eJOV

LIVING LABS IN SOUTH AFRICA:
AN ANALYSIS BASED ON FIVE CASE STUDIES

Hendri Coetzee[1], Ina-Mari du Toit[2] & Marlien Herselman[3]

[1] North-West University, [2] North-West Living Lab & [3]Meraka Institute, CSIR

[1]12894451@nwu.ac.za, [2]ina-mari@researchlogistics.co.za, [3]mherselman@csir.co.za

ABSTRACT

The aim of this study is to understand the key features of five selected Living Labs (LLs) in South Africa, namely Siyakula LL, Limpopo LL, North-West LL, SAP Research LLs and Reconstructed LL. LLs do have the potential to address Africa's immanent socio-economic and developmental needs, therefore it is important to have a deeper understanding of the conditions under which existing LLs in South Africa operate. A qualitative case study approach was followed that included case descriptions, a within-case analysis and a between-case analysis to identify commonalities (i.e. central or recurring themes) between the various LLs in South Africa as well as to identify more overarching themes related to the Southern Africa network of Living Labs (LLiSA). A questionnaire, document study and interviews were used as the main data gathering methods. Main results include that LLs in LLiSA emphasize co-creation with communities, specifically rural communities, as opposed to European LLs' collaboration with 'users' who are mostly located in urban areas. An interesting finding is that the South African LLs do not operate according to a preferred or fixed approach or model. Rather, models (e.g. processes and methods used), goals, theories and values differ greatly from one LL to the next.

Keywords: Living Labs, South Africa, Case Study.

1. INTRODUCTION

It is the purpose of this paper to provide an understanding of specific features which are eminent in five different Living Labs (LLs) within the Southern Africa network of Living Labs (LLiSA – for more information please see http://llisa.net). The reason for conducting this study was mainly to compare and analyse five operational LLs with a track record of at least two years to understand how these LLs function and operate and which models are applied. These LLs operate in real-life settings in which the research and interventions are conducted, innovation of new uses and service opportunities to address communities' needs are recorded, the active role of the users (communities) as co-creators are perceived, continuous evaluation of new technological solutions takes place and the testing of products and services happens.

In order to assist LLiSA in its efforts to provide a sustainable network of LLs in South Africa, the function and functionality of current LLs should be taken into consideration when discussing LLiSA's outcomes and its value proposition. Also to share these specific findings from the case study analysis of the five LLs, it will be easier to provide support to new LLs to become more agile if they are aware of specific success factors existing in sustainable LLs in the LLiSA network. Therefore this study wanted to address the following research questions:

- What are the key features of five selected LLs in South Africa, namely Siyakhula LL, Limpopo LL, North-West LL, SAP Research LLs (Rustica and Overture) and Reconstructed LLs regarding their purpose; the process they follow; the current products and services they offer; how they evaluate themselves; and their relationship with LLiSA?

- What are the commonalities (i.e. the central or recurring themes) between the five different LLs regarding their purpose, process, products, services, evaluation models as well as their relationship with LLiSA?

This paper will therefore start by providing a background to improve a better understanding of the concept of LL. The research methodology and design will be addressed which will be followed by descriptions of each of the five cases, the within-case and between-case results of the case analysis and finally a discussion on the commonalities which were found.

2. BACKGROUND AND CONCEPT OF LIVING LAB

Living Lab (LL) as a new approach to innovation and information and communication technology (ICT) development emerged during the 1990's. It encompasses the idea of creating an environment (e.g. an open innovation environment, also referred to as an ecosystem or platform) that offer users (i.e. different stakeholders such as public-private-partnerships) the opportunity to take part actively in the co-creation of innovation and, more specifically, the

development of ICT-related products and services (e.g. idea generation, development, implementation and evaluation) (ENoLL, 2011; Følstad, 2008).

It also encompasses additional characteristics found in most LL definitions, for example the fact that the context is usually familiar to the users and has its foundation in real-world situations (e.g. it focuses on an actual need or problem) (ENoLL, 2011). Typically, multiple stakeholders are also engaged. Finally, most LL studies seem to be either medium- or long-term involving users over an extended period of time (Følstad, 2008) or large-scale studies that include large numbers of users (ENoLL, 2011; Hoving, 2003). However, some LLs, like the SAP Research LLs in South Africa, seem to be more project orientated with a shorter timeline (e.g. 18 months) (SAP, 2011).

LL environments or platforms have been created for a variety of ICT-related topics from e-commerce to healthcare, transport, tourism development, energy production, agriculture and governance (Herselman, 2011) as well as specific ICT and IT focus areas like mobile ICT, computing and cognitive systems engineering (Intille, 2005; Lievens, Van den Broeck & Pierson, 2006; MacEachren, 2006). The importance of LLs in emerging economies has also been indicated in a recent paper (Smit et al., 2011). Thus in an African or at least Southern African context, the focus seems to be on the application of ICT-related products and services as catalysts for capacity building and community development or empowerment (Herselman, 2011).

LLs are typically established to understand what can ultimately be described as human behavioural responses to ICT and IT. According to Følstad (2008), this includes, for example, to investigate the context in which ICT is used (i.e. context research), to discover new uses and service opportunities for ICT, to involve users as co-creators, to evaluate new ICT solutions with users, and to conduct technical testing of ICT products and/or services in an everyday (user) context.

The theoretical underpinning of Living Labs from a technological innovation perspective is found in Human Computer Interaction where the user is co-creating during the interaction dimension. Social innovation is also included which corresponds to the interpersonal interaction. While in the first case the focus of Living Labs is on developing a product (hardware), in the second case the priority is much more about developing specific services for people.

Existing research areas include User Centred Design, User Experience (ISTAG EAR report, 2004; Aarts & Marzano, 2003; de Ruyter et al., 2007), User Group Experience (Fleming, 1998), Contextual Design (Beyer & Holtzblatt, 1998), User Co-creation, User Centric-Innovation, and User Driven-Innovation. It also makes sense to include participatory de-

sign. All of these play an important role to provide the landscape of a Living Lab and to better understand the role of users in this context.

The necessity to establish more LLs and LL networks in Southern and other parts of Africa to address Africa's immanent socio-economic and developmental needs was expressed during the inaugural IST-Africa LL Workshop in Gaborone, Botswana in June 2011 (Cunningham, Herselman & Cunningham, 2011). This notion is supported by the European Commission, African Union Commission, World Bank, all IST-Africa national partners, LLiSA and the European Network of Living Labs (ENoLL). As a consequence, a deeper understanding of the conditions under which existing LLs in South Africa operate became apparent.

3. RESEARCH METHODOLOGY

This study applied interpretavism as its philosophy and theoretical underpinning. Klein and Myers (1999:1), define interpretive research as based on knowledge obtained through "social constructivism such as language, consciousness, shared meanings, document tools and other artifacts". The researcher is seen as investigating the phenomenon based on the perceptions of participant's history or experience that the participants have encountered.

Walsham (2006:320), states that the philosophical base of interpretive research is phenomenology and hermeneutics. This is because interpretive research seeks to investigate meanings of words or texts as they are expressed within definite social contexts by various participants according to individuals' previous experiences (Carr and Kemmis, 1986). It is in the social context that one can find various groups interacting with one another and with objects within a given context. Therefore interpretive researchers underpin the perceptions of the social actor in order to make sense of the activities that exist within the defined contexts (Hesse-Biber and Leavy, 2010:5).

A qualitative research approach was followed, as it allows for a careful and nuanced examination of the data, while reducing the likelihood of biased assumptions from an outsider's perspective by providing a more objective view from an insider's perspective (i.e. people's subjective views of their world and reality) (Babbie & Mouton, 2001; Creswell, 2007).

