Training Manual: Uganda as a Knowledge Society

to support the sessions on Knowledge Society, KS Public Policy and ICT Policy at the

Executive Training on Foundations of Government Information Leadership

Kampala, Uganda, 22-26 July 2013

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Introduction

This manual has been developed to support two sessions on Knowledge Societies and Policy for an executive training that took place in Uganda in July 2013.

The objectives of the training sessions are:

1. To introduce the role of governments in supporting the development of a Knowledge Society (KS)
2. To analyze several e-readiness indicators in order to understand the state of the art concerning KS in the world, Africa and particularly Uganda
3. To discuss the need of Public policies for Knowledge Societies and present areas of government intervention
4. To reflect on the knowledge acquired through a series of practical exercises based on the current Ugandan situation and some of its key policy documents

The following manual has been developed as support material for the sessions and is distributed as an OER (Open Educational Resource) to be used by anyone interested in the subject. For reference and reflecting purposes it is mostly based in Ugandan Policy documents, but takes into considerations Kenya, Tanzania and Rwanda, as well as the African continent in general. However, most of the content has been specifically researched for the training session, and since the Ugandan landscape regarding KS is changing so fast, please take into account that the content might become outdated very rapidly.

Roxana Bassi and Susana Finquelievich, September 2013
Building Knowledge Societies

Have you ever wondered how Knowledge Societies are built? The emergence of the Knowledge Society (KS), building on the growing influence of Information and Communication Technologies (ICTs), is bringing about a fundamental reshaping of the global economy and society. This transformation is changing and will continue to change our regions and countries’ economies and societies.

Since humanity’s earliest steps knowledge has always been a factor of production, and a driver of economic and social development. Earlier economies depended, for example, on knowledge about where specific plants grew, how to capture animals, how to farm, how to exploit natural resources, how to build and how to manufacture. However, the capacity to manipulate, store and transmit large quantities of information cheaply has increased at an incredible rate over recent decades. The digitalization of information and the ubiquity of Internet access are facilitating a new intensity in the application of knowledge to economic activity, to the extent that it has become the predominant factor in the creation of wealth. As much as 70 to 80 percent of economic growth is now said to be due to new and better knowledge.

In an increasingly global economy the effective creation, use and dissemination of knowledge is increasingly the key to success, and thus to sustainable economic and social development. Innovation, which fuels new job creation and economic growth, is quickly becoming the key factor in global competitiveness. Building a specific Knowledge Society for our own countries, a KS that considers and respects the countries’ economic, social, cultural background, needs, visions and goals has become a priority.

But how is a KS built? A Knowledge Society is built primarily by an informed and updated National Policy, which can consist of several policies, plans and laws. Three fundamental goals of such a policy could be summed up as follows:

- **Goal 1- to democratize access**: To place within the reach of all persons, the means to access and use information and communication technologies, guaranteeing the enjoyment of citizen rights, fostering education, local development, eradication of poverty, gender equity, digital inclusion, universal access, public transparency and efficiency, and participatory governance;

- **Goal 2- to develop capacities**: to create, support and promote strategies, tools and methodologies to generate capacities and skills to utilize information and information and
communication technologies for all sectors and societal groups, at all levels of formal and informal education, also disseminating the possibilities provided by different information management models. In particular, to build capacity for research and technological innovation oriented toward generating one's own knowledge; and to generate national contents on the part of public institutions and local contents on the part of different social groups;

- **Goal 3** - to achieve an adequate legal and regulatory framework: to create the necessary norms and regulations to guarantee the right to information; to encourage utilization of information and of information and communication technologies, through relevant legal bodies, creating an adequate, stable legal setting. The goals of a National KS policy must be designed to reinforce all ways of accessing and using information, both traditional and digital.

Source: IFAP Template, 2009

In this training session participants will learn how to contribute to the construction of Public Policies for Knowledge Societies (PPKS) through an analysis of the established and proposed PPKS documents in Uganda.

**Knowledge Society definitions and concepts**

Knowledge – or Information – Society (KS) is a term that has become increasingly popular since 2005. But the concept is complex, has been evolving over the years and there is not a single definition.

Practical exercise:
Take a minute to reflect about your own definition of the concept of a "Knowledge Society". Is Information Society the same as Knowledge Society? What do you believe should be the characteristics of a KS?

Let us review some concepts and definitions from diverse sources:

- "Knowledge Society: Knowledge Society is one that creates, shares, and uses knowledge for the prosperity and well-being of its people" [Wikipedia]
- "knowledge societies are about capabilities to identify, produce, process, transform, disseminate and use information to build and apply knowledge for human development. They require an empowering social vision that encompasses plurality, inclusion, solidarity and participation" UNESCO 2005
• "It is widely accepted today that the 'Information Society' is going to lead to the 'Knowledge Society' where individuals as well as institutions are valued (and judged) according to what they know and how much they know. Populations need new knowledge and new skills to understand, to feel at ease with, to take advantage of, to benefit from, and to operate ICT efficiently. The speed of change of ICT means that acquisition of this new knowledge and skills needed to operate ICT is becoming a never-ending process." Uganda's ICT Policy 2003

• UNESCO, in particular, has adopted the term "knowledge society", or its variant, "knowledge societies", within its institutional policies. There has been a great deal of reflection on the issue, which strives to incorporate a more integral conception that is not only related to the economic dimension. For example, Abdul Waheed Khan (general sub-director of UNESCO for Communication and Information) writes: "Information society is the building block for knowledge societies. Whereas I see the concept of 'information society' as linked to the idea of 'technological innovation', the concept of 'knowledge societies' includes a dimension of social, cultural, economical, political and institutional transformation, and a more pluralistic and developmental perspective. In my view, the concept of 'knowledge societies' is preferable to that of the 'information society' because it better captures the complexity and dynamism of the changes taking place. (...) the knowledge in question is important not only for economic growth but also for empowering and developing all sectors of society." IFAP IS Policy document

• "In emerging knowledge societies, there is also a virtuous circle in which the progress of knowledge and technological innovation produces more knowledge in the long term. We are witnessing an acceleration of knowledge production". UNESCO 2005

• The European Commission envisions an innovative, inclusive and dynamic Europe based on a knowledge-based economy and society. The ‘Lisbon strategy’ covers a whole range of areas, such as scientific research, education, vocational training, Internet access and online business.

• The Geneva Declaration of Principles adopted by governments during WSIS—with significant contributions from civil society—expresses in its first article: "We... declare our common desire and commitment to build a people-centered, inclusive, and development-oriented Information Society, where everyone can create, access, utilize, and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life, premised on the purposes and principles of the Charter of the United Nations and respecting fully and upholding the Universal Declaration of Human Rights. We are committed to building information and communication societies that are people-centered,
inclusive, and equitable. Societies in which everyone can freely create, access, utilize, share and disseminate information and knowledge, so that individuals, communities, and peoples are empowered to improve their quality of life and to achieve their full potential.” Subsequently, this Declaration adds the principles of social, political, and economic justice, as well as full participation and capacity-building of the peoples; it highlights the objectives of sustainable development, democracy, and gender equality; and it evokes societies where development acts as a setting for fundamental human rights and is oriented to attain a more equitable distribution of resources.” IFAP Policy doc

- UNESCO website, on Building Knowledge Societies: “Human Development is about expanding people’s choices so that they can live long, healthy, creative lives, and make investments in the future. Knowledge is at the center of human development. As a human right, knowledge is an end in-and-of-itself. But it is also an important means – a prerequisite for participation in governance, for health, for human security, and, more than ever, for productive engagement in the increasingly competitive global economy. UNDP works with partners around the world to better equip people with the knowledge necessary to lead more fulfilling lives in a context of more inclusive human development”.

- “To arouse the interest of the African populations to securely use of the ICT for a successful transformation of Africa and introduction to the digital era and to a Knowledge Society” African Union, Information Society division objectives

Some reflections on the KS:

- The UNESCO World Report on Knowledge Societies for All (2005) stresses that knowledge societies are not to be confused with information societies. Knowledge societies contribute to the well-being of individuals and communities, and encompass social, ethical and political dimensions. Information societies are based on technological breakthroughs that risk providing little more than “a mass of indistinct data” for those who don’t have the skills to benefit from it. An information society is, therefore, considered as a necessary previous step to build Knowledge Societies

- UNESCO (2005) considers that while information is a knowledge-generating tool, but that it should not be understood as knowledge by itself. “The idea of the information society is based on technological breakthroughs. The concept of knowledge societies encompasses much broader social, ethical and political dimensions. There is a multitude of such dimensions which rules out the idea of any single, ready-made model, for such a model would not take sufficient account of cultural and linguistic diversity, vital if individuals are to feel at home in a changing world. Various forms of knowledge and culture always enter into the building of any society, including those strongly influenced by scientific progress
and modern technology. It would be inadmissible to envisage the information and communication revolution leading – through a narrow, fatalistic technological determinism – to a single possible form of society”. Therefore, ICT tools are a necessary but not sufficient precondition for the societal and political process of developing knowledge societies. IFAP Template, 2009.

- “A knowledge society should be able to integrate all its members and to promote new forms of solidarity involving both present and future generations. Nobody should be excluded from knowledge societies, where knowledge is a public good, available to each and every individual.” UNESCO 2005

- “Will knowledge societies be societies based on knowledge-sharing for all or on the partition of knowledge? In the information age, and at a time when the advent of knowledge societies is poised to become a reality, we are, paradoxically, seeing divides and exclusions emerge between North and South, and within each society”. UNESCO 2005

- “The digital divide helps widening an even more alarming divide – the knowledge divide, which adds up the cumulative effects of the various rifts observed in the main areas that make up knowledge (access to information, education, scientific research, and cultural and linguistic diversity) and is the real challenge facing the building of knowledge societies. This knowledge divide is rooted in the dynamics inherent to knowledge gaps, be they global inequalities in the distribution of cognitive potential (gaps between forms of knowledge) or the unequal value put on different types of knowledge” UNESCO 2005

- “A crucial question is how a society should organize access to information while encouraging the creation and production of knowledge. This question goes to the very heart of how we value knowledge socially, as well as economically. The challenge is to find a balanced solution that is socially acceptable and economically viable between two contrasting options – copyright which protects intellectual property but restricts access to information in the market and the commons approach which favors a public domain and open access to information (...) Stimulating the production of information in knowledge societies which is perceived as being relevant by those who access and apply it in their everyday lives, and in political and economic contexts, will remain a major challenge for policy in the coming decades” UNESCO 2013

- “It is essential to recall that knowledge societies are concerned with human development, not only with technological innovation and its impacts.” UNESCO 2013

- “Our starting point is to recall that if knowledge is valuable economically, it is also the core of culture and human life within peaceful societies. We emphasize that universal access to information is a basic requirement to create knowledge societies for peace and sustainable development, but that it is not a sufficient requirement. This is because knowledge implies
meaning, appropriation and participation. Access to knowledge implies much more than access to ICTs or digital information. It involves learning in formal and informal educational settings and it is acquired through experience.” UNESCO 2013

Practical exercise:
Take a minute to reflect on the different and complementary concepts you have read related to Knowledge Societies. As a consequence, what are KS main characteristics? Is your country planning to become one? Do you know about African initiatives to build National Knowledge Societies?

Uganda as a KS

One of the key documents to understand the future of Uganda is its development Policy, Vision 2040, that hopes to create “A transformed Ugandan society from a peasant to a modern and prosperous country within 30 years”

Another Key document, the National ICT Policy of 2003, acknowledges that the ‘Information Society’ is going to lead to the ‘Knowledge Society’ where individuals as well as institutions are valued (and judged) according to what they know and how much they know. Populations need new knowledge and new skills to understand, to feel at ease with, to take advantage of, to benefit from, and to operate ICT efficiently.

