IST-Africa 2012
Living Lab Working Group Meeting Report

Tanzania

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08 May 2012

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Introduction

IST-Africa 2012 Living Lab Thematic Workshop Group Meeting took place as a pre-conference event on 08 May 2012 in Dar es Salaam, Tanzania. It was organised as part of the activities of the **IST-Africa Initiative**, by IIMC Ltd (IST-Africa Coordinator) in cooperation with COSTECH (Tanzania Commission for Science and Technology), the National **IST-Africa** Partner and TANZICT.

Within the context of developing the socio-economic & research potential of the African ICT (Information Communication Technologies) & STI (Science, Technology, Innovation) landscape the **8th Africa-EU Strategic Partnership (Science, Information Society, Space)** 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), Research Community, Private Sector, Civil Society and NGOs, Local Authorities, International Financing Institutions, International Donor Organisations & Foundations to collaborate in Science, Information Society and Space.

The **Second Action Plan** (2011 – 2013) of the **8th Africa-EU Strategic Partnership** (Science, Information Society, Space) has identified a number of priority areas for public sector, private sector and research community collaboration between Africa and Europe to complement investments in ICT infrastructure deployment by exploiting synergies between the EU 2020 Digital Agenda and the 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 activities identified under the Information Society Priority 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.

IST-Africa undertook a comprehensive survey of existing and emerging Living Labs across Africa from May 2011 – January 2012, and in cooperation with LLiSA (Living Labs Network for Southern Africa) and other key stakeholders, identified priorities and recommendations for sustainable Living Labs and Living Labs Networks in Africa. An extensive public consultation was undertaken and the report findings were further validated at a series of interactive workshops in IST-Africa Partner Countries across East Africa and Southern Africa.

This **IST-Africa 2012 Living Lab Thematic Working Group Meeting** follows on from the inaugural IST-Africa Living Labs Workshop organised by IIMC (IST-Africa Coordinator) on 10 May 2011 in Gaborone, Botswana, and the subsequent IST-Africa Living Labs Validation Workshops undertaken by IIMC with national stakeholders in East Africa - hosted by Ministry of Higher Education and Scientific Research, Burundi (26 - 27 September 2011); Tanzania National Commission for Science and Technology (29 - 30 September 2011), Uganda National Council for Science and Technology (06 - 07 October 2011), Ministry of Science and Technology, Ethiopia (24 November 2011), and in Southern Africa - hosted by the National Commission for Science and Technology, Malawi (17 November 2011); Ministry of Communications and Transport, Zambia (22 November 2011); and Ministry of Information Communication Technology, Swaziland (29 November 2011).

The **IST-Africa Living Labs Report** "**Supporting the Evolution of Sustainable Living Labs and Living Labs Networks in Africa** " ISBN 978-1-905824-28-1 can be downloaded from

www.IST-Africa.org/home/default.asp?page=reports

Focus of IST-Africa Living Labs Thematic Working Group Meeting

This **IST-Africa Living Labs Thematic Working Group** focused on consolidating a network of European and African experts and key stakeholders to support existing and emerging Living Labs across Africa through networking and sharing knowledge, experiences and expertise.

It provides an opportunity for all key stakeholders interested in learning more about the potential of Living Labs for socio-economic development to work together to co-create a framework for future emerging Living Labs and Networks in a developing country context.

The **IST-Africa Living Labs Thematic Working Group** followed immediately after the Opening Plenary **for the 8th Joint Expert Group (JEG8) Meeting**, with a welcome from Dr Raphael Mmasi, COSTECH, Tanzania, Paul Cunningham, IIMC, Ireland (IST-Africa Coordinator) and Klaus Pendl, DG Information Society and Media, European Commission. This set the context for the primary goals of the Working Group Meeting –identify key stakeholders with an active interest in learning more about cooperating to support implementation of Living Labs.

IST-Africa Living Labs Thematic Working Group Meeting Report

As each of the over 90 participants from Africa and Europe entered into the Meeting Room, they self-selected a unique number from a bowl of numbers presented at the door. By selecting a number, this randomly assigned them to a specific round table (each for 10 participants) positioned around the room. This approach ensured that participants were randomly assigned to different groups, so that there was better cross-fertilisation across the participants.

The four moderators of the Working Group Meeting were introduced: Paul Cunningham (IST-Africa), Prof. Marlien Herselmann (LLiSA Network, South Africa), Kristiina Lahde and Jukka Siltanen (TANZICT, Tanzania).

