4TH EURO-AFRICA COOPERATION FORUM ON ICT RESEARCH

Exploring how to support efficient & innovative ICT Public-Private Partnership (PPP)





INTRODUCTION

The 4th Euro-Africa Cooperation Forum on ICT Research took place on November 14-15, 2011 at the Cape Town International Convention Centre (CTICC) in Cape Town, South Africa. The Forum was organised by the EuroAfrica-ICT initiative under the aegis of the European Commission (DG INFSO: International Relations) and the African Union Commission, in the framework of the Africa-EU Strategic Partnership and with the significant support of the South African Department of Science and Technology (DST). During the Forum almost 250 participants from some 30 countries gathered to discuss new developments on ICT research, development and innovation collaboration between Europe and Africa.

The 4th Euro-Africa Cooperation Forum featured networking sessions, parallel sessions, expert group meetings, lab visits and FP7 consortium meetings.

The exhibition area on the first floor of CTICC was the ideal networking place. Books, brochures, research innovation magazines and even practical demonstrations from the participating sponsors of the event were located there.

Following the closing of the Forum, an evening visit to the nearby Centre for High Performance Computing (CHPC) was undertaken by some 50 participants.

Prior to the Forum itself, on Nov. 11, 2011, the Promoting African European Research Infrastructure Partnership (PAERIP) workshop, designated as an official side event to the Forum, took place in Cape Town. Attended by over 50 African and European delegates, it focused on FP7 instruments and other similar initiatives. PEARIP is an EU-funded project aimed at promoting and enhancing African-European cooperation on research infrastructures.

DAY 1: NOV. 14, 2011

The Forum was opened on Monday 14 November by **Karine Valin** (Managing Director of Sigma-Orionis & Coordinator of the EuroAfrica-ICT project), who welcomed all the speakers, delegates and

session chairs to the conference and laid down three challenges to the participants:

- To investigate and analyse the progress made so far;
- To identify the impediments and find the right instruments to overcome them; and
- To ensure we deliver tangible benefits and that win-win outcomes are delivered.

During the opening session Ms. Valin introduced **Isaac Maredi** (Acting Chief Director: Sector Innovation and Global Change & Director: ICT, DST, South Africa), **Harry de Backer** (Minister Counsellor, EU Delegation to the African Union, European Commission, Addis Ababa, Ethiopia), **Nezaam Joseph** (Director, Department of Environmental Affairs and Tourism, Provincial Government Western Cape, South Africa), **Laurens Cloete** (Executive Director, CSIR Meraka Institute, South Africa) and **Moctar Yedaly** (Head of the Information Society Division, African Union Commission, Addis Ababa, Ethiopia).

Isaac Maredi highlighted that South Africa, through Meraka/CSIR, is currently working on a long-term ICT Roadmap for Research, Development and Innovation that will review existing capabilities and identify gaps, opportunities and economic drivers. **Mr. de Backer**, meanwhile, highlighted the development of African-based innovation to solve Africa's problems, such as the Kenyan M-Pesa banking system. He remarked that there is space and opportunity for locally grown applications that can be adapted elsewhere such as in Europe. In turn, **Nezaam Joseph** highlighted the role of local innovation in training and building local skills mainly amongst the unemployed youth. He emphasised the role of open source technologies in the innovation space and insisted that development should be driven by patents and the protection of intellectual property.

Laurens Cloete confirmed that South Africa's economy is largely driven by traditional primary industries such as mining and agriculture, but that there is government commitment to developing a knowledge economy, for example through a new 10 year innovation plan, in which the production and dissemination of knowledge would drive development and at the heart of which would be a focus on ICTs such as wider access to broadband Internet and digital inclusion strategies. He also noted South Africa's commitment to research, including the global research community, through the development of such infrastructural facilities as CHPC for high-power computing.

Finally, **Moctar Yedaly** congratulated the EuroAfrica-ICT initiative for putting together such a rich and exhaustive agenda, and encouraged participants to take advantage of the opportunities presented to further their ICT research and infrastructure development goals.

Following the opening session, the day continued with five plenary sessions dedicated to:

- ICT-enabled development strategies;
- The AU & EU Programmes and their supporting Cooperation Frameworks (Priorities, implementation status and remaining challenges);
- The role and priorities of the African Regional Economic Communities (RECs) as building blocks for regional integration through ICT networks;
- How to support efficient and innovative ICT Public-Private Partnerships (PPPs)?; and
- Africa-EU Cooperation on Open Living-Labs (local innovation & technology transfer): Status & perspectives.