The newest ICT Policy draft 2012 can be considered critical for Uganda as a Knowledge Society. Its Vision is “A knowledge society where Information and Communications Technology (ICT) is central in all spheres of life”, while its mission is “To leverage ICT for transformation of Uganda into a Knowledge Society by 2025”. It also indicates that “In its long term vision, government of Uganda, like all other countries aspires to be a globally competitive and prosperous nation with a high quality of life, within the shortest time possible. Aware that ICT have the potential to impact economic growth by providing the catalytic role to other sectors, this new ICT policy is aimed at supporting the realization of the national vision.”

The broad policy objectives of the draft national ICT policy of 2012 are:

i) Build a knowledge based human capital;

ii) Promote innovation in economic and social systems;
iii) Expand ICT infrastructure and its integration throughout the country;
iv) Deepen utilization of ICT services by government, private sector, not for profit organization and citizenry;
v) Enhance research and innovation in ICT products, applications, and services; and
vi) Improve ICT governance and environment in Uganda.

Milestones in Uganda’s KS & related public policies

Several key policies, plans and laws have been developed in Uganda related to the construction of a KS. Below is a list of some of the key milestones.

- 1996: Government adopted the telecommunications policy which led to the liberalization of the sector, creation of Uganda Communications Commission (UCC) as the regulator and privatization of the then incumbent, Uganda Posts and Telecommunications Corporation (UPTC).
- 2001: Rural Communications Development Policy for Uganda enacted, with the main objective being to provide access to basic communication services within a reasonable distance to all people (universal access)
- 2002/2003: approval by Cabinet of National ICT Policy Framework to guide the development of the ICT sector in Uganda. It focuses on three areas: as a resource for development, mechanisms for accessing it, and ICT as an industry, including e-business, software development and manufacturing.
- 2005: More reforms in the telecommunications sub-sector further opened it up to full liberalization. Broadcasting Policy was developed. Uganda access to Information act.
- 2006: Ministry of ICT was created, with an aim of bringing all aspects of ICT under one roof. Objectives: provide strategic and technical leadership, overall coordination, support and advocacy on all matters of policy, laws, regulations and strategy; sustainable, effective and efficient development, harnessing and utilization of ICT in all spheres of life to enable the country achieve its national development goals. Creation of the National Information Technology Authority-Uganda (NITA-U).
- 2007: Revised Education Sector Strategic Plan (ESSP) 2007-2015
- 2009: Revised Rural Communications Strategy (UCC) - Science, Technology and Innovation Policy
- 2011: e-Government Strategy Framework (Uganda e-Government) whose vision is to "Ensure online accessibility of all government services and opportunities for community participation in a friendly, transparent and efficient manner for all sections of the society". Also computer Misuse Act, Electronic Transaction Act, digital signature enacted. National IT Policy approved by Cabinet.
- 2011: Draft Information Management Services Policy developed to address poor management of information resources within government and beyond.
- 2012: A new and very comprehensive ICT Policy draft created, opened for feedback and is pending approval as of July 2013. This document is the object of our analysis during this manual.

"The social and economic challenges facing Uganda and the opportunities that ICTs offer pose complex policy choices for the nation. The country has to address the implementation of this policy and mainstreaming of ICTs amid strong competition for limited financial resources from other sectors." ICT Policy 2012

Practical exercise:
Take a few minutes to reflect on Uganda’s Vision 2040 and the draft 2012 ICT Policy. Do you think they are connected? How? Do you believe it is possible to transform Uganda in a KS by 2025? What steps are going to be necessary?
E-readiness in the Knowledge Society

Introduction to Indicators

The English Language Dictionary describes an indicator as "an instrument which gives you information". According to OECD/DAC, an indicator is: "A quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect changes connected to an intervention, or to help assess the performance of a development actor" (DAC Glossary of Key Terms in Evaluation, May 2002)

Indicators are an important instrument for monitoring the dynamics of the Knowledge based Society and to generate information for better policy interventions. The goal is that the selected indicators have to properly reflect the evolution and characteristics of the processes of development and spreading of Knowledge Societies in Africa and be, as well, capable of being internationally compared.

In general, indicators can be used to measure inputs, processes, outputs and impacts, as follows:

- **Input** indicators measure resources, both human and financial, devoted to a particular program or intervention (i.e. kilometers of backbone). Input indicators can also include measures of characteristics of target populations (i.e. number of internet users).
- **Process** indicators measure ways in which services and goods are provided (i.e. e-government websites or services, e-business volume).
- **Output** indicators measure the quantity of goods and services produced and the efficiency of production (i.e. coverage of Internet access, average connectivity speed).
- **Impact** indicators measure the broader results achieved through the provision of goods and services (i.e. number of online transactions, amount of e-commerce).

Some questions that may guide the selection of indicators are:

- Does this indicator enable one to know about the expected result or condition?
- Is the indicator defined in the same way over time? Are data for the indicator collected in the same way over time? Is the data comparable with other countries?
- Will data be available for a given indicator over time? Can this data be collected on time to be of value?
- Are data currently being collected? If not, can cost-effective instruments and processes for data collection be developed?
• Is this indicator important to most people? Will this indicator provide sufficient information about a condition or result to convince both supporters and skeptics?

Measuring Knowledge Societies

In this section we will discuss some selected frameworks and indicators which measure how countries are doing in developing a KS, and we will analyze in detail the African and Ugandan context.

There are many different reports and sets of indicators developed by international organizations to evaluate the level of development of a country towards a Knowledge Society. In general, E-readiness describes a country’s degree of preparation to participate as a proactive agent in the diverse sectors and levels of an information society, and to capitalize on the opportunities of participation offered by the new economic and technological environment. (Source: IFAP template)

Until some years ago most indicators were focused in measuring ICT infrastructure (PCs/population, cell phones, fixed phones, broadband, etc.). In recent years indicators designed to measure the knowledge society are becoming broader by encompassing other indicators, such as freedom of speech, online business, e-government usage, legal environment, social changes, education and other critical areas. This reflects what society is recognizing as policy areas where government intervention can make a difference in the development of a KS.

In the following section we will analyze and compare four selected frameworks and sets of indicators that have been developed in order to measure e-readiness. For those interested in the subject, other reports are available in the resources section.

a) IFAPs 2011 Report

IFAP publishes an annual report on information societies. The map below depicts the state of development of information societies in the world. Three indices (number of mobile phones per one hundred citizens, number of Internet users per one hundred citizens, and landline broadband Internet per household) were used to create the seven clusters that range from orange (the regions believed to be the most developed) to dark blue (least developed) on the thematic map, which presents a clear picture of the global inequalities.
Below we take a closer look at the African situation looking at Internet penetration.

Figure 1: ICT development of the world by IFAP

Figure 2: Internet penetration in Africa by IFAP

The IFAP Report summarizes the African situation as follows “In 2011 Africa’s dual character has become even more marked. While the continent lags behind the other regions with respect to the basic information technology indices, a development model of its own is starting to take shape. This model is based on mobile technology and is governed by the principle of “more from less”, whereby the maximum utilization of the existing infrastructural resources by simple, practical services is tailored to actual needs.”

b) ITU Measuring the Information Society 2012

The set of indicators built by the International Telecommunication Union for the “Measuring the Information Society” framework are widely used. It measures variables like access (to equipment, to services, to connectivity, to training) and more interestingly, a measure of “development potential” or an indication of the extent to which countries can make use of ICT to enhance growth and development based on capabilities and skills. The report provides two key benchmarking tools to measure the Information Society: the ICT Development Index (IDI) and the ICT Price Basket (IPB). We will concentrate on the first of the two.

IDI combines 3 sub indexes in a scale 0-10 that are shown in the table below.

**Figure 3: IDI sub indexes**

<table>
<thead>
<tr>
<th>Sub-index</th>
<th>Ref. Value</th>
<th>Weight</th>
</tr>
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<tbody>
<tr>
<td>1. Fixed telephone lines per 100 inhabitants</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>2. Mobile cellular telephone subscriptions per 100 inhabitants</td>
<td>300</td>
<td>20</td>
</tr>
<tr>
<td>3. International internet bandwidth (Mbps) per internet user</td>
<td>400</td>
<td>20</td>
</tr>
<tr>
<td>4. Percentage of households with a computer</td>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>5. Percentage of households with internet access</td>
<td>100</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sub-index</th>
<th>Ref. Value</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Percentage of individual using the Internet</td>
<td>100</td>
<td>33</td>
</tr>
<tr>
<td>7. Fixed (wired) broadband and internet subscriptions per 100 inhabitants</td>
<td>60</td>
<td>33</td>
</tr>
<tr>
<td>8. Active mobile broadband subscriptions per 100 inhabitants</td>
<td>100</td>
<td>33</td>
</tr>
</tbody>
</table>

**ICT Skills**

<table>
<thead>
<tr>
<th>Sub-index</th>
<th>Ref. Value</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Adult literacy rate</td>
<td>100</td>
<td>33</td>
</tr>
<tr>
<td>10. Secondary gross enrolment ratio</td>
<td>100</td>
<td>33</td>
</tr>
<tr>
<td>11. tertiary gross enrolment ratio</td>
<td>100</td>
<td>33</td>
</tr>
</tbody>
</table>

Source: ITU “Measuring the Information Society 2012” report
### Figure 4: World list and IDI 2011 and 2010

<table>
<thead>
<tr>
<th>Economy</th>
<th>Rank 2011</th>
<th>IDI 2011</th>
<th>Rank 2010</th>
<th>IDI 2010</th>
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<tbody>
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<td>Russian Federation</td>
<td>38</td>
<td>6.00</td>
<td>40</td>
<td>5.61</td>
</tr>
<tr>
<td>Slovakia</td>
<td>39</td>
<td>5.86</td>
<td>39</td>
<td>5.63</td>
</tr>
<tr>
<td>Bahrain</td>
<td>40</td>
<td>5.85</td>
<td>45</td>
<td>5.19</td>
</tr>
<tr>
<td>Hungary</td>
<td>41</td>
<td>5.77</td>
<td>42</td>
<td>5.53</td>
</tr>
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<td>Croatia</td>
<td>42</td>
<td>5.75</td>
<td>41</td>
<td>5.54</td>
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<tr>
<td>Antigua &amp; Barbuda</td>
<td>43</td>
<td>5.74</td>
<td>44</td>
<td>5.35</td>
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<td>Cyprus</td>
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Source: ITU “Measuring the Information Society 2012” report
The report highlights that Africa remains the region with the lowest average IDI (1.88), less than half the global average (4.15). Africa is the region with the smallest range (3.49), but it has the second highest coefficient of variation, which underlines that there are major differences in terms of ICT development within the region. The trend suggests that the digital divide, both globally and regionally, is widening. It is also noticeable that the African regional access sub-index is not only higher than the region’s use sub-index, but shows a stronger average growth. This signals to the general low level of ICT development in the region, and to the fact that many basic infrastructure needs have yet to be met. Many African countries are among those that have made most progress globally in the access sub-index. Impressive growth continues in mobile-cellular subscriptions, which have reached very high penetration levels in a number of African countries.
c) WEF Global Information Technology Report

The World Economic Forum in Switzerland publishes the Global Information Technology Report 2013 which uses Networked Readiness Index (NRI), an indicator that considers the traditional driving factors of infrastructure, but highlighting the joint responsibility of all social actors, namely individuals, businesses, and governments.