A case study strategy (Fouche & Delport, 2002) was used during which a bounded system or, in this case, multiple bounded systems (five selected South African LLs bounded by their affiliation to LLiSA) were explored over time (three months between April and June 2011) through detailed data collection involving triangulation of information sources, including a questionnaire, document study and telephonic and personal interviews. This resulted in thick descriptions of the five LLs and allowed for the emergence of case-related themes as well as central or recurring themes between the cases (different LLs). The advantage of using

Hendri Coetzee¹, Ina-Mari du Toit² & Marlien Herselman³

a case study strategy is that it allows new ideas and hypothesis to develop from careful and detailed triangulation of methods (Creswell, 2007; Terre Blanche, Durrheim & Painter, 2006). Multiple case studies represent the class of cases better, it allows for comparisons across cases and it also allow for more breadth and depth (Rule & Vaughn, 2011).

3.1 LLs and Participants

The LLs that were selected for this study are scattered throughout South Africa and operate mostly in rural communities in five out of the nine provinces. The main reasons for selecting only five LLs were that all were operational for at least two years and have a track record of success. Two of these LLs operate on a provincial level, namely the Limpopo LL and the North-West LL, while the remaining three LLs focus on a smaller, more specific geographical area within their respective provinces, such as a community or suburb/area:

Living Lab name	Province/level it operates in	Communities involved
Limpopo LL	Limpopo – provincial level	All communities
North-West LL	North-West – provincial level	All communities
Siyakhula LL	Eastern Cape- community level	Dwesa community (rural Transkei)
SAP living Labs (Rustica, overture)	Mpumalanga & Gauteng- community level	Gautswane (Mpumalanga) and plumbers in Gauteng
Reconstructed LL	Western Cape- community level	Athlone - Bridgetown

Table 1: Living Lab participants in this study

A purposeful sampling method was used to select at least two participants from each LL to take part in the study. However, due to other commitments, the final group of participants consisted of six participants (n=6), including two males and four females between the ages of 28 and 47 years old (average = 37 yrs). All six participants have a background in computer science and or social sciences with qualifications from higher education institutions. All six participants were involved in the establishment of their LL, are still actively involved in the management of their LL and were able to give an informed opinion on the purpose, the process they follow, how they evaluate themselves, and their relationship with LLiSA.

3.2 Data Analysis

A thematic content analysis procedure was used to identify themes. Each text (responses to the questionnaires, transcribed copies of the telephonic and personal interviews and documents) was first read and studied in detail to gain a broad overview of the data. Units of meaning, including sentences or paragraphs relating to the topic, were then identified in each of the texts and coded accordingly. This was followed by grouping related units of meaning under a descriptive theme. Each theme was then again carefully studied in detail to check that the original data truly supported the theme identified as well as to identify the units of meaning and links with other themes (Creswell, 2007; Denzin & Lincoln, 2003).

Case study data were analysed on three levels (figure 1). The first level involved a description of each LL in narrative form starting with a short background and followed by the five categories namely its purpose, the process it follows, how it evaluates itself and its relationship with LLiSA. In the second level of analysis, within-case analysis, LL's case description were studied to identify the main theme that best describes each of the underlying intra-related categories for each of the LLs, namely purpose, process (approach or model), products and services and evaluation. These categories can be described as intra-related because they provide information on the inner workings of the LLs. The participating LLs' case descriptions of their relationship to or affiliation with LLiSA were used to identify inter-related themes. These themes were separated from the other intra-related categories, since they involve interaction between two entities, namely the respective LLs and LLiSA. The final level of analysis consisted of a cross-case/between-case comparison of the within-case themes, identifying intra- and inter-related themes for all of the LL cases together.
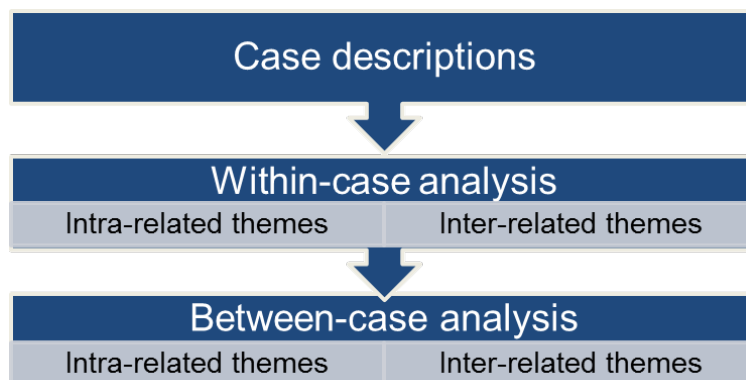

Figure 1: Levels of Case Study Analysis

Hendri Coetzee[1], Ina-Mari du Toit[2] & Marlien Herselman[3]

To ensure validity in the qualitative findings, Guba's model of trustworthiness (Kreftin, 1991), consisting of four criteria (credibility, transferability, dependability and confirmability), was applied using strategies proposed by Shenton (2004).

4. RESULTS

4.1 Case Descriptions

Siyakhula LL (Eastern Cape Province)

Siyakula LL (SiLL) started out as a project but evolved over the years into a fully fledged LL. The infrastructure for a distributed, multifunctional community communication platform has been set up and the creation of e-commerce and e-government websites, underpinned by the continuous ICT training of the local community, has occurred. Part of its current activities includes the rolling out of generic communication services and IT training (capacity building) at schools. This multi-component, multi-partner and multidisciplinary initiative, which was pioneered by the universities of Rhodes and Fort Hare, not only strives to empower rural communities in the Dwesa community but also integrates the localised innovation potential in the marginalised rural areas with the general national system of innovation.

The e-services that were offered to the community were expanded to also include e-government, e-health and e-judiciary services since 2007. In 2008, the project was formalised with the support from COFISA and became known as the SiLL. In 2008, SiLL was also awarded a contract to host the Nokia "Wireless Village" which incorporates the Village Connection concept. In 2008, SiLL also became a member of ENoLL. In 2009, SiLL established the SiLL management unit, commenced with Pre-ACE-certified literacy training for teachers and became a member of LLiSA. In 2010, with the support of SAFIPA, a SiLL spinoff resulted in the software factory ESTIMA, currently trading as Reed House Systems. The latter creates solutions for challenges inherent to communities such as Dwesa and provides SiLL with a firm commercial footing. Earlier this year, SiLL began to offer teachers full ACE-certified training, deployed the Teleweaver software (developed by Reed House Systems) and expanded the SiLL network through the support of Saab Grintek even further.
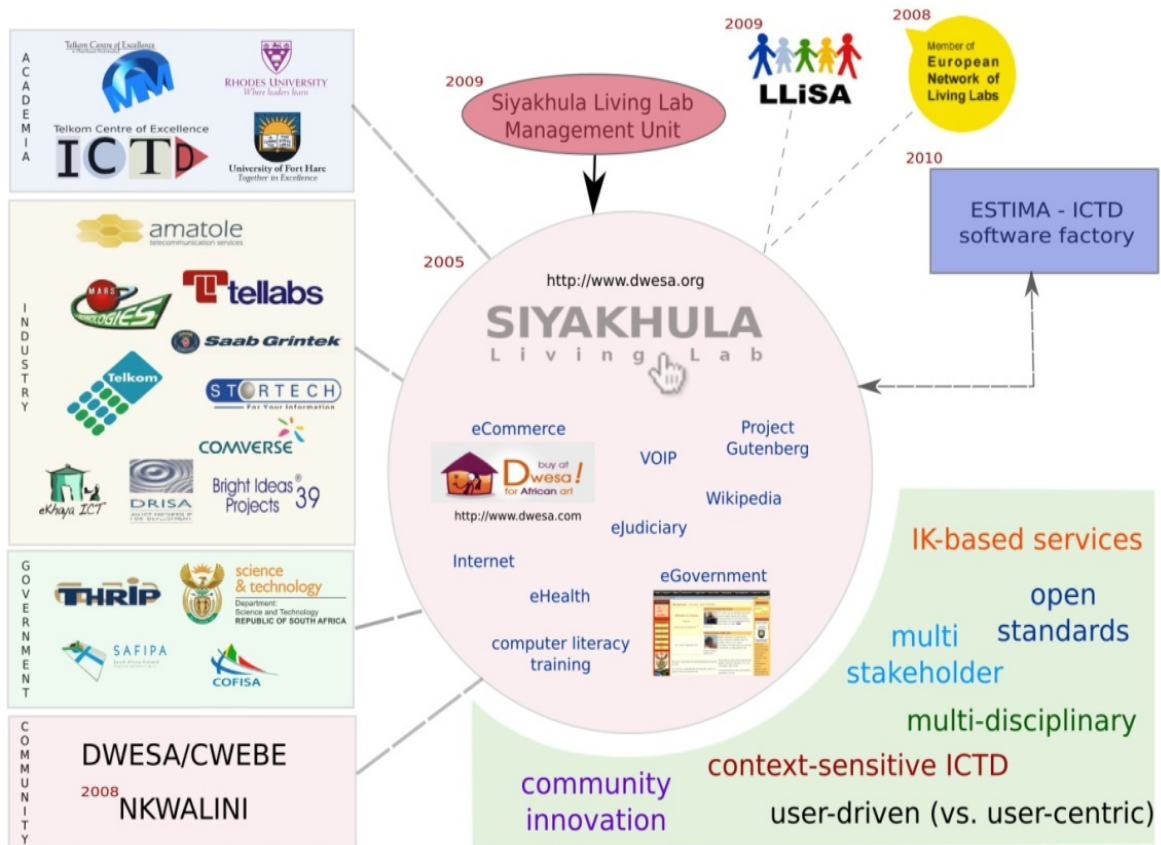
Figure 2: SiLL's establishment and milestones (*Source: SiLL*)