These sessions ensured that details of high level strategic programmes and policy priorities under the Africa–EU Strategic Partnership were shared, including the Programme for Infrastructure Development in Africa (PIDA) and the African Regional Action Plan on the Knowledge Economy (ARAPKE) as well as other perspectives on EU-Africa cooperation on ICT.

Participants were introduced to examples of successful PPPs, as well as the concept of Open Living Labs. Such Living Labs involve people who come together with a specific focus in multi-disciplinary teams to tackle community challenges, where all stakeholders play an equal role, be they from academia, the private sector, NGOs or government, etc. Built on trust, all partners co-create innovations that are intended to provide solutions to local challenges, participants learned.

Key conclusions of the day:

- It is a given that ICT enables socio-economic growth and participation in the knowledge economy. The strong emotional and historic bonds between Africa and Europe motivate a desire to seek collaboration. This is already verbalised by the EC, AUC and other role-players with an output based vision for inclusion, connecting all, broadband for all, etc.
- ICT is driven by "location-agnostic" perspectives on the collection, dissemination and usage of data. The "Digital Agenda" with all its issues and challenges are global while experiences and applications can be unique and local. Therefore ICT collaboration is easier on the technology level rather than applications;
- There is a need to solve African problems through collaborative, action-based research in order to come up with innovations that are relevant to the continent as well the rest of the world;
- While a lot can be done via the Internet, face-to-face connections between people are essential and the 4th EuroAfrica-ICT Cooperation Forum was such a crucial networking event;
- Testbeds in the African context offer a unique diversity of usage and applications (e.g. mobile) and Living Labs have a huge potential to provide win-win and learn-learn opportunities for co-creating and innovating products, services and processes where the people benefit within their own context;
- PPPs are useful vehicles to align research, service delivery and business objectives;
- Funding for research remains a challenge. However, in some cases the available funding mechanisms such as FP7 are not fully utilised and therefore researchers are encouraged to respond.

The first day ended with a chance for participants to network during a cocktail reception and to relax and admire some traditional Zulu dancing and participate in a drumming performance. This informal networking event was instrumental in facilitating the exchange of ideas and contact details.

DAY 2: NOV. 15, 2011

The second day of the Forum (15 November) opened with a keynote address by **John Wood**, Secretary General of the Association of Commonwealth Universities (ACU), who explained that the original mandate and role of ERA (European Research Area) was to modernise European universities with regard to open innovation. The question is how do we share innovation and guarantee the 5th freedom: the freedom of knowledge. Above all, he stressed the importance of engaging citizens as there is a disconnect and billions of euros have been spent that need to be justified. Prof Wood also asked what the ERA should look like in 2030 and how it will be achieved. Here, he advised that three fundamental drivers should be considered: globalisation of the world and of the world of science (European researchers feel acute global pressure), virtualisation (more than e-science) and the grand challenges. Indeed, the ERA Board has produced a report, '*Preparing Europe for a New Renaissance'* (2009), which outlines its strategic view for ERA 2030. This report claims that in order to cope with the challenges ahead we need a 'New Renaissance' which should

be a paradigm shift in how we think, live and interact as well as a paradigm shift regarding the role and place of science in society. The 'New Renaissance' calls for our rationality and creativity, the fundamentals of science, to face the challenges and to help 'inventing' a new way of living.

Participants then divided into thematic sessions on their specific areas of interest that also allowed more in-depth discussions of technology topics. These 12 parallel sessions, which featured a total of 108 speakers, covered the following themes: e-Health; linking ICT policies, developments and regulations to market opportunities; taking RDI results to market; local innovation and technology transfer; e-Learning and e-Skills; research and education networking; joint ICT priorities and ICT deployment; ICT for environmental sustainability and energy efficiency; mobile technologies and mobile applications; building and strengthening capacities in ICT research; building international collaboration on trustworthy ICT; and guidance for FP7 newcomers.