Please have a look at the NRI index for the world for 2013 and 2012 in the table below. You can also extract and compare different variables using the online tool “The Networked Readiness Index data platform” located at http://www.weforum.org/issues/global-information-technology/gitr-platform

**Figure 6: NRI index for the world in 2013 and 2012**

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**Economy** | **2013** | **Score** | **Rank** | **2012** | **Score** | **Rank** | **Score var.** | **Rank var.**
---|---|---|---|---|---|---|---|---
Kyrgyz Republic | 118 | 3.09 | 115 | 3.13 | -0.04 | -3
Bolivia | 119 | 3.01 | 127 | 2.92 | 0.09 | 8
Côte d’Ivoire | 120 | 3.00 | 122 | 2.98 | 0.02 | 2
Gabon | 121 | 2.97 | n/a | n/a | n/a | n/a
Mali | 122 | 2.97 | 126 | 2.93 | 0.04 | 4
Benin | 123 | 2.97 | 117 | 3.05 | -0.08 | -6
Cameroon | 124 | 2.95 | 125 | 2.93 | 0.01 | 1
Nicaragua | 125 | 2.93 | 131 | 2.84 | 0.09 | 6
Nepal | 126 | 2.93 | 128 | 2.92 | 0.01 | 2
**Tanzania** | 127 | 2.92 | 123 | 2.95 | -0.03 | -4
Ethiopia | 128 | 2.85 | 130 | 2.85 | 0.00 | 2
Malawi | 129 | 2.83 | 116 | 3.05 | -0.23 | -13
Burkina Faso | 130 | 2.80 | 135 | 2.72 | 0.07 | 5
Algeria | 131 | 2.78 | 118 | 3.01 | -0.23 | -13
Libya | 132 | 2.77 | n/a | n/a | n/a | n/a
Mozambique | 133 | 2.76 | 120 | 2.99 | -0.22 | -13
Timor-Leste | 134 | 2.72 | 122 | 2.84 | -0.11 | -2
Mauritania | 135 | 2.71 | 139 | 2.55 | 0.16 | 4
Swaziland | 136 | 2.69 | 136 | 2.70 | 0.00 | 0
Madagascar | 137 | 2.69 | 134 | 2.73 | -0.04 | -3
Lesotho | 138 | 2.68 | 133 | 2.78 | -0.09 | -5
Yemen | 139 | 2.63 | 141 | 2.41 | 0.21 | 2
Guinea | 140 | 2.61 | n/a | n/a | n/a | n/a
Haiti | 141 | 2.58 | 142 | 2.27 | 0.31 | 1
Chad | 142 | 2.53 | 138 | 2.55 | -0.02 | -4
Sierra Leone | 143 | 2.53 | n/a | n/a | n/a | n/a
Burundi | 144 | 2.30 | 137 | 2.57 | -0.27 | -7


The report summarizes the African situation as follows: "**Sub-Saharan Africa has continued to make significant efforts to build its ICT infrastructure, as reflected by important improvements in developing its broadband infrastructure and the expansion of its mobile network coverage. As a result, ICT usage, while still very low, has picked up slightly, as seen especially by an increase in the number of Internet users and also by the continued commitment of some governments in the region to expand the number of available online services. Despite this positive trend, the stubbornly high sharp digital divide from more advanced economies, notably in terms of ICT-driven economic and social impacts, persists. A still-costly access to ICT infrastructure, relatively low levels of skills with low educational attainments, and unfavorable business conditions for entrepreneurship and innovation are hindering the region's capacity to fully leverage the potential of the increasingly available ICT infrastructure.**"
The report also indicates that sub-Saharan Africa still suffers from a serious lag despite infrastructure improvements, an expansion of coverage and a push into e-government. Costly access to technology, a low skills base and unfavorable business conditions are among the chief obstacles “in East Africa, Uganda, Zambia, and Tanzania—in 110th, 115th, and 127th place, respectively—suffer from strong connectivity gaps and environments that lack the conditions to allow for a full leverage of the benefits of ICTs.”

For a final reflection please have a look at Uganda’s NRI in detail.
Figure 8: Detailed NRI of Uganda

d) UNDP technology achievement Index (TAI)

Created by UNDP in 2001, the Technology Achievement Index (TAI) aims to capture how well a country is creating and diffusing technology and building a human skill base—reflecting capacity to participate in the technological innovations of the network age. This composite index measures achievements, not potential, effort or inputs. It is not a measure of which country is leading in global technology development, but focuses on how well the country as a whole is participating in creating and using technology.

It is calculated from indicators in four categories:

- creation of technology: patents granted per capita and royalty and license fees received from abroad per capita
- diffusion of recent innovations: calculated from the number of Internet hosts per capita and the share of high- and medium-technology exports as a percentage of all exports
- diffusion of old innovations: telephones (land line and cellular) per capita and electricity consumption per capita
- human skills: average number of years of schooling and the gross enrolment ratio at the tertiary level in science, mathematics and engineering.

The Index categorizes countries into four groups including: Leaders with a TAI value above 0.5, Potential Leaders (0.35-0.49), Dynamic adopters (0.20-0.34), and the Marginalized (below 0.19).

This indicator is important because it is one of the base indicators selected by Vision 2040 to measure the countries success in developing a KS.

<table>
<thead>
<tr>
<th>Indicators in Uganda’s Vision 2040</th>
<th>Current 2010</th>
<th>Expected 2040</th>
</tr>
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<tbody>
<tr>
<td>Technology up-take &amp; diffusion (Technology Achievement Index TAI)</td>
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</table>
Practical Exercise on e-readiness

Objective: Understand e-readiness indicators and reflect on the African situation and Uganda’s relative situation.

Tasks:

- Look at the world rankings, African map and Uganda’s ranking in the different e-readiness frameworks that were listed. What are your reflections on general world trends?
- Does any specific country in any of the reports have a ranking you were not expecting? Why do you think that is?
- Regarding Uganda’s rankings, do you think they represent the reality? Why or why not? Which index do you think represents reality more accurately?
- Compare Uganda’s ranking with Kenya’s, Tanzania’s, Rwanda’s and Burundi’s. What conclusions can you extract?
- What can you say about Uganda’s IDI index? What might affect its evolution over time?
- Final reflection: do you believe that public policies can affect the countries’ reality – and its e-readiness ranking- in regards to becoming a Knowledge Society?
The need of public policies for the development of a Knowledge Society

Many developing nations have committed to becoming knowledge societies in the near future, Uganda amongst them by 2025. Developing and implementing public policies for the Knowledge Society is not an easy task in a constantly changing environment which challenges existing structures and processes, and is affected by many internal and external factors.

Although in the previous section we have learned that there is plenty of room for growth, the rapid pace of development and adoption of information and communication technologies (ICT) in Africa and Uganda in the last five years, and especially the widening levels of access to mobile phones and Internet connectivity, the use of computers in businesses and government offices, and the use of other mobile devices, has taken many societies unaware about the potentials and requisites to build a Knowledge Society.

Public policies reflect the gap between the ubiquity of ICT and the governments’ abilities to fully exploit ICT for the public good, reacting effectively in a timely manner. Remember what we discussed in the section about Knowledge Societies and their characteristics? In developing countries creative capacities are tirelessly tested in an effort to identify innovations that will help nations make leapfrogs in development to catch up with more advanced countries. How governments support the process to become a KS through public policy can become a determinant of failure or success. For example, ITU’s annual ICT report *Measuring the Information Society 2011* indicated that while ICT and income levels are closely related, getting the right public policy mix can drive faster take-up. For example, a number of countries, including Australia, Japan, New Zealand and the Republic of Korea have higher information society development levels than their income levels would predict. The report says that this “indicates that this should encourage all countries to proactively promote ICT policies and create an enabling environment for the sector to grow”.

“Knowledge societies are not emerging in isolation from other large-scale changes including shifts in economic power, and major political, social and cultural transitions. The policy environment needs to be flexible enough to ensure that stakeholders do not become locked into unsustainable pathways. Not all initiatives are concerned with the potential for the empowerment of local communities or disadvantaged and excluded groups, and not all ICT innovations are benign. Policy initiatives need to give greater attention to approaches that embrace bottom up participation and promote education and learning.” UNESCO 2013
A Policy for the Knowledge Society

So what is a National Information Society Public Policy (NISP)? A NISP can be defined as

"A roadmap, a national, regional, or local plan for the inclusion and appropriation, by Governments, institutions, communities and individuals, of the benefits derived from the construction of an Information Society. The KS Policy is a highway, not a harbour. It is a process, a collaborative, open, and permanent building task. In order to travel this highway, it is necessary to envision it, to plan and build it, to make it travelable for all the citizens”

IFAP Template, 2009

The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP, 1999), observes that: "Even when promulgated as distinct policy pronouncements, ICT policies of necessity have to take into account other policy areas, such as education policies, information policies, trade and investment policies, and cultural and linguistic policies. However, the mere establishment of a written national ICT policy has value in itself. At a minimum, it conveys the message that the government is forward-looking and intends to pursue the utilization of ICT in society. Governments should, of course, aspire to more by putting the policy content into actual practice and becoming a role model in applying ICT in their own administration and services."

Countries do not only need to build explicit KS Policies; given the particular characteristics of an knowledge society, they also need to regularly update their public policies. The fast pace of technological innovation requires a periodical updating and monitoring process. Technological convergence, wireless access, triple play, interactive television on mobile phones, new services to citizens, Internet 2.0, traceable devices, wearable technologies, and new software applications are drastically shifting the terms of the debate not only on access to technologies and citizens’ appropriation of those technologies, but also on access to diversified contents and national capacities to negotiate and achieve certain level of development.

Explicit public policies functionalities
The construction and updating of explicit public policies for a KS normally has the following stages:
1. Inviting public institutions to make a diagnostic of their situation regarding an information society, e-readiness, etc., in order to base the public policies on the needs, demands, and aspirations identified.
2. Relating information society strategies to overall national policies and strategies.
3. Identifying common goals, visions, and missions.
4. Redressing market failures or insufficiencies through legal and regulation (IFAP Template, 2009)

According to UNESCO's IFAP National Information Society Policies Template, countries develop Knowledge Society policies to achieve three main goals:

- **To democratize access**: To place within the reach of all persons the means to access and use information and communication technologies, guaranteeing the enjoyment of citizen rights, fostering education, local development, eradication of poverty, gender equity, digital inclusion, universal access, public transparency and efficiency, and participatory governance.

- **To develop capacities**: to create, support and promote strategies, tools and methodologies to generate capacities and skills to utilize information and communication technologies for all sectors and societal groups, at all levels of formal and informal education, also disseminating the possibilities provided by different information management models. In particular, to build capacity for research and technological innovation oriented toward generating one's own knowledge; and to generate national contents on the part of public institutions and local contents on the part of different social groups.

- **To achieve an adequate legal and regulatory framework**: to create the necessary norms and regulations to guarantee the right to information; to encourage utilization of information and of information and communication technologies, through relevant legal bodies, creating an adequate, stable legal setting.

**No country starts from zero in the construction and development of a Knowledge Society.** The multiple existing examples, both in developing and developed countries, demonstrate that each country has its own entrance point. Each local, national and regional reality is unique and needs a KS Policy adjusted to its circumstances. Policy goals are generally formulated and implemented following one or more of six essential overall guidelines, which we have adapted from IFAPs template:

1) The Millennium Development Goals (MDGs)


3) Objectives established by regional associations, EAC, COMESA, African Union, Connect Africa Goals, New Partnership for Africa's Development (NEPAD), among others.

4) Principles and goals established by North-South, North-North and South-South cooperation programmes between regions. An example is the EU 27 cooperation with Africa (Joint EU – Africa Strategy, 2007). The European Union and the African Union have thus decided to develop a co-owned joint strategy which “reflects the needs and aspirations of the peoples of Africa and Europe”. Particularly relevant is the thematic Partnership on Science, Information Society and Space.
5) National development goals, as stated in Uganda 2040 and The National Development plan. The NDP has many pillars including the infrastructure and reform pillar; Universal Primary Education; National Health Policy; E-government strategy; Medium-Term Competitive Strategy for the Private Sector (MTCS) and the strategic Export Intervention Program (SEIP), Poverty Eradication Action Plan (PEAP), Plan for Modernization of Agriculture (PMA), among others.

6) Regional (region, district, counties in Uganda) and local development goals, as well as individual community objectives.