Purpose

The main purpose of the Siyakula LL (SiLL) is to develop and field-test the prototype of simple, cost-effective and robust integrated e-business and telecommunication platforms.

Process (approach or model)

The four main stakeholders involved in SiLL are academia, industry, community members and government. SiLL's process is based on the premise that Information and Communications Technology for Development (ICT4D) interventions require the contributions of multiple disciplines within the academic sphere in order to be successful; disciplines such as computer science, communication, anthropology, linguistics, education, and information systems.

SiLL also uses scrum agile project management (software development and plain management) for its day-to-day running. Community meetings are held before significant changes to the project are made so as to keep the community informed. The users who have received the most extensive training are the teachers, because the project is implemented in schools which best meet the infrastructure requirements and are central locations for community meetings. A train-to-train approach is applied, whereby teachers are trained by the

project team to later train students and community members themselves, additionally using an informal training structure they may view as appropriate and relevant.

The Dwesa community is considered an important partner of SiLL as they are co-creators in this ecosystem.

Products and services

SiLL has successfully incorporated all relevant stakeholders into its products and services, each responsible for a specific role. For example, academia as one of the main stakeholders is responsible for most of the intellectual work, research frameworks, design and deployment of the telecommunications infrastructure, literacy training sessions and e-service creation. Industry is responsible for producing products for experimentation and creating an environment for production. The community member's role is that of co-creators (providing the researchers with knowledge of themselves/market, entrepreneurial desire, etc).

SiLL has successfully completed a number of projects. Currently it has 24 sub-projects (listed at http://www.dwesa.org/projects) relating to technical and cultural sustainability, e-services provisioning, networking and ICT4D. It has also published numerous research papers (listed at http://www.dwesa.org/node/19) since 2006.

Evaluation

There is currently no continuous evaluation of SiLL's activities and projects, however, according to the interviews, this is about to change. So far, evaluation has occurred through the completion of annual Department of Trade and Industry THRIP programme (this programme provides opportunity for industry to co-fund government funds to improve skills development of participants and to invest in ICT related products through research projects in South Africa, for more detail please visit: http://www.thedti.gov.za) reports submitted by the Telkom Centres of Excellence and a 2009 baseline study that was funded by the Cooperation Fund between Finland and South Africa (COFISA, which ended 2011, see http://siyakhulall.org). It also uses questionnaires to assess the status quo and progress of its projects and measures its progress/success based on the number of student and publication outputs by the University of Fort Hare and Rhodes University. Postgraduate work is also currently being conducted to determine the impact of the larger project as well as further baseline studies.

Limpopo Living Lab (Limpopo Province)

A feasibility study was conducted in 2006 to determine the feasibility of setting up an LL in the Limpopo Province. In 2007, the office of the premier in the province appointed a team of programme managers to establish two programmes, namely the Limpopo Living Lab (LLL) and an information and knowledge society programme. It took a while to establish the two programmes as they were faced with many challenges within a broader government institution system. However, in 2010 a decision was taken to establish LLL within the Limpopo Economic Development Enterprise (LimDev), a state-owned enterprise wholly owned by the Limpopo Provincial Government. These programmes now form an integral part of the Limpopo Employment Growth and Development Plan (LEGDP) and are termed "LEGDP Pillar 14 ICT Innovation and Knowledge Enabled Economies". LLL has conducted research on innovation systems through the Human Science Research Council (HSRC) as well as research on some of the baseline indicators. These indicators are in line with the Millennium Development Goals (MDGs) and World Summit on Information Society (WSIS).

Purpose

LLL's purpose is to promote regional business development and innovation strategy solutions through multi-stakeholder engagement in its province. LLL also focuses on innovative solutions in the areas of e-services offered by municipalities, agricultural services for farmers, e-education and e-health services.

Process (approach or model)

LLL currently forms part of LimDev's business unit and is currently in partnership with various institutions and organisations, including the Finnish Foreign Ministry, Department of Science and Technology, Universal Service and Access Agency of South Africa (USAASA), Council of Science and Industrial Research (CSIR), ISETT SETTA (Body in South Africa which accredited the training of Information Technology skills), SENTECH (single distributor of the South African broadcasting Cooperation), University of Limpopo, University of Venda, provincial government, municipalities, parastatals (bodies which is controlled or owned partially or wholly by government), civil society, NGOs and training institutions (public and private). Its typical stakeholder groups include general citizens, government departments, municipalities and SOEs, SMMEs, universities, and large businesses.
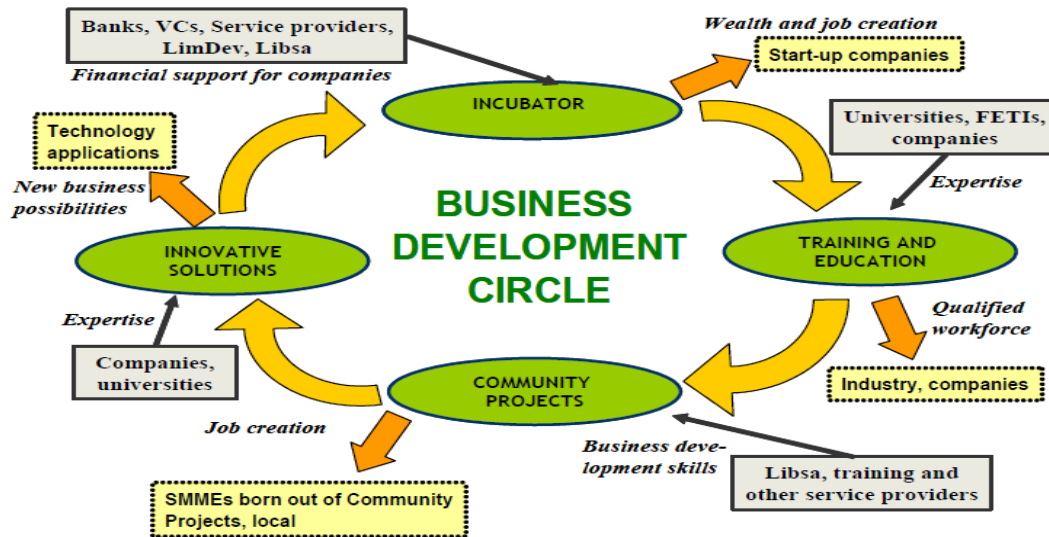
Hendri Coetzee[1], Ina-Mari du Toit[2] & Marlien Herselman[3]

Figure 3: Limpopo Living Lab's business model (Source: LLL)

Products and services

In addition to broadband and community development projects, LLL currently offers services and products within the following programmes: information society and knowledge economies; ICT business incubation; business process outsourcing and off-shoring; research, development and innovation; and programme planning and execution.