This working group meeting is part of an ongoing longer term study by **IST-Africa**, and the results will be incorporated into this ongoing research.

The goal of the working group meeting was twofold (a) sensitise and educate stakeholders in East Africa and in particular Tanzania to concepts associated with Living Labs and Living Labs Networks to identify local, national and regional priorities and facilitate wider adoption, and (b) identify stakeholders willing and able to collaborate to support implementation of Living Labs as a mechanism to support sustainable socio-economic development in developing countries.

Participants were then given a warm up activity to get them into the participatory spirit of group work. Each table was assigned a different specific item, and asked to co-create a set of unique and create ways of utilising that everyday item for presentation to the entire group. This served to break the ice between people working together and provided an opportunity for individuals to get used to public presentation of collective ideas.

Key Stakeholder Groups

Following this short warm up session, the first Participatory Session focused on Stakeholder Roles in Living Labs. As there are many different stakeholders who can contribute to Living Labs and Living Labs Networks, each participant was asked to contribute up to ten stakeholder roles, which were then grouped by each table based on common concepts.

One key goal was to get people used to the concept of synonyms (different names for similar or identical concepts), as the use of language varies between as well as within countries. Once people start using common language in relation to Living Labs, everything becomes easier.

All contributions for each table were then collected and common attributes in terms of different stakeholder groups, were compiled and presented back to the full working group.

Key Stakeholder Groups	Synonyms Used By Working Group Members
Public Sector	Government
	Policy Makers
	Development Agencies
	Local Government
	Parliament/Legislature/Local Council
	National Politicians and Local Politicians
Private Sector	Corporate
	SMMEs/SMEs
	Telecoms Operators
	Internet/WiFi/WiMax Providers/Internet Service Providers (ISPs)
	Technologists and ICT Experts
	Inventors/Innovators
Education	Academia
	Universities
	Research Institutions
	Primary and Secondary Schools
	Researchers
	Teachers
Community	Village Community
	Community Leaders
	Community Champions
	Local Tribal Leaders/Authority
	Sub-Communities (Youth, Women, Elderly)
	End Users
Civil Society	NGOs (Non Governmental Organisations)
	Community Organisations
Other	Utilities
	Media
	Hospitals
	Observers
	Financial Institutions
	Donors/Other Funders

The Education Category has been extended beyond traditional universities and research institutions to include primary and secondary schools, as these have strong trust relationships with local communities and stakeholders in a Developing Country context can also provide useful and necessary skills training and infrastructure.

The Other Category includes organisations that could otherwise be classified either as Public Sector (Utilities, Hospitals) and Private Sector (Financial Institutions), but who have not traditionally been involved in Living Labs in developed countries.

There is a relatively high level of financial innovation in Africa, particularly through delivery of mobile banking solutions by telecoms operators. As such, financial institutions have potentially a valuable role to play going forward, as private bank accounts becomes more common.

Local delivery of healthcare in developing countries will increasingly rely on leveraging technology for telemedicine, in cooperation with both regional hospitals and national primary healthcare facilities. This involves testing and evaluating a range of technologies.

The Other Category also includes organisational types such as Media that could be held in either private or public ownership, as well as organisational types such as Observers and Donors/Other Funders that could traditionally be classified as Civil Society, but increasingly due to the establishment of private foundations, take more of a business perspective on delivery.

Stakeholder Roles – Motivation, Expectation, Contribution

The next task the Working Group Members were set was to examine the perceived motivations (why would they get involved?), expectations (what would they hope to achieve?) and contributions (how they could make a difference?) of each stakeholder type.

The goal was twofold (a) to provide a better understanding of both the different and complementary interests of each stakeholder group and (b) to help working group participants better appreciate why it is either beneficial or necessary for different stakeholder groups to be engaged in the design, planning, implementation and exploitation of Living Labs in a Developing Country context.

It is clear that there are significant opportunities for the local, regional and national Public Sector stakeholders to achieve their organisational mandates by leveraging and supporting implementation of Living Labs.

This is particularly true at a local government level, but may also have good resonance at a regional, provincial or national level. However, it is essential that the focus of Living Labs is well considered and takes advantage where possible of potential alignment with national and regional government policy. Sustainability increasingly requires engagement with more than one funding channel.