The closing session chaired by **Laurens Cloete** (Executive Director, CSIR/Meraka Institute, South Africa), featured closing remarks from: **Moctar Yedaly** (Head of Information Society Division, African Union Commission, Addis Ababa, Ethiopia), **Isaac Maredi** (Acting Chief Director: Sector Innovation and Global Change & Director: ICT, DST, South Africa), **Luis Magalhaes** (President, UMIC, Knowledge Society Agency, Ministry of Education and Science, Portugal & European Co-Chair, EU–Africa 8th Partnership), **Harry de Backer** (Minister Counsellor, EU Delegation to the African Union, European Commission, Addis Ababa, Ethiopia) and **Rached Hamza** (General Director, CERT, Centre d'Etudes et de Recherche des Telecommunications, Tunisia). This closing session highlighted the following:

- This successful event again confirmed the importance of the EuroAfrica-ICT project (and its successor EuroAfrica-P8) to bring together African and European researchers and policy makers to share experiences, hold dialogues on joint agendas and build networks. A unique combination of researchers and policy makers attended, representing many research institutions, as well as the EC, the AUC and member states;

- The event is important in terms of its core goals of supporting Africa-Europe dialogue, but also as a platform for African researchers to meet and collaborate;

- The forum allowed for the discussion of important engineering and technical challenges that need to be overcome to work towards the information society and knowledge economy that are known to be enablers of socio-economic growth;

- In many cases specific topics of joint interest, such as the Future Internet and Trustworthy ICT, were explored to the point where research topics unique to Africa and relevant to Europe were identified, together with current and future funding opportunities. It is now up to the researchers to make use of every available opportunity for collaborative research and to turn those into benefit for both continents.

The overall consensus among those who attended the event was that the 4th Forum had provided them with an excellent overview of the latest developments into the ongoing and planned EU-AU programmes for ICTs. Delegates also found the opportunity to meet key players from the region and exchange experiences with international experts of great value.

LAB VISITS

The lab visit to the nearby Centre for High Performance Computing (CHPC) was hosted by Kevin Colville, Nicholas Thorne and Chris Petzer. The infrastructure developments required to install and host Africa's first supercomputer as well as details of the machine itself and the analyses that it runs were highlighted. Internationally the machines are ranked according to their performance when running the High Performance Linpack (HPL) benchmark and tracked on a list referred to as the Top500. The CHPC cluster is currently ranked 329 on the Top500 list and achieved 61.33 Tera FLOPS (10^{12} or a million × million floating-point operations per second). The calculations are performed by 6336 computer cores, all operating in parallel and connected together using the Infiniband networking system. This massive computing power has been used in such projects as astronomy, aeronautics, electronic engineering and oceanography. Two projects in particular involved modelling the biomechanical behaviour of the human heart and the simulation of the complex microstructure of lithium manganese oxide for potential use in high-capacity composite electrodes in rechargeable batteries for cars. The CHPC caters to academic users and has over 450 individual users across a wide spectrum of research disciplines.

MAIN EVENT OUTPUTS

This important event focused on Euro-Africa collaborative initiatives addressing research, development and innovation in ICT and on exploring how to support efficient and innovative ICT Public-Private Partnerships (PPPs). Among the main issues that came under the spotlight were the following:

- **ICT-enabled development strategies**
  The important role played by the European Union and its commitment to further economic growth stimulated by a Digital Access Agenda that aims to make access and use of ICTs ubiquitous throughout the EU by 2020, was highlighted.

- **AU & EU programmes and their supporting cooperation frameworks - priorities, implementation status and remaining challenges**
  The policy framework for EU-Africa collaboration, funding instruments, programmes and different projects were presented. Three reasons to strengthen EU-Africa cooperation in ICT were identified: a special strategic interest for both regions; the importance of international knowledge networks; and the enhanced productivity of collaborative work involving cultural and regional diversity. Challenges regarding implementation due to limited capacity in many African countries were highlighted, while the suitability of various funding mechanisms designed to increase the participation of African researchers was discussed and explored.

- **The role and priorities of the African Regional Economic Commissions (RECs) as building blocks for regional integration through ICT networks**
  The vital role for all stakeholder institutions to work closely together to implement an efficient mechanism for coordination and harmonization of regional and continental programmes was discussed. There is strong political will for regional integration and strong consensus that any duplication of efforts should be avoided. Despite the fact that there is divergence on the pace and depth of integration between and within the different RECs, it was generally agreed that ICTs can play a significant role in facilitating and harmonising regional programmes.