We can summarize by pointing out that the role of the government is to provide an **enabling environment for the development of the Knowledge Society**. As we know that a country’s capacity to create wealth is depending less and less on natural resources and more on capacity to transform and add value to the resources, science, technology and innovation (STI) should be encouraged as being key for the advancement of a country. Governments can use their policies and strategies to build a vision for the country, create a regulatory environment and allocate resources to implement the policies. In this way they can integrate the public and private sector interests to provide services to people.

**The IFAP Template**

The Information for All Programme (IFAP) was established by UNESCO in 2000 to provide a framework for international co-operation and partnerships in “building an information society for all”. IFAP’s focus is on ensuring that all people have access to information they can use to enhance their lives.

Taking into consideration the leading role of governments in partnership with other stakeholders in implementing the WSIS outcomes (including the Geneva Plan of Action) at the national level, IFAP encourages those governments that have not yet done so to elaborate, as appropriate, comprehensive, forward-looking and sustainable national e-strategies, including ICT strategies and sectoral e-strategies as appropriate, as an integral part of national development plans and poverty reduction strategies.

The Template ([http://ifap-observatory.ittk.hu/sites/default/files/NISP_FINAL.pdf](http://ifap-observatory.ittk.hu/sites/default/files/NISP_FINAL.pdf)) was devised in 2009 to assist in the development of such policies and strategies. The Template fully endorses the multi-stakeholder approach to the development of the Information Society, however, and acknowledges that the role of other stakeholders (especially entrepreneurs, network, service and content providers, but also, of course, civil society and NGOs) is as (if not, in some cases, more)
important as that of governments. Nevertheless, this depends on the specific circumstances, and also on the stage of the process of developing the Information Society, in any particular country. The emphasis in this Template is primarily on what governments and the civil service should do and this was a deliberate choice, in keeping with the approach adopted in the Tunis Agenda for the Information Society, given that the document may be most useful in countries where the role of government policy and of the public sector is especially important.

The Information Society Observatory (http://ifap-is-observatory.ittk.hu/), is continuously updated with new, relevant strategic documents, events, books and experiences, annotations and links, following the development of the field. Once a year, IFAP publishes Information Society Policies Annual World Report that will summarize latest trends, fresh approaches and experiences, new phenomena and concepts, and the important features and patterns of different practices worldwide.

### Practical exercise:

- What do you think is the role of Uganda’s government in the development of the KS? Why is that role needed?
- Go back and look at the mission and vision of the draft ICT Policy 2012. Do you believe it can be considered as a base for a KS Policy?
- Can you mention examples of local development goals that may be related to building a KS?

### Areas of government intervention

In general, we can say that a KS Policy is developed around the following main themes or areas:

- **Telecommunications infrastructure**: develop and support the telecommunications market through transparency and competition, properly managing the electromagnetic spectrum so that innovation can take place (i.e. deployment of Wi-max networks), coordination of infrastructure layout, support the development of regional and local networks, backbones, international links, compliance with standards, Internet governance, etc.

- **Developing the IT industry and related services**: develop local industry for hardware, software and related services, encourage public agencies to develop e-government applications, allowing people and businesses to access government services and conduct
business with the government online, developing products and services that can be exported.

- **Promoting the applications of IT in all critical areas**: by supporting e-government, e-business, e-education, e-commerce, e-agriculture, e-health, R&D, innovation, e-science and in general, supporting the use of IT in all the critical government areas.

- **Making sure citizens are enabled to become active participants of the KS** by:
  
  o Promoting Access and measures that help reduce the digital and access divide: access strategies like e-rates, providing free access for schools and hospitals, setting up Telecentres in critical locations, using its buying power for aggregated bandwidth acquisition, creating a Universal access fund and administering it to make sure all citizens and all regions have equal access, making sure all country is covered, developing programmes to connect minorities, content and culture preservation strategies.
  
  o Training and educating the citizens in ICT. Government should play a *catalytic role* in making access to the Knowledge Society a reality by enabling acquisition of the requisite skills, aptitude and education, to make sure citizens are able to use technology properly. Basic ICT training is needed, but also business management and organizations using ICTs; life-long education and training in courses, professions and skills related to the IS, technical training and specific training to develop the IT industry.

According to Uganda’s ICT Policy Draft (2012) the areas of government intervention are grouped as follows:

a) Information and communication infrastructure
b) Access to information and knowledge
c) Capacity building
d) Building of confidence and security in the use of ICTs
e) Requisite enabling environment
g) Cultural diversity and identity, linguistic diversity and local content
h) Media
i) Ethical dimensions of the Information Society
j) International and regional cooperation.
In the following sections we will discuss several of the intervention areas planned for Uganda in more detail. They are mostly based on the draft ICT Policy 2012, but have been edited and grouped under different criteria.

a) Information and communications (ICT) infrastructure;

An adequate telecommunications network is critical for the development of a Knowledge Society, as it provides the infrastructure that enables knowledge to be easily created and shared. We have seen in some of the e-readiness indexes seem to indicate that in fact this is one of Uganda’s main weaknesses. In the coming years Uganda will have to make available a good, solid, and fast Internet access (broadband) network covering most of its territory, and this is a major undertaking for any country.

According to the ICT 2012 draft Policy “In recognition of the crucial role that easy access to relevant information and efficient communications play in supporting human development, it is government policy to ensure equitable and affordable access to telecommunication services for all the citizens of Uganda through an enabled and competitive private sector.”

The 2012 draft ICT Policy presents some of the current statistics on Ugandan ICT infrastructure:

- Mobile Penetration (per 100 people) - 50.5
- Fixed penetration (per 100 people) - 0.48
- Internet Penetration (per 100 people) - 21.48 (2012)
- Internet users 7.5 million (2012 ) 20% of population
- Internet wireless/mobile subscriptions – 1.5 million
- Fixed internet subscribers- 90,000
- Broadband Penetration - 9% (2012)
- PC Penetration (Number of PCs per 100) – 2.3 (2012)
- Computers Assembled in Uganda - < 500,000
- Number of registered ICT companies - 350

General African infrastructure trends:

- Africa has one of the most dynamic telecommunications sectors in the world. Broadband (mainly mobile) is replacing dial-up as the preferred access method, and this process is already virtually completed in the more developed markets. According to the ITU for 2013, cell phones are used by 63% of the population, internet users are about 16%, broadband users stand at about 11.2% of the population (10.9% mobile and 0.3% fixed). Of course these are averages, with major differences in terms of ICT development within the region.
• The average price of fixed-broadband services in Sub-Saharan Africa fell by more than 50% in the last 5 years, but services remain far too expensive for many, with prices in 2012 equivalent to almost three times average incomes. Access to submarine cables has reduced the average price but not as much as initially expected.

• The growth in the African telecommunications landscape can be attributed to a number of factors including the liberalization of the telecommunication markets, the subsequent introduction of mobile cellular technologies and the arrival of submarine fiber optic cables to connect the continent to the rest of the world. A quote by the Secretary General of the ITU is instructive. According to Mr. Hamadoun I. Touré of ITU: “The growth in telephone access in Africa has been largely fuelled by mobile cellular communications. The change has been so rapid that it has caught many by surprise. From just two countries in 1999, there were 33 African countries that had more mobile than fixed-line telephone subscribers in 2004, more than any other region. The wireless boom has been caused by the combination of sector liberalization—which has seen the licensing of multiple cellular operators in most African markets—and service innovation in the form of pre-paid cards. Africa’s challenge is to sustain this high mobile growth and extend it to other sectors such as the Internet.”

• Africa is now served by more than five submarine cables, up from just one five years ago. Governments and private sector are busy building national backbone networks in most part of Africa. Nevertheless, there is still plenty of room for growth. An assessment conducted by ITU in 2007 concluded that, in addition to the existing infrastructure, Africa needs at least 52,040 kilometers of backbone infrastructure for connectivity within and among countries. ITU estimates that some 55% of the total rural population of sub-Saharan Africa remains without access to ICT. New wireless technologies promise to offer new possibilities for extending access to rural areas.

Practical exercise:
Analyze the Ugandan general telecommunications statistics in comparison with the African trends in each of the categories. What are your reflections?

ICT Infrastructure intervention areas

“To ensure efficient management and utilization of telecommunications resources for sustainable socio-economic development” Objective defined in Uganda’s 2012 Draft ICT Policy
Telecommunications Market action lines:

- Maintain a fully liberalized sub-sector in order to attract additional investment in the sector
- Further strengthen a legal and regulatory environment that supports development of Uganda’s Telecommunications sub-sector
- Review, existing legal framework to provide a competitive environment that facilitates and encourages investment in the telecommunications sector; support and promote a liberalized, competitive and innovative telecommunications sector
- Promote a pricing and tariff regime that incorporates fair interconnection rates and facilitates the achievement of affordable telecommunications services, including special pricing models for education and health (E-rate pricing model)
- Provide incentives such as tax relief for network infrastructure, ICT development, application tools and software, and reduction of excise tax as well as VAT on ICT end-user equipment in order to improve access and affordability
- Provide for a legal and policy framework for government to monitor and establish a baseline for collection of revenue from national and international telecommunication traffic.
- Enforce fair and efficient management of scarce resources such as spectrum, numbering and rights of way
- Enhancing public private partnership in delivery of ICT infrastructure and services

Interconnection and Backbones:

- Establishment of a centralized mechanism to plan, build and manage all the public communications Infrastructure in a coordinated manner
- Encourage participation of the private sector in IT infrastructure development (shared public private investment in infrastructure)
- Optimize the operations of the national Internet Exchange Point and participate in the establishment of regional and international Internet Exchange Points;
- Integration of the communication, broadcasting and Information infrastructure and systems (convergence). Implement the migration roadmap from analogue to digital broadcasting
- Promotion of reliable and affordable ICT infrastructure in rural, remote and other underserved areas;
- Extension of the national backbone infrastructure (NBI) to cover the entire country as well as addressing last mile challenges. The project involves building a 1536 Kms of Optical Fiber Cable across the country to build the National Data Transmission Backbone; Optical Fiber connections from Kampala-Busia/Malaba Border to connect Uganda to Kenya,
Kampala-Nimule, to connect Uganda to Southern Sudan and Kampala-Katuna to connect Uganda to Rwanda, making Internet accessible and affordable to the majority of Ugandans.
- Optimize the connectivity to the undersea fiber optic cables on the East African coast (see map below)

**Figure 9: Uganda backbone Map**

KEY: Phase I Yellow, Phase II Blue Phase III Green

**Figure 10: African submarine cable layout**

Submarine cables in Africa source: TeleGeography - [http://www.submarinecablemap.com](http://www.submarinecablemap.com)
Some notes on the backbone: According to NITA (2011) the backbone will lower the cost of Internet bandwidth for Government and targeted user groups such as Schools, Universities, Hospitals, Research Institutions, etc., provide high speed internet bandwidth to support Information technology enabled services such as Business Process Outsourcing (BPO), which will create jobs and earn foreign exchange, it will enhance efficiency and effectiveness of service delivery to the citizens of Uganda through electronic transactions such as; e-taxation, e-health, and e-learning, will improve collaboration within Government through services such as unified messaging and collaboration services as well as enhance efficiency and effectiveness of service delivery to the citizens of Uganda through electronic transactions such as e-taxation, e-health, and e-learning, and last but not the least; it will facilitate business transactions nationally and internationally through the adoption of E-commerce.

