



Supporting the Evolution of Sustainable Living Labs and Living Labs Networks in Africa

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1. Introduction

Within the context of developing the socio-economic & research potential of the African ICT¹ & STI² landscape, the 8th Africa-EU Strategic Partnership³ provides a political mandate based on mutually agreed priorities, for the European Commission (EC), African Union Commission (AUC), European Union (EU) and African Union (AU) Member States, Regional Economic Communities (RECs), the Research Community, Private Sector, Civil Society and NGOs, Local Authorities, International Financing Institutions, International funder Organisations & Foundations to collaborate in the areas of Science, Information Society and Space.

The Second Action Plan $(2011 - 2013^4)$ of the 8th Africa-EU Strategic Partnership (Science, Information Society, Space) has identified a number of priority areas (including Living Labs) for collaboration between public sector, private sector and research communities in Africa and Europe, to complement investments in ICT infrastructure deployment by exploiting synergies between the EU 2020 Digital Agenda and African Union (AU) ICT development frameworks.

The goal is to support STI and ICT capacity-building initiatives for mass diffusion of ICTs and related services, as key enablers for poverty reduction, economic growth, social development and regional integration. One of the priority areas identified is to support the establishment of sustainable Living Labs Networks across Africa as a tool to enhance ICT research cooperation, local innovation, entrepreneurship and wider socio-economic and community development.

This White Paper "Supporting the Evolution of Sustainable Living Labs and Living Labs Networks in Africa" - and the establishment of the EC – AUC Living Labs Task Force for Africa, was initiated as a result of the Inaugural IST-Africa Living Labs Workshop (10 May 2011, Gaborone). IIMC organised this workshop as a Pre-Conference event to IST-Africa 2011, and invited key stakeholders including EC, AUC, Co-Chairs of 8th Africa – EU Strategic Partnership, IST-Africa National Partners, World Bank, LLiSA Network (Living Labs in Southern Africa), ENOLL (European Network of Living Labs), researchers and private sector.

This White Paper is targeted at Key Stakeholders including the EC, AUC, African and European Member States, African Regional Economic Communities (RECs), Community Leaders, Researchers, Industry and Entrepreneurs, other National, Regional & International Funding Agencies and foundations, as well as existing Living Labs and Living Labs Networks.

It positions Living Labs and Living Labs Networks within the context of current literature in this domain and shares lessons learnt from establishing the LLiSA (Living Labs in Southern

¹ Information Communication Technologies

² Science, Technology and Innovation

³ <u>http://www.africa-eu-partnership.org/partnerships/science-information-society-and-space</u>

⁴ <u>http://africa-eu-partnership.org/sites/default/files/doc_jaes_action_plan_2011_13_en.pdf#page=6</u>

Africa) Network and perspectives from LLiSA Members and different stakeholder groups (government, industry/commercial, research/academia, civil society and funders) involved in supporting LLiSA. It also provides an overview of some of the Living Labs related activities across Africa as well as international good practices to provide a better perspective on potential differences in context between Living Labs and Living Labs Network priorities in developing and developed countries, and ensure cultural and other differences are taken into account.

As a result of reading this White Paper, relevant stakeholders will better appreciate:

- (a) the basic concepts behind Living Labs;
- (b) the different forms and focus that Living Labs can take, and the role of Living Labs in innovation and socio-economic development policies for rural/other disadvantaged areas;
- (c) the diversity of Living Labs related activities that already exist across Africa;
- (d) the potential socio-economic, socio-cultural and quality of life benefits and opportunities presented by applying Living Labs Methodologies adapted to an African context; and
- (e) the enormous potential impact of supporting replication of such activities across Africa.

However, equally importantly, it aims to start an action oriented dialogue about: (1) how EU – African cooperation can contribute at both a policy and implementation level to wider exploitation of Living Labs Methodologies and sustainable Living Labs Networks in Africa; (2) the potential impact that better collaboration, communication and coordination between existing and planned stakeholder initiatives with complementary goals and Living Labs Methodologies and Living Labs Networks can achieve; and (3) identify priorities for partnerships between EU – Africa stakeholders (in terms of resources or skills transfer).

1.1 Background

In the context of supporting the implementation of the 8th Africa – EU Strategic Partnership, the IST-Africa Initiative⁵, through its strategic network of Government Partners in 19 African countries⁶, has identified a high level of interest in leveraging Living Labs Methodologies, reinforced by a steady increase of Living Labs papers submitted to the IST-Africa Conference.

As a result, IIMC organised the inaugural IST-Africa Living Labs Workshop on 10 May 2011 in Gaborone, Botswana. The goal was to provide greater clarity about methodologies and processes supporting monitoring and evaluation and comparative benchmarking. IIMC invited key stakeholders including the EC, AUC, Co-chairs of the 8th Africa – EU Strategic Partnership - represented by the Knowledge Society Agency (UMIC) Portugal, IST-Africa National Partners, World Bank, LLiSA Network (Living Labs in Southern Africa), ENoLL

⁵ IST-Africa Initiative, co-funded under FP6 and FP7, <u>www.IST-Africa.org</u>

⁶ IST-Africa Partner Countries represent North Africa (*Egypt, Tunisia*), Southern Africa (*South Africa, Namibia, Lesotho, Mauritius, Mozambique, Botswana, Zambia, Swaziland, Malawi*), East Africa (*Tanzania, Uganda, Kenya, Burundi, Ethiopia*), West Africa (*Senegal, Ghana*) and Central Africa (*Cameroon*).

(European Network of Living Labs), as well as other thematic experts from government, research and private sector to contribute to this Workshop. There were almost 100 participants.

The IST-Africa National Partners have identified Living Labs related activities across Africa. However, these are often called by other names and do not always follow all the methodologies and processes required to allow monitoring, evaluation, and comparative benchmarking. These characteristics are necessary to maximise socio-economic impact by making it possible to replicate success stories, with necessary adaptation as required to reflect cultural, national and regional differences, and lowering implementation costs by taking account of best practices. It is important to take a truly international perspective in this regard.

Based on the level of enthusiasm and engagement demonstrated during the inaugural IST-Africa Living Labs Workshop, the European Commission (EC) and African Union Commission (AUC) established an **EC** – **AUC Living Labs Task Force for Africa** to develop an implementation strategy to support the rollout of Living Labs across Africa. Task Force members include the EC and AUC as Co-Chairs, the LLiSA Network and University of Botswana representing Southern Africa, IST-Africa National Partners representing North Africa (MCIT, Egypt), Central Africa (ANTIC, Cameroon), East Africa (COSTECH, Tanzania and UNCST, Uganda) and West Africa (MESUCURRS, Senegal), IIMC (Ireland) with its extensive African and European networks and experience, ENoLL (to share international experience from its members), the World Bank and Embassy of Finland in South Africa.

It was agreed that a White Paper would be prepared by Task Force members to provide a framework for next steps. IIMC (Founder and Coordinator, IST-Africa Initiative) has a long-standing, successful track record of ICT and STI collaboration across Africa with national and regional government, academia, industry, civil society and other stakeholders, including authoring and co-creating important policy documents (e.g. National eSkills Plan of Action, for the Department of Communications, South Africa). Based on this, and the track record of the LLiSA Network, within the context of the Task Force, LLiSA requested IIMC to collaborate on authoring this White Paper, which presents a proposed approach to achieving the sustainable adoption of Living Labs Networks (and Living Labs Methodologies) across Africa.

All relevant stakeholders including all members of the EC – AUC Living Labs Task Force for Africa were consulted during the preparation of this White Paper and invited to provide contributions and case study summaries for inclusion in different drafts.

A further validation of the proposed approach was undertaken with national stakeholders through a series of two day Living Labs Workshops organized by IST-Africa in East Africa (Burundi, Tanzania, Uganda, Ethiopia) and Southern Africa (Lesotho, Malawi, Swaziland, Zambia), September – December 2011. This work has been undertaken by IIMC in partnership

with the national IST-Africa Partners, within the framework of the IST-Africa Initiative. LLiSA participated in the IST-Africa Living Labs Validation Workshops in Burundi and Tanzania to share their experiences supporting Living Labs in Southern Africa.

1.2 Socio-Economic Context

It is important to have some socio-economic context for Africa, when considering engagement with and investment in Living Labs and Living Labs Networks. It is also important to understand that circumstances vary enormously across Africa. Socio-economic, cultural and socio-political factors can make it easier to achieve traction in one region compared with another. This section aims to provide insight into differences between the five regions in Africa (North, South, East, West, Central) and highlight specific sectors aligned with national and regional priorities and policies, when considering Living Labs related activities. More detailed analysis of national policies will subsequently need to be carried out for shortlisted countries.

The 2011 African Statistical Yearbook⁷ is the third annual edition jointly produced by AfDB, AUC and UNECA. While most data sets are sourced and validated from African national sources, with 32 countries represented at the validation meeting of experts, population related statistics are derived mainly from "World Population Prospects, estimates and projections of the UN Secretariat Population Division", "World Urbanisation Prospects" and "Labour Force Estimates and Projections, 1980-2020" prepared by International Labour Organisation (ILO). National sources were used to supplement missing data when comparable with the UN series.

Economically Active Population in Africa Increased by 32.6% Since 2000 Based on reported national statistics for 53 of the 54 African States (2010 data is missing for Seychelles, 2010 Sudan statistics include those of South Sudan, which only recently became an independent State), the Economically Active Population⁸ reported in Africa has increased by 32.6% between 2000 and 2010 to 413.5 million (out of

a total 2010 mid-year African population of c. 1 billion - 1,031,472,000). While the percentage of economically active women rose from 40.3% to 41%, as these figures are based on the System of National Account (SNA) definition (which minimises activities in the Informal Sector, where women employed are in the majority), these percentages may be understated.

⁷ African Statistical Yearbook 2011 was prepared under by the African Statistical Coordination Committee set up by the African Development Bank (AfDB), African Capacity Building Foundation (ACBF), African Union Commission (AUC), and United Nations Economic Commission for Africa (UNECA) in the context of implementing the Reference Regional Strategic Framework for Statistical Capacity Building in Africa (RRSF).

⁸ Economically Active Population is defined as comprising all employed and unemployed persons between 15 and 64 (including those seeking jobs for the first time). It covers employers, self-employed, salaried employees, wage earners, unpaid family workers, members of producers' co-operatives and members of the armed forces.

While Adult Illiteracy⁹ is still an ongoing challenges across Africa (Average [Arithmetic mean] of 30.9% and a Median [Middle number of a group of numbers] of 29.5% for 2006 – 2008) Average and Median Youth Literacy rates (15 - 24 year olds) of 74.9% and 79.3% were achieved in the same period (only Burkina Faso, Chad, Ethiopia and Mali fell below 50%).

Africa has particular challenges in relation to rural socio-economic development and sustainable quality of life, due to the current state of evolution of infrastructure, limited educational and employment opportunities. The disconnect between youth literacy and the reality of employment opportunities is that for many African States, unemployment levels amongst youth (15 - 24 year olds) is high, particularly in rural areas, for reasons already stated.

While a UNECA and UN Programme on Youth (UNPY) Fact Sheet "*Regional Overview: Youth in Africa*"¹⁰ reports that average youth unemployment in 2009 in Sub-Saharan Africa was 11.9% and 23.7% in North Africa, there are considerable national differences. In North Africa, youth unemployment was over 30% in Algeria, 31% in Tunisia and 34% in Egypt. The situation was more varied in Southern Africa: below 5% in Rwanda and Malawi; over 20% in Zambia and Zimbabwe; and over 30% in Botswana, Lesotho, Mauritius, Namibia and Swaziland. Generally, unemployment amongst young women was higher than young men, with over 60% of young women unemployed in South Africa.

Key contributors to youth unemployment include (a) a strong social preference for white collar employment, resulting in low status and low take up of vocational training, (b) a mismatch between education received and market skills required because of limited post-primary education opportunities, and (c) limited public sector and SME employment opportunities. As a result, there is a high dropout rate from school, and migration - particularly of youth to urban centres, where there are often insufficient employment opportunities and limited suitable housing, which can lead to homelessness, poverty, social unrest & opportunistic crime.

Sustainable Economic Growth and Social Development – Primary Economic Policy Goals The UNECA and AUC joint *Economic Report on Africa 2011¹¹* identifies sustainable economic growth and social development as the primary goals of economic policy in Africa. The Report acknowledges that these strategic goals are unlikely to be achieved without widespread economic diversification and

⁹ Adult Illiteracy Rate (Percentage of all persons aged 15 and over who cannot read and write) based on reported national statistics in 44 out of 54 African States (excluding Algeria, Burkina Faso, Congo, Djibouti, Egypt, Mali, Niger, Senegal, Somalia and South Sudan)

¹⁰ United Nations Economic Commission for Africa (UNECA) and UN Programme on Youth (UNPY). 2010. *Regional Overview: Youth in Africa*. Fact Sheet Supporting the International Year of Youth.

¹¹ United Nations Economic Commission for Africa (UNECA) and African Union Commission (AUC). *Economic Report on Africa 2011: Governing development in Africa - the role of the state in economic transformation*. March 2011. ISBN: 978-92-1-125116-6

structural transformation, and suggests that based on the failure of earlier state-led and marketdriven approaches to development, African countries adopt a "developmental state"¹² approach with governments taking a pro-active role in the process, *"using the [free] market as an instrument rather than a sole mechanism for fostering long-term investment, rapid and sustained economic growth, equity and social development"*. Such an approach requires bringing together all key stakeholders (government, industry, research/academia, civil society, funders) to take a coordinated approach to strategic challenges.

According to the UNECA/AUC Report, completion rates for primary school across Africa are around quite low at 60%, and pupil-teacher ratios are very high. This is a key contributor to low standards and drop-out rates. According to UNESCO (2010), the teacher supply gap in Africa has been estimated at over 4 million, with clear consequences for school capacity and class sizes. Part of the problem is that there is currently limited access to post-primary education in most African countries (primarily for economic reasons), let alone third level education. The African Union's Second Decade of Education for Africa (2006–2015) emphasizes higher education as a critical requirement for sustaining pan-African development.

In June 2010, the McKinsey Global Institute (MGI) published the results of a joint research project "*Lions on the Move: The Progress and Potential of African Economies*" ¹³, by MGI and McKinsey & Company's offices in Egypt, Morocco and South Africa.



SOURCE: International Monetary Fund Direction of Trade Statistics; McKinsey Global Institute

Diagram 1 – Evolution of Sub-Saharan Africa's Trade by Trading Partner (1990 – 2008)

¹² The Report defines a Developmental State as "one that has the capacity to deploy its authority, credibility and legitimacy in a binding manner to design and implement development policies and programmes for promoting transformation and growth, as well as for expanding human capabilities. Such a state takes as its overall socio-economic goals the long-term growth and structural transformation of the economy, with equity". [p7]

¹³ ROXBURGH C., DOERR N., LEKE A., TAZI-RIFFI A., van WAMELEN A., LUND S., CHIRONGA M., ALATOVIK T., ATKINS C., TERFOUS N. & ZEINO-MAHMALAT T. 2010. *Lions on the Move: The Progress and Potential of African Economies*. McKinsey Global Institute

This MGI Report provides useful insight into several issues relevant to this White Paper, including key sectors with which Living Labs and Living Labs Networks could be strategically aligned, forecasts identifying the potential of discretionary household spending power in Africa, and market opportunities and related socio-economic impact stakeholders can support.

Diagram 1 illustrates how so much can change in two decades and how much some things remain the same - for better and for worse. The level of intra-African trade show little or no progress compared to 1990, which reflects lack of infrastructural and regulatory change (for which national governments and Regional Economic Communities (REC) must take responsibility), and lack of progress in developing value-added processing within Africa which could substitute for imports and increase employment and foreign currency earnings.

South-South trade now accounts for 50% of total trade, with doubling of trade with Latin America and Middle East and even greater trade growth with Asia (driven by China's strategic approach to leverage FDI, infrastructure and development assistance to secure long term rights for key minerals and other resources which many African countries have in abundance).

In the context of renewed strategic engagement through the 8th Africa – EU Strategic Partnership (Science, Information Society, Space), it is of considerable concern that Strategic Foreign Direct Trade with Europe has fallen dramatically (45%) and intra-African trade has shown no growth over the last twenty years. This is despite continued EU and Member State commitment of development aid and technical assistance to Africa, and strong investment returns achieved in Africa compared to the rest of the world. Sustained strategic engagement and Foreign Direct Investment (FDI) is required to reverse these trends and participation in and contribution to the success of Living Labs in Africa could provide a win-win opportunity.



SOURCE: International Monetary Fund; World Bank World Development Indicators; McKinsey Global Institute

Diagram 2 – Africa Transforms into 3^{rd} Fastest Growing Region in the World (2000 – 2008)

Africa 3rd Fastest Growing Region in World Diagram 2 shows that since 2000, Africa has become the 3rd fastest growing region in the world. MGI suggests that Africa has enormous business potential "*particularly for companies in consumer-facing industries (such as retail, telecommunications, and banking);*

infrastructure-related industries, across the agricultural value chain; and in resource-related industries" [p9]. MGI points out that 40% of Africans now live in urban centres, Africa has the same number of cities with over 1 million population as Europe (52), and is now home to 20 African companies with annual revenues of at least \$3 billion.

Aggregate GDP growth figures disguise significant economic variations across the five African regions (Diagram 3). The UNECA/AUC Report expects East and West Africa to continue to outperform North, Central and Southern Africa, with improved economic performance in 2011, compared to the figures achieved in 2010: East Africa (6.8%); West Africa (6%); North Africa (4.7%); Central Africa (4.3 per cent); and Southern Africa (3.3 per cent)). This is striking, as half of all intra-African trade (6%) takes place between SADC¹⁴ Member States.



Source: UNECA calculations based on UNECA and UN-DESA databases, November 2010. Diagram 3 – Regional versus Average Pan-African Growth Performance (2008 – 2010)

According to the UNECA/AUC Report, most North African countries recovered strongly in 2010. GDP growth in Libya and Mauritania reflected increased government spending and robust activity in agriculture and construction (and mining in Mauritania). The economies of Egypt and Sudan grew based on continued demand for services. GDP growth in Tunisia reflected rising industrial output and investment, although EU exports were weak. Weaker growth in Morocco reflected falling agricultural production after the bumper 2008/09 harvest.

Important growth factors for West Africa included high oil prices and revenue and increased economic diversification (Nigeria), growth in the construction and services sector (Ghana), growth in agriculture and mining (Sierra Leone) and higher earnings from rubber exports (Liberia). Guinea, Niger and Côte d'Ivoire were affected by continued political instability.

According to the UNECA/AUC Report, growth rates in Central Africa rose from 2.2% in 2009

¹⁴ Southern African Development Community (SADC) – Regional Economic Community with 15 Member States

to an average of 4.3% in 2010. With the exception of Congo and Gabon, other countries in the region expanded by less than 5% in 2010, mainly due to poor export diversification, political uncertainty in Central African Republic and declining oil production in Equatorial Guinea, Gabon and Cameroon. Oil output in these countries fell because of some oil fields' declining production capacity. However, non-oil activity, including mining continued to grow strongly.

East Africa achieved similar growth in 2010 and 2009 due to the developing industrial services sectors of Ethiopia, Rwanda, the United Republic of Tanzania, and Uganda, especially telecommunications (assisted by Chinese development aid funding national fibre optic rings) and construction. Additional factors included increased agricultural output (Ethiopia), rising mining output (Tanzania) and donor-funded infrastructure development (Ethiopia & Tanzania).

According to the UNECA/AUC Report, Southern Africa benefited from strong growth in Q1 – Q3 2010, due to FIFA World Cup (South Africa), robust exports and increased mining and manufacturing activities. In Q4 regional private consumption weakened. Malawi, Mozambique and Zambia maintained growth rates of 6% or more, due to rising mining output and bumper harvests in Mozambique and Zambia. Economic activity recovered in Botswana and Namibia due to global demand for minerals. Zimbabwe benefited from an improved macroeconomic environment, lower inflation, increased industrial capacity, manufacturing output and tourism.

According to the UNECA/AUC Report, while growth rates usually have a direct correlation with employment and productivity growth, improved economic performance across Africa has not had a similar impact on reducing unemployment and poverty or progress towards achieving the Millennium Development Goals (MDGs). According to UNECA (2010), the employment-to-population ratio has largely stagnated since 1991 and West Africa has registered a decline in the employment-to-population ratio since 2000. Much of the economic activity has been in capital intensive extractive sectors with limited upstream or downstream employment creation opportunities. Youth unemployment in Africa has remained at around 18% for the last decade.

Clearly agriculture and exporting raw materials are not having the necessary level of socioeconomic impact. More value-added processing needs to take place in Africa, thus creating sustainable employment, upstream and downstream job creation and the foundation for a wider tax base. Only a few countries including Egypt and Mauritius have reduced unemployment to some degree during 2010 by continuing to expand labour intensive services sectors.

A number of other countries, particularly in Southern Africa (e.g. Botswana, Namibia, South Africa) and East Africa (e.g. Kenya, Uganda, Tanzania, Rwanda) have similar ambitions in sectors including Services, ICT, Business Process Outsourcing (BPO) & Knowledge Economy.

However, most of these sectors often require eSkills¹⁵ or university education as well as strong literacy. While it is clear that progress is being made in many African States with basic education, youth literacy, Internet access (many African states had 10–20 internet users per 100 of the population in 2008 according to UNECA, 2010). legal protection and incentives to attract Foreign Direct Investment (FDI), much work remains to develop Digital Literacy capacity, facilitate wider access to post-primary & third level education and diversify national economies beyond an over reliance on exporting agricultural produce, raw materials and oil.

Cooperation with Private Sector Directly Linked with ICT Proliferation According to the UNECA/AUC Report, there are strong benefits for social development of proliferating new technologies, especially ICT. MDG 8 (Develop a Global Partnership for Development) places private sector cooperation at the heart of

ICT access. "In sum, progress in social development is determined by economic growth and the extent to which this growth is shared, as well as by the quantity and quality of public services delivery" [p42]. Targeting countries (such as in East Africa) where ICT is already a priority will facilitate faster adoption of Living Labs methodologies & Living Labs Networks.



1 Due to data constraints, comprises 15 countries that account for 80 percent of Africa's GDP: Algeria, Angola, Cameroon, Egypt, Ethiopia, Kenya, Libya, Morocco, Nigeria, Senegal, South Africa, Sudan, Tanzania, Tunisia, Zimbabwe.

2 Education, Health, Social Services, Household Services.

SOURCE: Global Insight; Arab Monetary Fund; African Development Bank; McKinsey Global Institute

Diagram 4 –Segmentation by Sector of African GDP Growth and % of Total Growth (2002 – 2007)

While Diagram 4 summarises data based on only 15 African States, these account for 80% of total African GDP, thus providing a good proxy of average annual percentage growth per

¹⁵ Cunningham et al in National eSkills Plan of Action, 2010, Department of Communications, South Africa, defines eSkills or Digital Literacy as "...the ability to use and develop ICTs within the context of a Knowledge Society, and associated competencies that enable individuals to actively participate in a world in which ICT is a requirement for advancement in business, government and society in general."

sector across Africa for the period 2002 – 2007. The relatively low percentage share of total growth for some of the sectors with higher annual growth (e.g. Tourism – with Hotels and Restaurants as a proxy, Finance, Construction, Utilities and Other Services) clearly relate to a relatively low base from which these are emerging as important contributors to regional GDP growth, compared to Resources, Wholesale and Retail Trade, Agriculture and Transport and Communications for example, which have been major long term contributors to GDP. The constraints on employment growth in the resource and agricultural sectors due to lack of value-added processing to date has already been noted. Sectors like tourism (including hotels and restaurants) and Other Services (which include education, health, social services, household services) clearly have enormous potential for creating upstream and downstream employment.

Diagram 5 maps the level of exports achieved in 2008 against the level of economic diversification achieved in the 31 countries analysed by MGI. The remaining 22 countries were excluded on the basis that collectively, they accounted for only 3% of 2008 African GDP.



NOTE: We include countries whose 2008 GDP was approximately \$10 billion or greater, or whose real GDP growth rate exceeded 7% over 2000–08. We exclude 22 countries that accounted for 3% of African GDP in 2008. SOURCE: Organisation for Economic Co-operation and Development, World Bank World Development Indicators; McKinsey Global Institute

Diagram 5 – Exports Per Capita versus Level of Economic Diversification Achieved (32 Countries)

These in turn have been grouped into Oil Exporters, Pre-Transition, Transition and Diversified economies. Oil and gas exporting countries (9 including Sudan) tend to have relatively high levels of exports compared to Pre-Transition and Transition Countries, but also tend to have relatively low levels of economic diversification, with only Sudan achieving almost 50%. While more recent Foreign Direct Investment (FDI) in the Resources sector have included some local infrastructure and processing, future employment creation is primarily in value-added processing, complex manufacturing and services, which requires investment in training.

Diversified countries (7 including Botswana and Mauritius) tend to have relatively high levels of economic diversification, and with the exception of Botswana (thanks to Diamonds) and Mauritius (thanks to vibrant ICT and Services industries), slightly lower levels of exports compared to Oil Exporters. According to MGI, in Egypt, Morocco, South Africa and Tunisia, 90% of all households have discretionary income and "service industries such as construction, banking, telecom, and retailing accounted for more than 70 percent of their GDP growth" [p5]. MGI found that on average, "each 15 percent increase in manufacturing and services as a portion of GPD is associated with a doubling of income per capita" [p24]. Increasing per capita income has a direct impact on reducing poverty and increasing discretionary spending.

Transition economies (9 including Cote d'Ivoire) have rapidly growing economies, with agriculture and resources accounting for up to 35% of GDP and two thirds of exports. These figures (and associated employment levels) would be significantly higher if these countries were to invest in value added processing prior to exporting raw materials & agricultural goods. MGI points out that there is significant potential in sectors including green agriculture (where there is little current activity), as well as telecommunications, banking and formal retail (where market penetration rates are much lower than those in the Diversified economy countries).

Pre-Transition economies (6 including Madagascar and Rwanda) are generally poor but growing relatively fast. Rwanda for example has the ambition to become the "*Singapore of Africa*", basing on its future economic model on positioning itself as a datacenter for industry and government in Africa. However, many of its ministries are significantly under resourced – particularly in terms of breadth and depth of skilled personnel. This makes achieving progress difficult. Burundi is not as advanced as Rwanda despite being next door, and its circumstances are worse. The upside opportunity is that Members of the East African Community (EAC) are actively willing to support less developed Members, initially by linking national networks.

Having looked at regional and national differences, it is also necessary to acknowledge the importance of having access to households with discretionary income when attracting FDI.



 Purchasing power parity adjusts for price differences in identical goods across countries to reflect differences in purchasing power in each country.
SOURCE: Canback Global Income Distribution Database (C-GIDD); McKinsey Global Institute

Diagram 6 – Growth in Discretionary Income and Socio-economic Independence of African Households

Diagram 6 shows a significant improvement from 2000 to 2008 in the number of African households with discretionary income (8% increase) and those able to fund their basic needs (3% increase). MGI project 128 million households will have discretionary income by 2020.

Africa on Track for Largest Working-Age Population Diagram 7 illustrates that as of 2010, Africa had the third largest working-age population in the world (over 500 million) after India (over 700 million) and China (over 900 million).



Diagram 7 – Worldwide Trends in Working-Age Population (1950 – 2040)

This compares to falling working-age populations in Europe and Japan, a plateau in the case of North America (around 200 million) and trends for South East Asia and Latin America, which are likely to plateau around 500 million by 2040. China's working age population is expected to peak by c. 2017 and India by c. 2040, at which time Africa's working-age population will still be growing at over 1.1 billion. As the proportion of households with discretionary income continue to grow, the implications for Africa as the largest market of the future are clear.

Opportunities in Context of Living Labs and Living Labs Networks

Based on the opportunities identified, it seems clear that in the context of Living Labs methodologies and Living Labs Networks, the initial geographic focus should primarily target those Diversified and Transition economies where (a) fibre optic and telecommunication networks are sufficiently advanced, (b) key stakeholders (government,

industry, research/academia and civil society) are willing to collaborate to achieve common or complementary socio-economic and community development goals, (c) households have at least some discretionary disposable income, (d) national governments have regulation in place to protect investors, (e) government understands the strategic imperative of supporting Knowledge Society engagement and (f) support mechanisms for Foreign Direct Investment.

1.3 Living Labs and Innovation

Innovation as a concept is regularly mentioned in this White Paper, as it is a critical aspect of Living Labs. This subsection aims to provide a basic context for the interaction between Living Labs and the Innovation Lifecycle, introduce a visualisation framework for the Living Labs Landscape, and highlight different forms of innovation relevant to Living Labs, particularly in a developing country context where achieving wider socio-economic impact is essential.

The Innovation Lifecycle (Diagram 8) illustrates a number of opportunities to leverage Living Labs as a methodological framework to support end-user engagement during a number of key Phases of the Innovation Lifecycle. These range from Large Scale Idea Generation (during the Idea Phase), Experimentation (during the Concept Phase), to Prototype Development and Testing and Validation (during the Development Phase), Market Pilots (during the early Deployment Phase prior to Market Launch) and User Feedback (during the Evaluation Phase).



Potential User Roles in all Phases of the Cycle

Diagram 8 – Different Opportunities to Leverage End User Participation within Living Labs

Obviously the greater the level of end-user participation during a variety of Phases of the Innovation Lifecycle, the closer a specific Living Lab is based on a User Driven Model (where end-users are actively involved in a continuous co-creation process in partnership with other key stakeholders – typically government, business/industry, academia/research and/or civil society) rather than a User Centric Model (where end-users are essentially observed subjects).

INRIA has created an interesting framework in the AxIS project to map the role of end-users, number of end-users, goals, evaluation and forms of collaboration within Living Labs.

Diagram 9¹⁶ presents a cartographic landscape encompassing four main axes described as Granularity (continuum of Individual Users to Group of Users), User Roles (continuum of Users as Observed Subjects to Users as Value Creators), Collaboration Style (continuum of Unstructured to Structured) and Evaluation Purpose (continuum of Reliability to Adoptability). AxIS suggests this tentative structure will "make it easier to organize the different approaches of living labs … between technology push and application pull. This tentative cartography of user centered innovation processes is a good start to plan further clarification".



Diagram 9 - Living Lab Landscape of Research Streams: Towards User Co-Creation

The Innovation Propeller below (Diagram 10) presents an integrated model for different forms of innovation (Technological, Business, Learning, Social, Aesthetic), each of which can be evaluated in the context of Living Labs, either individually or in one or more combinations. For example, testing a new service or business model could involve technological innovation as well as business innovation from the private sector and academic/research perspective, while it could involve social innovation and learning innovation from a community

¹⁶ Usage-Centered Design, Analysis and Improvement of Information Systems (AxIS) - Institut National de Recherche en Informatique et en Automatique (INRIA). 2010 (New Results: Living Lab Landscape of Research Streams: towards User Co-creation. Participants - Marc Pallot, Brigitte Trousse, Bernard Senach, Dominique Scapin) - http://raweb.inria.fr/rapportsactivite/RA2010/axis/IMG/LL.jpg

development and academic/research perspective where entrepreneurship and skills development was designed into the Living Labs model and methodology used. Testing a new product or User Interface could also involve technological, business and aesthetic innovation.