Public Sector	
Motivation	Improve quality of life; develop communities and country; political influence; regulation
Expectation	Provide better services; expand service delivery to less advantaged areas; capacity building; develop and validate policy; visibility; re-election
Contribution	Infrastructure; resources; development of justice; justice; official legitimacy

The private sector is traditionally seen as the primary driver of Living Labs with universities and other research organisations. This is clearly because of their role in developing and validating new products and services, and the associated economic benefits business enjoys from their commercial exploitation.

While it is certainly true that they have a critical role to play, in a developing country context, the private sector is strongly reliant on the public and education sectors, both as potential markets as well as potential strategic partners, especially where skills development and new infrastructure are essential for exploitation of new and adapted products and services.

Private Sector	
Motivation	Revenues and Advertising; commercialisation opportunities; product and service development
Expectation	Economic impact; new markets and revenue streams; new infrastructure and investment; commercialisation test bed
Contribution	Innovative products and services; share knowledge and expertise

The education sector is critical for the successful implementation of most Living Labs, but in a developing country context, it is essential that education stakeholders are not limited to the traditional universities and other research institutions.

While their role continues to be of significant importance, in a developing country context, the active engagement and participation of other educational stakeholders including primary and secondary schools is also essential. This is due to the strong trust relationships they have in place with local communities as well as useful local infrastructure and skills training they can contribute to ensuring those participating in Living Labs have the necessary level of support.

Education	
Motivation	Increase knowledge and innovative skills; problem solving; validate ideas; travel; funding opportunities; new knowledge; problem solving opportunities
Expectation	Increase creativity; learning opportunities; professional development; new knowledge; recognition; material for graduate degrees and research papers
Contribution	Innovation; education, knowledge and research skills; research facilities; infrastructure

It is clear that in any Living Lab, community stakeholders have a critical role to play. In a developing country environment however, engagement with sub-communities (especially youth, elderly and women) is particularly important, both because there is often high levels of unemployment, but also because youth and women are often attractive target demographics and the elderly are usually held in high esteem in their communities.

Community	
Motivation	Meeting community needs; improve ownership; job creation; skills development; developing communities
Expectation	Access to appropriate products, services and local employment; local empowerment/upliftment; human capacity development
Contribution	Active participation in testing and validation; facilitation; coordination

It is also critical to understand that youth and women often do not have the same level of access to educational opportunities, and therefore, skills development as a means towards local employment creation is a key aspect of Living Labs in developing countries.

Similarly, although in many societies the elderly are disenfranchised, in developing countries also they tend to be highly influential, and therefore respectful and meaningful engagement is important in the context of building

sustainable community relationships.

Civil Society	
Motivation	Increased awareness; create employment; provide community support
Expectation	More proactive community; fairness; capacity building; local employment; skills development
Contribution	Support; information, training and skills development

Civil Society motivations, expectations and contributions are usually well aligned with the interests of Community Stakeholders, although there may be cultural and other differences between developed and developing countries that may reduce that potential alignment.

Other	
Motivation	Closer community engagement; improve society
Expectation	Impact
Contribution	Resources; funding; infrastructure; publicity

Other Stakeholders include Organisational Types that could be either Public or Private (e.g. Financial Institutions, Hospitals, Media, Utilities) and Organisations or Individuals that could be either Private or Civil Society (e.g. Observers, Donors/Other Funders).

Visualisation of Stakeholder Motivations, Expectations and Contributions

The images below present Word Clouds produced by Wordle.net, reflecting the universe of terms used by Working Group Meeting Participants associated with different types of Stakeholders engaging with Living Labs. While the tables above separate the terminology used associated with specific Stakeholders, the Word Clouds below provide a representation across all Stakeholder Groups identified. The primary purpose is to help identify common Motivations (what do they hope to achieve or how do they hope to benefit?), Expectations (what do they expect to happen as a result?) and Contributions (how can they increase the likelihood of success?). The larger the word or phrase, the higher the frequency of selection by participants.

Stakeholders

While participants saw Community, Researchers, Government and NGOs as being at the core of Key Stakeholders, there are clearly a number of Private Sector and Education synonyms.

Motivation

While participants saw Participation, Solutions, Profit, Innovation, Recognition, Market Research, Funding and Profit as being at the core of Motivation, there are clearly a number of Capacity Building related synonyms.

Expectation

While participants saw New Knowledge, Development and Regulation as being at the core of Expectation, there are clearly a number of adapted Product and Service related synonyms.

Contribution

While participants saw Knowledge, Infrastructure, Resources and Justice as being at the core of Contribution, there are clearly a number of Capacity Building related synonyms.

