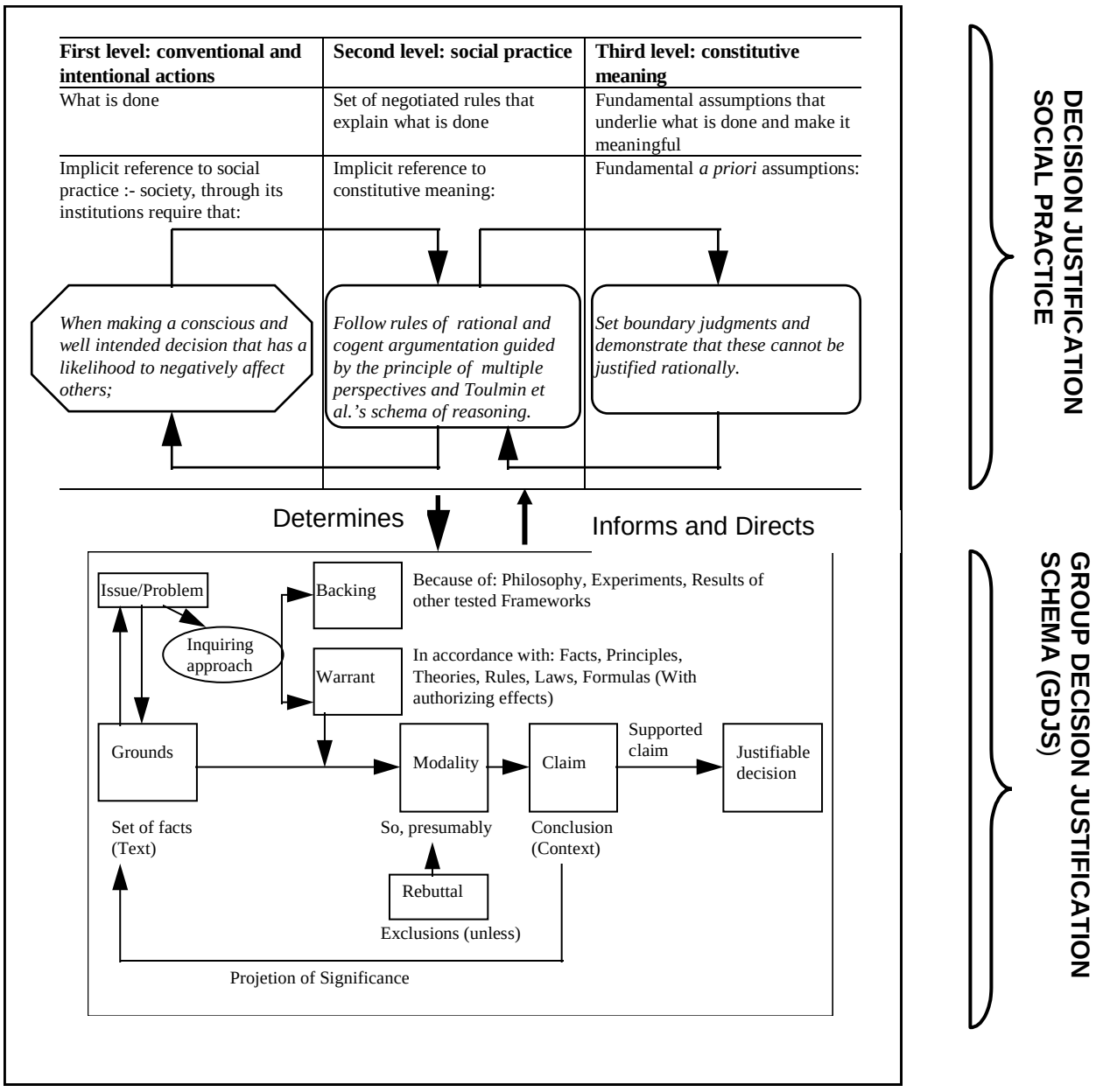

Fig 1. Group Decision Justification Framework (Phahlamohlaka, Letlibe Jacob, 2003)

The study followed the interpretive IS research tradition where meaning is attributed to social constructions (Klein & Myers, 1999). The notion of a thinkLet was used as a basis for simulating the process of interaction in a workshop setting.

Each workshop, which included the GroupSystems simulation exercise, was treated as a single case. This enabled us to use these guidelines to structure and to present the results of the simulation. We followed an Action Research method since we were influencing the process of interaction.

The simulation of the process of interaction involved following a uniform set of procedures, support material, instructions, duration and facilitation with the goal of being able to create possible repeatable patterns of interaction between those affected by an

administrative action (a decision not in their favour) and those making the decision (administrators).