Diagram 10 – Different Forms of Innovation that can be Assessed and Validated Through Living Labs¹⁷

Summary

Socio-Economic Context - Opportunities

- By 2040, Africa will have the world's largest Economically Active Population (15 64), growing from c. 413 million in 2010 to over 1.1. billion
 - Africa will become the most important market in the world as the proportion of African households with discretionary income continues to grow
 - o By 2020, c.128 million African households (52%) will have discretionary income
- Literacy levels for African Youth (15 24 year olds) is high, Average (74.9%) and Median (79.3%) [2006 2008 Statistics]
- Only 25% of growth in African GDP per capita was as a result of productivity gains
 - With skills transfer and targeted investment in education and eSkills (Digital Literacy) to leverage the high level of youth literacy, Africa's future workforce could become a significant engine of both global production as well as global consumption
- Targeting countries and RECs where ICT adoption and skills development are priorities will facilitate faster adoption of Living Labs and establishing Living Labs Networks
- Botswana, Egypt, Kenya, Mauritius, Namibia, South Africa, Rwanda, Tanzania and Uganda are amongst those African countries who understand the imperative of supporting Knowledge Society engagement (including eSkills Development) and encouraging Foreign Direct Investment (FDI) to exploit opportunities in Sectors including Services (e.g. Health, Education), ICT, Business Process Outsourcing (BPO) and Knowledge Economy

¹⁷ Community Intelligence Innovation Architecture - <u>http://www.community-intelligence.com/node/118</u>

2. What are Living Labs?

2.1 Introduction to Living Labs

Just as living labs methodologies can be applied in very different contexts, both geographic (or territorial – e.g. urban or rural, local community or region) and thematic (e.g. eWellbeing, eServices in Rural or Developing Areas, eDemocracy and eGovernance, ICT for Energy Efficiency, Food Security), Living Labs have been defined in a variety of ways. A representative sample of European, International and African definitions are presented below.

Living Lab Definitions Living Labs were developed as a concept in 1990 (Lepik, Krigul & Terk, 2010:1090¹⁸) and is referred to by Holst, Ståhlbröst & Bergvall-Kåreborn¹⁹ (2010) supported by Eriksson, Niitamo & Kulkki²⁰ (2005) *as a system, an*

arena, environment and/or a systemic innovation approach. They argue that a Living Lab is both a milieu (environment, arena) and an approach (methodology, innovation approach). It is a concept that refers to a Research and Development (R&D) methodology where innovations (services, products and application enhancements) are created and validated in collaborative, multi-contextual empirical real-world settings (Geerts, 2011²¹), and seen as a new character in the open innovation chain (Lepik et al., 2010:1091).

Currently, several Living Lab descriptions and definitions are available from different sources (CoreLabs, 2007²²; Niitamo, et al. 2006²³; Pallot, 2009²⁴; Schumacher & Feurstein, 2007²⁵; DG

¹⁸ LEPIK, K-L., KRIGUL, M. & Terk, E. 2010. *Introducing Living Lab's method as knowledge transfer from one socio-institutional context to another: Evidence from Helsinki-Tallinn cross-border region*. Journal of Universal Computer Science, Vol 16 (8), 2010: 1089-1101.

¹⁹ HOLST, M. STÅHLBRÖST, A. & BERGVALL-KÅREBORN, B. 2010. *Openness in Living Labs: Facilitating Innovation*. Proceedings of the 33rd IRIS Seminar. 2010.

²⁰ ERIKSSON, M., NIITAMO, V.P., & KULKKI, S. 2005. *State-of-the-Art in Utilizing Living Labs Approach to User-centric ICT innovation - a European approach*. Centre of Distance Spanning Technology at Luleå University of Technology, Sweden, Nokia.

²¹ GEERTS, G. 2011. A Design Science Research Methodology and its Application to Accounting Information Systems Research. International Journal of Accounting Information Systems. Retrieved from <u>http://linkinghub.elsevier.com/retrieve/pii/S1467089511000200</u>.

²² CORELABS, I. 2007. *Building Sustainable Competitiveness - Living Labs Roadmap 2007 - 2010.* Luleå University of Technology - Centre for Distance-spanning Technology.

²³ NIITAMO, V.-P., KULKKI, S., ERIKSSON, M., & HRIBERNIK, K. A. (2006). *State-of-the-art and good practice in the field of living labs*, Proceedings of the 12th International Conference on Concurrent Enterprising: Innovative Products and Services through Collaborative Networks, Milan, Italy

²⁴ PALLOT, M. 2009. ECOSPACE Survey on Barriers Affecting Collaboration Effectiveness and Efficiency, *ECOPSACE Newsletter* double issue no 11 & 12, November 2009.

²⁵ SCHUMACHER, J., & FEURSTEIN, K. (2007). *Living labs - A New Multi-stakeholder Approach to User Integration*. Paper presented at the 3rd International Conference on Interoperability of Enterprise Systems and Applications (I-ESA'07), Funchal, Madeira, Portugal

Information Society and Media, European Commission, 2009²⁶). Several scholars have also presented definitions: Eriksson *et al.*, (2005) defined a Living Lab as "*a user-centric research methodology for sensing, prototyping, validating and refining complex solutions in multiple and evolving real life contexts*" (p. 4). Ballon *et al.*, (2005)²⁷ define Living Lab as an experimentation environment in which technology is given shape in real-life contexts and in which (end) users are considered '*co-producers*'. Schumacher & Feurstein (2007) describes a Living Lab as a systemic innovation approach in which all stakeholders in a product, service or application participate directly in the development process. Other concepts also evident from various definitions of Living Labs are open innovation ecosystems, territorial contexts, concurrent research and innovation processes, where users have the opportunity to play an active role in the development of new services, products or processes (Følstad, 2008²⁸).

The European Commission in a 2009 report²⁹ defines Living Labs as "open innovation environments in real-life settings, in which user-driven innovation is fully integrated within the co-creation process of new services, products and societal infrastructures".

According to Massachusetts Institute of Technology (MIT)³⁰ "Living Labs brings together interdisciplinary experts to develop, deploy, and test - in actual living environments - new technologies and strategies for design that respond to this changing world".

According to Living Labs Portfolio Leadership Group³¹, a "Living Lab has one main role, and this is to engage and empower users to participate in the generation of valuable and sustainable assets towards objectives set-up by its partners and customers. Primarily, a Living Lab should have capability to;

- ✤ Form an appropriate organisation and partnership
- > Motivate and empower large scale user engagement
- Establish adequate tools and infrastructure
- ➢ Form and execute case-dependent processes and manage IPR
- Disseminate a wide variety of results"

²⁶ European Commission, DG Information Society and Media, Unit F4 New Infrastructure Paradigms and Experimental Facilities. Living Labs for User-driven Open Innovation. An Overview of the Living Labs Methodology, Activities and Achievements. January 2009.

²⁷ BALLON, P., PIERSON, J., & DELAERE, S. 2005. *Open Innovation Platforms for Broadband Services: Benchmarking European Practices*. 16th European Regional Conference, 4-6 September, Porto, Portugal.

²⁸ FØLSTAD, A. 2008. *Living Labs for Innovation and Development of Information and Communication Technology: A Literature Review.* The Electronic Journal for Virtual Organisations and Networks 10 (Special Issue on Living Labs,):100-131.

 ²⁹ Living Labs for User Driven Open Innovation, DG Information Society & Media, European Commission, 2009
³⁰ http://livinglabs.mit.edu/

³¹ Living Labs Roadmap 2007 - 2010, Living Labs Portfolio Leadership Group and CORELABS Project - <u>www.ami-communities.net/wiki/CORELABS</u>

ENoLL's (2011) definition of Living Labs identifies and qualifies five key dimensions of Living Labs, (1) innovation settings ("*open innovation environment*"), (2) operating environments ("*real-life settings*"), (3) affecting innovation processes ("*user-driven innovation*" and "*co-creation process*"), (4) related to user engagement and (5) from which innovation outcomes are expected ("*new services, products and societal infrastructures*").

The European Commission report "Living Labs for User Driven Open Innovation" contextualises that Living Labs bring users into the creative process at an earlier stage of innovation "to better discover new and emerging behaviours and user patterns, bridging the innovation gap between technology development and the uptake of new products and services involving all relevant players of the value network ... [and] allowing for early assessment of the socio-economic implications of new technological solutions by demonstrating the validity of innovative services and business models".

Diagram 11, extracted from this Report, positions the Action Space for Living Labs in relation to three key Lifecycles - Technology Adoption (Orange), Research (Green) & Funding (Blue).



Action space for Living Labs along the technology adoption cycle

Diagram 11 – Intersection of Living Labs with Technology Adoption, Research and Funding Lifecycles

Within the Research Lifecycle, Living Labs have most applicability to *Applied Research*, *Demonstration and Piloting* (of new products, services, processes or business models) and *Early Stage Market Assessment of Service and Product Development*. Living Labs can be a very effective mechanism to engage with enthusiasts, early adopters and the early majority, whose input can be critical to the successful evolution of a new product or service as well as justifying seed and venture capital funding as the availability of research funding reduces.

According to Bergvall-Kåreborn, Eriksson, Ståhlbröst, & Svensson³² (2009), the key components of Living Labs are illustrated in Diagram 12 below, with Innovation at the Centre:



Diagram 12 – Key Components of Living Labs

- The ICT & Infrastructure component, which outlines the role that new and existing ICT technology can play to facilitate new ways of cooperating and co-creating new innovations among stakeholders
- Management represents the ownership, organization, and policy aspects of a Living Lab, by which a Living Lab can be managed by e.g. consultants, companies or researchers
- The Living Lab Partners & Users bring their own specific wealth of knowledge and expertise to the collective, helping to achieve boundary spanning knowledge transfer
- Research symbolizes the collective learning and reflection that take place in a Living Lab, and should result in useful contributions to both theory and practice. *Technological research partners* can also provide direct access to research and research results that can benefit the outcome of a technological innovation
- Finally, Approach stands for methods and techniques that emerge as best practice within the Living Labs environment

The European Commission report also identifies benefit statements for the stakeholder groups. "The benefits for the different types of stakeholders to deploy user-driven open innovation and Living Lab methodologies can be summarised as follows:

³² BERGVALL-KÅREBORN, B., IHLSTRÖM ERIKSSON, C., STÅHLBRÖST, A., & SVENSSON, J. 2009. *A Milieu for Innovation - Defining Living Labs*. Paper read at The 2nd ISPIM Innovation Symposium - Stimulating Recovery - The Role of Innovation Management, 6-9 December 2009, at New York City, USA

- ➢ For the users in their role as citizens and ... community [representatives]: To be empowered to influence the development of services and products which serve real needs, and to jointly contribute to savings and improved processes through active participation in the R&D and innovation lifecycle.
- ➢ For the SMEs, incl. micro-entrepreneurs as providers: developing, validating and integrating new ideas and rapidly scaling-up their local services and products to other markets.
- ➤ For the larger company: making the innovation process more effective by partnering with other companies as well as end-users, which are rooted in active user experiences, increasing 'right the first time'.
- ➢ For research actors, the economy and the society: Stimulating business-citizensgovernment partnerships as flexible service and technology innovation ecosystems; integrating technological and social innovation in an innovative 'beta culture'; increasing returns on investments in ICT R&D and innovation''.

While LLiSA Members generally accept these definitions and proposed benefits as perfectly valid based on the development of Living Labs worldwide, there is a consensus that in an African context, they are too focused on external tangible outputs of living labs (e.g. process, product or service) and not sufficiently focused on equally valuable but less easily quantifiable outputs and benefits at a community development, socio-cultural and socio-economic level.

RuralOne key dimension seen as critically important in an African context, is the
rural community perspective and engagement, and proposed adaptation of
the innovation concept and process, which is often misinterpreted as only
tangible, ignoring knowledge or idea creation.

SuccessfulBased on the consensus of Members of the LLiSA Network whoLiving Labs inparticipated at the 3rd Annual LLiSA Workshop at Rhodes University,African ContextEastern Cape, South Africa (20 - 21 June 2011), organised by the
Siyakhula Living Lab, a successful Living Lab requires a strategic,

mutually beneficial partnership between a minimum of two key stakeholders (e.g. government, industry/business, research/academia, community) with complementary expertise and experience, a common vested interest in the outcomes of enabling users (community) to actively participate in the research, development and innovation process, and at least one stakeholder ensuring the necessary methodological rigor is applied so that results are valid.

There was universal acceptance that the minimum requirement for a successful Living Lab in an African context includes a clear focus/vision, credible community champion(s), the potential for sustainable community development and a strong sense of community ownership. Africa has particular challenges in relation to rural socio-economic development and sustainable quality of life, due to the current state of evolution of infrastructure, educational and employment opportunities and the resultant migration - particularly of youth, to urban environments and sometimes to other countries or even different continents. The multi-stakeholder partnerships on which Living Labs are based can provide the necessary foundation for addressing some of these challenges, but only when communities are fully engaged.

Based on an integrated developed and developing country perspective, Herselman and Cunningham [2011] propose this definition: "Living Labs are environments, a methodology or an approach which caters for user-driven open innovation within real-life rural and urban settings/communities, where users can collaborate with multiple committed stakeholders (whether NGOs, SMMEs, industrial, academic/research, government institutions or funders) in one or more locations, to become co-creators or co-designers of innovative ideas, processes or products within multidisciplinary environments. Successful deployments can result in improved processes or service delivery, new business models, products or services, and can be replicated (with necessary socio-cultural adaption) to improve overall quality of life and wider socio-economic impact (including entrepreneurship) in participating and other communities".

In the sub-sections below, a representative sample of African (and European) Living Labs are briefly profiled to illustrate the diversity of Living Labs related activities that already exist across Africa and the different forms and focus that Living Labs can take.

2.2 African Living Labs Case Studies

Evolution of

Formal and

Informal Living

Labs in Africa

This section presents a representative sample of some of the formal and informal Living Labs that have been established in recent years in Africa. It is clear that each Living Lab has evolved over time based on a clear focus and commitment from both the instigators and communities involved, with limited funding at national level from funders and a high

level of support from volunteers. Some of these Living Labs are still functioning, while others were project based (like many of those established in Europe in recent years), and ceased operating when project funding ended. Some of the emerging Living Labs do not have all the necessary Living Labs characteristics, but have been identified nationally as having potential.

As the authors are made aware of other African Living Labs at different stages of development through the current consultation process, the white paper will continue to be updated.

2.2.1 Case Studies from Southern Africa

There are currently a number of operational Living Labs as well as emerging Living Labs in South Africa, Mozambique, Mauritius, Lesotho and Botswana.

Open-Ended Engagement with Community or Project Approach Two different approaches are evident across the operational and emerging Living Labs to date: an open ended engagement with one or more communities (physical or virtual); or a more project oriented approach with a specific focus and target end date.

While there are a number of Living Labs based in South Africa, it is important to remember that because of the motivations of their founders and target communities (which are clearly informed by their experiences, culture and local circumstances), and their location in different provinces of this very large country, they are often addressing very different requirements.



Diagram 13 – Living Labs in Southern Africa

LLiSA has recently undertaken a Living Labs Network Case Study³³ to highlight the key features/characteristics of five Living Labs (all current members of the LLiSA Network) located in South Africa. One of the common drivers noted for these Living Labs is the strong focus on co-creation with rural and other disadvantaged communities, and leveraging

³³ LLiSA Case Study Report: Living Labs in South Africa, Hendri Coetzee & Ina-Mari du Toit, July 2011

community-based technological solutions, in tandem with innovation-driven research, development and training in relation to community wellbeing, education and social media.

2.2.1.1 Siyakhula Living Lab, South Africa

Siyakhula Living Lab³⁴ is based in the Eastern Cape, South Africa and was established in 2005 by stakeholders from academia (i.e. Rhodes University and the University of Fort Hare's Telkom Centres of Excellence), industry (i.e. Telkom, Saab Grintek, Tellabs, Comverse and Easttel), government (DTI THRIP Programme³⁵, DST and Finland Partnerships) and the Dwesa community. A strong trust relationship with the Dwesa community had previously been established as a result of a successful land restitution claim facilitated by Rhodes University.



Diagram 14 – Infrastructural Model of Siyakhula Living Lab

Integrated R&D and Training Approach to Address Communication Challenges in Rural Communities The Siyakhula Living Lab takes an integrated research, development and training approach to address the communications and accessibility challenges experienced by remote rural communities (e.g. e-business and basic Internet connectivity, access via GSM and WiMAX, VSAT and Digital Access Nodes). It is primarily focused on developing and field-

³⁴ <u>http://siyakhulall.org/</u>

³⁵ Department of Trade and Industry, South Africa - Technology and Human Resources for Industry Programme

testing a robust, cost-effective and integrated e-business/telecommunications platform. It is currently rolling out communication services and IT training at local schools, used as points-of-presence for the community's IT needs. During 2010 a spinoff technology provider (Reed House Systems³⁶) was established with the support of SAFIPA. It aims to replicate implementation of the e-business/telecommunications platform (now called Teleweaver) tested in the Siyakhula Living Lab in other marginalized communities. The Siyakhula Living Lab evaluates itself through peer review (e.g. publications, student outputs) and - with the support of LLiSA, is currently developing continuous evaluation and impact assessment tools.

The Siyakhula Living Lab has been supported by COFISA (2008 - 2009) and SAFIPA (2010 - 2011) - Programmes co-funded by Ministry of Foreign Affairs Finland and RSA Department of Science & Technology. It also received significant funding from the Telkom Centres of Excellence in Universities of Fort Hares and Rhodes. If Reed House Systems is successful, it will become a major source of funding for this Living Lab, thus supporting sustainability.

2.2.1.2 Limpopo Living Lab, South Africa

ICT as Enabler for Socio-Economic Developments **Limpopo Living Lab** is focused on the development of ICT as an enabler of socio-economic development and ICT as a production sector through innovative solutions in partnership with key stakeholders. It has evolved over a number of years with the initial feasibility study

being undertaken in 2006 and the initial Living Lab launched in 2007 in tandem with the Provincial Information Society Program in the Republic (INSPIRE). It is driven by Limpopo Development Enterprise (LimDev), the Limpopo Provincial Government's economic development enterprise as part of its business unit since 2011, with a primary focus on assisting the Limpopo Provincial Government with the implementation of its Limpopo Employment, Growth and Development Plan (LEGDP). Stakeholders include citizens, government, training institutions, academia and industry. LimDev is the Limpopo Provincial Government's role to create economic growth in Limpopo it also focuses on ICT as an enabler of socio-economic development and as a production sector through innovative solutions in partnership with key stakeholders.

The Limpopo Living Lab integrates an incubator, business and ICT-related training, other education and community-based projects as well as innovative solutions (e.g. new business possibilities and technology applications) and eServices to achieve its goals. The Living Lab has projects across the Province, which focus on ICT training, business incubation, open-source software and PC refurbishment. Some of the projects planned for 2011/2012 include

³⁶ <u>www.reedhousesystems.com</u>

creation of a Technology Innovation Hub, and establishment of a PC refurbishment centre, PC manufacturing plant and an open-source software centre.

Previously supported through programmes co-funded by the Ministry of Foreign Affairs Finland and the Department of Science and Technology, the Limpopo Living Lab is partially funded through government grants. It also aims to generate income through service provision, commercialising the results of projects and the development of an affordable broadband infrastructure in the long term. The Limpopo Living Lab with the support of LLiSA, plans to conduct an impact analysis in the future on all the programmes and projects implemented.

2.2.1.3 Reconstructed Living Lab (RLabs), South Africa

Community Transformation Through Use of Social Media and ICT Training **Reconstructed Living Lab**³⁷ (**RLabs**) was established in a disadvantaged part of Cape Town, Western Cape in 2007, which is plagued by gang activity and drug abuse and has very high levels of unemployment. Based on the solid foundation of community trust and social capital established over a considerable period of time by the father of one of the founders, and with initial support from CPUT (Cape Peninsula University of Technology), RLabs has evolved rapidly based

on the commitment of the targeted communities and the promoters. RLabs now employs 18 people full-time and also has a team of 18 volunteers, working on a number of programs focused on community transformation, up-skilling and empowerment.

RLabs uses a value-based model to develop and train people in disadvantaged communities in the use of ICT and social media (e.g. Facebook, Twitter and others), focusing on using innovative ICT solutions to address social problems in communities. RLabs carries out work in a number of distinct areas, with the RLabs Academy at the core, which takes groups of 12 - 20 people through a social media and web literacy training programme (two hour sessions over twenty weeks) delivered by a team of trainers. To date, on average five out of each group that has successfully completed the RLabs Academy have been taken on as volunteers, who contribute in training subsequent groups. The active involvement of the community in training users, tends to attract more participation.

An important part of the community ownership culture that has developed around the Academy is that participants voluntarily offered to bring snacks to share with other participants, in part as an exchange of value, as they do not pay for the training received. This is a significant sign of ownership for people living in poverty. Based on community feedback, some classes have been specially designed around women, with both women trainers and trainees, as some members of the community find this more comfortable for cultural reasons.

³⁷ <u>http://www.rlabs.org/</u>

The Innovation Incubator is currently primarily focused on internally generated ideas, but is open to incubating ideas generated by graduates of the RLabs Academy. The RLabs Research Institute is currently focused on providing access to grass roots communities by conducting research and development for government agencies, commercial businesses, foundations, academia and other organisations. RLabs Products and Services are currently selling social media consulting and online services, based on an internally created product, which is in the process of being commercialised. RLabs has established relationships internationally with a number of prospective or existing living labs and plans to roll out a number of products and services in cooperation with these potential partners on a global scale by 2012.

RLabs uses a continuous evaluation system through online feedback from those included in its large network (e.g. training participants, different partners). In December 2009, RLabs was formally established as a Section 21 Company (not-for-profit organisation). The two primary promoters do not currently draw any income from RLabs, which has allowed RLabs to grow much faster than would otherwise have been possible. The promoters currently generate income from licensing the JamiiX platform, which was developed by a spin-off company. This and income from JamiiX will also support the future evolution of RLabs, as RLabs has a financial stake in the spin-off company.

The promoters are true social entrepreneurs, with a strong vision for what they are trying to achieve, both locally and internationally, and have established links with like-minded individuals abroad. RLabs initially received support through COFISA to develop a business plan and feasibility study and later seed funding from SAFIPA to commercialise JamiiX (the COFISA and SAFIPA Programmes were co-funded by Ministry of Foreign Affairs, Finland and Department of Science and Technology, South Africa). RLabs is a member of the LLiSA Network and works in partnership with Cell-Life (an NGO based in Capetown) and VodaCom.

Project-based Living Labs, South Africa

2.2.1.4 Sekhukhune Rural Living Lab, Overture Living Lab & PatHS Living Lab

SAP Research Living Labs are based on short to medium term projects aimed at developing and testing technologies for emerging economies (e.g. enterprise development, business software systems). SAP Research Pretoria was established in 2009 in Gauteng Province by SAP in partnership with the Meraka Institute (CSIR) with the objectives to Research and develop new ICT solutions for Emerging Economies; measure and validate the social and economic impact and investigate methodologies, technologies and techniques for Emerging Economies. The Living Lab methodology leveraging user-centred, open innovation, real environment and multi-stakeholder involvement is well aligned with these objectives. To date SAP Research in South Africa has lead three Living Labs: *Sekhukhune Rural Living* *Lab/Rustica Living Lab*; *Overture Living Lab* and *PatHS Living Lab*. SAP is a member of the LLiSA Network.

Collaborative Procurement Service for Rural SMEs

Sekhukhune Rural Living Lab³⁸ was launched under the FP6 cofunded C@R (Collaboration at Rural) project and developed the initial collaborative procurement service system for small scale retailers in rural communities ('Spaza' shops) piloted from 2008 to

2009. Building on the lessons learnt from the C@R project, the **RUSTICA³⁹ project**, which started in 2010 aims to improve the collaborative procurement system through the introduction of smart phones, the use of mobile Internet and by collaborating with various larger retail providers that can offer a substantially larger product range. Various services such as micro financing and cashless payments will be introduced to facilitate and enhance the overall procurement process. Impact studies will be conducted to study the effect of these interventions on the socio-economic development of the environment. The research undertaken within the RUSTICA project is supported by SAP Research, the SAP/Meraka Unit of Technology Development and Deutsche Investitions- und Entwicklungsgesellschaft mbH Healthcare and Trade in Rural Africa.



Diagram 15 – External Architecture of Business Model

The Overture and PatHs Living Labs have both fulfilled their original objectives and are no longer operational. A short summary of their operational focus is provided below as examples of previous project-based living labs work undertaken in Southern Africa.

³⁸ <u>http://www.c-rural.eu/Southafrica-LivingLab/</u>

³⁹ NGASSAM E.K, KANDIE W, RABBOLINI G, *Towards a Mobile eProcurement System for Small Scale Retailers in Rural South Africa*, In IST-Africa 2011 Conference Proceedings, Paul Cunningham and Miriam Cunningham (Eds), IIMC International Information Management Corporation, 2011, ISBN: 978-1-905824-24-3

Mobile Business Services for Very Small Enterprises The **Overture Living Lab**⁴⁰ was established in October 2009 (and ended in December 2010) with the specific purpose to support the design process for Mobile Business Services for Very Small Enterprises (VSEs) in Emerging Economies and to evaluate it in a real-world

scenario. The project focuses on how very small businesses in the plumbing industry can benefit from service oriented mobile phone related software platforms and services in a costeffective and efficient manner. SAP Research in collaboration with Vodacom, CashBuild, the Institute of Plumbers of South Africa, and four plumbing businesses, worked together to design, develop, and evaluate new solutions, that address the different culture, language, and technology needs and ICT literacy levels. Through constant feedback from users from the conceptual to implementation phase, these solutions consider business requirements, user ethnographies, hosted mobile business platforms, novel mobile user interfaces, and alternative financial business models to help ensure affordability of the final solutions.

User-Friendly Patient Management System

The **PatHS** (**Patient Health System**) **Living Lab** was undertaken in collaboration with University of the Witwatersrand's School of Public Health and with the support of the Provincial Department of

Health and Social Services in Mpumalanga, focused around three primary healthcare clinics – Agincourt, Xanthia, and Thokozani – in the Bushbuck Ridge Municipality in South Africa. Starting in January 2009, the project was focused on understanding health clinic business processes and the development of a user-friendly patient management system for chronic diseases to improve primary healthcare systems in rural communities. Wider user involvement included neighbouring clinics, private healthcare providers, and a district and regional hospital. The official end of the project was 31 March 2010 after which it was envisaged that Mpumalanga Department of Health & Social Services would take ownership of and responsibility for the system to ensure sustainability of the Living Lab. This unfortunately did not materialise and the PatHS Living Lab ceased operations.

2.2.1.5 Motataisi Living Lab, Lesotho

Service Delivery in Rural Communities The Motataisi Living Lab, Lesotho commenced as a pilot at Ha Tsolo, a community on the outskirts of Maseru in 2009 based on cooperation between the National University of Lesotho and

Meraka Institute, CSIR, South Africa funded through the Digital Doorway Literacy through Unassisted Learning Project. This pilot was based on leveraging the social entrepreneurship concept to fill gaps in service delivery for rural communities. The Motataisi Foundation was

⁴⁰ SMIT D, HERSELMAN M, ELOFF J.H.P, NGASSAM E, VENTER E, NTAWANGA F, CHUANG C, VAN GREUNEN D, *Formalising Living Labs to Achieve Organisational Objectives in Emerging Economies*, In IST-Africa 2011 Conference Proceedings, Paul Cunningham and Miriam Cunningham (Eds), IIMC International Information Management Corporation, 2011, ISBN: 978-1-905824-24-3

established as a NGO in 2009 based on a belief that the Digital Doorway could be used as a model to support networks and online resources to assist community capacity building.

The Digital Doorway (created by CSIR) consists of a steel terminal, server and broadband satellite multicast solution for the downlink and GSM Cellular GPRS backhaul to facilitate maintenance. The Digital Doorway provided information services to the local community and facilitated interaction with technology to build capacity. It was located in close proximity to the community school and football grounds and used extensively by both children and youth to transfer information to the community and improve computer awareness and literacy. This pilot was used to identify practical uses associated with using the Digital Doorway in rural communities. While the device is still present in the village, it is currently not operational.

Emerging Living Labs, Southern Africa

2.2.1.6 Southern African Regional Mobile Application Laboratory, South Africa

Mobile Content and Applications In September 2010, two African Regional Mobile Application Laboratories were announced by InfoDev under the "Creating Sustainable Businesses in the Knowledge Economy Programme",

as a public-private partnership between the Government of Finland, Nokia, and infoDev / World Bank. Each Lab will provide a hub for companies and experts to collaborate to develop locally relevant mobile content and applications.

The Southern African mobile application hub⁴¹ is co-hosted in South Africa by Meraka Institute, CSIR, Innovation Hub, Innovation Lab and Ungana-Afrika. Financial support is provided by the Department of Science and Technology (DST) South Africa and infoDev.

mLab South Africa was officially launched in Pretoria on 15 September 2011⁴². There is a huge business opportunity for mobile services in Southern Africa. The mLab will provide networking and training opportunities, support for the development of a viable business model, mentoring, subsidised office space, and technical and financial support to assist mobile entrepreneurs through the start-up phase. While the region's mLab hub is in Pretoria, a number of satellite offices are planned throughout the region, including in Cape Town. During the preparation phase for the official launch mLab Southern Africa ran training events in Pretoria and Cape Town, supporting over 80 mLab members.

⁴¹ http://www.mlab.co.za/about/

⁴² http://www.mlab.co.za/mlabsa_launch/

2.2.1.7 North-West Living Lab, South Africa

Community-based R&D North-West Living Lab⁴³, South Africa was established by an entrepreneur in 2008 as a research practise (Research Logistics) and since 2010 has focused on community-based research and development from a wellness perspective. It has a close working relationship with the North-West University (NWU) and assists LLiSA and the NWU with research-related services. A base line study was undertaken between June 2010 and March 2011 in 38 pre-selected communities in North-West Province to identify future community interventions and engagements based on local needs. The North-West Living Lab is currently developing and refining a community development toolkit that includes e-services technology and asset-based social interventions to address identified needs in the province. It evaluates itself through client feedback and an internal evaluation model.

The North-West Living Lab is in the process of developing into a Living Lab and is funded through research and commercial assignments including community needs assessment studies. It has trained over 70 field workers in the collection of community-based data. Wellness in this context refers to community engagement to identify areas for economic growth and developing strategies to support capacity building. From a community context the North-West Living Lab focused on strengthening areas linked to supporting economic prosperity, social justice, adequate health and social services, low crime, adequate housing, clean environment and support of community structures (using technology, e.g. e-applications as catalyst for change).

During June 2011, North-West Living Lab in cooperation with Meraka Institute, CSIR introduced a Digital Doorway in the Khuma and Kopela communities to provide information services to the local community and facilitate interaction with technology to build capacity.

2.2.1.8 awareNet Living Lab, South Africa

Mesh Networks to Support Community of Learners

awareNet Living Lab⁴⁴ was established in late 2009 in Grahamstown, Eastern Cape, South Africa and addresses areas with no or interrupted Internet connectivity. awareNet's technology can fill that gap by functioning in mesh networks as well as the regular Internet, with local

servers synchronising content whenever possible, e.g. at low cost times at night. awareNet is focused on developing an online community of learners (including youths from disadvantaged or impoverished backgrounds) and teachers from deep rural to peri-urban and urban areas anchored in an online social network providing educational content (including life skills and autodidactic learning) and creative space for self-presentation and collaborative work by all

⁴³ <u>http://llisa.net/living-labs/north-west-living-lab/</u>

⁴⁴ <u>http://awarenet.org.za/awareNet-background</u>
learners. awareNet is collaborating with the Department of Education and researchers in the Departments of Anthropology and Computer Science in Rhodes University.