Examples of the type of projects and services it offers include incubating ten ICT in-novative business SMMEs and entrepreneurs; producing ICT cadres at National Qualifications Framework (NQF) levels 4, 5 or 6; empowering community members with basic computer literacy skills, working life ICT skills and information society knowledge and skills; establishing a credible Programme Portfolio Management Office (PPMO) and successfully establishing a community LL centre in Mogalakwena. This centre focuses on basic ICT training, business incubation and open-source software PC refurbishment.

LLL also established a Fab Lab (where children can develop products on high-tech machines) that operates at the Mokopane multi-purpose community centre (since 2010). Furthermore, it developed a project charter for the replication of LL approaches in a rural development hub (Nkuwankuwa) in collaboration with the Greater Tzaneen Municipality under the NDPG programme. In addition, it developed an e-heritage system in conjunction with the University of Limpopo which was handed over to the Department of Sports, Arts and Culture.

LLL has several ways of generating income. Some of the projects it has undertaken include the development of an e-heritage system that is expected to generate money when it goes into the support phase. It also regularly applies for grants from government and has

plans to develop a production unit within the next three years in a business incubation technology park. This also has the potential to generate revenue through the rendering of services and the letting of facilities. LLL is also in the process of developing a virtual research centre with various other partners and plans to commercialise the results thereof. The development and establishment of affordable shared, open-access broadband infrastructure will also generate revenue for LLL, but this is a long-term project.

Evaluation

LLL plans to conduct an impact analysis on all the programmes and projects implemented in future. This will, however, depend on the availability of funding.

North-West Living Lab (North West Province)

The North-West Living Lab (NWLL) is currently the implementation arm of a company called Research Logistics, a privately owned company that specialises in community-based research and interventions in the North West Province. NWLL started as a private research practice that offers support to other researchers in the field but expanded to focus on community-based research and interventions. In early 2010, Research Logistics was approached by a corporate company to help with its community engagement/stakeholder relationships. This led to the development of a research intervention model for community development. As part of the setup of NWLL, Research Logistics conducted a baseline study in its province in 2010, which was completed in 2011. At present, NWLL is in the process of developing, testing and refining of a community development toolkit that consists of scientific and technology-based interventions aimed at promoting sustainable community development. The toolkit is based on a hybrid wellness and asset-based community development model within the South African context.

Purpose

The purpose of NWLL is to promote community development from a wellness perspective through the application of scientific and technological interventions.

Process (approach or model)

NWLL follows an asset-based community development (ABCD) model consisting of consecutive phases (see figure 4). For research and interventions, an eclectic model is applied, integrating various relevant theories and models. A large spectrum of research topics and interventions is covered, and the latter mostly depends on what the nature of a specific project is. For most of the typical needs assessment studies, a pragmatic mixed-methods approach is used, but NWLL's research team is flexible in this regard and comfortable with using any other

qualitative or quantitative method in their research projects. Interventions are normally based on a hybrid wellness and asset-based community development model. NWLL is based on a business model and income is generated by clients approaching the LL. North-West University as well as corporate clients and other researchers and research companies are its main clients.
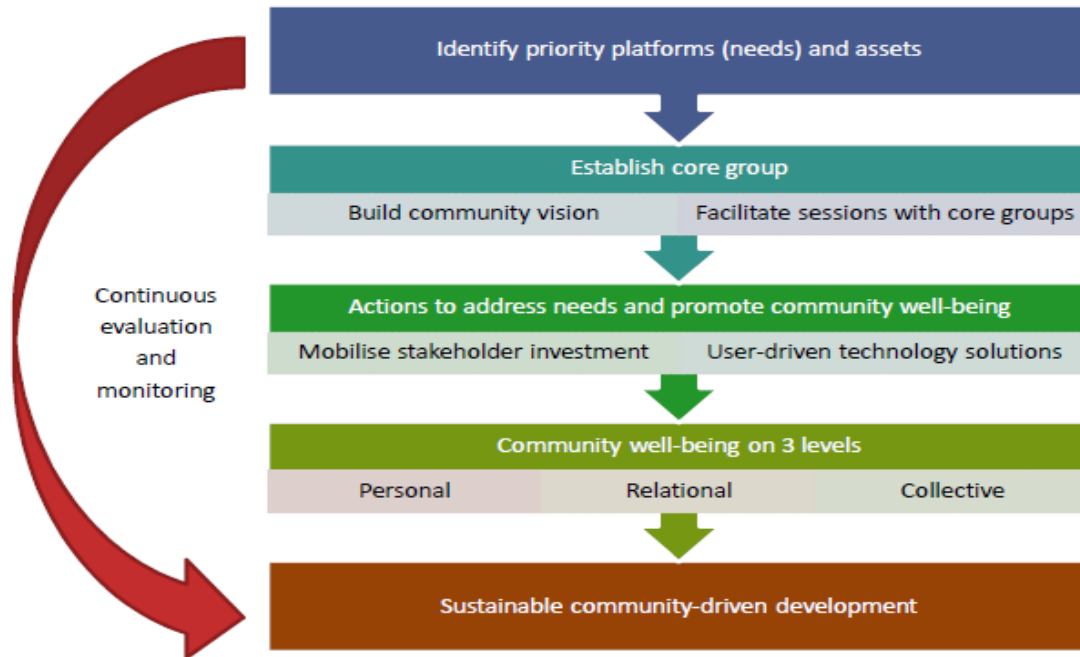
Figure 4: NWLL Community Development Model (Source: NWLL)

Products and services

NWLL offers an array of research and intervention-related services and products. These are comprised of needs- and assets assessment studies that include the determination of needs and strengths (resources, assets, etc.) in communities (clients typically use this type of information to plan interventions or as market research to identify and explore new markets); intervention evaluation (e.g. the evaluation of any type of project or programme); a rapid national survey (to collect data on a national scale); programme or project evaluation and the community development toolkit.

Evaluation

The main way in which the NWLL monitors itself is through client feedback, i.e. satisfaction with the completed task (outputs and services) and return business. Ultimately, NWLL is evaluated positively if all the bills are paid and some profit is made at the end of the month. In addition, an internal evaluation model was developed that can be used in future to evaluate community interventions.

SAP Research LLs (Mpumalanga and Gauteng Provinces)

Three SAP-led LLs were established in South Africa. The third LL, namely PatHS LL, was established in Bushbuckridge and is dedicated to health care where, for example, new and novel patient health care management systems were developed and tested in several rural healthcare clinics. This LL will not be described in more detail as it does not form part of this study.

Firstly, Overture LL was established to support the design process for the mobile business services of very small enterprises (VSEs). A number of small organisations in the construction sector was selected and invited to participate in the LL. This enabled all stake-holders ranging from the VSEs, suppliers, associations, government agencies and other services providers to develop new ideas together effectively, evaluate the concepts and obtain direct input during the whole process.

Secondly, Rustica LL's (Sekhukhune) main goal is to provide a collaborative environment with various stakeholders for the implementation and deployment of sustainable ICT innovations for socio-economic development in the rural community. It supports the introduction of ICT solutions to small-scale traders in rural areas and studies the impact of this intervention. This rural LL in Sekhukhune intervenes on the level of small and micro-enterprises to stimulate local economic development by utilising information and communication technologies.

Incubation mechanisms were also introduced and include tools and methods to improve existing business operations as well as to support the start up of new businesses. Such mechanisms are driven by tailored collaborative working environments (CWEs). Its current development concentrates on distinctive-use cases (experimentations) like collaborative procurement and logistics for the retail sector in the rural communities. By applying the principles of a LL, it endeavours to put the end user in the driving seat of technology development and open business innovation. The second area that forms part of this LL is the Leroro area located in the ThabaChweu Municipality (adjacent to the Sekhukhune district). This area consists of four villages namely Leroro, Mothibidi A and Mothibidi B and Maramela.