Six Thinking Hats Methodology

Session 2 Harvesting Different Perspectives and Emerging Issues on African Living Labs was based on the Six Thinking Hats Methodology published in a book by Dr Edward de Bono in 1985. It is designed to provide a framework based on creativity and collaboration rather than argumentation (the more traditional "I am right, you are wrong"). The methodology is based on focusing group members on thinking about issues from the same perspective at the same time, before moving on to considering the problem domain from another perspective.

It uses an easy to understand metaphor of six hats, each with a different colour and each focused on a different way of thinking. Group members are asked to put on and take off the same coloured hat at the same time, thus ensuring robust output from working group meetings, by tapping into collective wisdom.

White Hat Thinking - Facts

White Hat Thinking focuses on data, information and facts, and is neutral and objective in style. Relevant questions include "What do I know?", "What do I need to find out?" and "How will I get the information I need?"

Red Hat Thinking - Feelings

Red Hat Thinking focuses on feelings, hunches, gut instinct and intuition. Feelings can change over time and no reasons are required for having a feeling at a specific point in time.

Black Hat Thinking - Caution

Black Hat Thinking focuses on difficulties, potential problems, the devil's advocate, or why something may not work. It identifies potential risks, and logical reasons must be provided.

Yellow Hat Thinking - Benefits

Yellow Hat Thinking focuses on values and benefits, and why something may work. It identifies potential benefits and useful ideas, and logical reasons must be provided.

Green Hat Thinking - Creativity

Green Hat Thinking focuses on creativity; possibilities, alternatives and new ideas. It provides potential solutions or alternatives to address problems identified through Black Hat Thinking.

Blue Hat Thinking - Process (Big Picture)

Blue Hat Thinking focuses on managing and organising the thinking process, providing an overall focus, and identifying and developing next steps and action plans.

Harvesting Different Perspectives and Emerging Issues

Each of the tables below capture the key concepts and contributions made by Working Group members for each of the Six Thinking Hats, as that specific way of thinking applies to Living Labs. All outputs for each of the Six Thinking Hats were presented to the entire Working Group.

White Hat Thinking - Facts	*Learning*, Creating Links, Needs Community and People, End Users not sufficiently literate; multi-stakeholder approach necessary; mentoring and support beyond initiatives, sustainability, exchange ideas, ownership, quantitative, qualitative, problem solving, Living Living Labs, relevant solutions to users, user satisfaction, efficiency, 4 Eyes better than 2, *provides platform for sustainable development,* change management/ people side of change, empowering, concept still unknown, more population needed in some countries

Red Hat Thinking - Feelings	Frustrating (when it comes to change), lack of support for innovative ideas, interesting, enthusiasm and passion for new ideas, disappointment, hot to get others as excited as you are, deliverables not clear, hope, nostalgic, *do end users really benefit*, big expectations not fulfilled, surprising discoveries, curiosity, passion, hesitant, resistance, willingness, feel used, fear of failure, change management, trial, adaptability, anxiety

Black Hat Thinking - Cautions	Unstructured, *reliance on external support*, sustainability, business sense, participant patience, ambiguous techniques, still to become popular, companies can patent innovation that is not necessarily theirs, not well defined or structured, not clearly understood, methodology unclear, slow to achieve results, benefit sharing not clear, underestimates community capability, illusion, different from customised way of learning (complicated), inefficient, sustainable funding mechanisms, what is left behind after projects, don't survive past pilot, who will eventually benefit

Yellow Hat Thinking - Benefits	Promote African way of living (culture), creation of new knowledge via problem based learning and research, learning and sharing, local impact – global movement, sharing scarce resources, cooperation, unexpected outputs, users expect results, enhancing ict literacy, action research, *enhanced user experience*, local champions, solutions needed by communities built by communities, professional development, cooperation between African and European actors, *diffusion of new technologies to improve life (technology transfer)*, even the wretched can access global opportunities, getting more knowledge and experience, resource sharing, entrepreneurial mind-set, identifies and admits to presence of problems, information era, proliferation of new ideas with minimal resources, act local – think global, opportunities for action research, solve global challenges, conceptual framework, breaking unnecessary boundaries, demonstrating alternative culture of design/development to rest of world, breaking top-down approach to developing solutions

Green Hat Thinking - Creativity	Stimulate, magnified, facilitates, co=creativity, participatory design, group objectivity, screening out less realistic ideas, involve youth and give freedom to innovate, give people a blank canvas, unlimited possibilities, skills development, "grandma, grandpa, papa, mama and the kids all enjoying school", speed up, new ideas developed and shared openly, taking chances