The developer of the awareNet software (eKhaya ICT) is creating a product out of awareNet for national and international distribution via third-party NGOs and governments. Activities are currently funded through donations, product development and collaboration with local and national government, NGOs and other community projects. The Village Scribe Association, the overseer of the awareNet Living Lab, approaches schools especially in the Eastern Cape area to get them involved and is also approached by schools in the Eastern Cape and elsewhere who want to take part, i.e. learners and teachers may join the network by request. The Village Scribe Association certifies that only learners and teachers will be added to the network and provides introductions into the usage of the hardware and the software if necessary.

There are currently 30 Eastern Cape schools registered on awareNet of which about 10 are regular users, as well as a school in Uganda. The most active schools are Nathaniel Nyaluza PSS, Benjamin Mahlasela SS, CM Vellem HPS, Mary Waters HS, Nombulelo SS and Victoria Girls HS. The following benefits have been identified: learners gain experience on how to use computers, Internet and networking software; schools with computer labs but without Internet can use and teach networking software; teachers can use awareNet as a motivator for learning in general and specifically reading & writing and learning a foreign language (English); learners experience self-determination in what they express, publish and learn online; learners can network locally and internationally to raise awareness for their situation as well as identify life options; learners can transfer their experience to their families, thereby raising interest in the community in developing towards a digitalised community.

2.2.1.9 Maputo Living Lab, Mozambique

Support Entrepreneurship at Community Level Through Bilateral Exchanges of Expertise The **Maputo Living Lab**⁴⁵ started in January 2011 based on a technology cooperation agreement signed between the Government of Mozambique and Province of Trentino, Italy, which is providing funding to cover operations for three years. The Maputo Living Lab aims to improve competences and

stimulate developments through the use of ICT and ultimately support entrepreneurship at community level, launch joint ventures and attract international investments. While initially the Living Lab will focus on the rural region of Manhiça, a district of the Province of Maputo, the ideas and applications to be tested are also relevant nationally. Activities include: Research

⁴⁵ CIAGHI A, VILLAFIORITA A, CHEMANE L, MACUEVE G, *Stimulating Development through Transnational Living Labs: the Italo-Mozambican Vision*, In IST-Africa 2011 Conference Proceedings, Paul Cunningham and Miriam Cunningham (Eds), IIMC International Information Management Corporation, 2011, ISBN: 978-1-905824-24-3

projects to address rural community needs; Incubation to support start-up companies and facilitate spin-off entities developing products and services based on local requirements; Training (including ICT Summer Schools) and Internships; Exchanges of researchers and ICT practitioners between Mozambique and Trentino; Development of applications focused on services for rural areas aligned with national priorities.

The joint operational committee incorporates a representative from TasLab⁴⁶, Fondazione Bruno Kessler and Università degli Studi di Trento in Trentino and three representatives from the Ministry of Science and Technology in Mozambique. This committee will be supported by a working group in each country, who will collaborate as a virtual team to transfer knowledge and implement the project. The local community will contribute project ideas and as act as end-users for the Living Lab's products. One core activity of the Maputo Living Lab is an annual ICT Summer School, which aims at providing Mozambican university students with hands-on know-how related to software project development and management in the context of developing countries. The 2011 Summer School is currently under preparation. The participants will have the opportunity to gain expertise through real-world examples and projects. The best students will be selected for grants to support internships with ICT companies in Trentino or participation in a Masters Programme at the University of Trento.

2.2.1.10 Community Empowerment Programme, Mauritius

Support Community
Development andThe Community Empowerment Programme (CEP) in Mauritius
was established in February 2009 to empower local communities
and NGOs to use ICT for development, democratize access to
information, stimulate the development of local content and
creativity on the Internet and to develop capacities and partnerships
of local actors for service delivery to communities.

The CEP incorporates a number of complementary initiatives including the establishment of regional Computer Clubs, development of a Community Web Portal; establishment of Public Internet Access Points (PIAPs) in Post Offices; empowering local communities with ICT skills through the Universal ICT Education Programme (UIEP); the Cyber Caravan Project; and stimulating the development and production of local Internet content. It is implemented by the National Computer Board (NCB) - the IST-Africa National Partner for Mauritius, a parastatal body under the aegis of the Ministry of Information and Communication Technology (MICT).

Each initiative involves a multi-stakeholder approach. The NCB is working in close collaboration with the Ministry of Youth and Sports, the Ministry of Gender Equality, NGO's, youth centres, women centres, Microsoft and Mauritius Telecom to set up the Computer Clubs.

⁴⁶ <u>http://ptl.taslab.eu/iniziativa</u>

The development of local content and applications for the Community Web Portal is being undertaken by NCB in cooperation with District Councils and representatives from various villages. NCB has partnered with the Mauritius Posts Ltd and ICTA (ICT Regulatory Authority of Mauritius) to establish the Public Internet Access Points (PIAPs).

The CEP is being financed as a public-private-partnership (PPP) with participation to date from UNDP, Microsoft, ICTA and the Mauritius Telecom Foundation. Additional funding is required to complete the full implementation of CEP. Microsoft has funded the establishment of Computer Clubs in youth centres and women centres. As part of their Corporate Social Responsibility Programme, Mauritius Telecom Foundation is funding the establishment of 150 Computer Clubs in Social Welfare, Community and Day Care Centres. UNDP provided funding to develop the Community Web Portal and ICTA is funding the set up the PIAPs.

To date, over 250,000 people have used the facilities provided via the forty Computer Clubs in Youth Centres and Women Centres across the island. Each Computer Club typically consists of 3 Net PCs with a broadband (ADSL) Internet connection. All applications accessed by the Net PCs are stored centrally, which makes overall management and control (Internet access, filtering and anti-virus updates) easier. The second phase to set up Computer Clubs in Social Welfare Centres, Communities Centres and Day Care Centres is currently underway.

The design and development of the Community Web Portal has been completed. 80 villages have provided content to date and the gathering of content from the remaining villages is ongoing. The Portal also provides a marketing platform for businesses/individuals to enable people in different regions/localities to advertise their services. 94 Public Internet Access Points (PIAPs) have been set up and more than 70,000 users have used these facilities to date.

The Universal ICT Education Programme (UIEP) and Cyber Caravan Project are focused on imparting computer skills to students, workers, unemployed and the population at large through the internationally recognised Internet and Computing Core Certification (IC3) certificate. IC3 has been developed by Certiport Incorporation (USA). The IC3 course is 45 hours in duration and is delivered in the computer labs of 55 State Secondary Schools after school hours on week days and during weekends. It consists of the following three modules: a) Computing Fundamentals (Computer Hardware, Computer Software and Using an Operating System); b) Key Applications (Common Program Functions, Word Processing Functions, Spreadsheet Functions, Presentation Software) and c) Living Online (Networks and the Internet, Electronic Email, Using the Internet, The impact of computing and the Internet on Society). To date, more than 140,000 participants have completed the training.

The NCB operates three Cyber Caravans with Internet connections to provide basic ICT training to various segments of the community. Training is provided based on people's needs,

regardless of their age or education background. The Cyber Caravan Project aims to make IT facilities available in all regions in Mauritius, targeting children, students, unemployed, women, staff of private organisations, planters, farmers and senior citizens and especially those who do not have a computer. The ICT training is conducted in social welfare centres, community centres and civic associations' premises. To date, more than 100,000 persons have been trained in the NCB's Cybercaravans in ICT Awareness and IC3 courses.

2.2.1.11 NCB Incubator Centre/ Technopreneurship Programme, Mauritius

Support Entrepreneurship & Establishment of Technology Lab through Public Private Partnerships The National Computer Board (NCB) set up its ICT Incubator Centre in 2003 to promote entrepreneurship in the ICT sector by supporting start-ups through the provision of logistics and business support. The Centre provided assistance to 50 Companies, of which 26 benefited from the services and

facilities of the Incubator Centre and 11 successfully graduated. The Centre organised an Entrepreneurship Development Programme to provide information on support, facilities and available financing to start a business in the ICT sector, and a Technology awareness programme to empower all SMEs to enhance efficiency, performance and productivity through the use of ICT. The Centre also organised Seminars, Regional Incubation Manager Training in collaboration with InfoDev, Sensitisation Campaigns, Open Days and participated in various local fairs to promote entrepreneurship in the ICT Sector.

While a government initiative, the ICT Incubator Centre obtained \$100,000 World Bank funding under the InfoDev ICT Incubator initiative (June 2004 to October 2007) to provide technical assistance and capacity building to the ICT Incubator Centre.

To encourage ICT related entrepreneurship, in 2011 the National Computer Board transformed its NCB ICT Incubator Centre into a Technopreneurship Programme in partnership with the Microsoft BizSpark team. The Technopreneurship Programme is based on a multi-stakeholder partnership model and aims to facilitate access to world-class tools and technologies to help entrepreneurs to develop and bring innovative solutions to market, promote software development and innovative projects, foster entrepreneurship and create employment in the ICT Sector. Start-ups are also given advice on how to write their business plan, how to start their business and about the various financial schemes available for start-ups in the ICT sector. The Technopreneurship Program is both rural and urban in focus and participants are ICT professionals. There has been a good response to date with several applications submitted to join the BizSpark program and one new start-up. There will be a number of technical training sessions, with the first focused on Mobile Applications. The Technopreneurs will be provided with facilitators and lead technopreneurs to provide guidance in developing their business plan, prototypes and project. To help technopreneurs develop their prototypes, a Technology Lab is being established where all the latest tools and technologies will be made available.

The Program will also target the community in general with the setting up of the Virtual/Semi Virtual incubation facilities. The Virtual incubation will provide incubation facilities to a larger group of the Mauritian population who have started their business from home. The virtual incubators can also have access to the shared facilities provided by the physical incubation centre. The virtual system can also provide a pool of online mentors.

The Technopreneurship model is partly financed by the Government but NCB is still looking for funding towards the implementation of a Technology lab and a Technopreneur Centre.

2.2.1.12 Positive Innovation for the Next Generation (PING), Botswana

Youth Engagement in Mobile Healthcare **Positive Innovation for the Next Generation (PING)**⁴⁷ is a youth led organization based in Gaborone, that implements health or youth related technology projects with intensive high school-age

and college IT mentorship programs. PING's goal is to help address health and development problems simultaneously by using technology in an innovative way. While headquartered in Botswana, the organization has a regional focus in terms of activities and aspirations.

While Botswana has one of the highest cell phone densities in Africa (over 140%), it also has some of the highest HIV and TB prevalence in the world and a dramatic shortage of doctors and other healthcare workers. PING has forged partnerships with the Ministry of Health, MASCOM (largest network provider in Botswana) and Hewlett Packard to increase the efficiency of existing interventions and to create innovative solutions for HIV/AIDS, TB and other health issues. These partnerships allow the partners to participate in the study designs when technological interventions are introduced and to see the results first hand.

PING believes that this fusion of simultaneously running youth and health technology projects and cooperating with the public and private sector to create mentorship programs, is a way of achieving sustainability by passing on the skills needed to maintain and create these projects to Botswana's young population and inculcating a quest for lasting social change.

2.2.1.13 Learning and Living Community Program, University of Botswana

Engaging and Supporting Students LLC (Learning and Living Community)⁴⁸ is a program implemented by the Department of Student Welfare at the University of Botswana, which engages students, staff and the

⁴⁷ www.pingsite.org

⁴⁸ www.ub.bw/info.cfm?pid=490

community in integrating academic studies with learning outside the classroom, while helping students from across the country acclimatize themselves. Planned activities focus on Social and Recreational, Academics/Careers, Safety and Security, Personal Wellness and Development.

LLC supports students in participating in academic events outside the classroom, developing relationships with students, staff, alumni and community support groups, facilitates networking with students from different backgrounds, and improving life skills by developing competencies. A key goal is to build an institutional culture in the University of Botswana that values engagement, integrative learning and improve the overall student experience.

2.2.1.14 Local Enterprise Authority (LEA), Botswana

Developing a NationalThe Local Enterprise Authority (LEA)⁴⁹ is focused on supporting
entrepreneurial and SMME development in Botswana. As well as
providing business development services, training and mentoring,
LEA promotes linkages between emerging SMMEs, Government,

existing SMMEs and larger industrial players, to facilitate procurement opportunities.

2.2.1.15 Centre for Scientific Research, Indigenous Knowledge and Innovation (CesrIKi), University of Botswana

SupportingCoordinated by the Department of Environmental Science,InterdisciplinaryCESRIKI⁵⁰ exists as part of the University of Botswana's strategicmove to foster convergence of complementary disciplinaryapproaches to addressing developmental and societal problems

through the promotion of indigenous knowledge systems and innovation. CESRIKI understands that indigenous knowledge systems (IKS) are a vital source of knowledge for development and innovation. CESRIKI provides a framework to foster an interdisciplinary research approach to these challenges, leveraging research capacity inside and outside UB.

Proposed Living Labs, South Africa

2.2.1.16 Nongoma Mobile Rural Living Lab, KwaZulu-Natal, South Africa

Support SMEs in
Rural CommunitiesNongoma Mobile Rural Living LabLiving Lab51 52 is a concept for an emergingLiving Lab focused on supporting communities & SMEs located in

49 www.lea.co.bw

⁵⁰ www.ub.bw

⁵¹ MUTANGA MB, DLAMINI I, CHANI T, NDLELA N, ADIGUN M, *Living Lab: A Potential Change Catalyst for Development in Nongoma*, In IST-Africa 2011 Conference Proceedings, Paul Cunningham and Miriam Cunningham (Eds), IIMC International Information Management Corporation, 2011, ISBN: 978-1-905824-24-3

⁵² NDLELA N, MUTANGA MB, MUDALI P, ADIGUN MO, *Deploying Mobile Rural Living Lab in Nongoma*, In IST-Africa 2011 Conference Proceedings, Paul Cunningham and Miriam Cunningham (Eds), IIMC International Information Management Corporation, 2011, ISBN: 978-1-905824-24-3

Nongoma, one of the largest districts in KwaZulu-Natal province, with over 360 settlements, of which 93% are rural. The Nongoma Living Lab proposes to use mobile devices to evaluate concepts and prototypes in real-life settings. Mesh routers will be strategically deployed to provide maximum geographic coverage, with users able to access services anywhere within the network. Internet gateways and other services such as printers will be installed at schools and other public institutions. This proposed Living Lab can provide a catalyst for district based ICT-based developments supporting education and community development. The Department of Computer Science, University of Zululand also propose to leverage the GUISET Grid-based infrastructure to support SME e-commence activities. Stakeholders include the Nongoma Community (Nongoma Municipality, schools, Government Departments, Nongoma SMMEs and entrepreneurs); Department of Computer Science, University of Computer Science, University of Computer Science, University of Computer Science, University of Computer Science, University, schools, Government Departments, Nongoma SMMEs and entrepreneurs); Department of Computer Science, University of Computer Science, University of Zululand; and industry.

The Nongoma Mobile Rural Living Lab proposes to focus on: ICT infrastructure suitable for Nongoma and similar rural areas; Network planning, deployment and optimization in resource constrained societies; ICT infrastructure management in rural communities; Social factors, ICT adoption and ICT training methods for rural areas; Provision of services through mobile devices and Sustainability of ICT projects in rural areas. At this stage the University of Zululand is identifying funding mechanisms to commence implementation of this Living Lab.

2.2.1.17 Nelson Mandela Metropolitan University Living Lab

Support Healthcare Systems in Urban Areas

Nelson Mandela Metropolitan University Living Lab is a concept for an emerging Living Lab to be located in Motherwell, Port Elizabeth, Eastern Cape, focused on supporting healthcare

systems. Based on the portfolio of services (prevention, treatment, case and support) provided by the Emmanual Haven Project to communities affected by HIV and AIDs, it comprises of five clusters – Health cluster (VCT Clinic, ARV Clinic, Day Care Centre, Step Down Centre, Home-based Care, Eye Clinic), SMEE Cluster (Shoe Manufacturing, Small Business Corporate Services), Horticulture Cluster (Commercial Farming, Open Field Farming, Family Tunnels SMME Cluster), IEC Cluster (Creche, OVC School, Radio, Bible School, Computer School, Research Unit Horticulture) and Corporate Services (Facilities Management and Financial Accounting/Legal Services). Participating stakeholders include Nelson Mandela Metropolitan University (Dept. of Engineering, IT, Nursing Science, Education), Emmanual Haven Foundation and local Communities. Activities to be supported during the first two years have been identified and funding mechanisms are being explored. This project and specifically the Living Lab aims to create a research and social context that is not only relevant to the mission and objectives of NMMU, but also the broader South African community.

The project aims to use ICTs to play a catalytic role in the attainment of some specific Millennium Development Goals namely, eradicate of extreme poverty and hunger, achieve

universal primary education, promote gender equality and empower women, reduce child mortality, improve maternal health, combat HIV/AIDS, tuberculosis, diabetes and other diseases, and develop a global partnership for development.

It is envisaged that by establishing a Living Lab in the Nelson Mandela Metropolitan Metro, the innovation chasm which currently exists in South African healthcare can be addressed in a way that will recognise the NMMU's responsiveness to societal needs through collaborative and mutually beneficial partnerships at local, regional, national and international levels.

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As additional contributions are received and new Southern African Living Labs case studies prepared, the White Paper will be updated.

#### 2.2.2 Case Studies from East Africa

The section below provides a representative overview of Living Lab related initiatives and projects that have been undertaken in Tanzania, Uganda and Kenya in recent years, identified in part through IST-Africa Living Labs Workshop organised in Bujumbura (Burundi – where there is currently no Living Labs activities), Dar es Salaam (Tanzania), Kampala (Uganda) and Addis Ababa (Ethiopia). Results from these recent IST-Africa Living Labs Workshops are presented in Chapter 3.

An IST-Africa Living Labs Workshop has also been requested by the National IST-Africa Partners in Kenya to take place during 2012.

Diagram 16 below outlines the location of some of the Living Labs identified in East Africa.



Diagram 16 – Living Labs in East Africa

#### 2.2.2.1 East Africa Regional Mobile Application Laboratory

In September 2010, two African Regional Mobile Application Laboratories were announced by InfoDev under the "Creating Sustainable Businesses in the Knowledge Economy Programme" supported by Government of Finland and NOKIA. Each Lab provides a hub for companies & experts to collaborate to develop locally relevant mobile content & applications.

Support Broadband Communication Networks & eServices in Rural Communities The **m:Lab East Africa**<sup>53</sup> is co-hosted in Kenya by Nairobi iHub, eMobilis, World Wide Web Foundation and the School of Computing and Informatics, University of Nairobi. m:lab East Africa was officially launched on 16 June 2011. It provides the incubation facility for entrepreneurs and innovators in the region

with a focus on mobile technology. It aims to facilitate demand-driven innovation by local and regional entrepreneurs, ensuring that breakthrough low-cost, high-value mobile solutions can be developed and scaled-up into sustainable enterprises that address social and economic needs. Facility services include business incubation, training, consumer research and application testing. It will also assist developers and entrepreneurs to access capital to scale

<sup>&</sup>lt;sup>53</sup> <u>http://mlab.co.ke/pages/about.php</u>

their innovations and access markets and business partnerships. The lab's activities are aimed at helping to make the East Africa region a global hub for mobile innovation. It is currently running a course on mobile application development and entrepreneurship for students.

#### 2.2.2.2 @iLabAfrica Living Lab, Kenya

Support ICT Research, Innovation, Entrepreneurship & Incubation @iLabAfrica,a Research Centre at the Strathmore University in Kenya, was established in 2009 to spearhead research and innovation in ICT for the development of an ecosystem towards the attainment of the UNDP Millennium Development Goals (MDGs) and Kenya's vision 2030. The centre recognises that the

spread of ICT technologies in developing countries remains painfully slow. The increasing 'digital divide' continues to condemn a large fraction of Africa's population to ignorance, poverty, undernourishment, disease and disempowerment.

To address these challenges, the focus of @iLabAfrica is on ICT Innovation & Research, and Entrepreneurship & Incubation. The ICT Innovation & Research theme identifies the technological innovations and solutions to be developed in addressing public sector issues such as health, education, agriculture and capacity building in achieving the MDGs. The Entrepreneurship & Incubation theme seeks to provide a nurturing environment that builds on the potential of the youth to develop ICT solutions and SME businesses that work for the common good in society and reach the Base of the Pyramid.

For the past one and half years, the Internet Society (ISOC) has supported the research centre in one key project promoting ICT access in Education, '*Use of ICT in Enhancing Teaching and Curriculum delivery in marginalised Secondary Schools in Kenya*'. This project aims at developing Open Educational Resources for secondary schools, improving IT infrastructure in schools, enabling Internet/Web access (including the local communities), mentoring secondary school students and supporting teachers in the delivery of the Computer Studies course offered as part of the official KCSE curriculum<sup>54</sup> for secondary schools in Kenya. During the pilot period @iLabAfrica, (formerly the ICT for Development (ICT4D) research group, Faculty of Information Technology (FIT)) partnered with five rural secondary schools in Kenya.

The project has achieved a number of milestones during this period. These include: organising weekend school visits to supplement and support high school students, hosting two successful National Computer Science Teachers conferences, hosting two Computer Science Competitions for High School Students, creating an eLearning site, motivating and

<sup>&</sup>lt;sup>54</sup> Kenya Certificate of Secondary School Examination (KCSE) curriculum defined by Kenya Institute of Education (KIE)

encouraging school heads and principals to support the teaching of computer science in schools and working with other funders as additional support for the grant.

The project is partially funded through a number of grants including: Internet Society, HP's Innovations in Education Grant 2009, Safaricom Kenya Ltd and Google CS4HS grant.

#### 2.2.2.3 iHub Nairobi, Kenya

SupportingiHub is an open space for the techies, tech companies, creatives,Entrepreneurship &investors, and hackers in the area. The iHub space is a techIncubation thoughcommunity facility with a focus on young entrepreneurs, web/mobileOpen Innovationphone programmers, designers and researchers. It is part opencommunity work space (co-working), part vector for investors and

Venture Capitalists (VCs) and part incubator.

iHub (<u>www.ihub.co.ke</u>) has a 20MB internet connection from Zuku, hardwired and Wi-Fi, and it's freely available to any tech person in Nairobi to use once they become a green member. The space was made possible by funding to Ushahidi<sup>55</sup> by the Omidyar Network<sup>56</sup> and Hivos<sup>57</sup>. Ushahidi covers the lease, electricity and data connections.

The concept of the iHub is a first of its kind in Kenya and there are great expectations that it will spur a revolution in the technology products and services space with its core focus to give the tech community a community facility where they can bring their ideas to life. iHub is putting networks into place to give special access to entrepreneurs and startups who need space to meet with seed funders, local businesses and VCs. iHub has been working closely with people from the community with a long standing tech presence to establish an advisory group.

iHub is based on the concept of Open Innovation, the process of combining internal and external ideas and internal and external paths to market to advance the development of new technologies. The essence of iHub is epitomized by five key principles:

- Innovation For iHub to succeed it has to become a self-sustaining knowledge ecosystem, a place that will continuously appeal to great minds and produce innovative applications, systems and ideas.
- Community iHub is a place for all the stakeholders to meet, brain-storm, share ideas and collaborate. This is to be achieved through meet-ups, workshops, focus groups,

<sup>&</sup>lt;sup>55</sup> Ushahidi ("testimony" in Swahili) is a website that was developed to map reports of the 2008 post-election violence in Kenya, rooted in the collaboration of Kenyan citizen journalists – <u>www.ushahidi.com</u>

<sup>&</sup>lt;sup>56</sup> Omidyar Network is a philanthropic investment firm established in 2004 by the founder of eBay dedicated to harnessing the power of markets to create opportunity for people to improve their lives. - www.omidyar.com

<sup>&</sup>lt;sup>57</sup> Humanist Institute for Development Cooperation - <u>www.hivos.nl</u>

hackathons and competitions, bar camps, mobile boot camps and short-talks from guest speakers. iHub is a social networking nexus point where by the tech community can get to know each other and great synergy within the community thus encouraging innovation at a communal level.

- Entrepreneurship iHub's initial success was fuelled by relying primarily on local talent, to attract, develop, and retain a vibrant base of world-class talent. The goal as clusters mature and grow in complexity, is that they can take advantage of other government initiatives like Malili Technopolis or Sameer ICT park.
- Business mentoring The iHub is a place for people to share ideas, where copyright lawyers can talk to techies about their rights, where everyone can learn ways to cost effectively incorporate companies, techies can talk to their mentors either locally or via video conference links to Silicon Valley, India and the rest of the world. iHub will nurture the talents and link them with people who have succeeded in tech-prenuership.
- Research iHub is a place for problem solving and analytical thinking, to test the feasibility of a product or project based on the research findings from the systematic process the innovator utilizes.

#### 2.2.2.4 The Nailab, Kenya

*Supporting Co-Creation* The Nailab is a business incubator whose aim is to incubate small businesses and entrepreneurs. The Nailab tagline is "Where ICT meets society" as it targets businesses with the potential of improving society either through job

creation, or providing innovative and beneficial software. Participants are young, savvy entrepreneurs. They are supported by providing high speed wireless internet, office space, personalized coaching, training workshops and opportunities to meet potential clients and investors. The incubatees also benefit from an enlarged pool of network gained from interacting with each other and Nailab guests.

NAILAB (<u>www.nailab.co.ke</u>) works to enable the dynamic, intelligent and innovative members of Nairobi's tech community to transform their innovations into profitable business entities and/or service providers. The programs and initiatives help facilitate and inspire business development and also allow members to make a positive impact in institutions of learning, organizations and communities. Programs and initiatives are divided into three sections that all NAILAB incubatees participate in: Incubation, Co-creation and ICT Outreach.

Incubation services offer business development, legal advice, copyright facilitation, technological assistance, product/service implementation strategy, venture capital fundraising, marketing strategies and product packaging support. These services are offered virtually and

physically and on a full-time or consulted basis depending on the individual business requirements. The teaching format varies from a one-on-one setting to a group structure.

Co-Creation services are offered to external companies and organizations looking for a onestop ICT troubleshooting and consultation firm. NAILAB offers itself as a consultant to these entities and sub-contracts individuals within the incubator space with the expertise required to do the work. The individuals involved have an added source of income and find an opportunity expand their networks as they work on nurturing their own businesses within the NAILAB.

ICT Outreach volunteering program is a public service endeavour that benefits both the community involved and the business entrepreneur in various ways. For the community, it is an opportunity to learn new skills and acquire new technology that simplifies and improves their livelihoods through financial, health and communication technological tools. For the entrepreneur, this is an opportunity to test their products, sample user behaviour, receive immediate customer reactions and create publicity for themselves and their products.

Currently, Nailab houses 7 startups, of which two have recently secured 25,000 euro each in funding from 88mph<sup>58</sup>. One of the startups is negotiating a deal with multinationals while two are service providers with local clients. Another group of start-ups are at the prototyping stage.

While Nailab is primarily funded by the 1% Club<sup>59</sup>, they have sustainability plans in place and hope to expand these in the future. One of the ongoing plans for sustainability is "work for capital" where a solutions company that delivers high-end applications to clients for a fee has been established as part of a sustainability program. Nailab receives contracts which are serviced by Nailab Incubatees and 15% of the profits go into the sustainability program.

Some Nailab incubatees are mobile developers. Tusqee Systems developed an SMS based messaging system for schools making it possible for a school to communicate with parents, teachers, stake-holders and other members of staff via SMS messages.

M-lab and Nailab are under the banner of Afrilab, an umbrella organization that seeks to promote the growth and development of the African technology sector by bringing together technologists, developers, web and mobile phone programmers in technology labs around Africa. Organizations that have partnered with Nailab include WorkVoices, 1% Club, Accenture, Founder to Be, Rlabs (South Africa), Startup Weekend and AKVO Foundation.

<sup>&</sup>lt;sup>58</sup> A Denmark/Kenya based seed investment company focused on Startups targeting the East African mobile and web market - <u>www.88mph.co.ke</u>

<sup>&</sup>lt;sup>59</sup> A platform that connects smart development projects with people, money and knowledge around the world - www.onepercentclub.com

#### 2.2.2.5 Nguruman Maarifa Centre, Magadi, Kenya

*Supporting Rural Connectivity* Nguruman Maarifa Centre is a community resource point situated in Nguruman, which is 60km from Magadi town, about 160 Kilometers southwest of Nairobi, in an area lacking transport infrastructure. The

centre aims to improve livelihoods in this area through information sharing, documentation, exchange and protection of local, indigenous knowledge by communities with the support of field officers. Its goal is to enlighten the community on using ICT to enhance information access, content creation and skills development among rural communities.

Established in 2006, the Nguruman Maarifa Centre is the only local centre connected to the Internet. It has encouraged many community members around this area to venture into sustainable livelihood activities like mixed farming and tapping renewable energy sources like Biogas energy. Information delivered is packaged to suit the target audience. For example, if a farmer does not know how to read, the center has DVDs that can be watched by farmers to access the information required. The youth also have a stake of the center since they are able to apply for jobs online, register for colleges and visit social sites like Twitter and Facebook. Some also have learned about blogging and are now having their blogs where they are able to market Nguruman through private businesses, (http://loitasafaritrekks.blogspot.com/).

Nguruman Maarifa Centre is funded by Arid Lands Information Network (ALIN – <u>www.alin.co.ke</u>), a NGO operating in Kenya, Uganda and Tanzania, focused on knowledge sharing about small-scale sustainable agriculture, climate change adaptation, natural resources management and other livelihood issues. (<u>http://ngurumanmaarifa.blogspot.com/</u>)

#### 2.2.2.6 Map Kibera, Kenya

*Engaging Youth in Africa's Largest Slum* Nairobi. It engages young people, particularly young women and girls in the participatory digital mapping of risks and vulnerabilities in their community. Through this process young people gain new awareness about their surroundings empowering them to address critical issues. The project is helping identify safe and unsafe physical spaces, and raise awareness and offering advocacy opportunities around HIV, AIDS and other vulnerabilities.

Established in November 2009, Map Kibera (<u>www.mapkibera.org</u>) involves five steps:

• Stakeholder meetings: Implementers consider issues of gender-based violence, HIV and AIDS or related topics to identify the most appropriate map data to collect.

- Map data collection: Thirteen young mappers from the community use global positioning system (GPS) devices and open source software to create a map of safe and dangerous areas, then the data is uploaded to OpenStreetMap.
- Community consultation: Using printed maps, tracing paper and coloured pens, the mappers conduct discussions with girls and young women about safety and vulnerability, leading to better situational awareness for both girls and planners.
- Narrative media: Community Youth use videos, photos and audio to create short narratives about the issues they face, which are then interwoven into the map narrative.
- Advocacy: Quantitative and qualitative data are used for advocacy with local governments, community leaders and other decision-makers to obtain better services and protection for young people.

Results from the mapping process are used to identify physical and psychological areas of risk or vulnerability and patterns of risk perception. This publicly owned information will help keep grass-roots advocates and policy planners accountable to young people in the community.