Researchers at SAP Research Pretoria in South Africa, for example, conduct projects in the field using the LL methodology by working directly with end users. In order to achieve this, a number of focus groups form part of the SAP-led LLs, encompassing local informal economy participants and opinion makers, small and micro-enterprises, nurses, healthcare workers,

Hendri Coetzee[1], Ina-Mari du Toit[2] & Marlien Herselman[3]

farmers, plumbers, a community of practitioners, formal and informal economy intermediaries, information service providers and social entrepreneurs.

Driving the concept of LL as collaboration platforms for open innovation, SAP Research has been successful in bringing together customers, partners, SAP researchers and developers for in-depth collaboration and discussions on various current topics. Its concept involves demonstrating technological research in real-world settings, thus turning prospective SAP solutions into tangible experiences. The motto "SAP to touch and explore" best describes these efforts. SAP Research has established five LL locations in Australia, Germany, and Switzerland and applies the LL methodology to the field of emerging economies in South Africa and Ghana. SAP Research South Africa and the SAP Meraka Unit for Technology Development are addressing SAP product and service improvement or adaptation and the initiation of new services and products that are likely to unlock the vast market potential of emerging-economy countries. Researchers pay special attention to the technology infrastructure, usage patterns, applications and economics.

Purpose

SAP Research Living Labs has multiple LLs for different projects with the overall focus on the development and testing of technologies for emerging economies. More specifically, these LLs' main focus is on research and the development of new ICT solutions and measuring and validating the social and economic impact of technologies aimed at addressing the challenges of small, midsize and micro-enterprises in developing countries.

Process (approach and model)

SAP Research Pretoria makes use of a user-centred approach that combines a number of processes and designs, including use-case and process design, co-identified use cases reflecting expressed priorities and feasibility considerations, participatory design – user experience, usability and user experience (e.g. SMS versus mobile web application), functional design (UI elements and functional requirements, e.g. GIS navigation pattern) and scoping of real life implementation (impact).

Stemming from the above, the following integrated model was developed to depict how the different LLs within SAP Research Pretoria are integrated to function based on the strategic mission (illustrated in orange below) and objectives. As illustrated in figure 4 (described in Smit et al., 2011), the primary mission of the LL strategy can be defined as demonstrating the socio-technical feasibility of mobile business solutions for very small enterprises in South Africa.
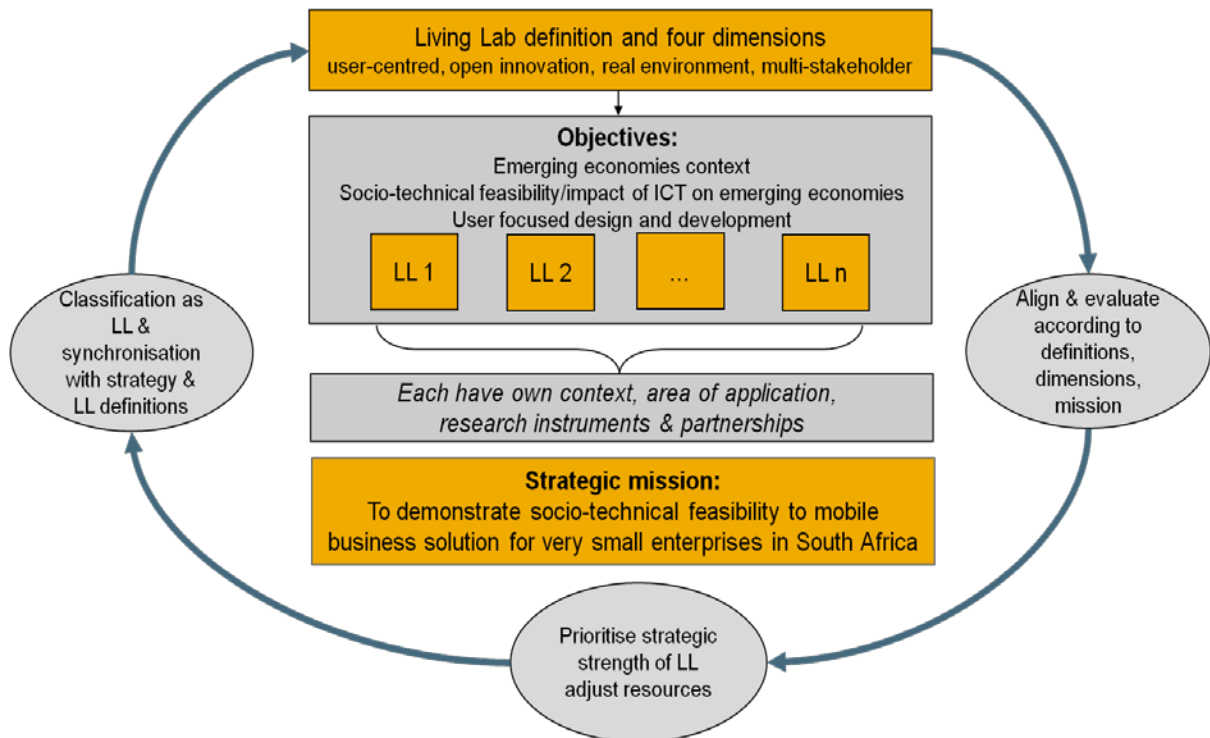
Figure 5: An integrated LL model for SAP Research Pretoria (*Source: Adam, Herselman, Chuang, Smit, Eloff & Zielinski (2011)*

This model is primarily aligned with and driven by the strategic research focus and mission of the SAP research centre (bottom of figure). Based on the research mission, each LL has to focus on specific objectives (emerging economies context, socio-technical feasibility/impact of ICT on emerging economies and user-focused design and development). Each LL also has to constantly re-align and evaluate itself to ensure that it is still aligned with the main LL definition with its four dimensions (user-centred, open innovation, real environment and multi-stakeholder components).

Within each LL, there can also be a specific context (urban, rural or semi-urban), area of application or also referred to in the table above as innovation outcomes, research instruments (for collecting data and improving the area of application) and partnerships (unique and specific for each LL environment) that can differ from other LLs within the SAP Research Centre. Based on the defined research context and appropriate application area, the different stakeholders that interact in this particular environment should be identified and their roles need to be defined within the research context.

The associated research instruments should then be designed in order to achieve and assess the goals of a particular LL. This generic structure is used to facilitate the classification and synchronisation of the various LLs, and it further allows individual LLs to create their uniqueness given the context of a project and research needs. A cyclic approach is followed

where the LLs align and evaluate themselves but also to (bottom of figure 4) prioritise the strategic strengths of each LL and allocate resources from a strategic point of view to support the development and co-creation activities within their ecosystem. This then feeds back (left hand side of model) to the LL definition and why a LL is classified as an LL, thus synchronising the LLs with the strategy and definition is a constant cycle to ensure that all LLs do address these important issues within the centre.

Evaluation

The LLs at SAP Research Pretoria adhere to and are evaluated against the four dimensions of LLs (user centred, open innovation, real environment and multi-stakeholder). The purpose and innovation outcome of each LL is also provided. It is, therefore, evident that each LL has its own specific context and technological focus, but all of these involve open-innovation based on both internal and external role stakeholders and involve users as drivers, centred innovators or as active participants from the initiation of the LL through to the evaluation.

Reconstructed Living Labs (Western Cape Province)

Reconstructed Living Labs (Rlabs) is described as a global movement and registered social enterprise that provides innovative solutions to address various complex social challenges such as gangsterism and substance abuse.

RLabs' main hub is in Athlone in the Western Cape region, but it also operates in the United Kingdom, Europe, Asia and Central Africa. Its goal is to reach all continents by 2012. It also has its own training academy that offers a variety of training programmes with a strong focus on social and new media. RLabs also strongly promotes the empowerment of women through technology and has specific platforms dedicated to this cause such as the blog "She's The Geek". (In the blog, training and consultation are provided on technology-related matters.)