Blue Hat Thinking - Process (Big Picture)	Empowering relationships, sharing, policy development, transformation, mitigate illiteracy, end user participation, locally adapted products and services, learning society, good ideas for better future > a few minds, ecosystem, momentum in group dynamics, critical mass for innovation, sustainability, lab facilities for knowledge sharing, eradicate poverty, innovation, equality, sustainable development, global network of Living Labs, *technology adaptation (transfer)* – also from Africa to other parts of the world, global solutions solved, community buy in, sustainable development, power to change community life completely

Background Context for Open Space Discussion

At the end of Session 2 Harvesting Different Perspectives and Emerging Issues on African Living Labs, each participant reviewed all of the contributions from across the entire Working Group and selected their three top priorities across the Six Thinking Hats by assigning a star.

While the top priorities selected by the Working Group were identified for further discussion during the Open Spaces session, there were three complementary presentations.

Paul Cunningham, Coordinator of IST-Africa Initiative and workshop organiser, provided an overview of the "Supporting the Evolution of Sustainable Living Labs and Living Lab Networks in Africa" Report.

This presentation provided an overview of basic concepts associated with Living Labs, summarised some of the different forms and focus that Living Labs can take, showcased known existing, emerging and planned Living Labs across Africa (with a particular focus on Southern and East Africa) and concluded by sharing key success factors identified for Living Labs and Living Labs Networks and actionable recommendations for supporting the evolution of Living Labs and Living Labs Networks in developing countries.

Based on an integrated Developed and Developing Country perspective, Herselman and Cunningham [2011] propose the following definition for Living Labs:

"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 donors) 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".

This was complemented by Prof Alvaro Oliveria, President of ENoLL sharing lessons learnt from the European Network of Living Labs and Prof Marlien Herselman, Chairperson of LLiSA shared lessons learnt from the Living Labs of Southern Africa Network. It is clear that while there may be technical similarities and similar stakeholders involved in Living Labs in Developed and Developing Countries, there are also clear differences in motivation, good practice, methodological approach and engagement strategy with target communities.

Open Space Discussion and Conclusions

A number of high priority topics selected for further Open Space discussion based on the previous Participatory Session and the key discussion points associated with each are summarised below. These include 2 Yellow Hat Topics (Benefits), 2 White Hat Topics (Facts), 1 Black Hat Topic (Caution), 1 Red Hat Topic (Feelings) and 1 Blue Hat Topic (Big Picture).

For this final phase of the Working Group Meeting, one volunteer was assigned to each Topic, to record the discussion at that table and report it back to the full Working Group. All other Working Group Participants were invited to contribute what they could to those topics of most interest to them, and when they had contributed what they could, to move onto the next topic. This was designed to capture as much insight as possible from Working Group participants, and identify potential priorities for subsequent IST-Africa Living Labs Working Group Meetings.

Diffusion of New Technologies for Life Improvement (Yellow Hat Thinking)

Living Labs have enormous potential to impact on people's lives by lowering the costs associated with adapting and diffusing new technologies for developing country contexts. They can focus on ensuring that new technologies are as user driven and user friendly as possible by involving end users from local communities as much as possible, thus gaining acceptance.

Gaining the trust of participating communities is essential for the success of any Living Lab. In a developing country context, this is also about sharing ownership to support sustainable development. This requires both a bottom up and top down approach. One critical way of supporting sustainable development is to look for opportunities to leverage local resources, whether in the form of materials, knowledge, experience or local champions supporting diffusion. Finally, ensuring a high level of accessibility is essential to support sustainable and successful engagement with key sub-communities including youth, women and elderly.

Enhanced User Experience (Yellow Hat Thinking)

Living Labs can facilitate enhancing the end-user experience by providing a framework that allows all stakeholders to engage fully with end-users in their real-life context throughout the development lifecycle of a new product or service.

It is critical to involve local communities (both end users and local community champions) from the very beginning of the process. It is also important to collect good practices from existing Living Labs in similar contexts, to accelerate the development and adaptation process, by building on existing lessons learnts. Providing access to good practices from Living Labs operating in similar or complementary contexts can be a key benefit of Living Labs Networks. Living Labs Networks have demonstrated the value of supporting the replication of success through facilitating the sharing of good practices through networking and interactive workshops.