#### 2.2.2.7 Serengeti Pilot, Tanzania

| Support Community |
|-------------------|
| Service-related   |
| Engineering and   |
| Technology-based  |
| Initiatives       |

The **Serengeti Pilot in Northern Tanzania** was established as part of the Information and Communication Technology (ICT) for Rural Development (ICT4RD)<sup>60</sup> project in Tanzania, which aimed to build and sustain broadband communication markets in rural areas. The project was initiated in 2005, with implementation commencing in 2006 and inaugurated in 2007. The project was funded by the

Swedish International Development Agency (SIDA) and executed through a partnership between the Tanzania Commission of Science and Technology (COSTECH); Dar es Salaam Institute of Technology (DIT) and Royal Institute of Technology (KTH), Sweden. The project focus was based on leveraging ICT through infrastructure sharing to build municipal broadband communication networks aimed at improving public sector service delivery with special focus on health, education and local government.

Initial services include email and Voice over IP (VoIP) to enhance communication channels as well as specific services related to e-health, e-learning and e-governance. Internet was considered a secondary service due to the expense involved. During the project life, eight Tanzanians completed Masters of Science and as part of their thesis work, contributed to the technical design and implementation. Most of the applications were developed or customised by students from the academic partners in collaboration with people from the local community.

<sup>&</sup>lt;sup>60</sup> www.itc4rd.ne.tz

The Serengeti pilot<sup>61</sup> is a broadband communication networks connecting two district capitals of Serengeti and Bunda in the Mara region, northern Tanzania. From the beginning, ICT4RD worked to secure community involvement and participation to create local ownership and leadership, hence, the local governments, the civil society organizations, and the private sector in the district are all essential partners in the implementation process. An ICT Board was established as a not-for-profit company using the Public Private Partnership model to ensure membership from government, private sector and community representatives. It oversees the ICT activities in the district, including managing the broadband network.

The pilot provides e-Governance services (district website to provide information to the public and facilitate feedback), eHealth services (district hospitals providing consultation to connected primary health centres via video-conferencing and VoIP) and eLearning services (learning resources available for students and teachers). All basic services are configured to run locally without dependence on the Internet, to reduce recurrent costs. The initial network costs were covered by SIDA. The municipalities provide funds to extend the network to cover new schools and hospital and operational costs are covered primarily from contributions provided for Internet access and services provided. The initial impact identified included increased ICT awareness in the communities, improved service delivery in the public sector, business and employment opportunities for entrepreneurs (technicians to repair computers, internet café operators, network administrators) and more timely access to information.

#### **Project-based Living Labs, East Africa**

#### 2.2.2.8 EPICS, Kampala, Uganda

Support ICT<br/>in EducationEPICS (Engineering Projects in Community Service-Learning) was<br/>established in Kampala, Uganda in 2010 as a joint project between the<br/>Aghakhan High School and Kyambogo University (providing pedagogical

expertise), the Log'el project (Non Government Organization) and the Institute of Electrical and Electronic Engineers (IEEE).

The focus of EPICS is to empower engineering student groups to work with high school students on community service-related engineering and technology-based projects, and to institutionalise this program. EPICS aims to interest more students in STEM (Science, Technology, Engineering, and Math) fields, and to reach out to females and other minorities, who are currently under-represented in these important fields. It also has the very practical goal of supporting students to leverage their theoretical engineering knowledge into skills that co-create environmentally friendly solar solutions for poor rural and urban communities. It aims

<sup>&</sup>lt;sup>61</sup> www.serengeti.go.tz

to reduce the use of fossil oil lamps, stoves and wood fuel by 90% of Ugandans, by developing low cost solar powered phone chargers and solar charging controllers.

#### 2.2.2.9 Uganda Rural Connectivity VSAT Project, Kampala

Uganda Rural Connectivity VSAT Project was established in Kampala, Uganda in 2002 as part of an ongoing international initiative by the World in Education Bank Institute's 'ICT for Education' Program and World Links (NGO) to

pilot new concepts in technology and pedagogy to integrate ICT in education in developing countries. Uganda was the first pilot country for the World Links program established in 1996.

The two-year pilot permitted fourteen geographically dispersed Ugandan high schools and one national teachers' college to gain access to high-speed Internet connectivity through the use of VSAT (Very Small Aperture Terminal) satellite dishes. The dishes and reception equipment were funded by the Bill and Melinda Gates Foundation, Schools Online (a California-based non-profit organization) provided ten schools with computer labs, networked PCs and printers, SchoolNet Uganda played a coordinating role, AFSAT Uganda Ltd handled the installation and commissioning and provided satellite bandwidth during the second year, the Ministry of Education and Culture paid for duty clearance of the equipment, while participating schools were responsible for hosting, operating costs and releasing teachers for training and staffing.

As a result, Uganda had the opportunity to accelerate the adoption of ICT resources to support learning and teacher training development, it was possible to evaluate the potential sustainability of school-based tele-centres and the potential wider impact on both the participating schools and the communities in which they exist. Finally, the project resulted in business entrepreneurs setting up ICT resources and Internet Points of Presences (PoP) in rural areas and towns as it provided a proof of concept for commercial demand.

#### **Emerging Living Labs, East Africa**

Support ICT

#### 2.2.2.10 Community Wireless Resource Centre (CWRC), Uganda

The Community Wireless Resource Centre (CWRC) was established in Supporting Wider 2006 in the Department of Electrical and Computer Engineering, Societal Impact of College of Engineering, Design, Art and Technology (CEDAT), **Telecentres** Makerere University, with support from International Development

Research Centre (IDRC, Canada). The original goal was to reduce the high cost of Internet connectivity at IDRC-supported telecentres in Kachwekano and Kabale (Kabale District), Nabweru telecentre (Wakiso District) and Lira CPAR telecentre (Lira District) by establishing community wireless networks and sharing bandwidth and costs with neighbouring institutions.

Establishing community wireless networks at the four telecentres was an innovative way of increasing Internet access in the wider communities and at the same time enabling the service be sustainable through sharing of costs related to delivery of internet access to the community. Previously such costs were being met by the telecentres who were having challenges meeting the monthly subscription charges after the project to establish the telecentres ended.

The community wireless networks were established with financial support from IDRC and technical support from IT+46, a Swedish based organisation with experience in establishing community wireless networks in developing countries. Implementation of the wireless networks was done by CWRC staff and third year undergraduate Electrical Engineering students at the Dept. of Electrical and Computer Engineering. Telecentre managers and partner representatives received basic training to enable them troubleshoot and maintain the network.

From the beginning, the telecentre managers were involved in planning and implementation of the community wireless networks. The telecentre managers have remained responsible for handling and addressing matters at their telecentres. This includes collecting the monthly dues from the network partners and remitting the monthly internet subscription charges. Indeed, an area of increasing significance is the type of business models that telecentres can use to successfully operate the community wireless networks. The CWRC and telecentres have partnered with the Economics Department at Kabale University to assess the impact of the community wireless initiative as well as to propose business models for the networks.

A key lesson learnt to date, is the need for the CWRC to also engage with end users in promoting and explaining the case for community wireless networks. This presents an opportunity for the CWRC to further incorporate Living Lab techniques into this initiative.

The CWRC research activities involve supervision, mentoring and training of students from the Department of Electrical and Computer Engineering. Students have been a mainstay in this initiative having been involved in conducting the preliminary technical inspection surveys and assessment of partners' willingness to cooperate in a shared Internet access initiative, to implementation of the community wireless networks and support to telecentre managers.

Some of the industrial training students have gone on to do their final year research projects under the supervision of the CWRC and three students have stayed on as Research Assistants with the CWRC after completing their undergraduate studies. Through their research projects, students have been able to test and demonstrate applications on the community wireless networks such as VoIP and bandwidth network management.

The CWRC is addressing a number of bandwidth-related challenges for community wireless networks through a grant from the Millennium Science Initiative (MSI) of the Uganda National

Council of Science and technology (UNCST) and World Bank. The MSI project involves supervision, mentoring and training of sixteen students (including four graduate students).

Under the Presidential Initiative for Science and Technology funding awarded to the College of Engineering, Design, Art and Technology (CEDAT), the CWRC successfully applied for a grant to examine the impact of public access to ICTs with a focus on the CWRC community wireless networks. To this end, a partnership with Kabale University in South Western Uganda was developed in order to obtain a socioeconomic expert to join the team in reviewing the wireless networks in Kabale, Nabweru and Nakaseke. Following the review, a dissemination workshop was held to draw contributions for a way forward for the community wireless networks. Participants in the workshop represented a wide range of stakeholders including telecentre users, community and local government leaders, civil society, and academia.

As an emerging program, the CWRC also seeks to build on the quality of expertise available by linkages with established programs. For example, with the MSI support, two graduate students are being exposed to advanced research environments. The objective of this exposure is to enable students acquaint themselves with experiments/simulations using advanced equipment and tools as well as to be exposed and interact with other researchers in telecommunication systems. In 2010, the first graduate student spent ten weeks at the Sentech Chair in Broadband and Wireless Multimedia Communications (BWMC) Lab at the University of Pretoria, South Africa. In 2011, the second graduate student will visit the Meraka Institute at the Council for Scientific and Industrial Research (CSIR) in South Africa.

While the community wireless networks were not established as Living Labs, their setup and operation have made use of some of the methods and techniques that emerge as best practice within the Living Labs environment. Based on current Living Labs in Africa, the focus and priorities have been on community impact, in terms of community development and empowerment, skills transfer, and support for entrepreneurial activity. As a result of participation in the IST-Africa Living Lab Workshop in Kampala in September 2011, CWRC is now going to work with the Community centres to introduce Living Labs.

#### **Proposed Living Labs, East Africa**

Mobile Public

Service delivery

#### 2.2.2.11 World Bank START Skills Living Lab, Tanzania

The World Bank Open Development Technology Alliance recently launched the Entrepreneurship and Innovation for Open Government in Tanzania<sup>62</sup> in partnership with City of Dar es Salaam, to foster ICT-

assisted public service delivery, leveraging the notion of government as technology client, and

<sup>&</sup>lt;sup>62</sup> <u>http://wbi.worldbank.org/wbi/stories/knowledge-platforms</u>

initially focusing on geospatial tools for the "Dar Es Salaam Metropolitan Development Project (DMDP) led by the World Bank's Urban Sector unit. As part of the initiative, crossdisciplinary teams of students and faculty will work with COSTECH's Innovation Hub, aiming to spawn start-ups around open government ICT applications. The World Bank, in partnership with the Dar es Salaam City Council's Community Infrastructure Upgrading Project (CIUP), Ardhi University School of Urban Planning (SURP), and Twaweza, helped pilot a new approach to urban infrastructure data collection and planning that utilizes GPS devices and free software to create dynamic, online maps. This pilot demonstrates one-way public service providers in Dar es Salaam can take advantage of low cost, widely accessible mobile and geo-spatial technology to improve public service delivery and enable data-driven government operations and policy making.

At the end of the project, various stakeholders will be brought together to explore ways the City of Dar es Salaam can leverage digital technology to lower costs and improve effectiveness. Based on data and tools generated, the World Bank's START Skills project, which is envisaged to commence by end of 2011 will take a step further and furnish teams of students with geospatial, software, and business skills needed in the context of global innovation. START skills project will use the geo-spatial data and tools generated and train student teams to build real-life demonstration applications/pilots for public services. By applying a living lab approach the student teams will work in close interaction with end-users/customers from ideation to initial market validation while preparing the demos. The training modules will be delivered via the dedicated co-creation forum established in COSTECH, Dar es Salaam by the TANZICT-project sponsored by the Government of Finland. It is envisaged that some of the demonstration applications/pilots can be nurtured further as business in the COSTECH Incubator established by World Bank's InfoDEV programme.

This pilot, which is planned to commence in late 2011, on ICT-assisted Public Service Delivery is envisioned as Module No. 1 under START Skills program. Based on this initial framework, subsequent modules for innovation and start-ups around immediately relevant themes such as education, health, banking and finance, etc. will get underway.

#### 2.2.2.12 Sustainable Donation of Medical Devices to Developing countries, Uganda

Train the Trainer Capacity Building for Specialist Medical Equipment The Department of Electrical and Electronic Engineering, Faculty of Engineering, Kyambogo University is involved in a pilot programme in Kampala, that involves UK based medical technicians training local engineers to service and calibrate medical equipment donated to Uganda. If the recipient hospital is unsure if donated equipment is

working or properly calibrated, it stands idle, because no one local is qualified to service or calibrate it.

Everyone agrees that the use of ICT for Health, or eHealth, is fundamental in health care delivery and public health practice, and that medical devices are an integral part of health care systems as they facilitate healthcare delivery, diagnosis and treatment for better patient care. However, as most medical devices are designed for industrialized countries, there are associated costs involved in incorporating these devices into healthcare systems in developing countries. Donations of such equipment allows for quicker access to sophisticated technology. Reports from World Health Organization (WHO, 2008) indicate that more than \$ 1.5 billion had been invested on medical devices for developing countries since 2001.

While ICT has been seamlessly integrated into the health sector to aid computerized data systems, medical records, clinical and administrative documentation, communication resources, telemedicine, electronic medical records, accessible over the web, no framework exists to share information on donated medical devices (Mike, 2010). As a result there is high failure rates (70%) of donated medical devices in developing countries which present a significant challenge in the fight against world diseases (Human Development report, 2007).

This proposed Living Lab framework would improve the selection of medical devices to be donated to Developing Countries, including train the trainer programmes necessary to meet the needs of the developing world. This could be used to develop a web based framework useful to donors, governments, users, biomedical engineers, and medical device industry who would like to consider donating and designing medical equipment for the developing world community.

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As additional contributions are received and new East African Living Labs case studies prepared, the White Paper will be updated.

2.2.3 Case Studies from North Africa

Some emerging Living Labs are planned in Egypt and Tunisia. To date they have not been in a position to provide a case study.

As additional contributions are received and new North African Living Labs case studies prepared, the White Paper will be updated.

2.2.4 Case Studies from West Africa

Project-based Living Labs, West Africa

2.2.4.1 Wenchi Living Lab, Ghana

Mobile Applications to Support Market Access for Cashew Farmers SAP in cooperation with the African Cashew Initiative is focused on providing solutions for market linkages and transparency within the Cashew production and processing value chain. The African Cashew Initiative is supporting cashew producers in

Benin, Burkina Faso, Cote d'Ivoire, Ghana and Mozambique to assist them in increasing their yields and quality of their products, improving business linkages with medium and large scale processing industry, brokers and traders and improving marketing strategies.

The Wenchi Living Lab in Brong Ahafo, Ghana commenced in March 2010 focused on the implementation of mobile applications to support the linkage of smallholder farmer cooperatives to sustainable markets in the cashew sector. Stakeholders include Wenchi Farmer Association, Savanna Marketing, US Peacecorps, GIZ, Fairmatch Support and MIM Cashew.

The Wenchi Living Lab is funded as a Public Private Partnership with contributions from the Bill & Melinda Gates Foundation, German Ministry for Economic Cooperation and Development [BMZ] and private partners. The expected impact is focused around increasing the farmer's income through increased production, better quality, enhanced organization; establish an African cashew processing sector; improving market linkages between farmers and processors and improving framework conditions for investments and business activities.

The project is planned to run from March 2010 to February 2012, continuation after the project phase is dependent on funding. The initial pilot phase was undertaken between March and June 2011. Further pilot phases are envisioned for 2012 and 2013 depending on available funding.

Similar Living Labs are planned in this initiative for Burkina Faso, Benin and Cote D'Ivoire.

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As additional contributions are received and new West African Living Labs Case Studies prepared, the White Paper will be updated.

#### 2.2.5 Case Studies from Central Africa

As additional contributions are received and Central African Living Labs case studies prepared, the White Paper will be updated.

#### 2.3 European Living Labs Case Studies

## Ongoing Living Labs Funded through National Government Grants and Research Projects

Living Labs in Europe have evolved over the past seven years based on national and European Policy and Innovation initiatives (including the i2010 and 2020 Policy Frameworks and Digital Agenda) that prioritised placing the user at the centre of the innovation lifecycle within real-life settings. Living Labs were

launched as test beds/pilots to measure the impact and effectiveness of research undertaken in the areas of Collaborative Working Environments, Ambient Intelligence and eInclusion.

The thematic areas were quite broad addressing WellBeing (eHealth, eInclusion, Ambient Assisted Living), e-Services in Rural areas, e-Participation (providing active input to municipal decision making) and ICT for Energy Efficiency. These Living Labs provided a mechanism to bridge the gap between technological development and market implementation by linking local experimentation environments with end users, industry and SMEs<sup>63</sup>.

# Evolution ofUnder the Collaborative Working Environments objective of FP6-ICT64, theLiving Labs inEuropeEurope(Collaboration@Rural (C@R)65, CoSpaces66, ECOSPACE67, Laboranova68and WearIT@Work69), three Coordination/Support Actions (2006 – 2008)

(CoreLabs<sup>70</sup>, CLOCK<sup>71</sup>, OpenFutures<sup>72</sup>) and a CIP ICT-PSP<sup>73</sup> Thematic Network of Living Labs CO-LLABS<sup>74</sup>, to pilot and demonstration Living Lab methodologies in the areas of e-Services in Rural areas; Collaborative Design and Engineering; Collaboration Environment for Strategic Innovation; eProfessionals and Wearable computing for mobile workers.

With the requirement to become more efficient in terms of energy and water consumption and leverage the Future Internet to address urban challenges and new ways of working, Smart City

<sup>&</sup>lt;sup>63</sup> European Commission, DG Information Society and Media, Unit F4 New Infrastructure Paradigms and Experimental Facilities. Living Labs for User-driven Open Innovation. An Overview of the Living Labs Methodology, Activities and Achievements. January 2009.

<sup>&</sup>lt;sup>64</sup> <u>http://ec.europa.eu/information\_society/activities/livinglabs/projects/index\_en.htm</u>

<sup>&</sup>lt;sup>65</sup> <u>www.c-rural.eu</u>

<sup>&</sup>lt;sup>66</sup> www.cospaces.org

<sup>&</sup>lt;sup>67</sup> www.ip-ecospace.org

<sup>&</sup>lt;sup>68</sup> <u>http://www.laboranova.com/</u>

<sup>&</sup>lt;sup>69</sup> www.wearitatwork.com

<sup>&</sup>lt;sup>70</sup> www.corelabs.eu

<sup>&</sup>lt;sup>71</sup> www.clock-project.eu

<sup>&</sup>lt;sup>72</sup> <u>www.open-futures.net</u>

<sup>73</sup> http://ec.europa.eu/information\_society/activities/ict\_psp/projects/portfolio/index\_en.htm

<sup>&</sup>lt;sup>74</sup> www.ami-communities.eu/wiki/CO-LLABS

*Transition from Living Labs to Smart Cities* Initiatives have emerged both at national and European level. Projects cofunded under CIP ICT-PSP and FP7 for the period 2009 – 2012 focused on Homecare and Independent Living; Energy Efficiency; e-Manufacturing; e-Participation and Smart Cities (Apollon<sup>75</sup>, Save Energy<sup>76</sup>, CO-LLABS, PreCo<sup>77</sup>, DEHEMS<sup>78</sup>, Fireball<sup>79</sup>, EU Platform for Intelligent Cities (EPIC)<sup>80</sup>, Open Innovation for Future Internet Services in Smart Cities (Open Cities)<sup>81</sup>, Networked Smart Peripheral Cities for Sustainable Lifestyles (PERIPHERIA)<sup>82</sup>, Smart Metropolitan Areas Realised Through Innovation & People (SMARTiP)<sup>83</sup>.)

The FIREBALL Coordination Action<sup>84</sup> (2010-2012) elaborates the perspective of living labs as innovation environments in urban areas, experimenting with the Future Internet for Smart Cities. It brings together various stakeholders and initiatives in Smart Cities, Living Labs and Future Internet to develop the concept of common resources for smart cities, including testbed and living lab facilities, and develops a roadmap and action plan towards Smarter Cities.

The over-all objective of the CO-LLABS Thematic Network (2008 – 2010) was to achieve a European-wide adoption of ICT-based Living lab services and practices to allow SMEs to improve their innovation capabilities and processes and become part of "open innovation" environments. In 2010, the Co-LLABS project undertook an evaluation of 18 living labs<sup>85</sup>, to compare, benchmark and identify good practices. Among the Living Labs investigated were Botnia Living Lab in Sweden, Mobile City Bremen, i2CAT in Barcelona; IBBT iLab Brussels; Helsinki Living Lab; RENER Living Lab Lisbon; Paris Region Living Lab; Living Lab Leiden in The Netherlands; Trentino Lab in Italy; Rural Living Lab in Hungary and Living Lab Vorarlberg in Austria. The Co-LLABS report focuses on the potential role of Living Labs in the Smart City and Smart Region concept with six main characteristics: Smart Economy, Smart Mobility, Smart Environment, Smart people, Smart Living and Smart Governance.

<sup>78</sup> <u>http://www.dehems.eu</u>

- <sup>80</sup> <u>http://www.epic-cities.eu/</u>
- <sup>81</sup> <u>http://www.opencities.net/</u>
- <sup>82</sup> <u>http://www.peripheria.eu/</u>

<sup>&</sup>lt;sup>75</sup> <u>http://www.apollon-pilot.eu</u>

<sup>&</sup>lt;sup>76</sup> <u>http://ict4saveenergy.eu</u>

<sup>&</sup>lt;sup>77</sup> www.preco.share2solve.org

<sup>&</sup>lt;sup>79</sup> www.fireball4smartcities.eu

<sup>&</sup>lt;sup>83</sup> <u>http://www.manchesterdda.com/smartip/</u>

<sup>&</sup>lt;sup>84</sup> SCHAFFERS, H., KOMNNOS, N., PALLOT, M., TROUSSE, B., NILSSON, M., OLIVEIRA, A. (2011): Smart Cities and the Future Internet: Towards Cooperation Frameworks for Open Innovation. In: J. Domingue et al. (Eds.), The Future Internet. Future Internet Assembly 2011: Achievements and Technological Promises. Springer

<sup>&</sup>lt;sup>85</sup> SCHUMACHER J, FEURSTEIN K, Living Labs - Good Practices in Europe. Chapter 2 in Co-LLABS Project Deliverable D5.2, August 2010.

While Living Labs commenced primarily as projects and fixed duration initiatives in different parts of Europe, there are now organizations that maintain Living Labs on an ongoing basis such as Amsterdam Innovation Motor<sup>86</sup> (Amsterdam Living Lab), Centre for Distance-spanning Technology, Luleå University of Technology<sup>87</sup> (Botnia Living Lab), Copenhagen Living Lab<sup>88</sup>, Forum Virium<sup>89</sup> (Helsinki Living Lab), IBBT Belgium<sup>90</sup> (IBBT-iLab), Informatica Trentina<sup>91</sup> (Trentino as a Lab), Laurea University of Applied Sciences<sup>92</sup> (Laurea Living Labs), University of Ulster (TRAIL Living Lab) and Wireless Info<sup>93</sup> (Czech Living Lab). These examples of Sustainable Living Labs are funded through a mix of national and regional government funding and implementation of industrial & research projects.

#### 2.3.1 Trail Living Lab, Northern Ireland

Co-Creation and Testing of Prototypes for Assisting Ageing and Rural Dwellers The **Trail Living Lab** (**Translating Research and Innovation Lab**)<sup>94</sup> is hosted by the University of Ulster in Northern Ireland. It leverages the concept of Public-Private Partnership (PPP) involving the private sector, public authorities and local communities to collaborate, co-create, prototype and test new products and services,

particularly focused on assisting ageing and rural dwellers<sup>95</sup>. Within the stakeholders groups<sup>96</sup>, public sector involvement is normally the health and welfare organisations (HWO) that commission services for the users groups, or charitable specialist service providers that commission services on behalf of HWOs.

The research vision, state-of-the-art, innovation models and research roadmaps are provided by a multidisciplinary team coming from the School of Health Sciences, School of Computing and Mathematics and Department of Management in the University of Ulster. The private sector incorporates a mixture of high-tech SMEs and multinational companies, who provide market access and commercial expertise. Users provide needs requirements and evaluate the

<sup>&</sup>lt;sup>86</sup> <u>http://www.aimsterdam.nl/english</u>

<sup>&</sup>lt;sup>87</sup> <u>http://www.cdt.ltu.se/</u>

<sup>&</sup>lt;sup>88</sup> <u>http://www.copenhagenlivinglab.com/uk</u>

<sup>&</sup>lt;sup>89</sup> <u>http://www.forumvirium.fi/en</u>

<sup>&</sup>lt;sup>90</sup> <u>http://www.ibbt.be/en/projects/start-a-project/living-lab-projects</u>

<sup>&</sup>lt;sup>91</sup> <u>http://ptl.taslab.eu/iniziativa</u>

<sup>&</sup>lt;sup>92</sup> <u>http://www.laurea.fi/en/Research/RD\_Services/Laurea\_Living\_Labs/Pages/default.aspx</u>

<sup>&</sup>lt;sup>93</sup> <u>http://www.wirelessinfo.cz/</u>

<sup>&</sup>lt;sup>94</sup> http://trail.ulster.ac.uk/about-trail/

<sup>&</sup>lt;sup>95</sup> MULVENNA M, MARTIN S, GALBRAITH B, WALLACE J and CLELAND B, *Case Studies of Living Lab Engagements in Northern Ireland*, In eChallenges e-2011 Conference Proceedings, Paul Cunningham and Miriam Cunningham (Eds), IIMC International Information Management Corporation, 2011, ISBN: 978-1-905824-27-4

<sup>&</sup>lt;sup>96</sup> MULVENNA M, GALBRAITH B and MARTIN S, *Enriching the Research & Development Process Using Living Lab Methods: The TRAIL Experience*, In eChallenges e-2009 Conference Proceedings, Paul Cunningham and Miriam Cunningham (Eds), IIMC International Information Management Corporation, 2009, ISBN: 978-1-905824-13-7

prototypes. They have historically incorporated elderly, rural dwellers from the rural counties of Ireland and Northern Ireland, user representative groups, formal healthcare workers, family and informal carers as well as councils, boards and other public representatives. Some of the case studies undertaken by the TRAIL Living Lab include the NOCTURNAL project<sup>97</sup>, which aims to develop a solution that supports older people with mild dementia in their homes, specifically during the hours of darkness and the Parterre project<sup>98</sup>, which aims to pilot the use of Electronic Town Meeting toolset as an eParticipation tool.

The TRAIL Living Lab has expressed their interest to the IST-Africa Coordinator in cooperating and sharing their experiences with emerging Living Labs in Africa.

#### 2.3.2 Amsterdam Living Lab, Netherlands

Co-Creation of Tools and Methodologies to Link Design with Understanding of Real-Life User Behaviour The **Amsterdam Living Lab**<sup>99</sup> was established by the University of Amsterdam, Waag Society, Novay and the Amsterdam Innovation Motor as a joint effort to leverage the resources available within the city of Amsterdam (infrastructure, knowledge institutions and citizens), to provide a testing ground for innovation. It aims to establish a European Center for design and

development of products and services in the area of ICT and New Media, by focusing on tools, methodologies and knowledge to measure and analyse behaviour and experience in real-life settings, with a strong link between design and understanding real life user behaviour. It also aims to develop an ecosystem of companies, government and knowledge institutions that will cooperate to drive further development and use of these methods and tools in real design processes. The thematic focus areas include Mobility, New Media, and Co-creative Design, Environmental Durability, eHealth, Social Cohesion and Tourism.

The Amsterdam Living Lab is currently involved in a number of EU and nationally funded projects including Apollon, Care for tomorrow<sup>100</sup>, FABLAB<sup>101</sup>, Fotorally<sup>102</sup> and Mocatour<sup>103</sup>.

While the Amsterdam Living Lab is currently financially supported by the National Government (Ministry of Economic Affairs) and linked with the Dutch Innovation Platform (a

<sup>&</sup>lt;sup>97</sup> Supported by grant from the United Kingdom Research Councils and the Technology Strategy Board's Assisted Living Innovation Platform

<sup>&</sup>lt;sup>98</sup> <u>http://parterre.ning.com/</u> - Co-funded under CIP-ICT-PSP Programme

<sup>&</sup>lt;sup>99</sup> <u>http://www.amsterdamlivinglab.nl/</u>

<sup>&</sup>lt;sup>100</sup> <u>http://www.amsterdamlivinglab.nl/page/662/en</u>

<sup>&</sup>lt;sup>101</sup> <u>http://www.amsterdamlivinglab.nl/page/107/en</u>

<sup>&</sup>lt;sup>102</sup> <u>http://www.fotorally.eu/</u>

<sup>&</sup>lt;sup>103</sup> <u>http://mocatour.wordpress.com/demos/</u>

national initiative chaired by the Prime Minister), there are plans to move towards being financially sustainable over the coming years.

#### 2.3.2 IBBT-iLab.o, Belgium

Living Lab Research on Policy and Business Goals using Stakeholder Co-Design **IBBT-iLab.o**<sup>104</sup> was set up as a Living Lab in Brussels with test and experimentation platforms to perform Living Lab research to achieve policy and business goals using stakeholder co-design. It is part of the IBBT (Interdisciplinary Institute for Broadband Technology) and works closely with the Vrije Universiteit

Brussel, Belgium. The concept of IBBT-iLab.o is to explore and achieve policy and business goals related to ICT innovation using an iterative model of stakeholder co-design. The centre was established as a nucleus for open innovation activities and as a repository of relevant knowledge and expertise. It sets up, coordinates, facilitates and carries out Living Lab research using various Living Lab settings. As of November 2006, it uses the permanent and large-scale Campus de la Plaine WiFi mesh network set up by the Brussels government. This pilot network is intended to be enlarged to the entire Brussels region. IBBT-iLab.o aims to overcome systemic failures in the innovation process by involving users at an early stage of the development phase, and by creating a trusted environment, and test out innovative products, services and business models. It also provides a platform for constructive technology assessment and for exploring societal and policy goals related to ICT innovation.

IBBT is the research institute founded by the Government of the Region of Flanders in Belgium, focusing on applications of broadband technology. It is composed of 14 high quality research groups, and involves the entire Flemish media and ICT business community. IBBT frequently carries out multidisciplinary Living Lab research to facilitate the development and exploitation of broadband services. The research includes technological research on networks, devices and content, together with research on user practices, domestication, usability, adoption, business modelling and regulation.

IBBT-iLab.o embeds the qualifications to set up and to accompany Living Labs through its Living Lab Integrated Data Collection & Aggregation Model. It also performs research within and around these Living Labs, in the conceptual, experimentation and evaluation phase. The centre's researchers have an extensive track record in policy support, business modelling and Living Lab research, including the development of interactive digital television applications and services. Other current Living Labs are in the field of e-tourism and electronic publishing.

<sup>&</sup>lt;sup>104</sup> <u>http://www.ibbt.be</u>

#### 2.3.4 Thessaly Living Lab, Greece

## Applied ICT Research in Human Movement to Exploit User-Driven Research Products

**The Living Lab Thessaly** (**LLT**)<sup>105</sup> is a consortium of private and public bodies that aims to constitute an innovative pole of reference for knowledge promotion focusing on "Quality of Life". The LLT aspires to exploit the unique climate, economic and societal conditions of Greece and facilitate testing for quality of

life services and strategies in large populations. "Quality of Life" is an issue related to the interests of the University of Thessaly, the Research Centre (CE.RE.TE.TH) and the 6 hospitals in the Thessaly region. The aims of LLT are strongly supported by the large number of IT and high tech companies that are members of the Technological Park of Thessaly. LLT is based in Trikala, a city located at the centre of Greece. The Municipality, a LLT member, offers citizens increased bandwidth wireless services free of charge. This medium has set the basis for widespread involvement of Trikala citizens in LLT's activities. The public bodies of LLT incorporate the University of Thessaly, CE.RE.TE.TH, and all hospitals of Thessaly, the city of Trikala and other bodies. Private bodies include companies from the Thessaly region and the rest of Greece. LLT aims at boosting applied ICT research in the field of human movement (human performance, prevention and rehabilitation), contributing to the scientific and economical development of the region, and creating the potential for the commercial exploitation of user-driven research products and thus improve the quality of life of people with chronic disease and injuries as well as that of children and aging populations.