RLab regularly partners with local NGOs, community-based organisations, various universities and governments across the globe. It has six external members that serve on the advisory board, four directors who serve on the executive board and a management team.

Purpose

RLabs provides innovative solutions to address various complex social challenges such as gangsterism and substance abuse by creating an environment where people are empowered to make a difference in the lives of others (e.g. the rest of their community). RLabs' vision is to impact, empower and reconstruct local and global communities through innovation.

Process (approach and model)

RLabs' community intervention approach is based on seven values: it is a movement *by people for people*; it is a movement of *hope*; it is a movement of *change*; it is a movement of *opportunity*; it is a movement of *learning*; it is a movement of *innovation*; and it is a *social revolution*.

Products and services

RLabs offers a number of products and services, including social media consulting and training which are provided to various organisations and corporations who want to maximise these new technologies in their organisations. Mobile consulting services and strategy and product development are also offered, and it has extensive development experience in various mobile platforms (e.g. MXit, Mobi, J2ME, etc.). It is a global agent for the JamiiX platform that allows organisations and businesses to provide low-cost call-centre type services through the use of instant messaging (via mobile or PC).

Research and development services are also offered through its extensive networks and work with local and global communities in the areas of social development, ICT and mobile technologies as well as in innovation and entrepreneurship. These services are offered through its research institute in partnership with a number of universities across the world and encompass the following:

- RLabs' training academy offers a number of training and empowerment courses in technology and entrepreneurship.

- Rlabs offers hosting and accommodation opportunities.

- RLabs is globally known for its community work encompassing mobile counselling services, community development and training services, senior mobile sessions and social media for teens.

- The RLabs innovation incubator provides community members with a shared space to develop their ideas and ventures with support from the experienced RLab developer and entrepreneurship network. It also offers a programme of related activities to deepen the understanding of entrepreneurship and innovation.

- The RLabs' research institute is an independent, non-profit research institute conducting research and development for government agencies, commercial businesses, foundations, academia and other organisations. Through the institute, RLab also provide various institutions the opportunity to do their research in a community-driven LL setting. It also assists research organisations with research methodologies and instruments in ICT with an emerging-market focus.

Hendri Coetzee[1], Ina-Mari du Toit[2] & Marlien Herselman[3]

RLab's sources of income are paid products and services, as well as research and development fees.

Evaluation

All Rlabs' projects have a start date and end date. Projects are continuously evaluated. As most project beneficiaries are trained in social media and in using online blogs, this medium has been extremely helpful to obtain feedback. The consistent monitoring and evaluation that take place are essential to keep abreast of current trends and to keep beneficiaries in line with that as well.

4.2 Within-Case Results

Intra-related themes

The themes that emerged occurred on two levels. On the first level, namely intra-related, it refers to the themes that emerged within the specific LL, based on the data that was collected on each LL. The themes that emerged on an inter-related level refer to the inter-relationship between the individual LLs and LLiSA. Table 2 and 3 indicates these themes.

Living Lab	Purpose	Process (approach or model)	Products and services	Evaluation
SiLL	Multi-dimensional ICT initiative	Quadruple helix model	Research, development and training	Towards continuous evaluation and impact assessment
LLL	Innovative business and technology solutions through multi-stakeholder relationships	Model supporting MDGs and WSIS	ICT, business and community-based services/products	Future impact analyses
NWLL	Community-based research and development from a wellness perspective	Eclectic wellness approach to conducting research	Research and interventions	Client feedback and internal evaluation
SAP Research LLs	Project-based LL: Technologies for emerging economies	User-centered model driven by strategic research focus/ mission	Enterprise resource planning research	Evaluation based on four dimensions of LL definition
Rlabs	Innovative solutions to community problems on a global scale	Value-based model	Social media, innovation-driven products and services	Continuous evaluation through online feedback

Table 2: Summary of within-case results: Intra-related themes

All five LLs have a distinct purpose that does not seem to overlap. SiLL focuses on Multi-dimensional ICT initiative, while LLL focuses on innovative business and technology solutions through multi-stakeholder relationships, NWLL on community-based research and development from a wellness perspective, *SAP Research LLs on* technologies for emerging economies and Rlabs on innovative solutions to community problems on a global scale. In order to achieve this SiLL follows a quadruple helix model, LLL a model that supports the MDGs and WSIS, NWLL pursues eclectic wellness approach to conducting research, SAP a user-centered model driven by strategic research focus/ mission, and Rlabs a value-based mode. SiLL's products and services include research, development and training, LLL ICT addresses business and community-based services and products, NWLL community-based research and interventions, SAP enterprise resource planning research and Rlabs social media, innovation-driven products and services. Finally, SiLL uses continuous evaluation and impact assessment, LLL is in the process of planning an impact assessment, NWLL is evaluated through client feedback and internal evaluation, SAP uses the four dimensions of LL definition to evaluate themselves and RLabs uses continuous evaluation through online feedback.

Inter-related themes

Living Lab	Relationship or affiliation with LLiSA
SiLL	Mutually supportive, active relationship with LLiSA
LLL	LL cooperation and collaboration through a more tangible LLiSA network
NWLL	LLiSA affiliation formalized to support credibility and networking opportunities
SAP Research LLs	Research partnership
RLabs	LLiSA provides platform for experience and knowledge sharing

Table 3: Summary of within-case results: Inter-related themes

SiLL joined LLiSA at its inception at the beginning of 2009 because of the opportunities LLiSA presents in terms of serving as a platform to share experiences. SiLL also hopes to enlarge its network of similar practitioners in the Southern African region through LLiSA. It actively and strongly supports LLiSA through participation in workshops, board meetings and conferences. SiLL strongly promotes the existence of LLiSA at public forums, in public documents and web articles. In the future, SiLL would like to join forces with LLiSA to lobby for funding or engagements with relevant government departments and would also like the opportunity to

Hendri Coetzee¹, Ina-Mari du Toit² & Marlien Herselman³

co-host activities that allow other LLs to establish a closer working relationship with similar bodies in South Africa.

In 2010, LLL became a member of LLiSA. It believes its LL does not exist in isolation and that it is possible to benefit from LLiSA, although it is not sure how this will come about. LLL's relationship with LLiSA is not clear yet, but experience with other LLs around the world proved that learning from one another through cooperation and collaboration is beneficial. Thus far, it has attended many workshops but according to LLL, there are no tangible activities from LLs on a national level. It would like to see that a more tangible national strategy is developed and would appreciate support from LLiSA in the form of assistance with awareness campaigns, capacity building in regional and rural settings, funding of rural ideas that will help to turn these into sustainable business ventures and assistance with setting up rural LLs.

NWLL's relationship with LLiSA commenced in 2010. According to this fledgling LL, the main reason for joining LLiSA is because a professional organisation such as LLiSA lends it additional credibility and creates the opportunity to meet new potential clients that could lead to business opportunities. Until recently the relationship has been very informal and irregular but was recently formalised when asked to do research for LLiSA. Support needed from LLiSA includes assistance with marketing the LL and putting NWLL in touch with other parties who might be interested in its services, e.g. other LLs.

SAP and the Meraka Institute at the CSIR have been in a partnership with LLiSA since mid 2009, and they formed a research unit dedicated to entrepreneurial resource planning. Their relationship with LLiSA can be described as partnering in research and funding.

RLab was present at and participated in the initial meetings to set up a board for LLiSA. Consequently, RLabs was one of the first board members along with the people present at the meeting in February 2009. According to RLabs, it cannot work and operate alone and needs to be part of an umbrella body comprised of similar organisations (e.g. LLs) that share experiences and knowledge with one another. RLabs' relationship with LLiSA can be described as respectful and sustainable, where both parties contribute towards the relationship. RLabs wants support from LLiSA in terms of guidance on funding proposals and writing of research papers.