As pointed out in the previous section, there are several outputs of the study. Topics already addressed by students and co-investigators include:

Justification of Group Decisions: A Case Study of User Training in Group Support Systems Applications (Phahlamohlaka, L.J. & Roode, 2001). This paper argued that groups of people can be prepared to justify their decisions to some extent through training in a systems thinking approach to decision making and using Toulmin et al's (1979) schema of reasoning. The paper served as a conceptual basis for the field studies

Enhancing procedural fairness in administrative action of the Administrative Justice Act of South Africa using web-based Group Support Systems (Twinomurinzi & Phahlamohlaka, 2005). In this paper, we focused on the potential of using web-based Group Support Systems (GSS) to enhance procedural fairness in administrative action of the PAJA. Using hermeneutics to analyse the data, we revealed that web-based GSS have the potential to enhance procedural fairness in administrative action.

Towards a Collaborative Engineering Framework for the effective implementation of the Administrative Justice Act of South Africa (Wooding & Phahlamohlaka, 2005). The paper investigated the feasibility of supporting the PAJA implementation through training and the use of thinkLet based Group Support Systems. It used feedback from a group of Master of Informatics students at the University of Pretoria to collaborate the arguments for the feasibility.

Information flows for meaningful Implementation of the Promotion of Administrative Justice Act of South Africa (Alexander & Phahlamohlaka, 2005). This paper described the early phases of the PAJA project and investigated how rural communities could use Information and Communication Technology (ICT) to access rights prescribed by the Act. Sen's Capabilities Approach was used to relate the role of ICT to an expansion of the capabilities of individuals and communities, which translates into them acquiring genuine options to access their constitutional right. This was done to identify the possible information flows, end-user requirements and social and individual constraints. The paper proposed an information flow incorporating facilitators and a 'clearing house' in addition to the citizens and administrators.

Simulating the Implementation of the Administrative Justice Act with ThinkLets and GroupSystems: A Comparative Analysis from Three Field Studies (Twinomurinzi & Phahlamohlaka, 2006). In this paper, the results of the simulation exercises are presented. Using Atkins and Sampson's (2002) critical appraisal guidelines, the process facilitation to emerge with a key milestone of the research, the TurnStormer thinkLet was evaluated.

Assessing the quality of the TurnStormer thinkLet as a Collaboration Engineering building block for the Implementation of the Promotion of Administrative Justice Act of South Africa (Phahlamohlaka, J. et al., 2008). This paper assessed the quality of the TurnStormer thinkLet (Twinomurinzi & Phahlamohlaka, 2006) as a building block for Collaboration Engineering. The analysis revealed that the TurnStormer thinkLet meets

four of the five dimensions of quality of collaboration process design for Collaboration Engineering (Kolfschoten, 2007).

Using web-based Group Support Systems to enhance procedural fairness in administrative decision making in South Africa (Twinomurinzi & Phahlamohlaka, 2009). In this book chapter, the aims and the potential of web-based GSS to facilitate policy implementation is presented to a global audience

As well, three Masters (Hossana Twinomurinzi, Omotayo Damola, Rosemary Ojo) dissertations and two Honours (Michael Dibakwane and Lindiwe Masanabo) research papers have been completed on topics derived from this study. It is thus not just a focused contribution that is framed within a well designed ICT research programme, but also the direct contribution that the study makes, both to human capital development and an enhanced understanding of ICT use within a socio-economic development context.

3 Facilitating service delivery through ICT use - building confidence by working on long term R&D inspired ICT projects

This section addresses the second aim of the paper. It draws on a similar longitudinal approach used to institutionalise ICT within the Siyabuswa Educational Improvement and Development Trust (SEIDET), a non profit community based educational project that has been running for the past eighteen years in the Mpumalanga province of South Africa. The details of this work are documented in Phahlamohlaka (2008). That there is preference for longitudinal studies both in the PAJA research project and the approach adopted in the SEIDET project is no coincidence. Both have been conceptualised and championed by the first author.

The short background we present in the next paragraph about one of the many early ICT interventions at SEIDET and how these were linked to academic research right from the beginning, not only serves to explain why SEIDET was chosen as one of three sites for the PAJA project, but also to demonstrate that a well conceptualised research and development intervention buys public credibility more through its intermediate outputs than through its ultimate outcomes. Our interpretation of the service delivery projects described later in this section is that there is a wider public recognition of the work we have been doing over the years.

In the same book edited by Phahlamohlaka (op cit), Lotriet and Phahlamohlaka describe a collaborative action research project between SEIDET and academics of the Department of Informatics at the University of Pretoria. The project focused on the opportunities related to the availability of LAN and Internet facilities at SEIDET. Its purpose was to make a contribution to the further development of the SEIDET project by assisting the computer committee to identify the opportunities and possible challenges that may be brought

about by the expanded ICT facilities. This longitudinal study was initiated in 2001 and has been continuing ever since. The project, being an action research project, has gone through various cycles of interaction and reflection, involving the SEIDET computer committee and the Informatics researchers. The authors use Activity Theory to describe the action research cycles of the project and their own work. In this way they succeed in addressing two emancipatory aspects of the project: the emancipatory potential locked up in the available technologies as well as in the collaboration with the University, and, most importantly, the emancipatory potential for the researchers themselves. This latter aspect clearly shows the growth in the approach to ICT interventions at SEIDET by the academic community of the Department of Informatics. The researchers were not engaged in an effort to introduce new ICT to SEIDET and the broader Siyabuswa community, but were exploring with them, on a collaborative basis, the empowerment potential of the available new technology. In the process they reached a deeper understanding of the ways in which lessons learned at SEIDET can be linked to existing theoretical concepts in Information Systems and to making contributions on ways in which theory could be enriched in order to explain SEIDET phenomena. This insight underlines the progress that has been made with academic research by the Department of Informatics at and with SEIDET.