LLT offers a wide number of services. It provides a unique validation environment for ICT based products and innovative services, strengthening industrial growth of region and business dexterity. It provides products and services to improve the quality of life of citizens (end-users). It facilitates research development within the area and particularly its applicability in the local area and in Greece in general and strengthen the local research community. It creates the necessary mechanisms for the transfer of the knowledge created in the main bodies of LLT, and assist in the development of the Thessaly prefecture, as an innovative high-level research centre. It provides the necessary mechanisms and guidance that will allow local stakeholder engagement in and execution of proposals for large-scale projects funded by the State or private companies, which cannot be realized within the existing framework of the Greek universities and research centers. Finally, it aims to support research and services related to problems of the region of Thessaly and Greece that ultimately help realize the Lisbon strategy for jobs and growth in Europe.

<sup>&</sup>lt;sup>105</sup> <u>http://www.cereteth.gr/</u>

#### 2.3.5 Northern Rural-Urban Living Lab, Finland

#### User-Centred Innovation

The **NorthRULL<sup>106</sup>** initiative has been launched by a set of northernmost regions of Finland and, within them, by a Triple Helix constellation of the Regional Councils and development agencies, the two universities and the

Higher Education Institutions network, and the key enterprise clusters. The Northern Rural-Urban Living Lab is focused on experimentation with, learning from and putting into effect forms of innovative interplay between ICT-intensive growth-hubs on the one hand and rural areas on the other. In the latter, three fourths of the 700,000 people of northern Finland live on about 133 000 square kilometres. It is their economic and demographic vitality as well as sustainable growth and new regional development practices that NorthRULL aims to enhance. The entire approach builds upon the strengths and challenges of the rural peripheral areas.

The NorthRULL aims to offer a new, integrated, user-centred approach to innovative economic and social development, in order to efficiently tackle the central challenges to the vitality of the rural areas of the North of Finland, northern Scandinavia, and eventually the circumpolar regions. This is to be achieved by combining cross-disciplinarity with the extant know-how and experience into a holistic approach to the implementation of the Lisbon strategy. NorthRULL aims to develop two main areas of activity, (1) health-related e-services and (2) international tourism industry. In both of them, NorthRULL explores the possibilities to set up open innovation systems and improve the management of innovation networks in the North.

#### 2.3.6 TasLab, Trentino, Italy

User-Centred Approach to Innovative Economic and Social Development **Trentino as a Lab** (**TasLab**)<sup>107</sup> is a cooperation cluster in Northern Italy whose goal is to develop user-centric innovation and which involves all the three main innovation actors, namely research centers, enterprises and users. The research centers

involved are: the University of Trento (Department of ICT), Fondazione Bruno Kessler, GraphiTech, CREATE-NET, ISTC- CNR and Laboratorio di Interoperabilità ed e-Government (LEGO), various enterprises including I&S Informatica e Servizi Srl, COGITO Srl, Sinergis Srl, Trentino Network Srl, GPI Spa, DeltaDator Spa, ALGORAB Srl, HEIDI Spa, Centro Ricerche Fiat (CRF), Siemens Spa and various end-user organizations including Provincia Autonoma di Trento (Autonomous Province of Trento), Azienda Provinciale per i Servizi Sanitari (Public Health Agency), Consorzio dei Comuni Trentini (Consortium of the Trentino Municipalities) and Trentino Riscossioni Spa. This initiative is supported by the local government. Informatica Trentina acts as catalyst and coordinator of the TasLab Living Lab.

<sup>&</sup>lt;sup>106</sup> www.northrull.fi

<sup>&</sup>lt;sup>107</sup> www.taslab.it

The main goal of TasLab is to create an advanced innovation infrastructure capable of responding to present and future user needs, not only from an ICT perspective but also from a cultural and social point of view. The plan is to reduce the digital divide, and at the same time to experiment with new ICT solutions, incorporating user involvement, all over the Trentino mountainous territory. The main TasLab activities include to develop a user-centric environment where innovation is the way of being, thinking and evolving of the Trentino citizens; to develop an environment where the full innovation cycle, from basic research to market products, gets naturally instantiated; to develop partnerships with other territories in Europe and in the world, building on top of the existing national and international cooperation and partnerships of the Trentino actors; to exploit the results of the previous activities towards a sustainable, environment and people aware, development of the Trentino region.

The approach incorporates a horizontal and vertical dimension. In the horizontal dimension, the approach is to take an eco-system oriented (socio/economic) perspective where different actors (citizens, public administrations, enterprises and research entities), the organisms of the ecosystem, interact with one another evolving on the base of the local/global conditions. The horizontal multidisciplinary eco-system driven approach is coupled, in the vertical dimensions, with a focus on the Trentino's vocation areas, namely those areas, which are core in the Trentino value system e.g., eInclusion, eMobility, eBusiness and eTourism, quality of life and eEnvironment.

The TasLab initiative started in 2005 and its actors have a long history of involvement in usercentric and European R&D projects. Various testbeds and experimental facilities have been or are being built in the Trentino territory. The most noticeable consists of a fiber network entirely dedicated to research and experimentation, which covers all the Trentino Territory and population, for a total length of 800 Kilometers, plus the access wireless network.

TasLab is one of the Italian partners involved in the Maputo Living Lab.

#### 2.3.7 i2Cat – Catalonia Digital Lab, Spain

Research and Innovation in Internet Technologies The i2CAT foundation<sup>108</sup> is a non-profit organization whose aim is to promote research and innovation in advanced Internet technology. The i2CAT model aims to make Internet research and innovation accessible to the whole of society through collaboration between the

public sector, businesses and research groups within universities and the educational world.

i2CAT promotes the deployment of services and wideband applications from both public and private research and innovation communities. The aim is to encourage telecommunication and

<sup>&</sup>lt;sup>108</sup> www.i2cat.net

state operators as well as businesses to make infrastructures and experimental services available. The i2CAT foundation is a research and innovation centre organised on a network basis in order to develop research and innovation projects, promote and maximize the use of advanced research in the area of networks and wideband applications, create platforms for collaboration between the business sector and universities, promote working teams in association with institutions in the rest of the world whose aims and research are in line with those of the Foundation. The i2CAT model aims to make Internet research and innovation accessible to the whole of society through collaboration between the public sector, businesses and research groups within universities and the educational world. In summary, the i2CAT Foundation aims to transform Catalunya into a leader in research and innovation in Internet technology making it available to everybody and everywhere.

Numerous research projects have been carried out under the auspices of i2CAT. These include the creation of an experimental network platform; middleware services and generic applications that are among the most advanced in Europe; and a group of projects for specific sectors, called Clusters. The experimental platform comprises elements such as OptiCAT, MediaCAT, GigaCAT, MobiCAT, and GridCAT.

#### 2.3.8 Botnia Living Lab, Sweden

Human-Centric ICT Services Development **Botnia Living Lab**<sup>109</sup> is Sweden's first and largest open Living Lab for human-centric ICT development. It is governed by the Centre for Distance-spanning Technology, CDT<sup>110</sup> which is a centre for

ICT R&D and innovation at Luleå University of Technology. Botnia is governed by the CDT board of directors, comprising senior managers from the University, ICT Corporations and regional public authorities. Botnia's focus is to support human-centric innovation of advanced ICT Services for "Extended Capabilities and Mobility". End-users, individuals and stakeholder organisations are engaged, along a targeted value chain, in the total process from requirements and idea-generation, through concept-development and prototype/usability testing to pilot service validation of market and marketing principles. The Botnia partnership includes international ICT/Telco organisations, SMEs and national and regional public authorities.

The Living Lab services mainly concern managing human-centric innovation processes and performing research based analyses in ICT Service development projects. Clients include providers and users of advanced ICT Services as well as academia performing research and education in the Living Lab context. The Botnia Living Lab system is constantly developed in close cooperation with end-users and stakeholders, including the human-centric research group at Luleå University of Technology. One good example of Botnia's assets, generated by this

<sup>&</sup>lt;sup>109</sup> www.testplats.com

<sup>&</sup>lt;sup>110</sup> www.cdt.ltu.se

collaboration, is the "Appreciating Needs" method applied there for efficient need-finding. Botnia operates a growing end-user community of 6200 (Oct.'06) registered individuals from all over Sweden. The Botnia Living Lab system for open, user-centric innovation encompasses the expertise, methods and tools necessary for end-user communication and management of innovation processes and related information such as demography and user action profiles.

Botnia's experience includes 30 full-scale technology and application projects with national and international cooperation and over 50 end-user investigations. With its focus on advanced ICT Services for "Extended Capabilities and Mobility", Botnia's track record includes areas such as: Mobile Pharmacy Service, Mobile Marketing, Sports Arena Services, City "eStreet" Services, Rural Business Support Services, Traffic and Road Information Services etc.

#### 2.3.9 Manchester Living Lab, United Kingdom

In East Manchester the City Council formed an Urban Regeneration Company (URC): New East Manchester (NEM) Ltd. This publicprivate-community partnership operates on a not-for-profit basis and has established an online community network, "Eastserve", run in partnership with local citizens' representatives linked to a city-wide initiative, **Manchester Digital Development Agency (MDDA)**<sup>111</sup>.

The loss of heavy industry and manufacturing in East Manchester has seen its population decline from 100,000+ to less than 30,000 people. Through the MDDA, EastServe and the FP6 Intelligent Cities EU Integrated Project initiative the City supported skills development of local people to facilitate full participation in the emerging Information society and to be able to take advantage of the new training and employment opportunities becoming available through the take-up of ICTs by small businesses and social enterprises. Residents prefer to use mobile phones and 25% no longer have a landline. Thus wireless broadband connectivity was required to enable households to access the Internet and on-line services and Manchester became one of the first local authorities in the UK to be an Internet Service Provider (ISP) through its partnership with the Phone Coop Internet, which is the UK's only mutual cooperative ISP [6]. EastServe has become one of the largest community based all-wireless broadband networks in Europe and is UK's largest community regeneration initiative using ICT.

East Manchester was the least connected part of the city with less than 15% of residents having dial-up Internet access in 2003, when other parts of the city had already reached more than 50%, and very few parts of the area had access to Cable TV or broadband. Now around 1,600 homes have (Cisco Aironet) wireless low cost (\$15/month) broadband Internet connections, as well as 17 local schools, eight UK Online community access centres and 10 public access points in libraries and other centres. EastServe.com offers email, online chat groups, and news

<sup>&</sup>lt;sup>111</sup> www.manchesterdda.com

and information tailored to East Manchester. The portal web site <u>www.eastserve.com</u> is designed specifically for the local community and provides access to local services and news about the area. A Residents' Panel of "e-journalists" provide much of this content. The EastServe site delivers information and interactive services from the City Council, national government departments, the Police and local community networks. In spite of the local concentration of low income, unemployment and poverty, broadband take-up has now reached 20% compared to 15% city-wide. Over 40% of residents now have basic ICT training because of EastServe, more than double the rate of most areas in the City. Plans are underway to expand the Eastserve network to cover 4500 homes and eventual expansion to 50,000 over the next three years is also being considered in a new city wide digital inclusion initiative.

#### 2.3.10 LEVIER, France

User-Centric R&D LEVIER<sup>112</sup> (Laboratoire d'Expérimentation et Valorisation Images et Réseaux) Living Labs, leveraging its diversity of broadband infrastructures and panels of users aims to provide an experimental facility, services and methodology for enterprises and R&D project wanting to practice user centric R&D. LEVIER is much centered around the fixed-mobile convergence paradigm and provides both "real" and virtual infrastructures. The LEVIER Living Lab is federated around the Images et Réseaux Cluster and the M@rsouin project and is operated by the Images et Réseaux Cluster under ImaginLab brand. LEVIER Lab gathers the existing Living Lab initiatives in Brittany and Pays de Loire, and is articulated over 2 main complementary infrastructures: (1) a broadband infrastructure interconnecting fixed and mobile areas allowing new deployment and usages around broadband and mobile TV, (2) a Virtual Reality "infrastructure" where collaborative design and innovation can take place between the different stakeholders.

LEVIER Lab covers the Brittany and Pays de Loire areas in France, with specific technology focus in the different areas currently connected to the Living Labs. Fixed-mobile convergence is the motor of the Living Lab, technologies cover all fixed and mobile access technologies (FTTH, FTTB), an IMS core network, land and sea wireless access (LTE). There is also a wide diversity of users in LEVIER. One of the main specificity of LEVIER is to see the technology as a mean to serve the use and to develop services to the whole population on the territory: advances users with high speed connection and new services (ex: virtual reality), but also rural or maritime population which do not have access to broadband for the time being, and for whom the services remain to be invented. The Lab has also set-up a common methodology and tools for tests definition and customer involvement, with the M@rsouin project.

<sup>&</sup>lt;sup>112</sup> <u>http://imaginlab.fr/blog-en/</u>, <u>http://www.images-et-reseaux.com/</u>

LEVIER offers its infrastructures, methodology and services to companies and projects wanting to apply user centric R&D. Moreover, LEVIER is interconnected to other Living Lab in Europe by means of the Panlab II project. This enables LEVIER to have access to various users in Europe from a unique geographical location.

Numerous projects have been carried so far, such as the Mazadoo project which aims to facilitate relations between the elderly and generally dependent housed in nursing homes. Point Etude (Ubiquitous access to new services related to University education, gathering 70000 students), first test of Audiovisual services over DSL, Experimental coverage of rural and sea areas via wireless, test of virtual reality concepts devices and contents at very large scale, usage tests around HDTV on the production, broadcasting, reception sides.

#### 2.3.11 Laurea Living Labs Network, Finland

Supporting Multi-Stakeholder Participation in Societal Innovation Laurea is a multidisciplinary University of Applied Sciences and an acknowledged developer that has been awarded multiple Centre of Excellence awards in the Helsinki Metropolitan Area. The volume of Laurea's R&D&I is the highest of the

Universities of Applied Sciences in Finland. Most of Laurea's R&D&I services are produced in research and development environments built around different core competence areas. The Laurea Living Labs network, as an innovation ecosystem, is a continuously evolving, flexible network of stakeholder groups and social partners. The network integrates various actors from product development and everyday life situations into the development of societal innovations.

In the Laurea Living Labs network the users, companies, cities, higher education and research institutions share an interest in service innovation and smart solutions in certain domains of life. The users and partners bring relevant information and knowledge about markets, end-user insights, possible solutions and contextual and societal circumstances to projects. Likewise, the LivingLabs network provides additional value for the partners through the development of systemic innovation, the faster diffusion of innovation and reduced risk when accessing a market. Laurea Living Labs is an ecosystem, well connected to the metropolitan policy guidelines and due to its dynamic and proactive operations mode it can adapt accordingly.

As well as serving as an ENoLL Council Member and Coordinator of the Thematic Domain Living Labs Work Group, Laurea employees have also worked as catalysts in creating an Asian-European Active Innovation Net addressing user centred innovation development in aging societies. The LbD model developed in Laurea, provides a strategic advantage for Living Labs. Through the LbD model, Living Labs can quickly mobilise different types of motivated stakeholders for co-creation, open and user driven innovation operations. The required multidisciplinary knowledge and skills can be found from the community of 8000 students, staff members and external network. Laurea provides a variety of co-researchers and coinnovators and different types of national and international user communities for partners.

Through its several locations Laurea acts as a host organisation for several Living Labs, including the Active Life Village, BarLaurea, the Care Innovation and Design Hub (CIDe ), the Medical and Care Simulation Centre, the Service Innovation and Design Labs (SIDLabs) and the User Driven Innovation Centre (UnIC), which provide research, development and innovation services through the LbD-based innovation process. Laurea has continuously invested in both physical and virtual Living Lab infrastructures, equipment and software. Moreover, the related methodological know-how and understanding required for open and user driven innovation has been developed in various studies.

The Living Labs focus on welfare, knowledge intensive business services, security and social responsibility. The basis for Laurea's R&D&I is a holistic view of well-being which provides sustainable direction for businesses and the development of entire service systems. The action research approach and LbD-model are the main instruments for user involvement. In addition to traditional research methods, the use of Living Labs methods and tools (e.g. visual ethnography, design probes, role and design games, participatory observation, context mapping, storytelling, focus groups, eye tracking, usability evaluation methods, prototype and product testing) varies by project, depending on the developmental stage of the innovation.

The Laurea Living Labs Network has expressed their interest to the IST-Africa Coordinator in co-operating and sharing their experiences with emerging Living Labs (& Networks) in Africa.

#### **Project-based Living Labs**

A considerable number of European Living Labs are funded as projects at EU or national level.

#### 2.3.12 Collaboration @ Rural Living Labs

Collaborative platform for Rural Living Labs The FP6 Collaboration@Rural  $(C@R)^{113}$  Integrated Project focused on the introduction of Collaborative Working Environments (CWE) as key enablers catalyzing rural development by providing a collaborative platform for rural communities and developing a common

methodology for the implementation of Rural Living Labs<sup>114</sup>. The C@R project promoted sustainable rural development through innovative IT services enabling new forms of collaboration and proposed a new approach of creating innovation ecosystems as living labs,

<sup>&</sup>lt;sup>113</sup> SCHAFFERS, H., GUZMAN, J. G., NAVARRO, M, MERZ, C. (Eds.): Living Labs for Rural Development. TRAGSA, Madrid (2010). 249 pages. ISBN-13: 978-84-693-0040-4. Download: <u>www.c-rural.eu</u>

<sup>&</sup>lt;sup>114</sup> MABROUKI O, CHIBANI A, AMIRAT Y, VALENZUELA FERNANDEZ M, NAVARRO DE LA CRUZ M, *Experiments of Context-Aware Collaborative Platform in Rural Living Labs*, In eChallenges e-2010 Conference Proceedings, Paul Cunningham and Miriam Cunningham (Eds), IIMC International Information Management Corporation, 2010, ISBN: 978-1-905824-20-5

tailored to rural development needs. This approach was implemented in various rural areas targeting sectors such as fishery, agriculture, logistics, retail, public services and government. The C@R project has made a significant contribution to developing and implementing a comprehensive methodology framework for human-centric open innovation in rural living labs, based on cyclic development and action research. The framework is built upon local user and stakeholder communities, Open Service Oriented Architecture based collaborative applications, and engaging all actors (end-users, software developers, policy makers) into the innovation process. This addresses all dimensions of future livelihoods of rural communities.

C@R implemented seven rural Living Labs: Homokháti (Hungary), Sekhukhune (South-Africa), Cudillero (Spain), Frascati (Italy), Soria (Spain), Vysocina (Czech Republic) and Åboland (Finland). Activities included the design, specification and development of collaboration services and tools and of collaborative applications, the development of a collaborative platform for rural communities integrating these services, tools and applications, and the validation and enhancement of these tools and associated concepts in rural living labs.

In Table 1 below Schaffers et al<sup>115</sup> provides an overview of the C@R focus on value chain innovations based on Collaborative Working Environment innovations:

| Rural Living<br>Lab | <b>Business Value Chain Innovation</b>                                                            | Collaborative Working Environment<br>Innovations (examples)                  |
|---------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Sekhukhune          | Collaborative order placement, procurement, stock management, logistics                           | Mobile messaging, GIS procurement, order bundling, Catalogue management      |
| Frascati            | Business incubation support, winery management                                                    | Shared workspace, Community Blog, Single Sign On                             |
| Åboland             | Virtual council meetings, mobile direct sales in tourism                                          | Conferencing, eVoting, Calendaring                                           |
| Soria               | Mycological licensing and verification                                                            | Mobile messaging, mobile GIS                                                 |
| Homokhátság         | Orders and offers matching (agriculture), collaborative logistics                                 | Collaborative workflow management, predictions modelling                     |
| Vysocina            | Collaborative spatial planning, Forest management, Incident prevention                            | Collaborative decision support and planning,<br>Map management, Conferencing |
| Cudillero           | Fishery coordination (hake traceability)<br>surveillance team coordination, ship<br>communication | Mobile messaging, presence awareness, context management                     |

Table 1 – Overview of C@R Focus on Value Chain Innnovations

These rural living labs were set up and operational during the life of the project. A number of these have been maintained following the project funding phase.

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As additional contributions are received and new European Living Labs case studies prepared, the White Paper will be updated.

¹¹⁵ SCHAFFERS H, MERZ C, GARCIA GUZMAN J, *Living Labs as Instruments for Business and Social Innovation in Rural Areas*, In ICE 2009 Conference Proceedings
2.4 International Living Labs Case Studies

Living Labs are supported as Innovation engines within national strategies. This section presents a representative sample of some formal and informal Living Labs established in recent years in different regions in Brazil, supported by national and municipal government.

2.4.1 Espírito Santo Cidadania Digital Living Lab, Brazil

Supporting Digital Inclusion and Co-Creation of Services

The Espírito Santo Cidadania Digital Living Lab was established in
2008 as an Extended Program of Federal University of Espírito Santo,
to develop and offer computational services to the community as a
mechanism to promote digital inclusion in the state of Espírito Santo.

It currently consists of a network of existing telecenters that have adopted Living Lab userdriven innovation methodologies to co-design and co-create new content and services. The Living Lab is managed by the Technological Center of the Informatics Department of the Federal University of Espírito Santo and it is established in Vitória, the capital of the Espírito Santo state, with nodes located mainly in residential areas of lower income that face socioeconomic problems. The Espírito Santo Cidadania Digital Living Lab works closely with the Espírito Santo Government and the Vitoria City authorities as well as with NGOs, Commercial and Industrial organizations and above all with local communities of citizens in need.

The target users of Espírito Santo Cidadania Digital Living Lab are the digital divided citizens of all ages of Espírito Santo State. The user driven methodology has proved to be the most effective to motivate and engage citizens and to sustain their communities.

The users are involved from the initial idea discussion to validation and design of the service concept. Users also originate ideas and bring them forward. The services are therefore co-created with the target end users. The different stakeholders are involved in all the innovation cycle. The teams in the field include experts and monitors that come from the University post-graduate students having a multidisciplinary background are responsible for part of the ideas initially gathered that trigger the community motivation to develop new services and activities.

The social interactions happen in both the Virtual World and Physical World. The engagement of users increases with their level of self-satisfaction in relation to the social activities they are involved in. The users are empowered by the training services provided by the Living Lab.

Cidadania Digital Living Lab has established a set of stable partnerships with the Federal University of Espírito Santo (UFES), the UFES Student Union, the Espírito Santo State Government, Vitoria Municipality, Petrobras – Brazilian oil company, Foundation Ceciliano Abel de Almeida and other NGOs, several service providers and informatics companies.

The Cidadania Digital Living Lab services are provided free of charge and financed by public funding and enterprise contributions. The Living Lab is committed to achieve a mixed business model including public funds and private funds coming from enterprise donations and services.

2.4.2 Group Inter-Action–Social Technologies and Sustainability Living Lab, Brazil

Supporting Co-Creation in Rural Communities

The Inter-Action Group Living Lab was created in January 2001 by the Social Service Department of the Federal University of Amazonas and National Council of Scientific and Technological

Development of Brazil (CNPq). It is focused on socio-environmental dynamics.

Involving more than 300 rural communities, the Inter-Action Group Living Lab develops social and educational processes through participatory activities, covering research and affirmative action to achieve inclusion and sustainability, thus contributing to the natural resource management of the Amazonia region. The Living Lab has created a Family Center, a Riverside Training initiative, and solidarity enterprises in the Amazonia region.

The Inter-Action Group Living Lab produces new knowledge, technologies and techniques and develops skills and new mechanisms to implement social innovation processes. The aim is to develop the local social economy and generate income from handicrafts, brick soil-cement manufacturing and community usage of the Amazonian biodiversity to create pharmaceutical products used in traditional medicine.

Interaction between researchers, technicians and public and private institutions as well as the productive sector support the co-design and co-creation of a sustainable cultural exchange. This leads to a stronger sense of territorial and cultural identity and the emergence of new knowledge in a context that engages this ecosystem in an innovation process that quite often leads to radical transformations.

One of the impacts on the quality of life of these communities is the co-creation of sustainable building techniques used for their own housing, addressing ecological concerns and low-cost construction. These technologies, methods and techniques are easily adaptable and cost-effective, allowing their replication in different scenarios. In addition, traditional health products created in the Inter-Action Group Living Lab are appreciated not only in the local communities but also abroad; the commercial distribution networks of developed countries thus bring new sources of income to these communities.

The Inter-Action Group Living Lab action teams are formed by senior experts and professionals, with a significant proportion of post-graduate students with multidisciplinary backgrounds (e.g. engineering, medicine, biology, sociology, anthropology, psychology), who gain experience in the field as the basis for their academic research programs.

The innovation eco-system of the Inter-Action Group Living Lab is structured as stable partnerships with the Federal University of Amazonas (UFAM), the Center for Technological Innovation - NIT/UFAM, the Center of Biodiversity of Amazonia (CBA), other higher education institutions and research centers such as the Universidade do Norte (UNINORTE) and the National Research Institute of Amazonia (INPA), the municipalities of Manaus, Maués and several NGOs and governmental organizations. Most of the funding of the Inter-Action Group Living Lab comes from the Federal Government (MCT, MEC, CNPq), the State Government (FAPEAM, SEBRAE-AM, REFIAM) and other national and international funding organizations.

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As additional contributions are received and new International Living Labs Case Studies prepared, the White Paper will be updated.

# 3. Methodological Approach and Validation Process

#### 3.1 Overall Methodological Approach and Validation Process

The primary author in consultation with LLiSA and the co-authors proposed an initial structure for this White Paper, which was circulated to all members of the EU – AUC Living Labs Taskforce for Africa, including the European and African Co-Chairs, for feedback. Subsequent private drafts were also circulated to all members of the EU – AUC Living Labs Taskforce for Africa for comments and contributions. During this private drafting stage, several new Chapters and subsections were incorporated including the Socio-Economic Context. Case Studies for African, European and International Living Labs were authored and validated.

There were also regular discussions with the European Co-Chair in relation to potential amendments and additional Chapters. These were agreed based on the need to contextualise proposed recommendations and make underlying concepts more accessible to a wider audience who might be less familiar with the academic literature related to Innovation and Living Labs.

With the agreement of the European Co-Chair, the first public draft was widely circulated, to all members of the EU – AUC Living Labs Taskforce for Africa, all IST-Africa Partners and over 5,000 IST-Africa Community members worldwide (including key stakeholders from the European Living Labs and Smart Cities Communities) in September 2011. Proposed contributions and new African, European and International case studies were requested to be provided by October 2011. The first public draft was discussed with the European Co-Chair and a number of International and European Taskforce members in Amsterdam, Netherlands on 15 September, each of whom were requested to provide additional contributions and case studies.

Following the IST-Africa Living Labs Pre-Conference Workshop in Botswana in May 2011, a number of IST-Africa Partners requested that Living Labs Sensitisation and Training Workshops be organised in their respective countries to (a) validate this White Paper against important national market sectors, (b) identify potential alignment with national policy priorities and (c) identify key national stakeholders with the interest and commitment to engage in developing national Living Labs and contribute to organising Living Labs Networks.

As a result, the primary author and co-authors organised and delivered three two day Living Labs Workshops within the framework of the IST-Africa Initiative in Burundi (Bujumbura, 26 – 27 September), Tanzania (Dar es Salaam, 29 – 30 September) and Uganda (Kampala, 6 – 7 October). Each workshop attracted an average of 40 participants, representing all key stakeholder groups (government, industry, research, civil society) and in some cases European Member States were also represented. This public consultation process continued with a

consultation meeting with senior representatives of IST-Africa Partners from Burundi, Cameroon, Kenya, Lesotho, Mauritius, Mozambique, Senegal, Tanzania and Uganda in Florence, Italy on 24 - 25 October. This was followed by a Public Consultation Meeting on 26 October, during which the updated White Paper and profiles of existing and emerging African Living Labs were presented as part of the scientific programme of eChallenges e-2011.

The recommendations of the White Paper were accepted by the participating IST-Africa Partners, which includes Members of the **EC** – **AUC Living Labs Task Force for Africa** representing Central Africa (Cameroon), East Africa (Tanzania and Uganda) and West Africa (Senegal). This latest version also incorporates additional contributions, suggestions and clarifications from these African Ministries and feedback received during the public workshop.

Several IST-Africa Partners subsequently requested that IST-Africa Living Labs Workshops be organised in their countries based on the results experienced to date by the other IST-Africa Partners. Additional national consultation and training workshops were delivered by IIMC in cooperation with the National IST-Africa Partner in Ethiopia (Addis Ababa, 24 November 2011), Malawi (Lilongwe, 17 November 2011), Swaziland (Mbarara, 29 November 2011) and Zambia (Lusaka, 02 December 2011).

A second public draft of this document and issues related to developing an implementation roadmap was presented by one of the co-authors in the Living Labs Plenary Session, Euro-Africa ICT Cooperation Event in South Africa (Cape Town, 14 November). A third public draft incorporating outcomes from IST-Africa Living Labs workshops and was discussed with the African Co-Chair by the primary author in Ethiopia on 25 November.

All contributions received during this open, transparent and inclusive public consultation process, including additional African, European and International Case studies, suggested additions and requests for clarifications of language, definitions or context have been addressed incrementally and incorporated into subsequent draft versions of this White Paper. All contributors to date (name, organisation) are reflected in the Acknowledgements section, which will continue to be updated as new contributions are incorporated into the White Paper.

Summary outcomes from the first set of IST-Africa Living Labs Consultation Workshops organised in Burundi, Ethiopia, Malawi, Swaziland, Tanzania, Uganda and Zambia, and a Consultation Meeting organised in Botswana (Gaborone, 22 September) are shared below.

#### 3.2 Outcomes from IST-Africa 2011 Follow Up Consultation Meeting in Botswana

The follow up Consultation Meeting in Botswana to the IST-Africa Living Labs Pre-Conference Workshop in May 2011 took place in Gaborone on 22 September and was formally opened by Prof. Moseki, Acting Dean, Faculty of Science, University of Botswana. The meeting was attended by senior representatives from the Department of Research, Science and Technology (IST-Africa Partner), the University of Botswana, the Botswana Technology Centre (BOTEC) and the African Materials Science and Engineering Network (AMSEN).

The participants identified a number of potential emerging Living Labs in Botswana and have provided short profiles, which have been incorporated into this version of the White Paper. They also provided feedback on a number of issues intended to improve the accessibility of the document, and these have been incorporated. The working group has instigated contact with a number of other relevant stakeholders, including emerging Living Labs in the energy sector. They also saw considerable potential to leverage Living Labs methodologies in the Kitsong Centres being set up all around the country – these were showcased during IST-Africa 2011.

The working group in Botswana also agreed that there was the need for wider engagement with other stakeholders and that the working group would be expanded accordingly. It is expected that these developments will result in additional contributions to be incorporated in Q1 2012.

The Government of Botswana sees Living Labs as being aligned with national policies and priorities and is fully committed to leveraging this potential in Botswana. The Botswana working group will continue to engage directly with IST-Africa and the LLiSA Network.