Producing a tangible enhanced user experience relies heavily on contextualisation, localisation and engagement through visualisations and interactive demonstrations and workshops.

Living Labs provide the opportunity to involve all types of users (e.g. youth, women, elderly, community champions etc) in the design, evaluation, analysis and validation phases of the development lifecycle. This also ensures that the development process is needs driven rather than funding driven or technology driven by ensuring a high level of community ownership.

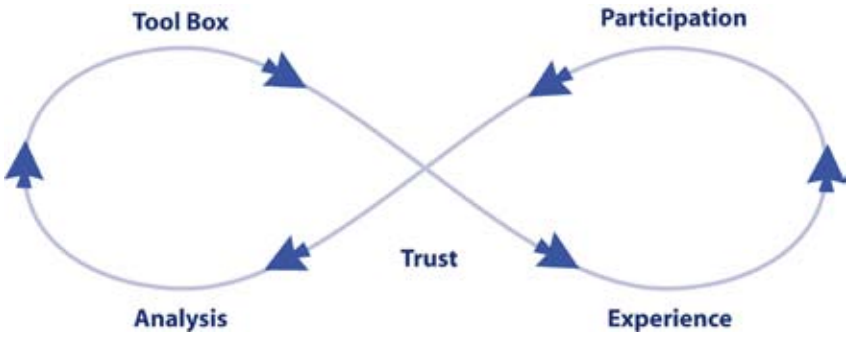
The learning process for all participating stakeholders is based around simplification, affordability, ease of use and ease of manufacturing/production.

Provides Platform for Sustainable Development (White Hat Thinking)

When Living Labs are appropriately designed, they allow participating communities and other beneficiaries to take ownership of the solutions being developed and the implementation process. This is beneficial as it encourages continuous end-user participation through the process of developing, adapting and validating new products and services, and by doing so, also provides an important mechanism for capacity building and skills development.

Living Labs can advance knowledge in participating communities and improve overall quality of life for the entire community involved, not just the end-users who directly participate. Monitoring and evaluation however, is essential to measure progress and change over time, and this also means that establishing baselines are critical during the design of the Living Labs. This also allows impact to be measured with respect to outcomes, which in turn can be measured with respect to outputs, which finally can be measured with respect to activities.

Dynamic Model of User Participation



Learning in Living Labs (White Hat Thinking)

Living Labs can provide participating communities with a platform to acquire new knowledge and skills that can enable their leadership to make better informed decisions. By engaging with different stakeholders, community leaders and end-users participating in Living Labs enjoy a “Window on the World” that can broaden the traditional mindset used when addressing challenging issues.

By establishing baselines and using monitoring and evaluation techniques, it is possible to measure the number of people engaged and the impact of the learning facilitated. This can be a powerful way of upskilling youth, women and elderly and creating employment opportunities.

Reliance on External Support (Black Hat Thinking)

While external support is often seen as a common way of starting a Living Lab, particularly in Developed countries, there are risks associated with too much reliance on external support when working towards the goal of sustainability. Many Living Labs cease operating as soon as external funding is no longer available, even if it was not originally intended as a project based Living Lab (with a known start and end date).

A lack of empowerment of local talent can lead to low confidence of participating communities. That having been said, there are important benefits of more intangible external support, such as market, product and service knowledge and expertise as well as the more traditional financial resources.

As such, there is a strong potential benefit in considering how to achieve and maintain a balance between local and external support from as early a stage as possible. One key benefit of addressing this risk during the design and implementation phase, is the increased urgency of focusing on the role of end users and community champions to build local capacity and a sense of local ownership.

Another key benefit is designing flexibility of roles and mutual expectations between stakeholders. When locals are trained to take ownership and look for solutions relevant to their challenges, the outcomes for other participating stakeholders are likely to be more successful.

Active engagement of local and regional stakeholders, whether community leaders, schools and institutions of higher learning, as well as local, regional and national government can provide access to more expertise and more resources to support sustainability goals. Showing that local and regional stakeholders can also be engaged to identify and address issues of relevance to their communities, is also important in keeping existing stakeholders - and critically participating communities, end-users and community champions, as motivated as possible.

However, a key challenge to be addressed in a developing country context, is typically a lack of local technical expertise and limited available local resources. One of the solutions to this issue is the building of local capacity from the beginning of a Living Lab, including adaptive management of local resources, which often involves thinking of leveraging existing resources in non traditional ways. Participation at conferences, workshops, Living Labs or other physical or virtual fora are beneficial ways of raising awareness and identifying other interested parties.