- **Mechanisms for supporting efficient and innovative ICT Public-Private Partnerships (PPPs)**
  Three main themes were considered: understanding PPPs, reviewing illustrative examples and reflecting on lessons learned. In this context, several questions were raised, specifically whether PPPs are considered to be a superior vehicle for funding, innovation and deployment. While there are many positive win-win examples of collaboration where the private sector shares its expertise and the public sector provides an enabling environment, challenges such as long-term and deeper impact on the community and the need for a secure legal framework are still to be addressed.

- **Africa-EU Cooperation on Open Living Labs (local innovation & technology transfer)**
  Open Living Labs can be described as vehicles for various players who come together in multi-disciplinary teams with a specific focus to tackle community challenges. In addition, all stakeholders, be they from academia, the private sector, NGOs or government, play an equal role. The discussion on Open Living Labs acknowledged the fact that such teams are often active and relevant for innovation. There was consensus that the main benefit of the Living Labs approach is that they are built on trust, which allows all partners to co-create innovations that can provide solutions to local challenges.

ICT EXPERTS GROUP MEETING

On the second day of the 4th Euro-Africa Cooperation Forum, an expert group meeting was conducted as part of data collection for the EuroAfrica-ICT study on ICT Research priorities. The purpose of the meeting was to consult a targeted group of experts in the fields of m-Application, e-Health and e-Learning to provide inputs on the identification of research priorities in this 3 domains.

This expert group meeting was attended by 11 researchers, selected according to their experience and expertise in the field. This meeting started with an introduction by Tshepang Mosiea to the research priorities study conducted by ACU and CSIR in the first phase of the study (2010).

Subsequently, an open but focused discussion was held, intended to identify areas of mutual interest and key research priorities that should be the centre of focus in the EuroAfrica-ICT cooperation programmes in the 3 domains. Technology needs not yet fulfilled in these domains, technology innovation opportunities in the domains and the niche areas for innovation relevant to Africa and Europe were also discussed.

The following section presents an annotated summary of the views and opinions of the participants of the forum experts' group meeting. The participants of the group were asked to focus on two questions:

Enabling environment

New innovation models are needed to bridge technology gaps, to meet societal needs and reduce the digital divide. New cooperation models and mechanisms, for example, cooperation with industry regarding mobile applications in the education sector, are important. Learners from rich families may be able to share information through smart phones, and learners from disadvantaged backgrounds do not have phones with the same capabilities. Hence, this may pose new technology uptake constraints depending on individuals' background and economic status. In this way there is a huge need for standardisation and interoperability on mobile devices and platforms.

European industries could benefit from outsourcing to Africa and establishing subsidiary research companies in Africa and this will strengthen ICT R&D capability in Africa and help to maximise benefits of the already existing cooperation programmes between the two regions.

Understanding who the users are, what their needs are, and what socio economic problems they confront is necessary in order to help project technology innovation needed in the future. User needs' analysis (i.e. market analysis) has to be undertaken in order to decide what the ICT research priorities should be.

Geography and specific context in each African country influence innovation in each region. Innovation is unique to geographic areas, thus nomadic people in Nigeria would not face similar social challenges to populations in urban centres. Therefore, various urban and rural communities in Africa provide a fertile ground for new technology solutions and products to be developed, but these must be context specific solutions.

Research priorities should be about innovations for competitive advantage in different sectors of the economy and society, and not a one-size-fits-all approach, as this will not work. Regional technology roadmaps should be established to build capacity in modelling future technologies.

Europe and Africa should cooperate to find projects that are of mutual interest to both regions in specific sectors. Sustainable energy and renewable energy sources should be amongst the priorities for cooperation and low energy consuming technologies should not be ignored. It is important to find equilibrium between African and European interests.

Innovation Opportunities

From the discussions emerged a list of areas and considerations identified for innovation through ICT and where there is a need to develop technology applications. Any future research activity has to take the following areas into account:

- Consumer supply chain;
- Exportable solutions;
- Better, cheaper, faster technologies;
- Technology localisation;
- Mobile language translation services;
- e-Learning – students and teachers;
- Resources – open access technologies;
- Applications to change the entire education system;
- e-Learning: teachers, students, administrators;
- Mobile technology – infrastructure – distance learning;
- Entrepreneurial content.

The complete reports on the research priorities study are available at http://euroafrica-ict.org/research-priorities/.

Event proceedings, attendee lists, photo gallery and the evaluation survey are available at http://euroafrica-ict.org/events/cooperation-forums/.