#### 3.3 Outcomes from IST-Africa Living Labs Workshop in Burundi

The IST-Africa Living Labs Workshop in Bujumbura on 26 – 27 September 2011 was formally opened by Hon. Dr Julian Nimubona, Minister of Higher Education and Scientific Research, with senior representatives of government Ministries, universities and other research institutions, telecoms operators, SMEs, Civil Society, and a representative of the Belgian Government in attendance.

While it is clear that there is currently limited Living Labs related activities in Burundi, there was a strong level of interest in the potential of the concept from all key stakeholder groups. A number of concepts for potential Living Labs in the agriculture, education, energy, healthcare, telecoms and educational spaces were developed during the meeting. The Minister of Higher Education and Scientific Research was very pleased with the feedback from participants and a multi-stakeholder taskforce lead by the Ministry is being established to agree key actors and initial focus. A follow up meeting of interested stakeholders was scheduled to take place in mid November. IIMC has offered to provide continued support as required through IST-Africa.

#### 3.4 Outcomes from IST-Africa Living Labs Workshop in Ethiopia

The IST-Africa Living Labs Workshop in Addis Ababa on 24 November 2011 was formally opened by H.E. Mahamoude Ahmed Gaas, State Minister, Ministry of Science and

Technology, with senior representatives of government Ministries, universities and other research institutions, telecoms operators, SMEs, Civil Society, and a representative of the Irish Government in attendance.

The workshop participants identified agriculture and the existing AgriNet (Agricultural Network) Programme as a sector where the adoption of Living Labs methodologies supported by skills development could have a transformational socio-economic impact in Ethiopia. Key stakeholders to be involved include Government (Ministry of Agriculture), Research Centres, Private Sector, Commodity Exchanges, Development Agencies and Agricultural Cooperatives.

One of the exciting opportunities identified during the workshop was the clear willingness of the Ministry of Communications and IT (MCIT) to collaborate with the Ministry of Science and Technology. MCIT has rolled out 60 district level community centres as part of a pilot programme. Eventually, there will be over 600 such community centres across Ethiopia, offering ICT training and access to computers and Internet. MCIT has offered MoST and IST-Africa access to all the facilities of the current community centres as infrastructure that can be leveraged to support the rollout of Living Labs across different regions in Ethiopia.

Education and health were also identified as sectors having great potential for the adoption of Living Labs methodologies. A voluntary Living Labs Committee for Ethiopia was established at the conclusion of the workshop, lead by the Ministry of Science and Technology (MoST) with the active support of the Ministry of Communications and IT. Other institutions co-opted onto the committee included Tigray (Regional Science and Technology Agency), ICT Centre of Excellence and ICT Association and Institute of Technology. MoST is going to invite the Ministry of Agriculture, Ministry of Health and Ministry of Education to also join the committee. IIMC has offered to provide continued support as required through IST-Africa.

#### 3.5 Outcomes from IST-Africa Living Labs Workshop in Malawi

The IST-Africa Living Labs Workshop in Lilongwe on 17 November 2011 was formally opened by Dr Henderson Chimoyo, Director-General, National Commission for Science and Technology, with senior representatives of government Ministries, universities and other research institutions, telecoms operators, SMEs and Civil Society in attendance.

Four key areas were identified as having great potential for the adoption of Living Labs methodologies in Malawi – agriculture, education, health and tourism.

The focus for agriculture would be on supporting communal selling and the One Village One Product Programme, where communities cooperate on adding value and finding markets for their crops. The focus for education would be on how to leverage distance learning to open up Third level education to the wider community, particularly those in remote areas, supporting secondary school curriculum development and delivery (especially for female students) and literacy programmes to raise the general literacy standards to support employment creation. The focus for health would be around opportunities to leverage telemedicine to support rural healthcare workers, capturing and leveraging indigenous treatment methods and raising general health awareness through mobile information delivery. The focus for tourism would be around building capacity to market tourism sites (particularly around Lake Malawi) internationally.

A voluntary Living Labs Committee for Malawi was established at the conclusion of the workshop, lead by the National Council for Science and Technology, with participation from the University of Malawi, UbuntuNet, the Polytechnic of Malawi, the National Library Service, the ICT Working Group, ARED and the Baobab Health Trust. The committee will write up relevant national case studies, gather together electronic copies of ICT related National Policies and Acts, identify emerging Living Labs and engage with LLiSA. IIMC has offered to provide continued support as required through IST-Africa.

#### 3.6 Outcomes from IST-Africa Living Labs Workshop in Swaziland

The IST-Africa Living Labs Workshop in Mbarara on 29 November 2011 was formally opened by Nathanial Mahluza, Permanant Secretary on behalf of Hon. Winnie Magagula, Minister of Information Communication Technology with senior representatives of government ministries, universities and other research institutions, telecoms operators, SMEs and Civil Society in attendance.

Agriculture was identified as a critical sector where the adoption of Living Labs methodologies could have a significant socio-economic impact in Swaziland. The primary concern was supporting food security through up-skilling, re-skilling and access to timely market data. While the National Agricultural Marketing Board provides some data to members, there is generally a lack of necessary transparency in relation to market pricing and demand and productivity suffers due to lack of time sensitive information when tracking diseases for example. Key stakeholders who would need to be involved in such a scenario include chiefs of local communities, cooperatives, the National Agricultural Marketing Board, the Ministry of Agriculture, Ministry of ICT and the Ministry of Administration and Local Government.

Communications was also identified as a sector where the adoption of Living Labs methodologies could have a significant socio-economic and socio-cultural impact in Swaziland. A key challenge in Swaziland is gaining access to news that addresses the interests of local communities. Workshop participants discussed the potential to address this issue by leveraging public library facilities to upload audio, pictures and text (the library in Manzini already provides ICT training) and encouraging contributions to media outlets from freelance journalists who in many cases could be graduates from the University of Swaziland. There is currently a high level of unemployment in Swaziland and such an initiative could both support community engagement and provide work experience and ad-hoc employment opportunities.

At the conclusion of the workshop, it was agreed that a follow on IST-Africa Living Labs Workshop would be scheduled during 2012 to support engagement with a wider constituency. The Ministry of ICT will engage with other relevant ministries including Ministry of Education, Ministry of Agriculture, Ministry of Health, Ministry of Housing and Urban Planning and Ministry of Commerce to review the current version of the White Paper to identify specific areas where Living Labs methodologies could be applied for most impact. Where appropriate, relevant stakeholders will be requested by the Ministry of ICT to write short case studies for any emerging Living Labs identified for inclusion in the White Paper.

A short briefing on the workshop outcomes was given to the Minister afterwards, who expressed her commitment to supporting the exploitation of Living Labs methodologies at a national level through cooperation with the IST-Africa Initiative and engagement with LLiSA. The Minister accepted IIMC's offer to provide support as required through IST-Africa.

#### 3.7 Outcomes from IST-Africa Living Labs Workshop in Tanzania

The IST-Africa Living Labs Workshop in Dar es Salaam on 29 – 30 September 2011 was formally opened by Dr Hassan Mshinda, Director General of the Tanzania National Commission for Science and Technology (COSTECH), with senior representatives of government ministries, universities and other research institutions, telecoms operators, SMEs, entrepreneurs, Civil Society from Tanzania and international donors (Finland and Sweden) in attendance.

Partly due to the participation of technology entrepreneurs and the greater maturity of ICT adoption in Tanzania (including Living Labs, Incubators, eSkills Development), the discussion in Dar es Salaam was focused on identifying thematic areas where Living Labs concepts are relevant at a national level. Potential sectors identified include agriculture, artisan/crafts, education, financial services, healthcare, procurement, public service delivery and sport.

COSTECH is taking responsibility for working with key national stakeholders to develop an action plan to identify the path forward in Tanzania. What was critically clear is that the development of Living Labs in Tanzania is seen as being well aligned with national priorities as identified through the National Development Plan, as well as aligned with the activities of TANZICT, a joint Tanzania - Finland ICT focused programme which started in Q4 2011. IIMC has offered to provide continued support as required through the IST-Africa Initiative.

#### 3.8 Outcomes from IST-Africa Living Labs Workshop in Uganda

The IST-Africa Living Labs Workshop in Kampala on 06 – 07 October 2011 was formally opened by Dr Peter Ndemere, Executive Secretary of Uganda National Council for Science and Technology (UNCST), with senior representatives of government ministries, universities and other research institutions, telecoms operators, SMEs, UNESCO and Civil Society in attendance.

As in Dar es Salaam, the discussion in Kampala was very interactive, again reflecting a greater maturity of ICT adoption in Uganda (including Living Labs, Incubators, eSkills Development). The discussion in Kampala was focused on coordinated action by relevant stakeholders and identifying thematic areas where Living Labs concepts are relevant at a national level.

Potential sectors identified include agriculture (and in particular, food security), cross-cutting areas and education (creating opportunities for new employment skills through value added processing and manufacturing), energy efficiency, healthcare, waste management (both in big cities as well as related to Mineral Mining), sustainable energy and public service delivery.

There was also considerable discussion about how Living Labs Concepts could be leveraged through existing community-wireless/tele-centre projects, extending existing mobile application initiatives to include community engagement and providing a local language framework for co-creation of local content and institutional memory creation for local languages, of which there are over fifty in Uganda. Alignment with the National Development Plan was seen to be essential to access credibility, resources and funding. UNCST will act as an initial focal point and look at developing a Steering Group/Task Force to carry forward ideas. IIMC has offered to provide continued support as required through IST-Africa Initiative.

#### 3.9 Outcomes from IST-Africa Living Labs Workshop in Zambia

The IST-Africa Living Labs Workshop in Lusaka on 02 December 2011 was formally opened by Sechwayo J. Nzima, Assistant Secretary (Communications) on behalf of Hon. Yamfwa Mukanga, Minister of Transport, Works, Supply and Communications. Senior representatives of government Ministries, universities and other research institutions, telecoms operators, SMEs, Civil Society, and a representative of UNECA were in attendance.

Workshop participants identified a number of key sectors where the adoption of Living Labs methodologies could have a significant socio-economic impact in Zambia. These include centralised purchasing for rural shops, eHealth, eEducation and supporting the crafts sector. Macha Works is one of the most successful Living Labs in Africa, and its founder made a presentation and answered questions about the work of Macha Works and its future plans.

A short briefing on the workshop objectives was given to the Ambassador of Ireland, who expressed his enthusiasm for the work being carried out by the IST-Africa Initiative.

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As the public consultation process continues and additional contributions are received and further IST-Africa Living Labs Workshops take place in new countries, fresh outcomes of this validation process will be reported and the White Paper will be updated accordingly.

4. Success Factors to Create Sustainable Living Labs in Africa

Clearly there are certain principles that all successful Living Labs must adhere to, both to have the basic characteristics of a Living Lab, and to achieve their strategic and operational goals. Before exploring success factors to create sustainable Living Labs Networks in Africa, it is important to contextualise potential success factors for Living Labs in Africa and look at widely accepted good practice criteria based on international research in this domain.

Before reviewing some of these good practices, there are valuable insights to be learnt from LLiSA Members, based on a structured working group exercise carried out during the 3^{rd} Annual LLiSA Workshop ("Making Living Labs Relevant in Southern Africa"), Rhodes University, Grahamstown, Eastern Cape (20 – 21 June), organised by Siyakhula Living Lab.

4.1 Potential of Living Labs in Africa – An African Perspective

Perspectives from KeyDuring the afternoon of 20th June 2011, representatives of LLiSAStakeholders ofMembers were divided into four working groups, representingQuadruple Helix oneach of the key stakeholder groups of the Quadruple HelixPotential of Living Labs(government, industry/business, research/academia & civil
society/community). Where possible, representatives from the

same Living Labs were spread across different working groups to reduce potential bias or "group think". Each of the four working groups was then asked to represent the interests of a specific key stakeholder group, and address a number of common issues from that perspective.

- > What is your understanding of a Living Lab?
- > What is the perceived potential of Living Labs to the Stakeholder Group you represent?
- How best can the potential of Living Labs be made most accessible to the Stakeholder Group you represent?
- How do Living Labs fit into the Innovation Chain from the perspective of the Stakeholder Group you represent?
- How does the Stakeholder Group you represent contribute towards the sustainability and future of Living Labs?
- What are the signals that the Stakeholder Group you represent has fully bought into the Living Labs Methodology?
- What are some of the key success factors for sustainability (both financial/economic and quality of life) from the perspective of the Stakeholder Group you represent?
- What is the potential impact of cultural differences and requirements for adaptation to achieve Replication, from the perspective of the Stakeholder Group you represent?

Each group was then asked to nominate a facilitator to lead a structured discussion (based on a set of common questions that each group was asked to address from the perspective of the

stakeholder group they represented), and a rapporteur to make a record of the consensus of that group. Where a group could not achieve a consensus on a specific issue, the group was asked to respect the majority view, but with the option for any minority view to be recorded as such. Three observers (Paul Cunningham, Prof. Marlien Herselman, and Prof. Alfredo Terzoli) rotated around each of the four groups individually to monitor the discussions, share personal perspectives where appropriate, and clarify issues or reframe specific issues each group was addressed, if required. While observers were free to contribute in the ways specified above, only the consensus of each group (with minority views if any) was recorded by the rapporteurs.

Table 2 below summarises the collective findings of each working group from the perspective of the different stakeholders involved. This synthesis highlights key issues that affect the focus and priorities of Living Labs in developing countries, particularly in Africa. These also have implications for the function, priorities and ways Living Labs Networks in Africa work. What is striking is the common vision, expectations and understanding of Living Labs across the stakeholder groups - a key accomplishment of LLiSA Network after three years in operation.

Strong Focus on Community Impact, Skills Transfer and Support for Entrepreneurs

Based on the experience of Living Labs currently operational across Africa, there must be a strong focus on community impact, in terms of community development and empowerment, skills transfer, and support for entrepreneurial activity in the form of social enterprises and SMEs. There is also recognition

that participation of external partners with a strong vested interest in the outcomes of the Living Lab, and ensuring necessary intellectual/analytical rigour, is key. Industry, universities and research institutions clearly have an important role to play, as well as being major beneficiaries of the outputs of Living Labs in terms of research results and real-life based market intelligence. However, local, provincial, national and regional government as well as international funders are also seen as an important beneficiary (in terms of support for achieving policy goals) and a stakeholder with a key role to play in supporting sustainability.

Living Labs, Incubators and Skills Development Programmes Important Mechanisms to Support Socio-Economic Impact Government sees Living Labs, Incubators and Skills Development Programmes as important mechanisms to support socio-economic impact by developing an entrepreneurial culture, capacity building and job creation in rural and disadvantaged communities through partnerships between universities and local communities. The expectations of communities around which Living Labs are based,

reflect an equitable exchange of value (not just in terms of resources but also skills transfer and influencing the Living Lab focus to address community priorities) and at least the opportunity to evolve beyond a project oriented Living Lab (with a fixed duration, pre-defined focus and objectives), which tends to be the primary Living Labs model that has evolved internationally.

Supporting the Evolution of Sustainable Living Labs and Living Labs Networks in Africa – Version 2.0

	Government	Industry/Business	Research/Academia	Communities
What is your understanding of a Living Lab?	Creation of an ecosystem of partnership for co-creation; using the multiple helix model or BUG-C model (business, university, government – community) Supports socio-economic impact by creating a collaborative, co-creation culture and environment, supporting prototyping and testing, Invention and commercialisation, identifying start-up opportunities & attracting potential investment	 Environment used to Test products and services, processes, business models Incubate new ideas Incubate innovation (created by community) Co-design with community Explore new markets Co-create products Win-win partnership Use as marketing exercise 	 Community-development focused, ICT driven living lab Quadruple helix (academia, government, industry, communities) Academic Perspective Multi-disciplinary Applied research Open research – sharing results and insights 	Innovative, multi-disciplinary eco-system, environment or space where different stakeholders collaborate to test ICT in real-life circumstances, achieve user-driven innovation and work towards sustainable community development Eco-system with stakeholders that influence the environment Benefit the community Eco-system where innovation is user driven, multi-disciplinary and sustainable
What is the perceived potential of Living Labs to the Stakeholder Group you represent?	Job creation Skills development Stimulate Entrepreneurship Transformation of economy – economic development of rural and urban communities	Explore new markets to increase profit margins Develop and refine existing and new products, services, processes and business models based on real customer needs Shape and co-create new market opportunities and solutions Marketing and media potential (image and awareness)	 Satisfies all key aspects of the academic enterprise Teaching – students from supervisor, students from community Research Community engagement Can allow for research to feed into teaching 	Empower communities so that they are part of the problem solving mechanism addressing real-life community needs Improving quality of life based on community priorities Community development and empowerment, through skills and knowledge transfer, and knowledge/service co-creation
How best can the potential of Living Labs be made most accessible to the Stakeholder Group you represent?	Communications & marketing strategy oriented around how Living Labs are aligned with different government policies Potential for capacity building, particularly in rural and other disadvantaged communities Success stories of community development, skills transfer, youth engagement and employment creation	Leverage the credibility established by LLiSA and communicate benefits using business language (e.g. ROI, reduced development lifecycle, access to trusted communities to test user-centric design and real- life evaluation & co-creation of products and services, UI, processes and business models) Give examples of success stories turning progractive solutions	Opportunities for multidisciplinary research collaboration and structured community engagement Supports government policy to teach, carry out research and engage with local communities Curriculum development and post- graduate studies around living labs Good PR and media publications – building public legitimacy	Show and tell – success stories and real community feedback Engage with communities to carry out needs assessment, and identify priorities for potential community development and community empowerment Identify community champions, form strategic partnerships and co-create implementation plans

Table 2 - Comparative Perspectives of Key Stakeholder Groups – Summary Synthesis of Working Group Outputs during 3rd LLiSA Annual Workshop, 20 June 2011

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	employment creation Lobby for new programmes and support under relevant	turning prospective solutions into tangible experiences Conduct multi-/trans-disciplinary		
How do Living Labs fit into the Innovation Chain from the perspective of the Stakeholder Group you represent?	Government can play a critical role as enabler, to attract the participation of other key stakeholders in the development of innovation systems e.g. establishing infrastructure	Community-based researchAccess to historical and currentinformation,methodology,experiences and lessons criticalin developmental lifecycleGather and integrate feedbackfrom customers and partners todirectly impact on R&D processDemonstratetechnologicalresearch in real-world settingsCatalysttodevelopmentlifecycle(creates platform forinnovation and change to follow)Identify/evaluateregulatory	 Academic innovation chain Field based evaluation and testing of innovative concepts Innovation not just about technology – can be a process Action Research / Applied Research / Design Research Innovation – invention with impact Ethical research and mutual 	Becoming a problem expert based on community needs Community is part of problem solving Role of the Living Lab creating an environment where the community can come and share ideas and come up with solutions to their own problems
How does the Stakeholder Group you represent contribute towards the sustainability and future of Living Labs?	Technical & financial supportInfluence other stakeholders to commit support and resourcesEnsureLivingLabs understandgovernment policies and priorities to align objectives and access fundingEngagewithLivingLabs to identify future opportunities & inform policy development	 issues in controlled context Sustainability not a priority unless enforced through MOU Engagement should create opportunities for communities to Transfer skills, empower people and generate income Identify actual needs around which to create solutions Have enough sense of ownership to actively identify opportunities 	 Ensure consistent flow of funds Academic publications, attract students participation Research & innovation around Living Labs methodologies Consistency and continuation Community based skills development through teaching engagement by staff and students 	The more investment by the community in terms of vision, resources and volunteers, the more sustainable it will become Develop strategic win-win partnerships with incubators, universities, research institutions, industry/business and local, provincial and national government
What are the signals that the Stakeholder Group you represent has fully bought into the Living Labs Methodology?	Integration of Living Labs strategies into broader government policy documents	When MOU is signed, you have achieved buy-in Critical to manage expectations and to deliver on commitments	When living labs methodology is accepted as the Modus Operandi of Academia (for funding, research, multi-stakeholder engagement) Senior staff & departments willing to exploit their social capital to promote community engagement	Community drives innovation Communities discuss social challenges, identify local needs, and suggest their own solutions Active engagement by champions with stakeholders
What are some of the key success factors for sustainability (both	Socio-economic impact of living labs e.g. contribution to	Product, service, process or business model tested in real-life	Support sustainability by linking community impact (improved	When communities are able to generate multiple income

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factors for sustainability (both	GDP. community based	environment for deployment	quality of life and socio-economic	streams to cover expenses
financial/economic and quality of life) from the perspective of the	employment, entrepreneurial activity and supporting	Develop new market awareness and business models around new	conditions) with project objectives Mutually beneficial value	Employment creation support (social enterprises and SMEs)
Stakeholder Group you represent?	enterprises as well as SMEs	customer segments	propositions for key stakeholders	through skills transfer and long
	Socio-cultural impact of Living Labs e.g. community empowerment, increased pride	Opportunities to generate new concepts and create new IP Community ownership can result	relevance and justifies the provision of resources, funding and income opportunities to support	Strengthening community structures, reduced social crime
	and youth engagement in	in higher level of co-creation,	long term strategic partnerships	Sustainable quality of life =
	disadvantaged communities Commitment and buy-in from	thus increasing value proposition and making long term engagement more attractive	Local ownership and regular reinvention through 360° reviews	Vision, self-determination, hope, drive, pride and passion
	supporting and funding Living Labs Networks to deliver	Buy in from traditional leaders essential to attract participation	When it can run on its own and generate its resources	
	training and services to support Living Labs members	by highly qualified individuals, achieve higher quality of community participation, and	Community-focused with a holistic approach, stakeholders with a vested interest in outcomes and use	
		attract a multi-stakeholder	of rigorous methodologies for	
		approach to sustainability justified by results and impact	oversight, monitoring, assessment	
What is the potential impact of	Local challenges – dynamic	Different environments require	With a needs driven project you	Establish values and choose the
cultural differences and requirements for adaptation to achieve Replication, from the perspective of the Stakeholder Group you represent?	best practices and global benchmarks	strategies, positioning, business models and customer profiles	differences	commonalities Core values are universal
	Avoid re-investing the wheel – adapt based on local dynamics	Working relationships can be facilitated by involving traditional leaders involved in existing Living Labs in discussions for new Living Labs. Such an approach also facilitates relationship building between		Assume innovation and sustainability is already present in the community prior to the Living Lab as a starting point. Build on this and focus on understanding the mechanisms that already exist
		existing and new champions, accelerating knowledge sharing		Managing expectations – not creating false expectations
		Engage with school principals and local authorities as well as traditional leaders as part of consultation & needs assessment		Relationship between community and Living Lab and new projects

4.2 International Good Practices

Pierson & Lievens¹¹⁶ (2005) include the following processes for creating Living Labs:

- contextualisation, referring to the prior exploration of the technological and social challenges implied by the technology or service under investigation;
- selection, referring to the identification of potential users or user groups, by means of non-probabilistic or purposeful sampling;
- concretisation, referring to a thorough description of current characteristics, everyday behaviour and perceptions of the selected test users regarding the research focus;
- implementation is actually the behavioural validation and operationally running test phase of the LL, from a user-oriented and ethnographic viewpoint; and
- ➤ feedback, consisting of two research steps:
 - *an ex post measurement* based on the same techniques of the initial measurement, to check if there is any evolution in the users perception and attitude towards the introduced technology or service, to assess changes over time in everyday life in relation to technology use and to detect transitions of usage over time; and
 - *a set of technological recommendations* from the analysis of data, gathered during the previous implementation phase; this outcome of the feedback phase is used as the starting point for a new research cycle within the Living Lab; in this way the iterative feature of research can be made operational.

The European Commission funded CORELABS Coordination Action¹¹⁷ (EP# 035065) developed a Harmonization or Interoperability Cube in 2008 which provides a valuable framework for capturing (and measuring) key elements of a Living Lab in a way that can be measured, evaluated and ideally, adapted or replicated to maximise socio-economic impact. The CORELABS Harmonisation or Interoperability Cube can be used to examine the status of a Living Labs with respect to six categories, namely User Involvement, Service Creation, Infrastructure, Governance, Innovation Outcomes, and Methods & Tools. ENoLL¹¹⁸ states, "*The harmonization cube not only represents the most important elements of a Living Lab, but also enables specifying bridges between existing Living Labs, i.e., to learn from each other, benchmark the validation of user behaviour studies, exchange best practices, and interconnect the Living Labs. Next to facilitating a common ground for sharing, the cube model enables recognizing the degree of harmonization of used methods and tools in Living Labs."*

Shared learning, exchanges of good practices and enabling specifying bridges between existing Living Labs clearly has implications for the role and focus of Living Labs Networks.

¹¹⁶ PIERSON J. & LIEVENS, B. (2005), *Configuring Living Labs for a 'thick' Understanding of Innovation*, In Proceedings of EPIC Conference 2005, pp. 114-127.

¹¹⁷ <u>http://www.ami-communities.eu/wiki/CORELABS</u>

¹¹⁸ www.openlivinglabs.eu

4.3 Extended Harmonisation/Interoperability Cube

When applied within the context of the European Commission CIP-PSP CO-LLABS project¹¹⁹ to carry out a Best Practice Analysis of 21 European Living Labs, this framework was modified to add a seventh category, namely SME Innovation Support. This adaptation reflects the important role that Small and Medium Sized Enterprises (SMEs) play in European Living Lab research, due to their critical importance in European economic activity and employment. One of the issues to be considered later is the considerable differences that exist in economic activity in most African countries, where there are less SMEs and much more economic activity takes place in the informal economy by sole traders. There is clearly enormous potential for wider socio-economic and employment development if Living Labs can play some role in helping the wider development of both social enterprises (not-for-profit) and SMEs (for-profit enterprises) in participating communities across Africa.

Further Extend Harmonisation Cube to Include Community Development Support While it is clear that the first six categories of the Harmonisation/Interoperability Cube are primarily methodological in nature, the seventh category added by CIP-PSP CO-LLABS is primarily stakeholder impact oriented. IST-Africa and LLiSA propose to extend the Harmonisation/Interoperability Cube further

by adding another stakeholder impact oriented category of critical importance in an African (or any developing country) context – Community Development Support. This further extension of the Harmonisation/Interoperability Cube is reflected in Diagram 17.

4.3.1 User Involvement

Iterative Approach to Design to Maintain User Involvement

Active user participation is the "*raison d'etre*" of any Living Lab – without committed and motivated users Living Labs cannot exist. Clearly different user types may require varied approaches and motivations to remain engaged, reflecting different expectations.

Creating a successful Living Lab often requires taking an iterative approach to design, particularly in relation to the types of tools required to keep users involved and the need for unobtrusive methods to reduce the "observer effect" (where the very act of observation changes the behaviour of users). To assist in sustainability however, there is a need to consider observation methods that are also low cost and how to automate data collection. This is obviously where ICT has much to offer, even in Living Labs without an ICT "centre of gravity". Finally, consideration of cultural and legal differences is essential, particularly when sharing experiences and lessons learnt between Living Labs, whether at different developmental stages, targeting different user communities or located in different countries.

¹¹⁹ http://www.ami-communities.eu/wiki/CO-LLABS

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Diagram 17 – IST-Africa/LLiSA Extended Harmonisation/Interoperability Cube



infrastructure

SME Innovation Support

CIP-PSP CO-LLABS Extension 2010

Community **Development Support**

IST-Africa/LLiSA Extension 2011

Harmonisation Cube (CORELABS Coordination Action 2008)

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4.3.2 Service Creation

Components to Support Stakeholders, Services and Collaborative Innovation

Service creation describes the structuring components that Living Labs can apply to supporting stakeholders (organisation and training, governance and management), customer services and collaborative innovation (idea generation - business support services, idea generation - services specific to stakeholders,

market customisation), and technical services and delivery (communication, collaboration, demonstration, validation and prototyping). By focusing on enabling competitiveness and innovation, monitoring, evaluation and validation, this will support socio-economic change through benchmarking, adaptation and replication.

4.3.3 Infrastructure

Framework, Facilities and Services Required to Achieve Operational Goals Infrastructure describes minimum features, framework, equipment, facilities and services required for any Living Lab to achieve its basic operational goals, or new operational goals as stakeholder requirements change or continue to evolve during the entire life cycle of a Living Lab. Being able to gather and exchange such

content in a standardised way provides invaluable insight for replication purposes.

By harmonising or standardising the infrastructure applied in different Living Labs, model infrastructures (which can established in a modular fashion and then adapted if required to be "fit for purpose") can be categorised for their potential applicability for different operating environments as well as different phases of the Living Labs life cycle. Taking a modular approach will also encourage greater collaboration and cooperation between Living Labs, both in terms of sharing insight into greater efficiencies achieved through adaptation or opportunities for other Living Labs to offer a wider range of services to target stakeholders.

Model Infrastructures could be selected depending on the geographic and/or thematic environment in which a Living Lab is to be deployed and the objectives to be achieved. Living Labs Networks in Africa (such as LLiSA which is focused on Southern Africa) should have the responsibility for gathering, categorising and modelling such modular infrastructures as part of its value proposition for Members and potential Members. Part of the value exchange that could be requested of Members of such a Network could be to share insight into the strengths and weaknesses of their approach, to allow good practices to be identified and the most flexible, adaptable modular infrastructures to be modelled and recommended for replication.

One of the important advantages of modeling standardised infrastructures is that it makes it possible to establish an interoperability framework allowing individual Living Labs or loosely coupled Living Labs and other organisational structures targeting similar or overlapping communities (e.g. Incubators) to work together as Smart and Virtual Organisations. This could be used to extend the existing business models of individual Living Labs by providing access to a critical mass of similar users or complementary user communities. Such techniques could also support the wider adoption of Living Labs methodologies to create an accelerated Innovation Funnel process to improve the selection process of Incubators, based on better information (through quasi test-beds or focus groups) on potential demand and likely success.

This also provides an important opportunity to increase scalability as well as increase both ROI (Return on Investment) and ROO (Return on Objective) by reducing set up times, lowering start up costs and providing predictable operating costs, thus minimising implementation risk, increasing organisational flexibility and increasing the opportunities for sustainable success.

4.3.4 Governance

Management and
Organisation of aGovernance of a Living Lab describes how it is managed, organised
and owned. A Living Lab can be initiated and owned by a research,
government, commercial or not-for-profit organisation, a community or
a multi-stakeholder partnership. Clearly its ownership structure will

have implications for its cultural ethos, activity focus, funding and business model.

While a Living Lab may also have either a for-profit or not-for-profit ethos, it must have policies in place to deal with start-up capital and operating financing, in-kind and financial contributions (from participating stakeholders as well as regular and ad-hoc clients), business models, exploitation of programme and project results and IPR (Intellectual Property Rights).

Leadership is also important from a cultural perspective, both at a management and board level and policies should be in place to inform management structure and responsibilities, board composition, the relationship between user communities, management and board members and the commitment (both duration and nature) and responsibilities of participating stakeholders.

While the culture and strategic drivers of a Living Lab may well evolve over time (e.g. research, industry or community driven), it is critical to consider whether resources and infrastructure are dedicated or shared (either with other Living Labs or other institutions - including Incubators), and whether the participating stakeholders are fixed or can be changed.

4.3.5 Innovation Outcomes

Co-Creation of New Products and Services Innovation describes the creation or co-creation of new or more effective products, services, technologies, processes or ideas that positively impact on business, research, government, communities or society as a whole. While innovation traditionally is driven by

suppliers, end-user innovation is a powerful key value proposition of Living Labs.