Internet Governance

- In cooperation with the relevant stakeholders, promote regional root servers and the use of internationalized domain names in order to overcome barriers to access
- Streamline the management of the dot UG Country Code Top Level Domain name (.UG ccTLD) in line with international best practices
- Put in place mechanisms to ensure that the country is ready for the transition to the next generation global Internet delivery mechanisms including Internet Protocol Version 6 (IPv6) address space
- Promote the development and use of open, interoperable, non-discriminatory and demand-driven standards
- Consolidate reforms in the institutional, policy, legal and regulatory environment for ICT sector/industry

Additional readings:
- Interactive online submarine maps by TeleGeography http://www.submarinecablemap.com/

b) Developing a local IT Industry

Uganda has immense growth prospects for developing world-class Information Technology (IT) industry and services so as to contribute substantially to her economic growth. In Vision 2040 Uganda expects to achieve **ICT goods and services as 40% of the total exports.**

Action lines:
Executive Training on Foundations of Government Information Leadership

- To promote the development of the hardware and software industry. Promote ICT industrial production and assembling. Promote software and applications development.
- Support the development of local capacity for the manufacturing of ICT products, creating software applications, as well as creating innovative services for local and export markets
- Partner with the private sector in devising innovative and productive ways of establishing a competitive local ICT industry so as to guarantee Uganda’s effective participation in the global economy
- To promote the utilization of Information Technology Enabled Services (ITES) to support Business Process Outsourcing (BPO) as a key intervention for job creation; ITES/BPO is an outsourcing model that uses information technology (IT), typically over the Internet, in the delivery of the outsourced process, like data entry, customer support, translation, etc.
- Design and implementation of ICT research and innovation activities. Set up ICT parks to support research and development as well as innovation.

c) Legal and Regulatory Framework

The collection of laws and regulations related to the digital world are called cyber legislation. Laws are needed to bring order to the telecommunications market, to protect citizen’s rights in the new media, to conduct online commerce, to stimulate digital content development, for consumer protection, telework, privacy, digital signature, among others. Most countries have existing national legislation for most of these areas, which can be more or less easily adapted, updated and/or adjusted for the digital world, but providing a proper legal environment to protect the rights of businesses and individuals is critical for the development of a knowledge society. Uganda is a leader in the region with its laws on Cyber-crime, Electronic transactions and digital signature.

Other than that the ICT Policy 2012 draft mentions:

- Legislation that address privacy and data protection, intellectual property rights and update existing legislation to cater for cyber-crime ;

References: Uganda’s Computer Misuse Act, Electronic Transaction Act, Digital signature, Access to information Act

d) ICT applications in all aspects of life

ICT applications can support sustainable development, in the fields of public administration, business, education and training, health, employment, environment, agriculture and science within the framework of national e-strategies. This will include actions within the following sectors:
E-government

ICT-enabled public service delivery - e-government- if implemented effectively, can improve access to public services, increase efficiency, transparency and accountability of government and political processes and empower citizens by enabling them to participate in the decision-making processes of governments.

The ICT draft policy mentions:

- Implement e-government strategies focusing on applications aimed at innovating and promoting transparency in public administrations and democratic processes, improving efficiency and strengthening relations with citizens
- Develop national e-government initiatives and services, at all levels, adapted to the needs of citizens and business, to achieve a more efficient allocation of resources and public goods
- Support international cooperation initiatives in the field of e-government, in order to enhance transparency, accountability and efficiency at all levels of government.

Among the challenges facing those who seek to apply new technologies to the realities of governance in developing countries are the reluctance of civil servants to change. We cannot forget that ICTs change the way things are done and in many cases this might mean less power, influence or money for those in public service that are involved in some of the old non-digital processes. Change in government organizations is not easy and we must make sure that political and cultural barriers are recognized and taken care of.

Other concerns include the digital divide (making sure everyone can have access to government services) and privacy and security (providing mechanisms to recognize the identity of individuals and organizations online).

For example Uganda listed the main concerns in the e-government framework itself, and they are: Cyber crime and cyber terrorism; undefined cross-border jurisdiction for cyber litigation; reliance on imported hardware and software; reliance on foreign funding; unharmonised ICT Policies and Strategies; inadequate infrastructure; adverse cultural beliefs and languages; inadequate funding; inadequate human resources and inadequate Public Private Partnerships (PPPs) frameworks.

E-Commerce

As we have seen in the e-readiness section, ICT business development can be a key indicator of KS development. This includes companies directly related to the digital world like telecommunication businesses, but also software developers, hardware vendors or assemblers, content developers, multimedia and digital media developers. But this also includes how traditional businesses, especially small ones, can adopt digital tools to improve processes, be more efficient and sell online, for example.

The ICT draft policy mentions:

- Promote the benefits of international trade and the use of e-commerce, and promote the use of local e-commerce models
- Through the adoption of an enabling environment, and based on widely available Internet access, seek to stimulate private sector investment, foster new applications, content development and public/private partnerships;
- Provide assistance to, and growth of SMMEs, in the ICT industry, as well as their entry into e-commerce, to stimulate economic growth and job creation as an element of a strategy for poverty reduction through wealth creation.


ICT in Education

"The African Union has a vision of an integrated, peaceful, prosperous Africa, driven by its own people to take its rightful place in the global community and the knowledge economy. This vision is predicated on the development of Africa’s human resources. Education is the chief means by which Africa's citizenry are prepared for their respective roles in the attainment of this vision.” African Union, Draft plan of action 2006.

Action lines:

- Review curricula at primary, secondary and tertiary levels in order to improve the quality of education and introduce new learning methods
- Improve the level of investment of educational ICT equipment, software as well as broadband connectivity of primary, secondary and tertiary institutions
• Impart teachers with the necessary ICT skills in order to enable them use ICTs in the teaching and learning process
• Establish educational networks for sharing educational resources
• Promote the growth and implementation of e-learning
• Create opportunities and providing assistance for the disadvantaged, people with special needs, women and the youth to acquire ICT skills.

Related documents: Uganda’s Revised Education Sector Strategic Plan (ESSP) of 2007-2015

**ICT in Health**

We define e-Health as the use of ICT to enable, support and deliver health services to patients and populations. Investment in ICT serves to amplify the impact of existing resources by improving accuracy, extending services to underserved areas, and cutting waste and redundancy. ICT could also be used to address the main obstacles to providing affordable quality healthcare in African countries.

**Action lines:**

• Promote collaborative efforts of government, planners, health professionals, and other agencies for creating a reliable, timely, high quality and affordable health care and health information systems and for promoting continuous medical training, education, and research through the use of ICTs, while respecting and protecting citizens’ right to privacy
• Facilitate access to the world’s medical knowledge and locally-relevant content resources for strengthening public health research and prevention programmes and promoting women’s and men’s health, such as content on sexual and reproductive health and sexually transmitted infections, and for diseases that attract full attention of the world including HIV/AIDS, malaria and tuberculosis
• Alert, monitor and control the spread of communicable diseases, through the improvement of common information systems
• Promote the development of international standards for the exchange of health data, taking due account of privacy concerns
• Encourage the adoption of ICTs to improve and extend health care and health information systems to remote and underserved areas and vulnerable populations, recognizing women's roles as health providers in their families and communities
• Strengthen and expand ICT-based initiatives for providing medical and humanitarian assistance in disasters and emergencies.

E-employment

Telework is a relatively recent trend enabled by Internet that allows some professionals to work from home; it has positive effects on costs, time efficiency and the reduction of traffic jams in big cities. It also favors the inclusion of mothers, people with physical disabilities, and in general, people who have difficulties for traveling to work on a daily basis or living in rural areas.

Action lines:

- Encourage the development of best practices for e-workers and e-employers built, at the national level, on principles of fairness and gender equality, respecting all relevant international norms
- Promote new ways of organizing work and business with the aim of raising productivity, growth and well-being through investment in ICTs and human resources
- Promote teleworking to allow citizens, particularly in the developing countries, LDCs, and small economies, to live in their societies and work anywhere, and to increase employment opportunities for women, and for those with disabilities. In promoting teleworking, special attention should be given to strategies promoting job creation and the retention of the skilled working force
- Promote early intervention programmes in science and technology that should target young girls to increase the number of women in ICT carriers.

ICT and the Environment

E-waste is becoming an increasingly problematic area in Africa, where components containing dangerous materials and being discarded incorrectly. Some countries have developed e-waste management policies or guidelines like Uganda. Other areas of concern are carbon emission of equipment and alternative energy sources like wind or solar.

Action lines:

- Implement efficient management and disposal of E-waste in line with the E-waste management policy
- Utilize ICT to minimize environmental degradation and manage natural disasters
- Collaborate with relevant institutions to establish recycling centers and educate the public through the media on how to ensure that the environment is protected
• Setup an e-waste management fund to which all importers of electronic equipment shall contribute
• Establish monitoring systems, using ICTs, to forecast and monitor the impact of natural and man-made disasters.


**ICT in Agriculture**

ICTs can be used at different stages of the agricultural cycle: Pre-cultivation (crop selection, land selection, calendar definition, access to credit), Crop cultivation and harvesting (land preparation and sowing, weather forecast, water management and fertilization, pest management) and Post-harvest (including sales, aggregated sales, storage, marketing, transportation, packaging, food processing, tracking, export).

**Action lines:**

• Ensure the systematic dissemination of information using ICTs on agriculture, animal husbandry, fisheries, forestry and food, in order to provide ready access to comprehensive, up-to-date and detailed knowledge and information, particularly in rural areas; and
• Public-private partnerships should seek to maximize the use of ICTs as an instrument to improve production (quantity and quality).

Case studies: Infotrade Uganda, a commodity exchange platform [http://www.infotradeuganda.com](http://www.infotradeuganda.com)

**ICT in Science and innovation**

According to UNESCO (2003), **Innovation is a national affair.** The major driving forces in the formulation of innovation strategies are national governments. Numerous countries have established commissions or committees dealing with the creation of an innovative society. Innovation is about science and technology: New government programmes increase public spending for scientific research, IT infrastructure and efficient patent systems. The state tries to coordinate and foster interactions between the government, universities, and the private sector. Innovation is primarily an economic concept: Key goals pursued through innovation within the private sector are new ideas, new alliances, and new markets. The main objective of this kind of innovation policy is to formulate proactive strategies designed to create, expand, and maintain systemic competitiveness in the economic field.
In brief, the term innovation can be defined as a “descriptive umbrella notion” covering a series of complex and interrelated economic, governance changes underway in various countries aimed at ensuring systemic and reinforced competitiveness in a global economic environment. A vast majority of highly industrialized countries have set up so-called National Innovation Systems (NISs) in order to analyze and react to technical change. The main objectives of such innovation policies are to create jobs, to reduce public expenses, to improve efficiency and operational methods, to generate publicity, and to increase the satisfaction of citizens. The basic “principle” of most of the related documentation and reports is that **in the 21st century the ability to innovate will separate economic leaders from the rest.** In Africa, coordinating activities that are taking place include UNESCO sponsored First Africa Forum on Science Technology and Innovations in 2012.

Related action lines in the draft 2012 ICT Policy:

- Promote affordable and reliable high-speed Internet connection for all universities and research institutions to support their critical role in information and knowledge production, education and training, and to support the establishment of partnerships, cooperation and networking between these institutions
- Promote electronic publishing, differential pricing and open access initiatives to make scientific information affordable and accessible in all countries on an equitable basis
- Promote the use of peer-to-peer technology to share scientific knowledge and pre-prints and reprints written by scientific authors who have waived their right to payment
- Promote the long-term systematic and efficient collection, dissemination and preservation of essential scientific digital data, for example, population and meteorological data in all countries
- Promote principles and metadata standards to facilitate cooperation and effective use of collected scientific information and data as appropriate to conduct scientific research.