4.3 Between-Case Results

Intra-related themes

Diversity of multi-dimensional, community-based technological solutions

The first theme reflects the diversity that was found in the various LL descriptions in this study. Most importantly, the definitions were not one-dimensional. Instead, the South African LL is characterised by multi-partner, multi-component and multi-disciplinary efforts to address community problems through the use of technology. All LLs emphasised the role that the community plays in the co-creation of innovation, and the communities are often involved as platform for interventions. In this study, all participating LLs (with NWLL being the exception because it is still developing into a fully-fledged LL) focus on ICT information solutions in their efforts to address real-life problems. Although each LL has its own focus such as emerging economies (SAP LLs), community wellness (NWLL) and problems found in deep rural communities (SLL), the above elements were found in all participating LLs.

Holistic, co-creative approach based on local and international goals, theories and values

This theme refers to the different LLs' process, including their model/approach to research, development and interventions. All LLs seem to prefer a model that is holistic, instead of applying one specific theory or model. However, all LLs agreed on the co-creation element: working together with the users/communities to find sustainable solutions to current problems or challenges. Some LLs did differ in the underlying framework that guides their practices. Some are based on internal goals while others make use of international goals. For example, LLL's model is guided by the millennium development goals and world summit on information society; SAP Research LLs' framework is based on their internal strategic mission and objectives, and the NWLL incorporates the theories of international researchers such as Totikidis and Prilleltensky (2006).

Unique innovation-driven research, development, training and intervention applications

This theme refers to the unique products and services offered by the participating LLs. The one thing all of them have in common is that they are innovative. Depending on the focus of the specific LL, the overarching products and services include research activities and technological development and training of community members as well as elements of intervention. Their products and services are all pragmatic- and application-orientated and aimed at solving real-life problems in a practical, realistic way.

Continuous internal and external project evaluation

Hendri Coetzee¹, Ina-Mari du Toit² & Marlien Herselman³

This theme refers to the different LL models for evaluating projects and/or activities. The one aspect of evaluation agreed on by all the LLs is that it should be a continuous process of monitoring and evaluation from the start of the project. Although some LLs do not have clear evaluation criteria and regular evaluation, they all realise the importance of having continuous project evaluations. Their different approaches to evaluation can be divided into internal (within the LL) and external (feedback from users and other stakeholders) evaluation. Internal evaluation includes evaluation against LL goals, cost-effectiveness, impact assessment, research publications, programme reports, etc., while external evaluation takes place mostly via online, questionnaire or face-to-face feedback from the external community/user.

Inter-related theme:

Mutually beneficial relationship-networking platform for Living Lab collaboration and sharing

Participating LLs suggest that their relationship with LLiSA should be characterised by benefits for both parties. According to these LLs, LLiSA should be a tangible network providing a platform for opportunities to collaborate and share knowledge and experiences.

5. DISCUSSION

The main objective of this study was to gain an in-depth understanding of the key features/characteristics of five pre-selected LLs in South Africa regarding their purpose, the process they follow, the current products and services they offer, how they evaluate themselves and their relationship with LLiSA as well as to compare the different LLs in order to identify central and recurring themes. By exploring established and operational LLs in South Africa, a framework can be developed to guide and direct future LLs in the Southern African and African context so that these LL networks can grow and expand.

LLs in South Africa are in many ways similar to European LLs but also have characteristics unique to the context in which they operate. According to the case descriptions, one of the main differences between South African LLs and European LLs is the emphasis on co-creation with communities, specifically rural communities, in contrast to European LLs' collaboration with 'users' who are mostly located in urban areas (ENoLL, 2011). The South African LLs also compare well with the literature regarding the timeline for LL establishment and activities (Følstad, 2008). Apart from the SAP Research LLs, which are more project-orientated, all four of the other LLs are predominantly long-term and involve prolonged engagement with communities. Although the findings also indicate some similarities between the LLs, they simultaneously operate in unique ways with distinct focus areas. Within-case results can be linked to the role of South African LLs in emerging economies but, additionally,

encompass the impact of LLs on community wellbeing (NWLL), education (SLL) and social media (RLab).

Between-case results (intra-related themes) indicated that the LL descriptions include a diversity of multi-dimensional, community-based technological solutions. LL models and approaches to research and interventions are holistic, co-creative and based on local and international goals, theories or values. With regard to products and services, LLs apply unique innovation-driven research, development, training and interventions. LLs also indicated a need for continuous internal and external project evaluation processes.

On an inter-relational level, LLs seem to agree that a mutually beneficial relationship with the LLiSA network is vital and that the main purpose of LLiSA should be a networking platform for LL collaboration and sharing.

The results from this study also compare to those of other researchers in terms of the South African LLs reasons/purposes for establishment. This includes the fact that South African LLs also use real-life settings in which the research and/or interventions is conducted, innovation of new uses and service opportunities to address communities' needs, the active role of the users as co-creators, continuous evaluation/validation of new technological solutions and the testing of products and services. An interesting finding stemming from the between-case results is that no preferred or fixed approach or model seem to exist which the preselected LLs use to operate. Models seem to differ greatly from one LL to the next, in terms of the goals, theories and values the LL follows. A decision should be made as to whether diversity should be encouraged or if there should be something like a model or approach that can be used across Southern and other parts of Africa. The between-case results also revealed that the work and research of South African LL can be contextualised within one or more of the four theoretical frameworks usually used by LLs, including co-creation/co-innovation, science and technology, human-computer interaction and test/experimentation platforms.

In order to assist LLiSA in its efforts to provide a sustainable network of LLs in South Africa, the function and functionality of current LLs should be taken into consideration when discussing LLiSA's outcomes and its value proposition. Firstly, LLs and LLiSA should aim for a relationship that is mutually beneficial and supportive. Both parties must become actively responsible for the strengthening of these ties. Secondly, the network must become a more visible and tangible entity so that LL cooperation and collaboration are enhanced. In the third place, formalising LLs' affiliation with LLiSA will create more credibility for emerging LLs and provide opportunities for projects through networking strategies. In the fourth place, the relationship between LLs and LLiSA should be a partnership, working together in pursuit of the

Hendri Coetzee¹, Ina-Mari du Toit² & Marlien Herselman³

same goals. Finally, LLiSA's main objective should be to provide a space where LLs can share lessons, experiences and knowledge that can inspire and strengthen one another.

6. CONCLUSION

The time has come for LLs in South Africa to grow and multiply so that information and communication technology can increasingly benefit users and communities by involving them in the co-creation process and addressing real-life problems. The results of this study will be valuable in guiding both established and emerging LLs towards sustainable projects. These findings can also be applied to the LLiSA network through the provision of detailed information on the inner workings of the various LLs as well as these LLs' expectations of LLiSA. More studies are needed to determine the impact of LLs in the African context, so that the LL methodology can be tested and refined. Future LL studies should further explore what is needed for a new LL to become successful and sustainable in an African country and how the southern African and African LL networks can best support local LLs.

7. REFERENCES

Adam, R., Herselman, M., Chuang, C-H., Smit, D., Eloff, J. & Zielinski, M. (2011). Challenges of evaluating a Living Lab in South Africa. Prato CIRN Community Informatics Conference, Prato, Italy. Retrieved from http://cirn.wikispaces.com/prato2011.

Aarts, E. H. L.; Marzano S. (2003). The new everyday: Views on ambient intelligence. Rotterdam: 010 Publishers.

Babbie, E. & Mouton, J. (2001). The practice of social research. Cape Town: Oxford University Press.

Ballon, P., Pierson, J., & Delaere, S. (2005) Test and experimentation platforms for broadband innovation: Examining European practice. Paper presented at 16th European Regional Conference by the International Telecommunications Society, Porto, Portugal.

Beyer, H. & Holtzblatt, K. (1998). Contextual design: Defining customer-centered systems. San Francisco: Morgan Kaufmann.

Carr, W., & Kemmis, S. (1986). Becoming critical: Education, knowledge and action research. London: Falmer Press.