Clearly, for Living Labs to operate efficiently, they must have either relevant in-house expertise and competencies or combine in-house expertise with reliable on-demand access to additional experts who can provide necessary insight (whether from research, government, industry or community stakeholders). There is an obvious trade off between the cost and flexibility of having all likely required expertise in-house and accessing on-demand expertise.

Equally obviously, participating stakeholders need to buy into a compelling value proposition, which includes not only the necessary available expertise to guide and manage the innovation process but also access to all necessary stakeholders in the target innovation chain, whether directly (members of a specific Living Lab community) or virtually (e.g. through collaboration within Living Labs Networks and/or with Incubators with complementary communities).

While having a diversified (multiple revenue stream) business model can substantially reduce operating risk, it seems clear that a Living Lab must have a centre of gravity or primary "target market" activity around which its operations are organised (e.g. general or specific industry sector(s), consumer markets). This is about market positioning and brand identity as well as optimal utilisation of available expertise, competencies, stakeholders and community access.

relationship and Having strong trust insight into the dynamics of the а community/communities around which a Living Lab is oriented can be enormously powerful in designing projects, particularly in relation to supporting optimal interaction with the target community. However, having access to necessary ICT skills and flexible infrastructure can be essential in achieving the necessary scalability increasingly required of Living Labs, as the scale of community engagement continues to grow, driven by ever greater market demand.

4.3.6 Methods and Tools

Select RelevantMethods and tools describe the enormous variety of methodologies and
tools (technological and otherwise) used in different Living Labs, even
within the same thematic focus area or country. Such diversity has
potential negative consequences (e.g. lack of training, risk of

obsolescence, lack of comparability of data/results, scalability/interoperability challenges).

Contributing to a common taxonomy of such methods and tools provides an opportunity for individual Living Labs to share knowledge and good practices by explaining the rationale behind their selections and the strengths and weaknesses of using particular solutions. It also provides a valuable opportunity to reassess whether current needs are being best met by the methods and tools used, even if they were originally selected for the best of reasons.

Sometimes changing methods and tools requires re-skilling or up-skilling – it may even have implications for existing work-flow processes and supporting technology infrastructure.

Valuable functions of Living Labs Networks could include developing Institutional Memory¹²⁰, through creating and maintaining a taxonomy of methods and tools, providing good practice recommendations, a forum for knowledge sharing complemented by sharing and capturing informal knowledge using social media tools (for later cross-referencing), and either developing, facilitating and/or delivering standardised (and tailored) training programmes to help Living Labs ensure they have the necessary technical and business skills and knowledge to deploy and exploit recommended methods and tools. This may be best achieved through strategic partnerships with well established training programmes and/or Incubators.

By promoting the use of standardised methods and tools, tailored where required to specific environments, this will also assist in reducing interoperability challenges. It is critical to remember that adaptation of such de-facto standards may be required for a variety of reasons (cultural, geographic and technological). Lessons learnt in such circumstances must be collected and shared to reduce implementation risks in Living Labs with similar characteristics.

Two other important aspects of methods and tools are standardised data preparation so that results from different Living Labs are comparable and the integration and interfacing of the products, services, technologies, processes or ideas being co-created and evaluated with target users. The ways in which this will be done will vary depending on the stage of evolution.

4.3.7 SME Innovation Support

Support SME Driven Innovation SMEs or SMMEs as they are better known in Southern Africa for example, are historically of critical importance in a European Union context for economic development, serving as engines of national and

regional innovation and equally importantly job creation. In 2008¹²¹, 20.7 million SMEs in the EU27 (representing 99% of all enterprises) provided over 89.9 million jobs. They also typically provide important supply chain functions for the c. 43,000 large (non-financial) companies in the EU27, and are the primary source of European innovation.

Living Labs offer an important opportunity to support SME driven innovation, in partnership with other SMEs both on a national and cross-border basis, as well as in partnership with research centres, regional development agencies, local communities and Incubators. The creation of one SME in each participating community would have an enormous positive

¹²⁰ Institutional Memory is defined by Cunningham as the processes by which a culture, organisation, network or community captures and remembers distributed, collective knowledge of cultural concepts, data, experiences, knowledge and values essential to understanding its evolution, current values and purpose and its likely future strategic or cultural direction. The common challenge is a context where these distributed, collective memories are susceptible to loss through the death, departure or retirement of members unless pro-actively shared, stored, contextualised and cross-referenced. This requires a cultural ethos of sharing rather than hoarding knowledge.

¹²¹ Directorate-General for Enterprise and Industry. European Commission, *European SMEs under Pressure*. Annual Report on EU Small and Medium Sized Enterprises 2009

economic effect not just for the families of direct employees but also their wider communities. Some South African Members of the LLiSA Network have already "incubated" such spin-offs, which directly and indirectly benefit the communities with which they collaborate, as well as creating visible success stories, which will encourage greater entrepreneurial activity.

4.3.8 Community Development Support

Support CommunityIn common with the rest of the world, there are social, educational and
employment drivers that continue to attract people from across Africa
to migrate to cities. However, cultural and social identity across

Africa is still primarily oriented around tribal and community origins.

Living Labs offer an important opportunity to support Community driven innovation, in partnership with other Communities both on a national and cross-border basis, as well as research centres, regional development agencies and Incubators, industry and SMEs and local, provincial and national government agencies. Many of the Members of the LLiSA Network already have a strong focus on Community Development, primarily demonstrated through active listening and a commitment to skills transfer and other activities oriented around addressing priorities in rural and other disadvantaged areas. These priorities include supporting employment creation, engaging and empowering youth and women, and reducing social crime.

4.4 Key Success Factors of Living Labs in an African Context

The socio-cultural, socio-economic, employment and educational conditions within which Living Labs operate across Africa can be quite different, even within the same country.

Moreover, there are often significant variances between the amenities, infrastructure, educational and employment opportunities available in urban, suburban and rural environments in developed and developing countries. As a result, it is important to recognise that success factors (including lessons learnt and good practices) from developed countries are subject to adaptation when applied in developing countries. Furthermore, there may well be unique success factors or resource constraints in developing countries that must be taken into account when developing flexible, adaptation based models for sustainable Living Labs in Africa.

While a clear focus on sustainability is critical in Africa where human, financial and infrastructural resources are at a premium, it is important to clearly manage the expectations of all stakeholders in terms of success factors of Living Labs in an African context.

Based on the experience of IIMC, LLiSA members, IST-Africa National Partners and other key stakeholders across Africa who have contributed during the public consultation process, a number of key success factors must be actioned to achieve sustainable Living Labs in Africa.

- A primary success factor is active and early engagement with community leaders, gatekeepers and key influencers. Community representatives must understand the potential benefits and responsibilities of being "At the Heart of a Living Lab", and the expectations & roles of all participating stakeholders. It is essential to manage community expectations in terms of potential impact. Nothing builds and maintains trust, enthusiasm and commitment better than open communication, managed expectations, and the respect and transparency demonstrated by offering community representation on the board.
- Irrespective of whether a Living Lab is to run on a "for-profit" or "not-for-profit" basis, it is essential that serious consideration is given to organisational culture and business model(s) to be applied, potential sources of start up capital and recurring revenue streams, potential sources of non-financial contributions (e.g. volunteer time, training, in kind resources etc.), priorities for investing and reinvesting capital, income and non-financial contributions to achieve target ROI (Return on Investment) or ROO (Return on Objective), ownership of Intellectual Property created through Living Lab activities, mechanisms to reward management, staff and participating stakeholders based on their contribution to success of the enterprise, how to continue to incentivise and reward active community participation and ownership, and what sustainability means in the context of the Living Lab and the community or communities around which it is based. It is critical that all of these issues are openly discussed between all participating stakeholders and that a framework is put in place to review these on a regular basis to ensure relevance.
- Board members, management, key staff and volunteers, must all be selected very carefully – the success of any Living Lab is entirely based on the quality, integrity, commitment and passion of the people involved and the culture they create together.
- ➤ When building a team based on complementary skills, expertise and competencies, all must buy into an entrepreneurial mindset of "doing what needs to be done", with the upside if successful, those providing services may be compensated when income allows.
- The X-Factor is a commitment to team building, a Train the Trainer philosophy (to create skills capacity both within the team and within the Communities with which they engage) and an affinity to social entrepreneurship, even if the Living Lab is profit oriented in the longer term. At least some champions and team members should be selected based on their aptitude, passion and commitment for community development, even if they do not have the prerequisite skills, as long as they are committed to undertaking necessary business and digital literacy skills training as part of the investment in establishing a new Living Lab or "*rebooting*" an existing one. This scenario would facilitate cooperation with local Incubators, who often are faced with similar challenges. Indeed co-location, shared services and thus lower overhead, should be considered.

- Planning and preparation is critical to increasing the likelihood that a new Living Lab will launch, and then survive the first three years of operations the so-called "Valley of Death" during which many early stage enterprises traditionally fail. Developing a short to medium term (3 year) business and training plan ensures that promoters have defined a terms of reference for operations and considered likely key risk factors. Having basic business and digital literacy skills is likely to significantly increase chances for success.
- ➤ When carrying out a Skills Assessment, this should not be limited to board members, management and staff, but should also have a strong focus on the Community or Communities at the heart of the Living Lab. While it is normal to have different types of users (primary, secondary, non-active/passive observers), the reality is that the level of basic literacy, digital literacy and business skills will have a direct correlation with the level of engagement and usage by the target user community. Investing in community skills capacity is also an important way of incentivising and rewarding active community participation and ownership, which are key to sustainability. The greater the skills capacity, the higher the level of input into the co-design process, which dramatically increases the value proposition Living Labs can offer both clients and strategic partners.

Summary

Key Success Factors of Living Labs in Africa

- Need to identify Win Win, mutually beneficial and sustainable partnership opportunities (New Market Opportunities for Europe Vs. Foreign Direct Investment and Opportunity to Co-Create new products, services and business models designed for local needs for Africa)
- Success factors from developed countries (as well as other developing countries at different levels of ICT adoption are subject to adaptation within Africa
- Focus of Living Labs need to be aligned with national and regional policies (both to maximise impact and secure funding) as well as potential market opportunities
- Direct relationship between Living Labs, Incubators and eSkills Development Programmes as important, complementary mechanisms to support wider socio-economic impact
- Active, early engagement with community leaders, gatekeepers & key influencers is key to manage expectations, listen to concerns, and explain potential benefits and responsibilities
- Benefits for participating stakeholders must be balanced with community impact (community development, skills transfer, and stimulating entrepreneurship & employment)
- The "X-Factor" is a commitment to team building and a Train the Trainer philosophy (to create capacity within the team and within communities with which they engage)
- Developing a 3 year business plan and training plan ensures Living Labs promoters have defined an operational terms of reference and considered likely key risk factors

5. Creating Sustainable Living Labs Networks in Africa

While a clear focus on sustainability of Living Labs and Living Labs Networks is critical in an African context, what is even more important is to clearly manage the expectations of all stakeholders in terms of the goals and objectives of African Living Labs Networks.

However, to design, implement and build Living Labs Networks in Africa, it is important to have some context in relation to how Living Labs Networks have evolved around the world. To date most National and Regional Living Lab Networks have focused on knowledge sharing and training. The next logical step is to work towards harmonisation of tools and methods.

5.1 Emergence of Living Labs Networks

Living Labs Networks have evolved in different ways and over different periods of time, based on a range of drivers including policy and innovation priorities at national and regional level. In Finland for example, Living Labs are mentioned in the national innovation policy¹²², driving research organisations to engage with government and funding organizations. Alignment of Living Labs with national policies is necessary to access resources and maximise impact.

Emergence ofIn Europe, national and EU level Research and InnovationNational & RegionalProgrammes have launched Calls for Research proposals and pilotsNetworks Alignedfocused on putting users at the centre of innovation lifecycles and
applying Living Lab methodologies in real-life settings.

At a European Union level, this was aligned with the i2010 and Europe 2020 policies¹²³ and supported the Digital Agenda¹²⁴. As a result, trans-European research projects¹²⁵ were funded under the ICT Programme of Framework Programme 6 & 7 (FP6, FP7) and the ICT Policy Support Programme of the Competitiveness and Innovation (CIP) Programme¹²⁶. There was a requirement that projects incorporate industrial, SME, research and end user participation.

National Living Lab Networks have been established in Finland, Italy, Portugal, Sweden¹²⁷ and Slovenia, primarily with funding from national Innovation Agencies or Regional Development Funds (e.g. INTERREG) to (a) coordinate existing and emerging Living Labs and (b) provide a framework for knowledge exchange between Living Labs focused on experiences, challenges and lessons learnt, and the ability to engage with and leverage different user communities.

¹²² <u>http://www.tem.fi/index.phtml?l=en&s=2854</u>

¹²³ <u>http://ec.europa.eu/europe2020/index_en.htm</u>

¹²⁴ <u>http://ec.europa.eu/information_society/digital-agenda/index_en.htm</u>

¹²⁵ <u>http://ec.europa.eu/information_society/activities/livinglabs/projects/index_en.htm</u>

¹²⁶ <u>http://ec.europa.eu/information_society/activities/ict_psp/projects/index_en.htm</u>

¹²⁷ <u>http://www.cdt.ltu.se/projectweb/472b900fc973a/Index.html</u> - initially funded by VINNOVA as a project

A number of regional Living Lab Networks have also been established, either funded as standalone projects or as funding mechanisms to support trans-national Living Lab projects.

Evolution ofWithinEuropean Network of(MarcLiving Labs from(ENoIProject to Associationnetwork

Within the context of the CORELABS FP6 Coordination Action¹²⁸ (March 2006 – Feb 2008), the European Network of Living Labs¹²⁹ (ENoLL) was established in November 2006 to provide an umbrella network of Living Labs (Regional Living Labs, Corporate Living Labs and Rural Livings Labs), whether funded at European or

National level. The overall aim was to exploit synergies between Network Members in terms of networking, sharing good practices, provision of services and tools and the ability to access different user communities. Complimented by the efforts of the CLOCK and Open Futures Coordination Actions (CAs) and five Integrated Projects (IPs) launched under FP6 (Collaboration@Rural (C@R), CoSpaces, ECOSPACE, Laboranova and WearIT@Work), the Network initially consisted of 19 Members. It was decided that there would be a strategic benefit of linking each Call for Members (Wave) with an EU Presidency¹³⁰. The ENoLL Network expanded under the Portuguese Presidency in 2007 with support continuing under the CO-LLABS Thematic Network (April 2008 – June 2010) funded under CIP-PSP. The Network continued to expand during the third wave launched by the Slovenian and French Presidencies.

As part of the aspiration to achieve sustainability, the ENoLL Network was incorporated in Belgium in February 2010 as an International Non-Profit Association with 20 founding organisations. ENoLL is currently funded through (a) participation in FP7 and CIP projects (Apollon, Smart Metropolitan Areas Realised Through Innovation & People (SMARTiP), Networked Smart Peripheral Cities for Sustainable Lifestyles (Peripheria), European Platform for Intelligent Cities (EPIC) & CONCORD FI PPP), (b) providing services to effective and associate members and (c) membership fees. ENoLL has three membership levels: Adherent Member - \notin 500 per year, Effective Member and Associate Member – \notin 5,000 per year.

Regional Networks Funded Through Projects and National Agencies The MedLab Project¹³¹ (Mediterranean Living Lab for Territorial Innovation), funded under the EU Regional Development Fund (April 2009 - October 2011), aimed to develop a trans-national Mediterranean Living Lab Network by aggregating partnerships built up through thematic pilots in 7 participating regions (Andalusia

¹²⁸ <u>http://www.ami-communities.eu/wiki/CORELABS</u>

¹²⁹ www.openlivinglabs.eu

¹³⁰ The Presidency of the Council of the European Union is responsible for the functioning of the Council of the European Union, which rotates between the 27 Member States of the European Union (EU) every six months. ¹³¹ http://www.medlivinglab.eu/

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region; Provence, Alpes, Cotes d'Azur; Latium region; Sicilian region; Slovenia; Region of Central Macedonia, Larnaca District)¹³².

Under the LILAN¹³³ (Living Labs in the North) Initiative, financed by NordForsk, seven countries in the Nordic-Baltic region established a joint R&D project funding programme in 2009. The national Research and Innovation Agencies involved include: VINNOVA (Swedish Governmental Agency for Innovation Systems) as Coordinator; Danish Council for Strategic Research (DASTI); Finnish Innovation Fund (SITRA); The Icelandic Centre for Research (RANNIS); Investment and Development Agency of Latvia (LIAA); Information Society Development Committee, Lithuania (ISDC) and The Research Council of Norway (RCN).

Projects funded under the first LILAN call "Innovations in Cross-Border Living Lab Structures - Empowering Users in Real Life Settings" started in late 2010 with a two-year duration. Because they were designed around active collaboration between research, industry, public sector and end users from at least three funding countries, they will facilitate de-facto cross-border Living Labs Networks, which is hoped can be formalised after the projects end.

The LLiSA Network (Living Labs in Southern Africa) was launched in South Africa on 24 February 2009, with support under the COFISA and SAFIPA Programmes, which are co-funded by South Africa and the Government of Finland. Chapter 5.2 presents a case study focused on LLiSA, while Chapter 5.3 presents lessons learnt from the LLiSA experience.

5.2 Case Study – Network for Living Labs in Southern Africa (LLiSA)

Living Labs in Southern Africa Network Supported through Bilateral Funding Living Labs methodologies started to be applied in different ways in South Africa in 2005, and since then user-driven innovation has gradually entered into the research mainstream. While the LLiSA Network (Living Labs in Southern Africa) started operating in 2006, LLiSA was officially launched on 24 February 2009 in Stellenbosch, South Africa. LLiSA was hosted by the Meraka Institute, CSIR from the

start and later supported by the South African Department of Science and Technology (DST) and Ministry of Foreign Affairs, Finland under the COFISA¹³⁴ and SAFIPA¹³⁵ Programmes.

While the LLiSA Network started with a regional focus on Southern Africa,, during the start up phase, it focused primarily on building capacity, facilitating collaboration, establishing and

¹³² MARSH J, *Macro-Regional Living Lab Innovation Systems*, In eChallenges e-2011 Conference Proceedings, Paul Cunningham and Miriam Cunningham (Eds), IIMC International Information Management Corporation, 2011, ISBN: 978-1-905824-27-4

¹³³ <u>http://www.lilan.org/en/</u>

¹³⁴ Cooperation Framework on Innovation Systems between Finland and South Africa (Sept 2006 – Feb 2010)

¹³⁵ South Africa-Finland Knowledge Partnership on ICT (July 2008 – July 2011)

developing Living Lab activities and supporting existing and emerging Living Labs in South Africa. As such, LLiSA could be described as a Hybrid Living Labs Network, with a strong regional engagement strategy. LLiSA actively brings together research organizations, industry players, government bodies, community leadership and potential promoters of Living Labs to advance national and regional Living Lab initiatives. LLiSA also sees its role as facilitating networking, community building, knowledge sharing and skills transfer between actors in South Africa, interested stakeholders in other Southern African countries and international stakeholders including Members of ENoLL¹³⁶ (European Network of Living Labs).

LLiSA has taken a position that its current focus is on opportunities for co-creation of innovation and collaboration to offer/develop new ideas of innovation, rather than technology transfer or commercialization *per se*. This is aligned with SAFIPA's focus to support Information Society Technologies innovation and knowledge creation in South Africa.

The LLiSA Network offers government, industry, research and civil society a large-scale experimentation platform for new products, services, technologies, processes and business models. LLiSA places a priority on stimulating interaction, knowledge sharing and collaboration between existing and emerging Living Labs, facilitating relationship building with industry partners and other research, government and community stakeholders, and raising public awareness of its Members activities and their contribution to community development, employment creation and increased economic competitiveness and growth.

The LLiSA Network is now transitioning towards a formal, legal entity, having been successfully incubated using COFISA and SAFIPA funding, and hosted/co-located as a virtual organisation by the Meraka Institute, CSIR for two and a half years. While consideration is being given to Section 21 incorporation in South Africa as a not-for-profit organisation/association, other equally important issues being considered include the growth strategy, funding model, membership fees (if any) and options to reduce operating costs, including continued co-location at Meraka.

The Finnish Ministry of Foreign Affairs views the investment in supporting the establishment of LLiSA by COFISA and SAFIPA as providing a strong Return on Objective (ROO) based on progress to date, and is open to continuing to support LLiSA through this transition phase. Equally importantly, based on feedback received during the 3rd Annual LLiSA Workshop in Grahamstown, Eastern Cape, LLiSA Network Members feel a strong sense of community, a key justification for transitioning from a virtual to a formal organisational structure.

¹³⁶ http://www.openlivinglabs.eu/

5.3 Lessons Learnt To Date from LLiSA

As the first Living Labs Network in Africa (Hybrid Living Labs Network - primarily nationally focused with strong commitment to regional engagement), it is important to consider which good practices and lessons learnt from LLiSA can be built upon to increase the possibility of success for establishing national, hybrid or regional Networks elsewhere in Africa. At the same time, it is important to recognise that there are cultural and other differences between South Africa and other countries in Southern Africa (the regional focus of LLiSA), and these differences can be even more striking when other countries and regions across Africa are considered. For these reasons, while good practices and lessons learnt from the LLiSA experience must be carefully considered, it is important to recognise that rolling out national, hybrid & regional Living Labs Networks across Africa may require some adaptation of good practices and lessons learnt.

Establish a Commonly Owned Vision for Primary Goals and Objectives

The first key success factor is to establish a commonly owned vision for the primary goals and objectives of the Living Labs Network through engagement and a co-creation process with all key stakeholders (including the physical and virtual communities around which Living Labs are based). While these may vary from country

to country and region to region, based on national and regional priorities, educational opportunities, available human and infrastructural resources, urban-suburban-rural divide, transportation and distance challenges and level of socio-economic development, it is also quite likely there will be common goals and objectives.

These are likely to include functioning as an Institutional Memory for the Network Members and other relevant stakeholders, where success stories and lessons learnt, problems encountered and how these were addressed are captured, analysed, generalised and shared. This is particularly important with project oriented Living Labs with fixed resources, duration, goals and objectives, where public lessons learnt can be quickly lost when the projects end.

Establishing an Institutional Memory includes developing databases of Members (profiles, stakeholders and communities involved, focus) and users (communities and government, industry, research, civil society stakeholders), developing training modules (communication skills, business skills and digital literacy), adapting evaluation tools and methodologies as required, working with members to identify good practices and co-author case studies, and developing a culture that understands the importance of Intellectual Property Rights.

It also involves regular engagement with other national, regional and international Living Labs Networks to keep informed of good practices, evaluation tools and methodologies that could be adapted to suit requirements in a developing country context, and educating national, regional & international stakeholders of success stories, good practices, technical innovations, adaptation opportunities, and methodological, technical and financing requirements.

Training and capacity building is also a logical Network function, as this is mutually beneficial for all Members, even those at different stages of evolution. This can also be seen as an extension of Institutional Memory, with training materials available for adaptation as required, as through the training and community development function, continuity is achieved. Institutional Memory also involves a commitment to regular communication to Members, community representatives and other stakeholders on the Network mailing list, as this supports community building, knowledge sharing, and capacity building of members and communities.

Assess Benefits of Co-
Locating Network withA second key success factor identified from LLiSA's experience,
is the potential benefit of hosting or co-locating the Network with
an existing organisation with strong systems in place for
procurement and payments (essential for operations), and auditing
and reporting (which are essential to support third party funding,

whether from donor government, national or provincial government, other stakeholders or foundations). Such an organisation should ideally provide access to complementary resources and skill sets useful to the Network and its Members. This hosting organisation could be a thematically relevant government ministry or agency, provincial or national research organisation or Incubator. While selecting such a partner organisation, it is essential their board and senior management are committed to the relationship, there is clear complementarity of purpose (whether reinforcing policy or targeting a common constituency) and mutual benefit.

Need Strong Focused Leadership with Clear Vision and Support and Trust of Members

A third key success factor is the need for strong, focused leadership, with a clear vision for what the Network aims to achieve, and the support and trust of its Members. It is also important that such leadership be supported by a strong board with the complementary skills, expertise, contacts, credibility and fund

raising capacity required to help ensure the Network has the opportunity to achieve its organisational goals. While it might seem obvious that such a board be representative of its Network members (and this is certainly important to ensure trust and transparency), what might be less obvious (especially as the Network evolves) is that not all the necessary skills, expertise and contacts may be available within the Network itself.

It is important that the leadership and stakeholders involved in supporting the success of the Network carries out a honest, 360 degree review of the necessary board competencies, skill sets and contacts required in the context of the Network Management Team available (part-time or full-time - if any) to guide the tactical and strategic implementation of its goals. What is right at one stage of development may not be sufficient or appropriate for another. The

transition period from a virtual to a formally constituted organisation is a suitable time for such a 360 degree review; establishing a Network where one does not already exist, is another.

Depending on the strengths, weaknesses, breadth and depth of available leadership from inside or outside an existing or new Network, the makeup of the board may require reconsideration. In the interest of trust and transparency, it is essential to regularly engage with Network Members so they understand and support decisions made in good faith, in their best interest.

Strong FocusA fourth key success factor from the LLiSA experience is that a strong
focus on community engagement, community development and skills
development
and SkillsA fourth key success factor from the LLiSA experience is that a strong
focus on community engagement, community development and skills
development and skillsDevelopment
and Skillsdeveloping country context. This may support cooperation with a local,
provincial or national educational institution, government institution,
incubator or funding agency with similar or complementary goals.

Ability to be Responsive to Stakeholders Requirements A fifth success factor is the ability to be nimble and responsive to the needs of members, their communities and the government, industry, research, civil society and other stakeholders who either fund Living Labs or Living Labs Networks, or use their services. LLiSA would not have achieved the level of success and credibility required to support the transition from

virtual to formally established legal entity without such engagement and relevance. It is important to respond quickly to mistakes, successes and opportunities, as most organisations have to reinvent themselves regularly to continue to meet market needs.

It is through such regular engagement, active listening and by keeping a "finger on the pulse" of the stakeholders to whom the Network and its Members are responsible that LLiSA was able to confirm demand from Members, communities and stakeholders for investment in

- Researching why Living Labs succeed, fail or falter, and sharing lessons learnt not just to members, but also stakeholders and the general public to raise wider awareness of the important role Living Labs can play in research and socio-economic development
- Developing training to help promoters of Living Labs and community leadership develop the necessary business and financial planning, communications and marketing, analytical and technology skills required to address market opportunities
- Starting to develop guidelines and metrics adapted from the Harmonisation/Interoperability Cube to allow African Living Labs to benchmark themselves against developing countries peers, identify and leverage potential strengths and collaboration opportunities, and identify and address potential weaknesses

Consistent messaging about the differences between projects and Living Labs, and tailoring messaging, use cases and benefits statements that resonate with each target stakeholder group to establish the credibility required to build a relationship

Regular Face-to-Face Engagements to Develop Trust, Increase Collaboration and Share Experiences A sixth success factor is that while services can certainly be delivered remotely and virtually (e.g. fast adoption of mobile services, remote training, eHealth, eGovernment services), regular face-to-face interactions, including training workshops, facilitate developing trust

relationships, overcoming cultural differences and identifying opportunities for collaboration that sometimes can only occur during the "empty spaces" of a meeting or event. The regular face-to-face meetings (including annual workshops) facilitated through LLiSA have been identified by members as a key factor that has facilitated progress made to date. Face to face meetings are also an excellent way to better understand and manage member expectations, as well as discuss, explore and develop reward systems that incentivise community loyalty.

5.4 What Goals and Objectives are Appropriate for African Living Labs Networks?

It is essential to manage expectations in terms of the proposed focus of a Living Labs Network. The more services to be provided, the more resources required (either financial or in-kind contributions) from Network Members, communities and other stakeholders with an interest in the socio-economic impact Living Labs can make at a local, national or regional level.

Provision of Skills Development, Networking and Support to Identify Funding The primary goal of any Living Labs Network must be to provide Members and potential Members with advice, contacts, introductions, educational and research services and opportunities for knowledge sharing, community and skills development, and networking. Its secondary goal must be to represent Member

interests by engaging with all key stakeholders (including funders) to raise awareness of the potential impact of leveraging Living Labs methodologies and identify funding opportunities to support the incubation of new Living Labs, evolution of existing Living Labs and replication of proven models in new communities.

Establish Codes of Practise and Codes of Ethics

However, to have the necessary credibility to achieve such goals, a Living Labs Network is only as strong as its weakest link. By establishing Codes of Practice and Codes of Ethics, Members and potential Members can be held to transparent, minimum standards,

which will inspire confidence in any stakeholder, funding agency or community engaging with a Network member. Consideration may also be given to having different levels of membership, based on meeting a range of different criteria. Such an approach would allow Living Labs at different stages of development to enjoy access to services and Membership benefits that support their evolution, while providing recognition based on performance, track record, and commitment to training & up-skilling team members and communities with which they interact.

Promote Culture of Collaboration Between Members

It is essential that a Living Labs Network promotes and instils a culture of collaboration and cooperation between Members, as this is central to the Living Labs concept. It would also require that all Network Members actively share good practices and lessons learnt

from overcoming challenges (whether cultural, methodological, or technical in nature). Apart from facilitating face-to-face knowledge sharing, it is obvious that a Living Labs Network must implement a web-based community platform to facilitate virtual knowledge sharing, support community development, and reinforce social media efforts by Members. A Network may decide to offer micro-site facilities to Members without necessary resources & skills.

Avoiding duplicating mistakes and wasting scarce resources is particularly critical in Africa. This would include persuading Members to apply for joint funding, to explore the market opportunities that providing access to a critical mass of user communities offer, test the potential scalability of solutions that Living Labs Network members can jointly develop, and co-design common skills-development programmes to support management, methodological and business capacity issues, as well as more tailored programmes for those working with similar types of communities, addressing common issues or exploring new techniques.

Support Living Labs to Provide Training and Skills Development to Communities Supporting individual Living Labs to offer professional training and skills development to their communities at little or no cost adds to the overall value proposition to Members. It offers an attractive proposition for both industry and government to support Living Labs Networks, under Corporate Social Responsibility (CSR)

programs for industry, and social development and educational programmes for provincial and national government. Based on the experience of LLiSA, it may also provide an attractive proposition for the international funder/donor community.

Encourage Collective Vision Towards Goals of Network

It is also essential that a Living Labs Network practices what it preaches in terms of establishing a strong value proposition and identity for its Members, potential Members, key Stakeholders (government, industry, research, civil society), the public and

media. This will involve a co-creation/co-design approach to developing a collective vision for the Network, that must be lead by its board and informed by its Members and their communities, and Stakeholders who may benefit from engaging services of these Living Labs.

Engage with Research Organisations, Government, Industry and Community Groups

It is critical to engage with research organisations, government, industry and community groups, as these are valuable sources of expertise, resources and income for Living Labs Networks and Members, as well as insight into both existing and emerging market needs. Workshops and Showcases can provide public

platforms for Living Labs Networks to engage with stakeholders and educate the public, while providing their Members with an opportunity to gather market intelligence and market themselves, their products and services to potential partners, users and new communities. Organising such forums as well as regular training workshops will also facilitate knowledge sharing and community building between Members.

Identify Key Industry Players and Supply Chain who can Benefit from LL Methodologies In each province, country and region, it is important to identify key industry players and supply chains who could benefit from Living Labs methodologies to test and customise technologies and processes, services and products for emerging markets. This could also provide a thematic focus for establishing Living Labs around

local, provincial, national and regional government and industry priorities to maximise socioeconomic impact. This would also facilitate potential funding as a Multi-Stakeholder or Public-Private-Partnership (PPP) to support longer term sustainability of Living Labs Networks.