Related documents: Uganda Science, Technology and Innovation Policy (2009), Global Innovation Index 2013

e) IT Education

UNESCO defines the importance of the population knowing how to use technology as "Empowerment of people through Media and Information Literacy (MIL) is an important prerequisite for fostering equitable access to information and knowledge and promoting free, independent and pluralistic media and information systems"
“Manpower development is imperative for the local IT industry to take root on a large scale in Uganda. For the country to achieve and maintain the position of an important player in the international IT market. A large pool of skilled manpower is required for all components of the IT industry and it has to be geared to meet both local and export needs. However, currently the professional IT human resource in both public and private sectors is inadequate lacks relevant professional skills. There is a high rate of IT illiteracy in both public and private sectors, which is characterized by a digital divide between urban and rural areas, as well as between men and women.” ICT Policy 2012

Action lines:

- Develop a comprehensive plan for human resource development in IT to meet present and future manpower needs
- Devise and implement a scheme for distributing affordable computers and Internet access to all academic institutions
- Encourage educational institutions to automate their management systems
- Establish a national educational network to enable sharing among educational institutions of e-libraries, teaching and tutorial systems
- Strengthen existing IT training institutions and setup new IT centers of excellence in all districts in Uganda to develop the requisite skills in various IT aspects including software and hardware development, network management and security through in-service training
- Encourage academic institutions to embrace e-learning so as to enable equitable regional access to IT training in all parts of the country
- Ensure inclusion of a comprehensive and regularly updated computer literacy module in the curriculum at all levels of education using international benchmarks as reference
- Promote “Training of Trainers” scheme to boost capacity building in IT
- Advocate for training and re-training of all personnel in the Justice, Law and Order Sector (JLOS) in applying and using IT to improve the delivery of justice
- Encourage IT companies to play a significant role in IT education through internship and industrial training schemes
- Ensure equal opportunity in basic IT training at all levels taking into consideration special interest groups namely; Women, Youth and PWDs.

f) Access to information and knowledge

“Universal service” refers to the availability of affordable communications services for all citizens on a personal basis (within the home or through personal ownership).
“Universal access” refers to the availability of affordable communications services for all citizens within the community in which they live but not necessarily on an individual basis (i.e.: Telecentres or public access points).

**Deepening utilization of ICT services by government, private sector, not-for profit organizations and the wider citizenry**

Action lines:
- Development of a national e-government strategy and master plan
- Awareness creation and mindset change
- Increasing penetration of ICT equipment, services and applications
- Partner with the private sector to support the development of the nation’s human resources including promoting private sector investment in education as well as in R&D;
- Develop provisions for regulation of value added services provided over telecommunications networks, like Mobile money
- Promote the development of telecommunications products and services in local languages.

**Universal access**

Uganda has been implementing the Rural Communications Development Policy (2001 and 2010) that addresses universal access among others. Although commendable progress has been made, substantial gaps still exist, especially in broadband access.

To this end, the following strategies are lined up:
- Roll out the last-mile broadband access countrywide in the shortest possible time
- Subsidize infrastructure deployment including broadband that would foster universal access/service
- Encourage Internet Service Providers (ISPs) to provide access to the network-based services from even the most remote locations in the country
- Utilize existing infrastructure (Post Offices, Schools, Hospitals) to extend universal access/service
- Provide computers in public places (e.g. post offices, schools, public libraries, etc.) in small and large communities to help low-income segments of society gain access to the internet and for business, educational and other purposes
Establish an independent Universal Access Service Fund for the converged industry for effective and efficient delivery of services to un-served and underserved areas of the country.

Promote value added services, access to information and service needs to all sectors of society especially the marginalized sections of society (rural or low income communities and people with disabilities).


**Access, Promotion and awareness**

Put in place mechanisms to promote IT awareness and reduce the digital divide between urban and rural, urban and urban, men and women.

**Action lines:**

- Promote IT usage in government by ensuring that all top leaders in government make transform the institutions under their control by automating their work as a priority
- Encourage production of local content in local languages over the Internet
- Establishing interactive for a for all government offices to share information on new technologies and their benefits
- Encourage utilization and expansion of start-up activities set up by the government
- Mobilize and sensitize communities about the importance of usage of IT in their day-to-day economic activities
- Facilitate and encourage the use of IT by special interest groups to make them more productive in the society and utilize this largely untapped human resource. (Special interest groups include: women, youth and PWDs);
- Encourage use of open source software and low cost commercial versions of software for normal operations
- Encourage the setting up of a “content industry”, comprising of local content and translation to local languages
- Encourage the use of Internet and Intranet for inter-office communication within government.

**Women, youth and PWD**

- Promote ICT as an alternative career for women, youth and PWDs in the informal and formal educational system
• Encourage creativity and innovation around ICTs among women, youth and PWDs leading to entrepreneurship development

• Enable full and equal participation of women, youth and PWDs in creating the Information society

• Implement special ICT training programs for women, youth and PWDs

• Facilitate and encourage the development of electronic networks and systems for associations and organizations engaged in the advancement of women, youth and PWDs issues in the country

Case studies: ICT Works article “Citizen election reporting in Kenya was a breakthrough in online-offline collaboration” http://www.ictworks.org/2013/05/13/citizen-election-reporting-in-kenya-was-a-breakthrough-in-online-offline-collaboration/

**g) Preservation of Heritage, Cultural diversity and identity, linguistic diversity and local content**

The Internet offers access to a myriad of content from all over the world. But local content relevant to local communities and in local languages can be under represented or non-existent. Therefore other areas of critical government interventions are those related to local languages and culturally-specific Internet content. Governments can help by encouraging content creation, especially of local content with cultural value, supporting content in local languages, and helping communities preserve their own heritage using technology.

**Specific action lines in the ICT Policy 2012:**

• Develop a cultural policy that promotes the production of cultural, educational and scientific content and the development of local cultural industries suited to the linguistic and cultural context of the users

• Develop a national policy and laws to ensure that libraries, archives, museums and other cultural institutions play their full role of content - including traditional knowledge - providers in the Information Society, more particularly by providing continued access to recorded information

• Support efforts to develop and use ICTs for the preservation of natural and cultural heritage, keeping it accessible as a living part of today’s culture. This includes developing systems for ensuring continued access to archived digital information and multimedia
content in digital repositories, and support archives, cultural collections and libraries as the memory of humankind

- Provide content that is relevant to the cultures and languages of individuals in the Uganda, through access to traditional and digital media services
- Through public/private partnerships, foster the creation of varied local and national content, including that available in the language of users, and give recognition and support to ICT-based work in all artistic fields

Related documents: In 2003 UNESCO General Conference adopted a recommendation concerning the Promotion and Use of Multilingualism and Universal Access to Cyberspace. The same year, countries also agreed on a Convention for the Safeguarding of Intangible Cultural Heritage. Case study: Four communities in Uganda commence inventory making of their intangible cultural heritage


**Policy implementation**

The implementation of a policy or strategy is the time to put the guidelines into practice. Finally the moment has arrived to use the assigned budget in order to carry on the activities planned in previous phases. In this stage, the main tool is the *political will* to support the proposed goals, to assign human, economic and technological resources to implement the previously agreed policy, and to encourage the maintenance and strengthening of the established alliances between the multiple participating stakeholders.

"The social and economic challenges facing Uganda and the opportunities that ICTs offer pose complex policy choices for the nation. The country has to address the implementation of this policy and mainstreaming of ICTs amid strong competition for limited financial resources from other sectors. Therefore, the successful achievement of the National ICT Policy goals and objectives depend on an integrated and wholesome approach during implementation underpinned by developing strategic synergies and partnerships between the public and private sector as well as civil society." draft ICT Policy 2012

In general the implementation phase gathers all the aspects related to the implementation of the KS Policy as planned in the elaboration stage, through a set of instruments and actions. In this phase, the implementation does not depend so much on the civil servants or governmental bodies entrusted with the construction of the KS Policy, nor on Experts’ Team, but on the government and other social actors.

Generic implementation actions:

- Choosing or creating a body (an agency or organization) to carry on the policies and strategies proposed by the KS Policy. This organization is usually coordinated by the government, but it includes multisectoral stakeholders: enterprises, universities, NGOs, etc.
- Establishing goals and beneficiaries: Goals are the reason for the policy to exist; the beneficiaries are the individuals, communities and organizations that will benefit from the KS Policies implementation.
- Planning actions and activities to achieve the goals, concrete programs and projects, as priority areas: e-government, e-health, cybersecurity, etc.
- Establishing legislation changes to make feasible the KS Policy proposal

Note: Implementation actions vary in each policy or strategy
The outcomes of the implementation phase are:

- New or updated legislations on an information society
- The total or partial concretization of the KS Policy, through concrete initiatives and projects
- The designation of control agencies for monitoring and assessment
- Communication of the KS Policies to the population, in order to obtain citizens’ involvement

In the case of Uganda, Section 6 of the Draft ICT Policy 2012 details an implementation framework that defines the roles, responsibilities and functions of all the involved stakeholders, as follows:

- **Ministry of ICT**: Overall coordination of formulation, implementation, review, target setting and oversight. Specifically the Ministry of ICT in collaboration with/through its Agencies (NITA-U and UCC/Broadcasting Council)
- **National IT Authority**: Oversee the implementation of IT sub sector priorities and regulate the IT sub-sector in relation to the broad responsibilities of the Ministry of ICT.
- **Uganda Communications Commission/Broadcasting Council**: Oversee implementation of communications and broadcasting sector priorities and to regulate the communications, broadcasting subsector in relation to the broad responsibilities of the Ministry of ICT.
- **Parliament**: Effective legislation, legal Framework, among other tasks
- **Judiciary**: assist with delivery of justice, dispute resolution.
- **Cabinet/Government**: provide political and economic will, vision and leadership to facilitate and drive the ICT for Development process in order to speed up the development of Uganda’s information society
- **Ministry of Finance**: resource mobilization and allocation
- **National Council of Science & Technology**: oversee the science and technology research in the country
- **Ministry of Education**: oversee training and human resource development
- **District Administration and Local Authorities**: Information plays an important role in the governance (decentralization of power) process of the country. In this regard, access to information, ICT tools and services form the backbone for governance and citizen’s participation in national, regional and global affairs. Therefore, district administrations and local authorities in collaboration with the Ministry of ICT (and its Agencies) shall work closely with Central Government, private sector, civil society and other partners to implement this policy
- **Development Partners**: Mobilize technical and financial resources, Support the effective participation of Uganda in international fora, among other tasks.
- **Private Sector**: is a key partner to Government is recognized as having a critical role in the process of developing Uganda’s information society and economy. The private sector is
expected among other things: to serve as the key driver for the development of the Ugandan economy by providing domestic and foreign investments in ICT services and infrastructure development; and facilitate the mobilization of funding/investments to implement ICT initiatives outlined in this policy.

- **Academia and Research Institutions**: continue to support science and innovation.
- **Civil Society**: a fundamental element in the preservation of human development and consolidation of governance systems. The challenges that face civil society in this area are related to: low literacy levels especially in the rural areas and the underserved poor urban communities; inadequate telecommunication facilities, electricity and road network infrastructure and the weak institutional coordination mechanisms.
- **Media**: plays an important part in Uganda’s social and economic development process, especially with respect to information dissemination

As a final note, the Ministry of ICT (and its Agencies) shall be responsible for coordinating resource mobilization in conjunction with the Ministry of Finance, Planning and Economic Development for implementing the National ICT Plan. This shall include coordinating investments, providing for equitable and transparent resource allocation as well as monitoring and evaluation.

**Monitoring and evaluation**

Assessment or control is the method by which governments and society may judge the real worthiness or credit of governmental (or multi-stakeholder) actions. Many countries are concerned about measuring the effective impacts of a KS Policy, remember the TAI index we discussed in the e-readiness section and how it related to actual achievement? The evaluation process implies a systematic examination of the KS Policy objectives and its results, an analysis of the distance between the actual results and the expected results. This distance may result from the impact of random elements and/or the government’s or designated responsible organization’s handling of certain obstacles. In general, the monitoring and evaluation processes measure the distance between the actual implementation of policy and the initial plan, and the economic effects generated by the policy executed.