Do End-Users of Living Labs Really Benefit? (Red Hat Thinking)

The level of benefit that end-users enjoy very much depends on the design of the Living Lab, who the end-users are, their expectations of participation in or engagement with Living Labs and the problems or issues being

addressed by the Living Labs in which they participate.

Where problems develop with Living Labs, it typically starts with bad design: unclear goals and target outcomes; and an local expectation mismatch between some or all end-users and other stakeholders. This is why having buy-in from champions and community leaders is essential, as this process will highlight potential mis-matches of expectations early, so they can be resolved.

It is important to create an enabling environment and supporting networks and develop local support mechanisms to mentor and support end-users throughout the duration of the Living Lab. This will often require a staged/ graduated process of Change Management, both in the preparation phase, as well as during and after the conclusion of each subsequent phase of a Living Lab. Successful change management is only possible with strong local end-user ownership and empowerment.

Key stakeholders who can facilitate and resource this process include local government and development agencies who are responsible for local socio-economic development, and national government policy makers who may be in a position to support replication of success stories and strategic input at the design stage to ensure Living Labs are aligned with national priorities. This is strategically important as it will facilitate access to financial and non-financial resources, and also justify providing free access to government infrastructure to achieve project goals.

Technology Adaptation (Transfer) (Blue Hat Thinking)

Technology Transfer in the context of Living Labs is focused on stimulating creativity. It is the process of transferring knowledge and embodied or disembodied technology from the place where it was developed to where it is used or exploited. Technology transfer can be either vertical or horizontal in nature, and typically involves sharing manufacturing, design, engineering and/or marketing knowledge, insight and expertise.

Technology Transfer can make a significant impact in the context of Living Labs as it is typically demand or needs driven and introduces new ways of doing things. It enhances productivity and competitiveness by facilitating the adaptation of products and services to new markets. It can make a substantial impact on the living conditions of the society where it is appropriately exploited and support the sustainability of employment created through that innovation.

The potential impact of Technology Transfer can be measured through increased competition, adapted products and services, enhanced productivity, improved efficiency and effectiveness in terms of resource management and the sustainability of organisations exploiting resulting outputs.

Technology Transfer can have a wider societal impact through replication and adaptation in other Living Labs, or through new markets created or faciliatated by Living Labs. Results can also be shared with users participating in the creation and exploitation of outputs of the technology transfer, assignment and commercial licensing agreements, and through collaboration with stakeholders.

The Working Group meeting concluded with an interactive discussion, with all participants having the opportunity to ask clarifying questions on any topic discussed during the day. It was striking how fully engaged all participants were throughout the day. It is clear that there is a high level of interest in applying Living Lab concepts in Africa.

This report and the analysis of outputs has been prepared by Paul Cunningham (IST-Africa Coordinator). We would like to thank Kristiina Lahde and Jukka Siltanen (TANZICT, Tanzania), Prof. Marlien Herselmann (LLiSA Network, South Africa), Prof Alvaro Oliveira (ENoLL), the IST-Africa partners and all the participants for their active input during this thematic Working Group meeting.

Participants

Participants included

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- Mrs Gift Kadzamira, National Commission for Science and Technology, Malawi
- Ms Juliana S Kamaghe, Open University of Tanzania, Tanzania
- Ms Florence Kavirindi, Ministry of Education, Namibia
- Mr James Kilaba, Tanzania Communications Regulatory Authority - TCRA, Tanzania
- Mr Zbynek Krivanek, Wirelessinfo, Czech Republic
- Ms Kristiina Lahde, TanzICT Programme, Tanzania
- Mr Edison Lubua, University of KwaZulu Natal, South Africa
- Mr Herbert Lwanga, LOG`EL PROJECT, Uganda
- Dr Edda Tandi Lwoga, Muhimbili University of Health and Allied Sciences, Tanzania
- Dr Gilbert Maiga, Makerere University, Uganda
- Mr Ishmael Makitla, CSIR - Meraka Institute / Nelson Mandela Metropolitan University, South Africa
- Mr Tiwonge Manda, University of Malawi, Malawi
- Mr Isaac Maredi, Department of Science and Technology, South Africa
- Dr Jameson Mbale, University of Namibia, Namibia
- Ms Grace Mbwete, Open University of Tanzania, Tanzania
- Mr Luzango Pangani Mfupe, Tshwane University of Technology, South Africa
- Dr Raphael Mmasi, COSTECH, Tanzania
- Mr Peter Mokube, Agence Nationale des Technologies de l'Information et de la Communication, Cameroon
- Mr Nathaniel Monroe, GSE, Tanzania
- Mrs Chino Monyatsiwa, Ministry of Agriculture, Botswana
- Mr Jerome Morrissey, GESCI, Kenya
- Mr Enock Mpenzwa, Ministry of Communications, Science and Technology, Tanzania
- Mr Yamiko Msosa, Baobab Health, Malawi
- Mr John Andrew Msumba, University of Kwazulu-Natal, South Africa
- Mr Jacob Mtalitinya, ITIDO, Tanzania
- Mr Mulembwa Munaku, UDSM, Tanzania