Identify Relevant Government Agencies who can Leverage LL Methodologies Similarly, it is important to identify key provincial, national and regional government organisations, who could leverage Living Labs methodologies to pilot and evaluate new services for education, healthcare and public service delivery, as this could also attract PPP funding. It is also important to consider opportunities to build the

skills capacity and employability of local (particularly marginalised) communities involved.

Summary

Key Success Factors For Living Labs Networks

- Establish a commonly owned vision for the goals and objectives of the Living Labs Network through active engagement and co-creation with all key stakeholders
- Consider co-locating Networks with incubators or thematically relevant government or research organisations with strong procurement, payment, auditing and reporting systems to lower costs and access complementary resources and skill sets
- Identify strong, focused leadership with clear vision and support & trust of Members, and strong board with complementary skills, expertise, contacts and credibility
- Networks must actively support skills development of Members and communities with
which they engage and support community engagement & development

- Networks must proactively address the needs of Members, their communities and all stakeholders who either fund or use services of Living Labs Networks or Members
- While virtual infrastructure is essential to maximise knowledge sharing and community building, regular face-to-face interactions facilitate developing trust relationships, overcoming cultural differences and identifying opportunities for collaboration that occur during the "empty spaces" of a meeting or event

Proposed Goals and Objectives for Living Labs Networks in Africa

- Primary Goal provide Members with advice, contacts, introductions, educational and research services and opportunities for knowledge sharing, community & skills development, and networking
- Secondary Goal represent Member interests by engaging with key stakeholders (government, industry, research, civil society and funders) to raise awareness and identify opportunities for implementation, replication and funding
- Create a framework for trust and credibility with key stakeholders by establishing Codes of Practice, Codes of Ethics & minimum standards Members should observe
- Living Labs Networks must promote and instil a culture of collaboration and cooperation in Members and their communities the heart of Living Labs concept
- Networks must support Members to offer low or no cost professional training and skills development to communities, increasing the overall value proposition to all
- Networks must actively engage with research organisations, government, industry and community groups, as valuable sources of expertise, market requirements, resources and income/funding
- Each Network must identify key provincial, national and regional actors that could directly benefit from Living Labs: industry players and supply chains to test and customise technologies and processes, services and products for emerging markets; and government agencies to pilot and evaluate new services for education, healthcare and public service delivery, which could attract funding

6. Recommendations

There are significant cultural, developmental, infrastructural and linguistic differences across Africa, which pose challenges when commercialising products, services, processes & business models. Living Labs Networks provide a framework to bring together relevant stakeholders (government, business, research, civil society) at a local, provincial, national and regional level that could benefit from or contribute to the capacity of communities & Living Labs promoters to collaborate to evaluate real-life deployment in structured, controlled environments.

African Living LabsTraditionally, Living Labs have been primarily focused on user-
driven innovation and the evaluation in real-life environments of
new products, services, processes and business models. However,
in an African context, there are often significant variances between
the amenities, infrastructure, educational and employment
opportunities available in urban, suburban and rural environments.

As a result, it is important to recognise that success factors (including lessons learnt and good practices) from developed countries are subject to adaptation when applied in developing countries. However, the focus and remit of Living Labs Networks must go beyond adapting proven Living labs concepts, good practices, methodologies and tools to local, national and regional circumstances. They need to support ICT research cooperation, local innovation and entrepreneurship, developing the potential of the current African ICT and STI landscape, as well as wider socio-economic development and community empowerment.

While people continue to migrate to urban centres all across Africa, this is primarily for economic reasons due to often limited or no employment, educational or other opportunities in their village or local area. Even those people who migrate to cities typically strongly associate themselves with where they are from – not the city where they are living, and will return to visit family as often as economic circumstances, transportation options and distances allow. In many cases, they would return home permanently if communications and employment existed.

6.1 General Recommendations

Focus on Supporting Regional Cooperation through Loosely Coupled National Networks or Hybrid LL Networks For these socio-cultural as well as socio-economic reasons, building Living Labs Networks initially on a national, and later on a regional basis (either through loosely coupled National Networks as these evolve within the five regions of Africa - Northern, Southern, East, West and Central Africa, or through a Hybrid Living Labs Network with a strong regional engagement strategy – such as LLiSA for Southern Africa) makes much more sense than trying to prematurely

establish a pan-African network with limited and patchy regional representation.

Other than LLiSA, no other National or Regional Living Labs Networks yet exist in Africa. It is already clear however, that many of the initial members of such new Living Labs Networks will be embryonic/informal and potential/planned Living Labs. Some of these will already be known as projects under different names - often without all of the methodological nuances typically required of a Living Lab. This means that creating a membership culture, a common language and common understanding of Living Labs will be of enormous importance for these newly established Living Labs Networks. It also means that expectations of members, communities and all other stakeholders involved must be understood and carefully managed.

By building Living Labs Networks in Africa around current, informal and potential/planned living labs at a local, provincial and national level, it ensures that each Network reflects common cultural, developmental, educational, infrastructural and socio-economic interests and priorities across their Membership. This will facilitate greater reusability of training materials, adapted good practices, lessons learnt, methodologies and tools across Members, supporting greater Return on Investment (ROI) and Return on Objective (ROO).

Need to Secure Multi-Stakeholder Funding (Government, Private Sector and Donors) Having this type of geographic identity and focus will also facilitate securing funding from provincial and national government (through alignment with local, provincial and national policies), the private sector through sponsorship and Corporate Social Responsibility (CSR) programmes, and international funders with a geographic

focus. Finally, it will focus delivery of research and evaluation services for Network Members and other stakeholder groups, while helping to build brand equity and identity for the Network.

However, there are several reasons why serious consideration should be given to designing and building at least one Hybrid Living Labs Network such as LLiSA (South African centre of gravity, but a strong Southern Africa engagement strategy) in each region of Africa.

Hybrid Living Labs Network can Support Regional Priorities and Knowledge Exchange First, not every country has the necessary scale or available human or financial resources to achieve a critical mass of Living Labs that would justify a National Living Labs Network. Just as co-location or hosting of Living Labs Networks with Incubators, or thematically relevant government or research organisations can

be an effective way of lowering operating costs while providing access to complementary resources and skill sets, a Hybrid Living Labs Network can cost effectively nurture and support the development of Living Labs in neighbouring countries until sufficient critical mass is achieved to justify consideration of extending it into a truly Regional Living Labs Network.

Second, even for those countries that may have the scale and necessary resources to achieve a critical mass of Living Labs, there is a serious commitment required in terms of both learning

curve and resources (particularly human, but also financial) for successful design and implementation. Participation in a Hybrid Living Labs Network (by taking advantage of training workshops and other services) and exposure to how it is managed (through board representation) significantly lowers implementation risks by providing hands-on experience of how a Network operates and a model that can be adapted, if required, to national priorities. The trust relationships established will also facilitate regional coordination and may also lower overall operating cost by encouraging sharing of resources between loosely coupled Networks.

Support Collaboration, Regional Integration and Engagement within each Regional Economic Community Third, by their nature, Hybrid Living Labs Networks promote the Living Labs (and Incubators) principles of collaboration, community building and knowledge sharing on a cross border basis. This can support regional integration and engagement at a Regional Economic Community (REC) level. Such engagement may support a more coordinated regional approach to supporting

Living Labs Networks, once there is sufficient national activity within several countries in the REC. RECs have an important role to play in this regard due to their coordinating mandate.

Serious consideration should be given by each REC (and their Member States) to requesting re-allocation of EDF funds (either as part of the current mid-term review of EDF 10, or as part of the EDF 11 implementation plan) to support wider adoption of Living Labs methodologies (especially in conjunction with Incubators, with whom many common characteristics have been identified) and implementation of accredited eSkills training programmes and Living Labs Networks. This will only work if a REC ICT/STI Desk already exists to coordinate such activities and provide a mandate for responsible Ministers to meet regularly to discuss common issues. Where no ICT/STI Desk exists, or where it is under resourced, reallocation of EDF funding should be requested to address such structural weaknesses within the REC Secretariat. Political support and encouragement from the EC and AUC would be beneficial in this regard.

Potential in East Africa to Leverage Links with TANZICT Programme in Tanzania For East Africa, the timing could be good to consider supporting the design and implementation of a Hybrid Living Labs Network in Tanzania. TANZICT (Tanzanian Information Society and ICT Sector Development Project (2011 - 2015) supported by the Ministry of Foreign Affairs of Finland) started in August with

COSTECH (national IST-Africa Partner), and Ministry of Communications, Science and Technology (MCST). TANZICT is focused on supporting STI capacity building and wider adoption of Living Labs methodologies and Incubators. Leveraging Living Labs Methodologies and collaboration between Living Labs with Incubators and Incubator related activities are a key theme within TANZICT, clearly recognising the potential synergies.

However, in a country as large as Tanzania, as one would expect, how collaboration between Living Labs and Incubators will operate will vary significantly, in part depending on whether the geographic context is rural, suburban or urban. A Living Lab and Incubator in Dar es Salaam for example with a common or aligned focus could easily collaborate to reinforce impact. The challenge will be addressing rural Living Labs, where the primary focus is on community development. In such a scenario, the challenges are greater, and it is likely to take much longer to develop a framework for a mutually beneficial collaboration with an Incubator. This is where the recently completed national fibre optic ring, increasing competition in delivering Internet bandwidth and COSTECH's previous experience come into play.

COSTECH currently hosts an Incubator on the top floor of their offices in Dar esSalaam, which was established in collaboration with InfoDev and the local private sector. Some ICT business companies are physically incubated while a larger number participate virtually. These operations will be expanded as part of the TANZICT Programme. COSTECH is responsible at national level for promoting the use and application of ICT and STI, as well as coordination of ICT4D research, and established the National Research and Education Network (NREN). As a result, it has a strong national mandate to encourage universities and research organisations across Tanzania to consideration participating in or hosting both Living Labs and Incubators.

COSTECH, supported by InfoDev, facilitates monthly Mobile Monday social networking events, providing a platform for young ICT entrepreneurs to share experiences and network. It has also engaged McKinsey Consulting to develop the business case for a multi-stakeholder partnership to develop an ICT Park in Dar es Salaam hosting ICT SMEs, established multinationals and IT services. It will also have business process outsourcing (BPO) call centres, online education through cloud computing, community public space and an incubation centre. Rhapta City aims to be the first 'Smart Village' cluster of its kind in East Africa, facilitating knowledge sharing and technology transfer between ICT-SMEs and multinationals.

COSTECH has been involved in numerous ICT projects in rural areas including tele-centres, School Net and local government projects. This provides the necessary framework to facilitate establishing rural Living Labs with local and international partners. Results of IDRC supported studies in Urban and Rural East Africa indicated that ICT intervention (Mobile phone, Air time and internet access) reduced poverty from 47% to 16% in one urban district of Tanzania.

Following high-level discussions with COSTECH and MCST, it is clear they are willing to take the lead to drive the adoption of Living Labs methodologies not just in Tanzania, but across the East African Community. Based on high-level discussions between IIMC, COSTECH and MCST and a Deputy Secretary-General of EAC, it is clear he appreciates the potential impact and would support such an approach. COSTECH is willing to host and

provide support for this proposed Hybrid Living Labs Network, as Meraka, CSIR did for LLiSA. LLiSA and IIMC are interested in collaborating with COSTECH to achieve this goal.

Proof of Concept that can be Replicated in Other Regions of Africa

Successful replication (with necessary adaptation) of the Hybrid Living Labs Network Model in East Africa would provide an important proof of concept to support staged National or Hybrid Network implementations across other regions of Africa. Further

research needs to be carried out, particularly in North Africa, West Africa and Central Africa to establish current Living Labs and Incubator related activities, priorities for potential Living Labs, perceived demand, services to be provided, potential collaboration and co-location opportunities with existing Incubators and other key stakeholders and policy alignment.

Serious consideration should be given by each African Member State to requesting reallocation of national EDF funds as part of the negotiation of their EDF 11 implementation plan to support wider adoption of Living Labs methodologies (especially in conjunction with Incubators, with whom many common characteristics have been identified), the implementation of accredited eSkills training programmes and Living Labs Networks. Similar consideration should be given to requesting re-allocation of EU bi-lateral and donor funding. Political support and encouragement from the EC and AUC would be beneficial in this regard.

6.2 Recommendations for Process of Establishing National Living Labs Networks

It is quite likely that in most African countries, government and or international funder support will be required to support the establishment and at least the first five to six years of operations of any Living Labs Network. This reflects socio-economic reality, where even in South Africa, asking members to make financial contributions towards operating costs is not appropriate at their current stage of development. Co-locating or hosting Living Labs Networks with established incubators, relevant research institutions or government agencies could also be a way of accessing relevant management and/or thematic expertise and lowering operating costs through shared overhead and focusing management resources on service delivery and strategy.

Feasibility Studies to Identify Relevant Priorities and Stakeholders and Support Funding Application(s) To attract funding for each National or Hybrid Living Labs Network, it will be necessary to carry out a feasibility study to (a) analyse the commercial, cultural, economic and research environment including local, provincial and national government and funder policies around which Living Labs

could be aligned, (b) identify existing and emerging living labs and existing projects which could be adapted to become emerging Living Labs and analyse their existing and potential needs as prospective Network Members, (c) identify key stakeholders (relevant government ministries, industry, research/academia, civil society and international funders whose organisational goals would be supported through the successful evolution of Living Labs), and (d) identify incubators, organisations involved in community development and skills transfer and urban and rural communities with whom these key stakeholders have an existing relationship, and explore their interest in becoming involved in Living Labs activities.

Key outputs of each feasibility study must be actionable recommendations for alignment with specific government and funder policies and priorities, and identification of key stakeholders willing to collaborate to support the establishment of a National or Hybrid Living Labs Network with the capacity to (a) provide Members and potential Members with advice, contacts, introductions, educational and research services and opportunities for knowledge sharing, community and skills development, and networking, (b) represent Member interests by engaging with key stakeholders (including funders) to raise awareness and identify opportunities for implementation, replication and funding and (c) establish an Institutional Memory and create a framework for trust and credibility with key stakeholders (including funding agencies and communities engaging with a Network Member) by establishing Codes of Practice, Codes of Ethics and minimum standards all Members are expected to observe

Having carried out the feasibility study (and assuming the overall results are positive), it will also be necessary to develop a three year business plan for each Living Labs Network (to provide a framework for commitments from stakeholders and measurable performance metrics, and identify board members with the required complementary skills, experience and contacts.

6.3 Recommendations on Board Representation for Living Labs Networks

Multi-Stakeholder Involvement (Government, Industry, Donors, Research, Civil Society) with Strategic Capacity & Networks The board of a Living Labs Network should have all key stakeholders (government, industry, research, civil society, funders) represented, with a complementary mix of skills and expertise relevant to the environments in which its members engage and operate. While this mix of skills and

expertise will include strategic thought leadership in the Living Labs space, what is equally important is strategic capacity in the areas of innovation, communications and marketing, research methodologies, business development, community development - and fund raising.

Having access to these skill sets, contacts and extended network at a board level will help ensure that the Living Labs Network can deliver value and is properly informed about delivering appropriate, high quality services to its members. However, when potential member services have been defined, they must then be funded, which requires the establishment of policies to deal with start-up and operating financing, in-kind and financial contributions (from participating as well as other stakeholders), membership criteria and business model. Ideally the board Chairperson should commit to a three-year term (Chairperson Elect, Chairperson, and Immediate Past Chair) as this provides a framework to ensure Institutional Memory at a board level. The Immediate Past Chairperson can act as an advisor to the current Chairperson, who in turn mentors the Chairperson Elect. Board members could be elected to one, two or three year terms. In the case of two or three year terms, these should be structured so there is some overlap between existing and new members, thus ensuring continuity.

In the case of a Hybrid Living Labs Network, one or more board members should represent the interests of Living Labs Members outside the Network's main centre of gravity. Such representation should be regularly reviewed as the demographics of the Network evolve.

It is important that the leadership and stakeholders involved in supporting the success of the Network carries out a honest, 360 degree review of the necessary board competencies, skill sets and contacts required in the context of the Network Management Team available (part-time or full-time - if any) to guide the tactical and strategic implementation of its goals. What is right at one stage of development may not be sufficient or appropriate for another. The transition period from a virtual to a formally constituted organisation is a suitable time for such a 360 degree review; establishing a Network where one does not already exist, is another.

6.4 Recommendations for Governance of Living Labs Networks

Leverage International Good Practises Adapted to African Context

A starting point for governance of new National and Hybrid Living Labs Networks should initially be based on good practices from LLiSA's experience, which reflect international good practices adapted to African circumstances. These good practices

should be proposed to members of the new Network for their consideration, with the potential additional benefit that at a later stage, having a high level of overlap of common values and organisational cultural norms will facilitate collaboration between Networks.

If a majority of Network Members believe things should be done differently, they should test their hypothesis for six months and then re-evaluate. While methodological consistency is important when designing and supporting Living labs and establishing Network linkages, these Networks will only be effective if there is a strong sense of local and regional ownership. This will ensure that new Networks respect cultural, national and regional differences, as well as the priorities established by the requirements of Members and their associated communities.

6.5 Recommendations for Evolution of LLiSA

Evolution of LLiSA (Living Labs in Southern Africa) Network LLiSA already exists as a successful Hybrid Network model for replication and adaptation. Taking a Hybrid regional engagement perspective, it is building around a core, national membership, reflecting current and embryonic Living Labs working with communities in different South African provinces. Through successful engagement with local, provincial and national stakeholders and international funders, it is in a strong position to support its Members. By focusing on delivering training addressing the needs of Members and potential Members, and carrying out research to better understand the communications, educational, financing and partnering requirements of members and the communities with which they engage, it has created a high level of trust, Member engagement and strong sense of Member ownership. By starting to capture good practices and lessons learnt in a structured way, working with Members to co-author case studies and develop a common language to describe Living Labs, it is establishing an Institutional Memory for the LLiSA Network that will support its Members, but also serve as a framework for evolving other African Networks.

LLiSA has started the process of drafting a three-year business plan, informed by its experiences to date as well as polling current and prospective Members. The LLiSA Network has a proven track record and is in transition between its current status as a virtual organisation and its future status as a legally established, not-for-profit association. LLiSA is also transitioning between fulfilling the role of a National Living Labs Network for South Africa and aspirations since its foundation as a regional Network for Southern Africa. There is a great deal that can be learnt from the LLiSA experience, and its Members and leadership are open to sharing this experience, including developing accreditation capacity within Africa.

LLiSA's success to date has been driven by strong leadership, support from the COFISA and SAFIPA Programmes and the trust relationship developed with its Members. It would be a very positive development if key stakeholders (e.g. Government of South Africa, The Ministry of Foreign Affairs, Finland, Meraka Institute, CSIR) who have supporting the LLiSA success story to date, continued to support LLiSA in both its national and regional engagement roles. Such continued support would also help attract commitments from other relevant stakeholders, who appreciate the potential impact of focused skills transfer, community and entrepreneurial development, all of which are important socio-economic benefits of African Living Labs.

Need to Show Clear Alignment with National Policies and Donor Priorities in Relation to Innovation & Skills Development As LLiSA is currently completing a three year business plan in the context of establishing itself as a not-for-profit association, it is recommended that national policies (e.g. MTSF¹³⁷, HRD¹³⁸, HRDSA¹³⁹, NSDS¹⁴⁰) and funder policies related to skills development and human resource

¹³⁷ Medium Term Strategic Framework (MTSF) 2009 – 2014, Minister in the Presidency: Planning (2009)

¹³⁸ Human Resource Development (HRD) Strategy, Department of Labour (2010)

 ¹³⁹ Human Resource Development South Africa (HRDSA) Draft Strategy for Discussion 2010 – 2030,
Department of Higher Education & Training

 $^{^{140}}$ Framework for the National Skills Development Strategy 2011/12 – 2015/16, Department of Higher Education & Training (2010)

development be carefully reviewed. Such a review may identify opportunities to better align the activities of LLiSA and its Members with policies that could justify project or programme funding under provincial, national or departmental budgets.

6.6 Conclusions

Coordination with Multi-Stakeholder Initiatives to Support Regional Policies and Socio-Economic Impact A Living Labs Network must also actively engage in multistakeholder initiatives, including – where possible, encouraging and supporting coordination & collaboration between privatesector, research, government, funder/donor-funded & communitylead initiatives with complementary goals. Such an approach will also showcase the broad range of opportunities to support socio-

economic impact (including community development) that Living Labs methodologies can provide. This inclusive approach should also include reviewing local, provincial, national and regional policies, where potential alignment or re-focusing could lead to funding support.

Living Lab Methodologies Considered Complementary with Incubator and Skills Development Programmes It is important to remember that in Africa, Living Labs methodologies should not be considered in isolation. Due to the greater focus on wider community and socio-economic impact, there is strong complementarity with both Incubators and Skills Development Programmes. In Chapter 4.3.3

(Infrastructure) in the context of the Harmonisation/Interoperability Cube, the Smart & Virtual Organisations (SVO) concept was discussed as a way (a) for individual or loosely coupled Living Labs and Incubators to collaborate, (b) to extend existing Living Labs business models by providing access to a critical mass of similar users or complementary user communities and (c) to support wider adoption of Living Labs methodologies to create an accelerated Innovation Funnel process to improve the selection process, success rate and ROI of Incubators.

While adopting a Smart and Virtual Organisational mindset clearly has potential to demonstrate relevance and expertise - and generate new revenue streams, its most important potential value is exploring the value of a collaborative partnership approach – which after all, is at the heart of the Living Labs concept. In Chapter 4.3.6 (Methods and Tools), it is recognised that in developing and delivering training programmes to Living Labs Members and communities, this may be best achieved through partnerships with training programmes and/or Incubators. ICDL has approached IIMC about partnering with the IST-Africa Initiative to roll out accredited eSkills development programmes in the 19 IST-Africa partner countries.

Collaboration with African Incubator Network Such an approach also supports structured outreach to stakeholders with similar or complementary interests who may be interested in either leveraging Living Labs methodologies for their own purposes or being involved in establishing new Living Labs, in cooperation with existing or new universities, science councils and Incubators. The Africa Incubator Network includes groups that have recently planned and opened incubators with infoDev support, existing organizations that have added or expanded incubation facilities, and a regional network support organization that is facilitating the further expansion and strengthening of the Network. infoDev supported incubators are being established in Angola, Ghana, Kenya, Mauritius, Mozambique, Nigeria, Rwanda, Senegal, South Africa and Uganda. Sharing knowledge and overhead can be a powerful of accelerating impact while reducing risk. The World Bank and infoDev should be approached to explore collaboration opportunities.

Collaboration provides an important opportunity to achieve scalability and increase both ROI (Return on Investment) and ROO (Return on Objective) by reducing set up times, lowering start up costs and providing predictable operating costs; thus minimising implementation risk, increasing organisational flexibility and increasing the opportunities for sustainable success.

Support SME and Social Enterprise Driven Innovation

As mentioned earlier, SMEs are of enormous importance in European economic activity, and make a particularly important contribution to employment. The Informal Sector is of even greater socio-economic importance in developing countries. One of the major challenges for

African governments and society in general is the considerable differences in economic activity that exist in most countries. Across much of Africa, there are relatively few SMEs, much economic activity takes place in the informal economy, and major employers are government agencies, agriculture, small number of retailers and multinationals. There is clearly enormous potential for wider socio-economic and employment development if Living Labs methodologies can play some role in helping the wider development of both social enterprises (not-for-profit) and SMEs (for-profit enterprises) in participating communities, by supporting informal economic actors to develop into SMEs to create greater local employment.

Living Labs offer an important opportunity to support SME driven innovation, in partnership with other SMEs both on a national and cross-border basis, as well as in partnership with research centres, regional development agencies, local communities and Incubators. The creation of one SME in each participating community would have an enormous positive economic effect not just for the families of direct employees but also their wider communities.

The IST-Africa Initiative is a well established pan-African Strategic Network with participation from Ministries responsible for ICT/STI in 19 African countries¹⁴¹ (Diagram 18).

Department of Science and Technology ("DST", South Africa)

¹⁴¹ The IST-Africa Initiative Strategic Partnership (2012 – 2013) currently consists of IIMC International Information Management Corporation Limited ("IIMC", Ireland)

Ministry of Education, Division Research, Science, Technology & Innovation ("MOE", Namibia)



Diagram 18 – IST-Africa Initiative National Partners and Cooperating Countries

Ministry of Communications, Science and Technology ("MCST-L", Lesotho) Unidade Technica de Implementacao da Politica de Informatica ("UTICT", Mozambique) Ministry of Infrastructure, Science and Technology ("MIST", Botswana) Tanzania Commission for Science and Technology ("COSTECH", Tanzania) Uganda National Council for Science and Technology ("UNCST", Uganda) Ministry of Higher Education, Science and Technology ("MOHEST", Kenya) Ministere de l'Enseignement Superieur et de la Recherche Scientifique ("MESRS", Burundi) Ministère de l'Enseignement Supérieur, des Universités et des Centres Universitaires Régionaux et de la Recherche Scientifique ("MESUCURRS", Senegal) National Computer Board ("NCB", Mauritius) Agence Nationale des Technologies de l'Information et de la Communication ("ANTIC", Cameroon) Ministry of Communications and Information Technology ("MCIT", Egypt) Ministry of Communications and Transport ("MCT", Zambia) Ministere de l'Enseignement Superieur et de la Recherche Scientifique ("MHESR", Tunisia) Ministry of Science and Technology ("MoST", Ethiopia) Ministry of Environment, Science and Technology ("MEST", Ghana) Ministry of Information Communication Technology ("MICT-S", Swaziland) National Commission for Science and Technology ("NCST", Malawi)

IST-Africa is committed to working with national, regional and international stakeholders to support establishment and wider adoption of Living Labs in IST-Africa partner countries and the design, establishment and implementation of National and Hybrid Living Labs Networks.

Establishment of Hybrid Living Labs Network in Four Other African Regions IIMC and LLiSA aim to collaborate with national IST-Africa partners across Africa and other relevant stakeholders in supporting the establishment of four additional Hybrid Living Labs Networks to address the often different needs and circumstances of all five African Regions (South - LLiSA, East, West, North and

Central). Some of these national and regional differences and policy priorities were highlighted earlier (Chapter 1.2 and Chapter 3).

Establish Second Hybrid Living Labs Network in East Africa

Based on contributions received to date, the level of current Living Labs related activity identified and the level of interest expressed during recent consultation workshops, it seems clear that East Africa would benefit most from the establishment of a

Hybrid Living Labs Network during the next twelve months. It is hoped that these Regional Networks (reflecting national and regional differences in terms of priorities, economic focus etc) will eventually become equal stakeholders in a pan-African Living Labs Network that will support the common interests of these Networks and their members across the Continent.

Both IST-Africa and LLiSA have established cultures of cooperation and knowledge sharing, and the Chair of LLiSA participated in workshops organised by IIMC and national IST-Africa partners in Burundi and Tanzania in September 2011. These IST-Africa workshops (whose outputs are described in Chapter 3) continued the process of open, transparent engagement with key national and regional stakeholders to raise awareness of the opportunities Living Labs provide and evaluate interest in adopting Living Labs methodologies. Lessons learnt and good practices were shared, and key stakeholders shared insights about relevant activities and national priorities. By taking a structured approach and promoting adoption and/or adaptation of international good practices, the goal was to learn more about potential challenges of collaboration between Networks and facilitate wider acceptance of Living Labs methodologies.

Adaptation of Accreditation Process

Rolling out Regional Living Labs Networks will also require a standardised accreditation process for Membership of Living Labs Networks, to facilitate later cooperation between the five proposed Regional Networks. There are clearly lessons learnt, good practises and

processes that can be shared by LLiSA, ENoLL and other National Networks for example. However, as the priorities and focus of African Living Labs are in some respects different to those in developed countries, it is important to consider necessary adaptation of existing accreditation processes and develop the capacity for accreditation within Africa based on African and international good practices.

By 2040, Africa will have the largest Economically Active Population in the world, and the potential to become the most important market in the world. It is critically important to identify Win – Win, mutually beneficial opportunities for Europe and Africa within the framework of the 8th Africa – EU Strategic Partnership (Science, Information Society, Space), especially in the context of the priority placed on Living Labs in the Second Action Plan (2011 – 2013).

Collaboration with Africa to leverage Living Labs methodologies and Networks provides a huge opportunity for Europe to co-create, prototype and test new products and services, technologies, processes, business models or ideas customised for the enormous potential of emerging and developing markets. Collaboration with Europe, provides a huge opportunity for Africa to attract Foreign Direct Investment and an opportunity to co-create new products, services, processes and business models designed for African needs, around which a African economic Renaissance can evolve based on entrepreneurship and community development

It is important that all key stakeholders (whether local, provincial, national or international in scope or focus) carefully consider how implementation of these recommendations could be aligned with and coordinated with existing or planned activities across Africa to reinforce impact and maximise ROI and ROO. Too little human and financial resources are available to needlessly waste through lack of research, communication, collaboration and coordination.

Summary

General Recommendations

- Starting Point Identify priority sectors and committed public & private stakeholders
- Analyse national, regional (and funder) policies related to skills development and human resource development to align Network activities and access funding
- Support establishment of National and Regional Living Labs Networks (loosely coupled National Networks, or Hybrid Network with strong regional engagement)
- Build links between existing and emerging Living Labs and with complementary initiatives (e.g. InfoDev Incubator Network) for knowledge sharing and skills transfer
- Carry out a feasibility study for each proposed National or Hybrid Network and where results are positive, develop a three year business plan
- Leverage the launch of TANZICT to support the design and implementation of a Hybrid Living Labs Network in Tanzania focused on the East African Community (EAC) REC
- Establish a Hybrid Living Labs Network in other regions of Africa on a phased basis

(starting with East Africa), leveraging the LLiSA experience to (a) lower implementation risks by sharing hands-on experience of how a successful Network is operated and managed in Africa, providing a model that can be adapted to national priorities; (b) promote Living Labs (and Incubators) principles of collaboration, community building and knowledge sharing on a cross border basis; (c) establish cross-border trust relationships to facilitate regional coordination; (d) cost effectively nurture and support Living Labs in neighbouring countries who may not have the necessary scale or resources to justify a National Network

- Consider co-locating or hosting Living Labs Networks with relevant research institutions, government agencies or incubators to access complementary expertise, lower operating costs and focus resources on strategy & service delivery
- Leverage the concept of Smart and Virtual Organisations to extend existing business models, facilitate collaboration between individual or loosely coupled Living Labs and Incubators, and support wider adoption of Living Labs methodologies by Incubators to create an accelerated Innovation Funnel process
- It is recommended that African Regional Economic Communities (RECs) consider requesting future allocation of EDF funds to establish or strengthen ICT/STI Desks within REC Secretariat(s) and implementation of related regional policies, including wider adoption of Living Labs methodologies and implementation of accredited eSkills training programmes and Living Labs Networks
- It is recommended that African Member States request future allocation of EDF, bi-lateral EU or international funder/donor funds to support implementation of ICT and STI policies including wider adoption of Living Labs methodologies and implementation of accredited eSkills training programmes & National or Hybrid Networks

Recommendation Related to LLiSA

• Recommended that key stakeholders continue to support LLiSA to facilitate regional knowledge transfer

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