**Monitoring**

It is important to consider that generally there is no data available to consider the long-term effects of the KS Policy. Therefore, further than the accurate evaluation of the KS Policy implementation results, a complete analysis or monitoring during several years can be necessary.
Monitoring provides information that will be useful in:

- Analyzing the situation in the country or community;
- Determining whether the inputs in the KS Policy are well utilized;
- Identifying problems faced by the implementation of the KS Policy and finding solutions;
- Ensuring that all activities are carried out properly by the right people and on schedule;
- Using lessons from the experience to update the KS Policy, its strategies and tactics;
- Determining whether the way the KS Policy implementation was planned is the most appropriate way of achieving the goals.

Evaluation

The evaluation should provide a clear picture of the extent to which the intended objectives of the KS Policy actions and policies have been achieved. Evaluation can and should be done before, during and after implementation.

- **Before** implementing the KS Policy, the evaluation is needed in order to assess the possible consequences of the planned KS Policy to the country over a given period of time and assist in making decisions on how the policy will be implemented.
- **During** the KS Policy implementation, evaluation should be a continuous process and should take place in all the implementation activities. This enables the organization in charge to review progressively the strategies according to the changing circumstances in order to attain the desired activity and objectives, and eventually to modify or relocate the financial, human, and technological resources.
- **After** the implementation of the KS Policy, the evaluation should be used to assess the Policy planning and implementation process, as well as its results after its implementation.

In the case of Uganda, the draft ICT Policy indicates that the Ministry of ICT shall carry out monitoring and evaluation at different levels of the impact of implementation of this policy. A monitoring and evaluation framework shall be developed to ascertain medium and long term impact of the policy across Government. The policy shall receive a mid-term review every three (3) years and a long term review every five (5) years in order to cater for the fast rate of technology innovation and advancement. The Policy documents proposes a series of indicators to measure over time.
Summary

This document has been conceived to support two sessions on Knowledge Societies and Policy for an executive training that took place in Uganda in July 2013. However it is our intention that the training manual be useful for anyone interested in the subject.

At the end of this training session, we hope that participants will be better informed to take part in building Public Policies for Knowledge Societies, to understand the role of governments in supporting the development of a knowledge society (KS), to analyze e-readiness indicators in order to analyze the state of the art concerning KS in the world, Africa and particularly Uganda; to apprehend the necessity of Public policies for Knowledge Societies; to analyze the diverse areas of government intervention for the development of a KS; to understand the content of Uganda’s ICT Policy draft 2012 as a base for a KS Policy; and to critically reflect on the knowledge acquired.

The Ugandan government has done a tremendous work in developing a series of policies, laws and plans to become a KS in 2025, and to fulfill its development objectives in 2040. It is fundamental that the Ugandan present and future KS leaders continue to contribute to this effort, knowing that in a rapidly changing environment public policies need to be constantly monitored, evaluated and updated in order to be effective and satisfy the objectives.

In brief, participants will be hopefully better prepared to fulfill their roles as educated leaders on Knowledge Society in their country and region.
Practical Workshop on the Knowledge Society and related policies in Uganda

The practical component of this workshop consists of three activities that allow a reflection on the subjects discussed and help build up the participants’ awareness on the areas of intervention and the types of intervention needed to turn Uganda into a Knowledge Society and fulfill the objectives of the development plan Uganda 2040.

- In activity 1 you will analyze different areas of government intervention related to the current Ugandan situation, the plans to become a KS by 2025 and the development plan for 2040: IT infrastructure, youth, agriculture, women, culture and language, poverty, tourism and the MDGs.
- In activity 2 you will consider Uganda’s development policy “Uganda 2040” and how some of its objectives might relate to a KS.
- In activity 3 you will build a SWOT matrix for Uganda today in order to become a Knowledge Society in 2025 and achieve its development vision objectives by 2040.

1. Selected action lines to support the development of a Knowledge Society

Now that you have learned more about the Knowledge Society and the areas of government intervention, we will work together to reflect on some of the critical characteristics of Uganda that support or hinder the development of the Knowledge Society.

1.1 Telecommunications infrastructure

In 2005 during the World Summit on the Information Society (WSIS) 10 targets were set related to ICT infrastructure for all participant countries to be met by 2015:

1. Connect villages and establish community access points;
2. Connect universities, colleges, secondary schools and primary schools;
3. Connect scientific and research institutions;
4. Connect all public libraries, archives, museums, cultural centers and post offices;
5. Connect health centers and hospitals;
6. Connect all local and central government departments and establish websites and e-mail addresses for them;
7. Adapt all primary and secondary school curricula to meet the challenges of the information society, taking into account national circumstances;
8. Ensure that the entire world population has access to television and radio services;
9. Encourage the development of content and put in place technical conditions in order to facilitate the presence, and use, of all world languages on the Internet;
10. Ensure that more than half the world’s inhabitants have personal use of ICT.

Activity: How well do you think Uganda (or your country) is doing in meeting each of these objectives? What actions are been carried out? Please use the table below to summarize your reflections.

<table>
<thead>
<tr>
<th>Objective</th>
<th>How well is your country doing?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Connected communities</td>
<td></td>
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<tr>
<td>2. Connected educational institutions</td>
<td></td>
</tr>
<tr>
<td>3. Connected Science institutions</td>
<td></td>
</tr>
<tr>
<td>4. Connected cultural institutions</td>
<td></td>
</tr>
<tr>
<td>5. Connected health institutions</td>
<td></td>
</tr>
<tr>
<td>6. Connect local and national government</td>
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</tr>
<tr>
<td>7. Adapt Curricula</td>
<td></td>
</tr>
<tr>
<td>8. TV and radio for all</td>
<td></td>
</tr>
<tr>
<td>9. Content and languages</td>
<td></td>
</tr>
<tr>
<td>10. Access to ICT</td>
<td></td>
</tr>
</tbody>
</table>
1.2 A Knowledge Society for a young population

Uganda has one of the youngest populations in Africa. Have a look at Uganda’s Predicted Population Pyramids for 2020 and 2050 by accessing http://www.nationmaster.com/country/ug/Age_distribution.

The African Economic Outlook report (2012), observes that Uganda has one of the youngest and fastest growing populations on the African continent. While a young population can be an asset, the country is facing a lot of challenges for providing quality employment for these young people. Youth unemployment and underemployment trends in Uganda are driven by a variety of factors; among these include the lack of employable skills, limited access to financial and technical resources, insufficient emphasis on vocational training and a mismatch between graduate skills and skills requirements in the job market.

Activity - Reflect on the following:

- How must the design of a Knowledge Society Policy take into account such a young population?
- What are the key areas of government intervention that must be considered in order to satisfy the needs of this population and fully support their growth into productive adults?
  Hints: Take into account education, employment, vocational training, entrepreneurship, parenthood and family, health, access devices, language and culture.
- What challenges does a large % of young people pose for developing a KS?
- Consider the organization/s you work for. Do they have a role to play in integrating youth in the KS? How? (if your organization does not have a role please select another organization you know of and that might play a crucial role).

1.3 Evolution from mainly agricultural to a leading IT industry

Economically, Uganda is reported to have substantial natural resources, including fertile soils, regular rainfall, deposits of copper, gold and other minerals and recently discovered oil. Agriculture remains the backbone of the economy employing over 80% of the work force, followed by industry at 5% and service industry at 3%. Coffee accounts for the bulk of export revenue. But all this is going to change: have a look at some of the development objectives for Uganda 2040, indicating the country wishes to update the agricultural system, become more industrialized and develop a strong IT industry.
Activity - Please reflect:

- What can a KS do to support agriculture development and modernization? Hint: think about e-agriculture applications, e-commerce, agricultural methods, automation, tracking and exporting.
- What can a KS do to support the development of other areas of the economy, like industry? What areas are these? What specific advantages does Uganda have in comparison with other countries in the region?
- If Uganda wants to develop IT related industries and services like hardware, software development and related services, so that they become 40% of all exports by 2040, what should it do?

1.4 Women and girls in a KS

"Responsiveness to the interests of women, people with disabilities, native peoples, and marginalized people and groups should be a consideration of the highest priority in all measures to promote knowledge societies." UNESCO 2013

According to the Millennium Development Goals (MDGs) Progress Report of 2010 for Uganda, there is progress in terms of gender equality and empowerment of women. The target of gender parity between boys and girls in primary education has been achieved. But it also seems that between family tasks, work and looking after the house and family members, women in Uganda work many more hours than men. In general within the African context, there are scarce policies oriented to integrate women as active players in the Knowledge Society.

"The successful penetration of ICTs within the existing social and economic structures depends on its people. However, women, youth and PWDs are at times marginalized in most activities but constitute a very important segment of society. Therefore, there is need to address them as special
groups in society that can positively contribute to the growth of ICTs as well as the use of ICTs as empowerment tools in their daily activities.” Uganda ICT Policy 2012

Activity - Now reflect:

- How can a KS support the inclusion of women in all areas of society? Hints: education, technical and vocational training, entrepreneurship, telework, policies, languages, health, community development, social.
- How can we make technology more accessible to Ugandan women and girls? What social changes are needed?
- How can your organization (or an organization you know, or the government) contribute to the needed changes?

1.5 Cultural diversity and identity, cultural Heritage, linguistic diversity and local content

Uganda is a unique Society where many different tribes, cultures and languages intermix and live in peace. But slowly traditional ways are disappearing and globalization takes over. A KS can help preserve Uganda’s cultural heritage.

“What is also at stake is the space we should make for local or indigenous forms of knowledge within knowledge societies whose development models highly value the codification forms specific to scientific knowledge. The increasing importance of cultural and linguistic diversity underscores the extent to which problems of access to knowledge are bound up with the production of knowledge. Fostering Diversity also means nurturing the creativity of emerging knowledge societies”. UNESCO (2005)

Activity - Now reflect:

- How can a KS help support local indigenous languages? Does it make sense to preserve them, and why? If yes, how could this be done?
- How can a KS help preserve Uganda’s cultural Heritage, like traditions, arts and crafts, songs and stories, artisan’s techniques? How could this preservation be done?
- How critical is to have Internet content in local languages? How can the government support the development of local content? What is the role of communities and the school system?
- How is cultural diversity, preservation of heritage and local languages covered in the draft ICT Policy 2012? What organizations could play a crucial role?
1.6 Fighting Poverty

"Over the last 25 years, Government has been battling poverty through a number of programmes, among which was the PEAP. The global trend is that the government, market, civil society and community all need to work together and help to create conditions that will enable the poor to overcome their poverty, build their lives, economic and social assets, improve their capabilities, safeguard their security and reduce their risks and vulnerabilities. The role of ICTs is catalytic in this complex task of poverty reduction by leveraging effects on earning opportunities, on educational and health services, on good governance and on promoting democracy." Uganda’s draft ICT Policy 2012

Activity - Now reflect

1) In general, how can Uganda as a KS help overcome poverty? What type of measures can be taken in the case of Uganda?

2) According to your opinion, how well is poverty tackled in the draft 2012 ICT Policy?

1.7 Tourism and Ecology

The tourism sector contributes significantly to Uganda’s Gross Domestic Product (GDP). It provides significant investment opportunities and employment to Ugandans. Tourism is also a major source of foreign currency, second after coffee exports. In 2011 the total tourism contribution to GDP was US$1628 million while total contribution to employment was US$447 million (Data collected from World Travel and Tourism Council 2011).