Cunningham, P., Herselman, M., & Cunningham, M. (2011). Supporting the evolution of sustainable Living Labs and Living Labs networks in Africa. Retrieved from http://www.ist-africa.org/home/files/Supporting_the_Evolution_of_Sustainable_Living_Labs_and_Living_Labs_Networks_in_Africa.pdf

Creswell, JW. (2007). Qualitative inquiry and research design: Choosing among five traditions. Thousand Oaks, CA: Sage.

Denzin, N. K. & Lincoln, Y.S. (Eds.) (2003). The landscape of qualitative research: Theories and issues. London: Sage.

De Ruyter, B., Van Loenen, E. & Teeven, V. (2007). User centered research in ExperienceLab. Paper presented at the European Conference, AmI, Darmstadt, Germany.

De Vos, A., Strydom, H., Fouche, C.B., & Delport, C.S.L. (2007). Research at grassroots for social and human service professions. Pretoria: Van Schaik.

ENoLL (2011). Open Living Labs by ENOLL. Retrieved April, 2011, from http://blog.openlivinglabs.eu

Eriksson, M., Niitamo, V-P., Kulkki, S. & Hribernik, K.A. (2006). Living Labs as a multicontextual R&D methodology. Paper presented at the 12th International Conference on Concurrent Enterprising: Innovative Products and Services through Collaborative Networks, Milan, Italy.

Fleming, J. 1998. Web Navigation: Designing the User Experience. California: O'Reilly & Associates, Inc.

Følstad, A. (2008). Living labs for innovation and development of information and communication technology: A literature review. The Electronic Journal for Virtual Organizations and Networks, 10 (Special Issue on Living Labs), August 2008.

Fouche, C.B. & Delport, C.S.L. (2002). The place of theory and the literature review in qualitative approaches to research. In A.S. De Vos (Ed.), Research at grassroots for social and human service professions. Pretoria: Van Schaik.

Herselman, M. (2011). Living Labs in Southern Africa network. PowerPoint presentation at 3rd Annual LLiSA Workshop in Grahamstown, Eastern Cape.

Hesse-Biber, S.N., & Leavy, P. (2011). The practice of qualitative research. London: Sage.

Hoving, D. (2003, April). Enhancing the quality of life in a Living Lab Moerwijk (The Hague). Presented at the New Media, Technology and Everyday Life in Europe Conference, London, UK.

ISTAG Report on Experience Application Research (EAR) (2004). Involving Users in the Development of Ambient Intelligence. European Commission – IST. Retrieved from http://www.cordis.lu/ist/istag.htm.

Intille, S.S., Larson, K., Beaudin, J.S., Nawyn, J., Munguia Tapia, E. & Kaushik, P. (2005). A living laboratory for the design and evaluation of ubiquitous computing technologies.

Proceedings of Conference on Human Factors in Computing (CHI), pp. 1941-1944, ACM Press.

Klein, H.K.& Myers, M.D. (1999).. A set of principles for conducting and evaluating interpretive field studies in information systems. Management Information Systems Quarterly, 23(1):67-94.

Kreftin, L. (1991). Rigor in qualitative research: The assessment of trustworthiness. The American Journal of Occupational Therapy, 45, 214-222.

Kusiak, A. (2007). Innovation: The living laboratory perspective. Computer-Aided Design and Applications, 4(6), pp. 863-876.

Lievens B., Van den Broeck, W. & Pierson, J. (2006). The mobile digital newspaper: embedding the news consumer in technology development by means of living lab research. Presented at Congress of International Association for Media and Communication Research, IAMCR, Cairo, Egypt.

MacEachren, A.M., Cai, G., McNeese, M., Sharma, R. & Fuhrmann, S. (2006). Crisis management: GeoCollaborative crisis management: Designing technologies to meet real-world needs. International Conference on Digital Government Research, San Diego, California, pp. 71-72, ACM Press.

McNeese, M.D. (2004). How video informs cognitive systems engineering: Making experience count. Cognition Technology and Work 6, pp.186–196.

Pierson, J., Lievens, B. (2005) Configuring living labs for a 'thick' understanding of innovation. Conference proceedings of EPIC 2005 (Ethnographic Praxis in Industry Conference), Redmond, WA: American Anthropological Association.

Rule, P & Vaughn, J. (2011). Your guide to case study research. Pretoria: Van Schaik.

SAP, (2011). SAP. Retrieved April, 2011 from http://www.sap.com; http://www.sdn.sap.com/irj/sdn/index?rid=/webcontent/uuid/208ce383-8482-2b10-8793-f2ba083b9a86

Shenton, A.K. (2004). Strategies for ensuring trustworthiness in qualitative projects. Education for Information, 22, pp. 63-75.

Smit, D., Herselman, M., Eloff, J.H.P., Ngassam, E., Venter, E., Ntawanga, F., Chuang, J & Van Greunen, D. (2011). Formalising living labs to achieve organisational objectives in emerging economies. Presented at IST-Africa 2011 Conference & Exhibition, Gaborone, Botswana.

Terreblanche, K. Durrheim & D. Painter (Eds.), (2006). Research in practice: Applied methods for the social sciences (2nd ed.) (p.455-475).Cape Town: UCT Press.

Totikidis, V. & Prilleltensky, I. (2006). Engaging community in a cycle of praxis: Multicultural perspectives on personal, relational, and collective wellness. Community, Work and Family, 9(1), 47-67.

Walsham, G. (2006). *Interpreting information systems in organizations*. Chichester: Wiley.

List of acronyms

CWEs	Collaborative working environments
DST	Department of Science and Technology
DTI	Department of Trade and Industry in South Africa
ENoLL	European Network of Living Labs
HSRC	Human Science Research Council
ISETT SETA	Body in South Africa which accredited the training of Information Technology skills
J2ME	Java 2 Micro edition from Sun Microsystems
JamiiX	Social media aggregator developed in South Africa
LEGDP	Limpopo Employment Growth and Development Plan
LLiSA	Living Lab in Southern Africa network
LL	Living Lab
LLL	Limpopo Living Lab (Limpopo Province in South Africa)
MDGs	Millennium Development Goals
MXit	Free instant messaging application developed in South Africa
Mobi	Access to Internet sources via moble devices
NWLL	North-West Living Lab
NQF	National Qualifications Framework of South Africa
Parastatal	Fully or partially owned by government
RLabs	Reconstructed Living Lab
SAP LL	SAP Living Lab
SENTECH	Single distributor of the South African broadcasting Cooperation
SiLL	Siyakhula Living Lab
USAASA	Universal Service and Access Agency of South Africa
WSIS	World Summit on Information Society

Hendri Coetzee[1], Ina-Mari du Toit[2] & Marlien Herselman[3]

BIOGRAPHICAL NOTE

[1]Hendri Coetzee

Hendri is a trained research psychologist and psychological counsellor in the category "community mental health". He is a part time project manager and researcher at the Research Unit for Environmental Sciences & Management at the North-West University's Potchefstroom Campus, where he works in the community-based conservation context. He is also the owner-manager of Research Logistics cc, a research and fieldwork logistics company specialising in community-based research and interventions in South Africa; and the driving force behind the North-West Living Lab.

[2]Ina-Mari du Toit

Ina-Mari completed her Master's degree and internship in Research Psychology at the North-West University's School for Psychosocial Behavioural Sciences. Currently she is a fulltime researcher at Research Logistics specialising in community-based research and interventions. Ina-Mari has a special interest in the well-being of children and community projects aimed at improving the lives of families in rural communities.

[3]Marlien Herselman

Prof Marlien Herselman is a research group leader of Living Lab user methods which falls under the Integrative technologies and platforms group at Meraka Institute, Council of Science and Industrial Research (CSIR), Pretoria. She is also chairperson of the Living Lab in Southern Africa (LLiSA) network in Southern Africa. She is also adjunct professor at the School of ICT in the Faculty of Engineering, the Built Environment and IT, Nelson Mandela Metropolitan University (Port Elizabeth), Fort Hare University, Department of Business Information Systems and at Monash University (Faculty of IT). In this capacity she is supervisor and co-supervisor of various Masters and Doctoral studies.