Our point is that networks of audiences get created along research pathways which build research, development and innovation credibility that others seek to leverage in various areas of potential ICT use to facilitate service delivery in South Africa. The evidence is shown in the four projects described below

3.1.1 Web-based collaboration and thinkLets research and the SEIDET project

All four authors of this paper are not only post graduate students and co-investigators in the web-based collaboration and thinkLets project, but they are also in the programmes of the Siyabuswa Educational improvement and Development Trust (SEIDET). The Web-based collaboration and thinkLets research project uses the SEIDET infrastructure as well as its community networks. SEIDET therefore serves as an important 'living laboratory' where research ideas and innovations are developed and tested. The projects described next serves to surface the research progression and the benefit of the link between the University of Pretoria and SEIDET.

3.1.2 The Ijima national seminar

Under the theme *Community based ICT initiatives,* SEIDET co-hosted the iJima national seminar in Siyabuswa, Mpumalanga province in South Africa. The iJima was a pre-quel to the National eSkills Dialogue (NeSDi) which was launched by the Minister of Communications in Pretoria on March 23 2009. About a 100 selected representatives from the corporate sector, all levels of government, NGO's, research institutes, and academic researchers, joined selected groups of successful ICT practitioners from communities across South Africa to discuss and identify the range of eSkills required to support current and anticipated grassroots efforts toward sustainable local social and economic development. The Siyabuswa statement on e-Skills was released as the main outcome on 20 March 2009.

The quotation below says it all about the importance of the ICT research work being undertaken at and in collaboration with SEIDET:

> "It is fitting that this first iJima be located in Siyabuswa, the site of SEIDET and the location of a partnership with the University of Pretoria including more than fifteen years of community focused research on ICT enabled socio-economic development" (Department of Communications, 2009)

3.1.3 The Broadband for ALL wireless mesh project

The next ICT research project that SEIDET was asked by the Meraka Institute of the CSIR to facilitate in is the Broadband for All (BB4ALL) project, which aims to provide affordable broadband connectivity to under-serviced, rural communities using low-cost infrastructure that are owned and supported by the local community to create socio-economic and commercial opportunities for that community. It was conceptualized and driven by the Department of Science and Technology, the Department of Communication and the Meraka Institute of the CSIR. Research by Meraka and international partners led to a wireless mesh-based solution to these broadband connectivity challenges. Key to the success of the BB4ALL initiative are people called Village Operators. Village Operators are young, local entrepreneurs with a keen interest in ICTs (Information and Communication Technologies) and who want to be self-employed. SEIDET is providing training facilities, liaison with schools and potential stakeholders, as well as assisting with the establishment of the wireless infrastructure that is rolled out by the CSIR.

3.1.4 Community Based ICT Supported Service Delivery Project

Several institutions in South Africa, key amongst them being SEIDET, including two municipalities in two provinces have agreed to combine their resources including experience and expertise to explore ways in which community based access in rural areas may be used in support of providing locally based delivery of municipal (and other) services. The intention is to develop a working model of how certain municipal services and other government services may be delivered in a cost-effective and quality driven manner in areas currently lacking in local access to services using existing community Internet access points.

4 Conclusion

ICT4D researchers from developing countries do not need to rush their research projects and programmes with the hope that they will catch up with the pace of the developed world. Instead, they must leverage the unique characteristics of the developing world, which has needs that if properly understood through well designed longitudinal research studies, could provide fertile grounds for scholarly work on how ICT could support socio-economic development goals. Roode (2008) concurs when he says:

> Most of research on the use of ICT to further socio-economic development in developing countries has come up against a formidable barrier of complexity, and successes have been few and far between. Perhaps it is fair to conclude that the issue is not so much that of complexity, be that as important as it may, but rather the approach taken by the researchers. What is reported

> here shows that while intentions were always good, approaches taken were often misguided in that they attempted to introduce the "saviour" ICT from the developed world to a developing community. The humble researcher, striving to gain an understanding of the real needs of such a community, works with the community to discover how development could be promoted and attempts to support this process. His or her research agenda is, therefore, determined not by what would be "nice" to research, but by what the situation requires (p. x)

It is our hope that by drawing on the various research projects conducted under the auspices of the longitudinal web-based collaboration and thinkLets as well as the SEIDET projects, we have demonstrated that despite the many constraints facing ICT4D researchers in developing countries, it is possible to conceptualise, design and execute an ICT use study that is well grounded in both theory and practice. The increasing interest by the various key players in the ICT sector briefly pointed out in the previous sections indicates recognition and appreciation for our approach regarding how ICT could be used to facilitate service delivery in South Africa.

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