As a practical application in ICTs, in 2009 the Uganda Wildlife Authority under the Ministry of Tourism, Trade and Industry launched a campaign to promote tourism in Uganda. The friend a Gorilla campaign (http://www.friendagorilla.org/) uses the latest technologies and this enables Uganda to earn revenue from tourists who visit the cyber space that has been created to promote the gorilla

Activity - Now reflect:

- How can a KS support the development of tourism? What can be done to better help potential visitors?
- What is the role (if any) of Ugandans in Diaspora?
1.8 Uganda and achieving Millennium development goals

Have a look at the status of achievement of each of the selected MDG according to the Millennium Development Goals Report for Uganda 2010 by Uganda’s Ministry of Finance, Planning and Economic Development


<table>
<thead>
<tr>
<th>Goal 1: Eradicate extreme poverty and hunger</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 1.A:</strong> Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day</td>
</tr>
<tr>
<td><strong>Target 1.B:</strong> Achieve full and productive employment and decent work for all, including women and young people</td>
</tr>
<tr>
<td><strong>Target 1.C:</strong> Halve, between 1990 and 2015, the proportion of people who suffer from hunger</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal 2: Achieve universal primary education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 2.A:</strong> Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal 3: Promote gender equality and empower women</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 3.A:</strong> Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal 4: Reduce child mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 4.A:</strong> Reduce by two thirds, between 1990 and 2015, the under-five mortality rate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal 5: Improve maternal health</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 5.A:</strong> Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio</td>
</tr>
<tr>
<td><strong>Target 5.B:</strong> Achieve, by 2015, universal access to reproductive health</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal 6: Combat HIV/AIDS, malaria and other diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 6.A:</strong> Have halted by 2015 and begun to reverse the spread of HIV/AIDS</td>
</tr>
<tr>
<td><strong>Target 6.B:</strong> Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it</td>
</tr>
<tr>
<td><strong>Target 6.C:</strong> Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal 7: Ensure environmental sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 7.A:</strong> Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources</td>
</tr>
<tr>
<td><strong>Target 7.B:</strong> Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss</td>
</tr>
<tr>
<td><strong>Target 7.C:</strong> Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation</td>
</tr>
<tr>
<td><strong>Target 7.D:</strong> By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal 8: Develop a global partnership for development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target 8.B:</strong> Address the special needs of the least developed countries</td>
</tr>
<tr>
<td><strong>Target 8.D:</strong> Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term</td>
</tr>
<tr>
<td><strong>Target 8.E:</strong> In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries</td>
</tr>
<tr>
<td><strong>Target 8.F:</strong> In cooperation with the private sector, make available the benefits of new technologies, especially information and communications</td>
</tr>
</tbody>
</table>
Activity- Now reflect:

- For those targets that are slow: How could ICT help Uganda achieve them? What applications or services exist today that focus on some of the targets?
- For those targets that are on track, how can a KS speed up their achievement?
- Do you believe ICTs could help in solving the issues faced by those targets that have reversed (meaning instead of being sorted out they have become worse)?
2. Achieving Vision 2040

“A transformed Ugandan society from a peasant to a modern and prosperous country within 30 years” Vision 2040

Vision: “A knowledge society where Information and Communications Technology (ICT) is central in all spheres of life” Mission: “To leverage ICT for transformation of Uganda into a Knowledge Society by 2025” ICT Policy draft 2012

In line with Vision 2040 a number of socio-economic indicators and targets have been developed for Uganda. Below you can find some selected development indicators we have selected for this exercise, their baseline status and target.

<table>
<thead>
<tr>
<th>Development Indicator</th>
<th>Baseline 2010</th>
<th>Target 2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per capita income</td>
<td>USD 506</td>
<td>USD 9500</td>
</tr>
<tr>
<td>% of population below the poverty line</td>
<td>24.5</td>
<td>5</td>
</tr>
<tr>
<td>Labor force distribution in line with sectoral contribution (%)</td>
<td>Agriculture: 65.6</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Industry: 7.6</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Services: 26.8</td>
<td>43</td>
</tr>
<tr>
<td>% share of national labor force employed</td>
<td>70.9</td>
<td>94</td>
</tr>
<tr>
<td>Manufactured exports as a % of total exports</td>
<td>4.2</td>
<td>50</td>
</tr>
<tr>
<td>ICT goods &amp; services as a % of total export</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>% level of urbanization</td>
<td>13</td>
<td>60</td>
</tr>
<tr>
<td>Technology up-take &amp; diffusion (Technology Achievement Index (TAI))</td>
<td>0.24</td>
<td>0.5</td>
</tr>
<tr>
<td>Literacy Rate (%)</td>
<td>73</td>
<td>95</td>
</tr>
<tr>
<td>Innovation as measured by patents registered per year</td>
<td>3</td>
<td>6000</td>
</tr>
<tr>
<td>Gender Related Development Index (GDI)</td>
<td>0.51</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Activity:
In the table below, please write down what you think can be the role of a KS to help achieve or influence each of the selected objectives of Vision 2040. As a hint, reflect on the implications for
Education, Industry development, Infrastructure in general (roads, water, electricity), work, communities, culture ICT infrastructure, legislation for each of them.

<table>
<thead>
<tr>
<th>Development area</th>
<th>Action lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase per capita income</td>
<td></td>
</tr>
<tr>
<td>Reduce % of population below the poverty line</td>
<td></td>
</tr>
<tr>
<td>Change Labor force distribution by reducing agriculture and increasing industry and services.</td>
<td></td>
</tr>
<tr>
<td>Increase national labor force employed</td>
<td></td>
</tr>
<tr>
<td>Increase manufactured exports as a % of total exports</td>
<td></td>
</tr>
<tr>
<td>Create ICT goods &amp; services as a % of total export</td>
<td></td>
</tr>
<tr>
<td>Development area</td>
<td>Action lines</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Increase level of urbanization</td>
<td></td>
</tr>
<tr>
<td>Improve Technology uptake &amp; diffusion</td>
<td></td>
</tr>
<tr>
<td>(Technology Achievement Index (TAI))</td>
<td></td>
</tr>
<tr>
<td>Increase Literacy Rate (%)</td>
<td></td>
</tr>
<tr>
<td>Foster Innovation</td>
<td></td>
</tr>
<tr>
<td>Improve situation of women</td>
<td></td>
</tr>
</tbody>
</table>
3. Uganda has achieved its dream

Let us imagine it is the year 2040 and Uganda has achieved its Vision and become a middle income country. Before that and by 2025, it has become a Knowledge Society as planned in the draft ICT Policy 2012. Becoming a KS has played a critical part in fulfilling the development objectives.

Now let us go back in time and analyze what the situation in 2013 was using a SWOT analysis matrix. Keep in mind the focus is Uganda as a Knowledge Society and the Vision objectives achieved by 2040.


- **Strengths:** characteristics of Uganda that give it an advantage over other countries (internal factors of all types). Examples: Capabilities, competitive advantages, resources, assets, population characteristics, geography, economy, innovation, culture, processes, systems, values, legal system, etc.
- **Weaknesses:** characteristics that place the country at a disadvantage relative to others (internal factors as well). These are areas that can be improved. Examples: disadvantages, gaps, competitiveness, financials, vulnerabilities, pressures, reliability, leadership, commitment, politics, etc.
- **Opportunities:** elements that Uganda could exploit to its advantage in order to become a knowledge Society (external factors). These are leads that we can focus our energy on. Example: other countries vulnerabilities, technological trends, population issues, Global and regional influences, adaptability, partnerships, commitment.
• **Threats:** external elements that could cause trouble, slow or hinder Uganda’s development as KS. These are obstacles that we must surpass. Example: politics, legislation, environment, competition, sustainability, economy, security, debt, etc.

The instructor will indicate how the activity will be carried out.
Knowledge Society

- IFAP Observatory website [http://ifap-is-observatory.ittk.hu/](http://ifap-is-observatory.ittk.hu/)

Ugandan Policies, Regulations and research documents

• Uganda’s Information Technology Policy 2012 (draft)

• Uganda’s Revised Education Sector Strategic Plan (ESSP) of 2007-2015


• Uganda’s policy framework for management of .ug country code (2011)

• Draft telecommunications policy (2012)

• E-waste Policy (2011)


• Uganda Electronic Signatures Act (2011)

• Uganda Electronic Transactions Act (2011)

• Ministry of Information and Communications Technology (ICT) Information Management Services Policy (2011)
• Rural Communications Development Policy for Uganda (2009)
  http://www.researchictafrica.net/countries/uganda/Uganda%20Rural%20Communication%202009.pdf


• Ministerial Policy statement: The Policy Statement presents planned outputs and achievements of the FY 2011/12 and planned outputs/priorities for FY 2012/13 which comprise specific inputs from the Ministry of Information and Communications Technology (MoICT), National Information Technology Authority - Uganda (NITA-U), Uganda Institute of Information and Communications Technology (UICT), as bodies that draw resources from the Consolidated Fund, Posta Uganda and Uganda Communications Commission & Broadcasting Council (UCC & BC) as the other semi autonomous bodies.


E-readiness
• IFAP 2011 Report

• ITU Measuring the Knowledge Society 2012 report
  http://www.itu.int/ITU-D/ict/publications/idi/

• World Economic Forum Global Information Technology Report 2013
  http://www.weforum.org/issues/global-information-technology

• ITU Statistical database of telecommunication indicators
  http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom.html

• The Economist Digital economy rankings 2010,
  a combined ranking of countries taking into account connectivity and technology infrastructure, business environment, social and cultural environment, legal environment, government policy and vision and consumer and business adoption. Unfortunately not many African countries are included, but the analysis of the indicators and its weight is interesting.
• The Digital Opportunity Index http://www.itu.int/ITU-D/ict/doi/material/WISR07-chapter3.pdf is an e-index based on internationally-agreed ICT indicators produced by ITU. The DOI was compiled for 181 economies for three years from 2004-2006, but unfortunately it has been discontinued. The Index (DOI) is based on 11 ICT indicators, grouped in clusters of three: opportunity, infrastructure and utilization.


• Global Innovation Index 2013 http://www.globalinnovationindex.org/

Kenya:

• The Open data website launched in 2011 makes key government data freely available to the public through a single online portal. The 2009 census, national and regional expenditure, and information on key public services are some of the first datasets to be released. The website is a user-friendly platform that allows for visualisations and downloads of the data and easy access for software developers. Indeed, tools and applications have already been built to take this data and make it more useful than it originally was. https://opendata.go.ke/page/about


• Kenya has a large number of laws and regulations that have been adapted for the digital world, including e-transactions, e-signatures, consumer protection, and computer crime. http://michaelmurungi.blogspot.de/#!/2011/06/schedule-of-laws-and-regulations-on-ict_24.html

• In Kenya a National e-Government Framework was developed in 2004 and a Directorate of e-Government was set up under the Cabinet Office within the Office of the President to coordinate and spearhead the implementation of the e-Government programme in Kenya. It includes deployment of village information centers in rural areas, re-engineering of business processes, development of website standards http://www.e-government.go.ke/index.php?option=com_docman&task=cat_view&gid=36&amp;Itemid=50
Rwanda:

- NICI 2010 is a comprehensive integrated ICT-led socio-economic development policy and plan set within the wider context of the developmental objectives of the country is in place. It includes actions for e-government. [http://www.ist-africa.org/home/files/Rwanda_NICI2010.pdf](http://www.ist-africa.org/home/files/Rwanda_NICI2010.pdf)

Tanzania:

- The Central Bank, the Tanzanian Revenue Authority, and the Public Procurement Regulatory Authority are setting up an **e-procurement** system for the Tanzanian Public Service. [http://ppra.forumotions.com/](http://ppra.forumotions.com/)

Other:

- The East Africa Community Task Force on Cyber laws has developed a framework for cyber laws. The EAC framework recommends the creation of regional oversight bodies; one such body being the Computer Emergency Response Team (CERT), an electronic authentication body, among others.[http://www.eac.int/index.php?option=com_docman&task=doc_download&gid=632&Itemid=163](http://www.eac.int/index.php?option=com_docman&task=doc_download&gid=632&Itemid=163)
- UNCITRAL, United Nations Commission on International Trade Law, OECD and ITU have coordinated their efforts to work on common legal frameworks for ecommerce and trade related issues defining model laws like:
Executive Training on Foundations of Government Information Leadership

- OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data
  http://www.oecd.org/internet/ieconomy/oecdguidelinesontheprotectionofprivacyandtransborderflowsofpersonaldata.htm