- Mr Collins Mushe, Ministry of Education, Namibia
- Mr Mike Mushi, Megapeen Group, Tanzania
- Ms Christine Mwase, University of Dar es Salaam, Tanzania
- Mr Marcos Mzeru, Ministry of Health & Social Welfare, Tanzania
- Ms Dinah Grace Nakabuye, Buzzibwera Secondary School, Uganda
- Dr Donart Ngarambe, KIST, Rwanda
- Mr Sikhumbuzo Ngwenya, University of Fort Hare, South Africa
- Mr Jacob Njagi, Ministry of Higher Education, Science and Technology, Kenya
- Prof Hamza Njozi, Muslim University of Morogoro, Tanzania
- Mr Augustin Nsabiyumva, Ministry of Higher Education and Scientific Research, Burundi
- Dr Gomang Seratwa Ntloedibe-Kuswani, University of Botswana, Botswana
- Mr Gerald Nyerere, Muhunda Resources Limited, Tanzania
- Dr Winfrith Ogola, Tumaini University, Iringa University College, Tanzania
- Mr Olalekan Samuel Ogunleye, CSIR, South Africa
- Dr Alvaro Oliveira, Alfamicro, Lda, Portugal / ENoLL
- Dr Maxwell Otim Onapa, Uganda National Council for Science and Technology, Uganda
- Ms Rene Parker, RLabs, South Africa
- Dr Klaus Pendl, European Commission, Belgium
- Ms Mmamakanye Pitse-Boshomane, Meraka Institute, South Africa
- Mr Jeath Prosper, Kigamboni Community Centre, Tanzania
- Dr Jyrki Pulkkinen, Ministry for Foreign Affairs, Finland
- Prof Andreas Rauber, Vienna University of Technology, Austria
- Prof Bugota Saganda, University of Dar es Salaam, Tanzania
- Ms Zauria Saifodine, National Institute for ICT, Mozambique
- Dr Julianne Sansa-Otim, Makerere University, Uganda
- Dr Yves Savidan, IRD, South Africa
- Ms Christina SHITIMA, Mzumbe University, Tanzania
- Mr George Sibiya, CSIR, South Africa
- Mr Jukka Siltanen, TANZICT, Tanzania
- Mr Godwishes Simbanegavi, Cape Peninsula University Of Technology, South Africa
- Mr Matti Sinko, Technical Advisor, UNECA, Ethiopia
- Prof Inderjeet Singh SODHI, University of Dodoma, Tanzania
- Mr Yusuf Ssessanga, Iringa Living Lab, Tanzania
- Mr Suleiman SULEIMAN, Zanzibar University, Tanzania
- Mrs Minna Takala, Aalto University, Finland
- Mr Mikko Terho, Nokia Ltd, Finland
- Mr Lefa Thamae, Department of Science and Technology, Lesotho
- Mr Abdissa Yilma Tiky, Ministry of Science and Technology, Ethiopia
- Ms Lieketseng Tjokotsi, Department of Science and Technology, Lesotho
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- Ms Nombulelo Twele, Fort Hare University, South Africa
- Mr Walter Uys, University of the Western Cape, South Africa
- Prof Darelle Van Greunen, Nelson Mandela Metropolitan University, South Africa
- Ms Alida Veldsman, Ukhozi Business Incubator, South Africa
- Mr Wilfred Wairoba, Commission for Human Rights and Good Governance (CHRAGG), Tanzania
- Prof Rupert Wegerif, University of Exeter, United Kingdom
- Mr Martin Yesaya, Ukombozi School, Tanzania
- Mr Moses Vusmuzi Zungu, Ministry of Information and Communications Technology, Swaziland