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ICT for SIDS Partnership: A Blueprint for Action based on Samoa Pathway and UN Post 2015 Agenda

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Abstract

ICT (Information and Communication Technology) services have been recognized as the key enablers of economic development, improvements in quality of life, and operational efficiencies in small islands and developing states (SIDS) by the Samoa Pathway document. This short paper describes the ICT4SIDS Partnership between a few islands, some UN organizations, academic institutions, and startups that is focusing on high impact ICT services in health, education, public safety, public welfare, and other vital sectors for SIDS countries. Specifically, we have developed a Blueprint for Action for SIDS that is supported by a systematic methodology and a powerful computer aided planning environment that quickly produces highly customized plans for more than 100 ICT services for SIDS and other underserved populations around the globe by using the latest thinking in ICT. As a starting point, we have already established an ICT4SIDS Center that can provide human capacity building (e.g., training) and technical capacity building (e.g., quickly enabling vital ICT services) for SIDS.

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Introduction

eGovernment, eBusiness, and eCommerce initiatives, collectively referred to as ICT (Information and Communication Technology) services in this paper, have been identified as the key enablers of health, education, public safety, public welfare, and other vital sectors for the developing countries and other underserved populations around the globe. These ICT services have been specifically highlighted for SIDS (Small Islands and Developing States) by the Samoa Pathway and the UN Post 2015 Agenda. For example, a two hour Panel Discussion on "ICT and E-Government in SIDS: Responding to the Samoa Pathway Call for Action" [1], was held at the United Nations on Nov, 2014 to exclusively discuss and elaborate on the role of ICT for SIDS. This conference and other publications identify the vital ICT services for SIDS that can enable disaster recovery, tourism, fisheries, telemedicine, mobile apps for the underserved population, and Big Data for health and human services. These ICT services are also at the core of the UN Post 2015 Agenda and SDGs (Sustainable Development Goals) with the objective of "No One Left Behind".

While the know-how about the needed ICT services is available in the form of best practices, the *major challenge is: how to make this know-how available quickly, economically, and globally so that no one is literally left behind.*

This short paper discusses the Blueprint for Action that has been developed by the ICT4SIDS Partnership [2] to specifically address the aforementioned challenge. The ICT4SIDS Partnership, formed during the UN-SIDS Conference, held in Samoa in 2014, combines people, processes and technologies so that no one is really left behind. This paper presents an overview of the ICT4SIDS Partnership, the key elements of the Blueprint, the step-by-step methodology adopted by the Partnership, and the computer aided planning and management environment that supports the methodology to rapidly and economically enable the ICT services urgently needed by the SIDS. The paper concludes by showing the initial results and the overall work-plan.

Overview of the ICT4SIDS Partnership

ICT4SIDS Partnership, formed at the Samoa Conference (UN-SIDS Registered Partnership No: 2765), consists of a few Islands, UN-based organizations, academic institutions, and startup companies that are devoted to explore ICT for SIDS. Our vision is to:

- Offer diverse array of digital innovations primarily to address the challenges faced by SIDS (Small Islands and Developing States) as specified by the Samoa Pathway document..
- Offer Computer Aided Advisory services that can be quickly customized to serve any underserved population around the globe.
- Deliver immediate benefits to the least developed countries, landlocked developing countries, small island developing states and other underserved populations.
- Focus on the ICT Services that cut across all sectors of value to the SIDS instead of one sector, as illustrated in Figure 1. We are specifically focusing on the coordination and integration of services that require multiple services from multiple sectors in scenarios such as disaster recovery.

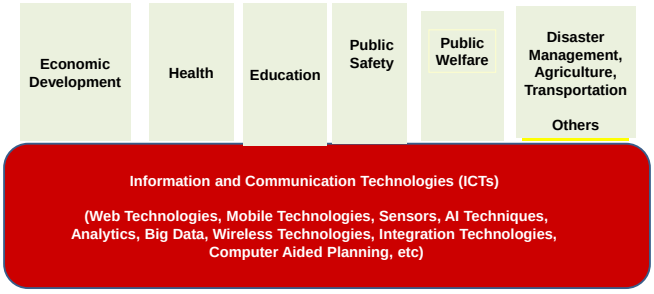

Figure 1: Scope of ICT4SIDS

The examples of ICT services of interest to us are:

- Smart Services for SIDS to form "Smart SIDS"
- Big Data applications in sanitation, food safety, fisheries & disaster management
- Business Intelligence and Analytics to support Fisheries, Tourism & Disaster Management
- Computer Aided Planning, Engineering, and Management Platform that uses Big Data to support capacity building in health, education, public safety and public welfare sectors.
- Partnerships between SIDS colleges and US universities for human capacity development
- Telemedicine services that integrate e-learning, e-health and e-administration to offer inexpensive healthcare to remote populations
- Artificial intelligence (AI) Applications to help the disabled and disadvantaged populations.
- Gamification for training of nurses and govt officials on needed areas
- Integration frameworks and architectures for inter-agency collaboration for SIDS
- Mobile computing and Social Media especially for the small islands and underserved segments

The Blueprint for Action

The partnership is centered around the participating islands that select projects of high value to them. We focus on producing results by using the capabilities of the following partners (see Figure 2):

- **OCCAM (Observatory for Cultural and Audiovisual Communication)** (www.occam.org) is one of the oldest United Nations NGOs. With its Infopoverty Program, it has formed several ICT villages in Africa and Latin America, such as the UN Millennium Village of Sambaina, Madagascar. In 2001 it created the Infopoverty World Conference (IWC), which is held yearly at the UN Headquarters in New York. OCCAM is currently operating the Digital Services Global Platforms to share telemedicine, food safety, and education to the most disadvantaged communities. Additional information about OCCAM can be found at [3].
- **Infopoverty Institute at Oklahoma University** (www.infopoverty.org) has been founded by the Oklahoma University and OCCAM, and it supports to run the annual UN Infopoverty World Conference. IWCs attract representatives from more than 100 countries every year.
- **University of Oklahoma's Education and Training Institute** (ETI) and Harrisburg University of Science and Technology (HU – website www.harrisburgu.edu) Graduate Programs in ICT are collaborating to support human capacity building through online courses.

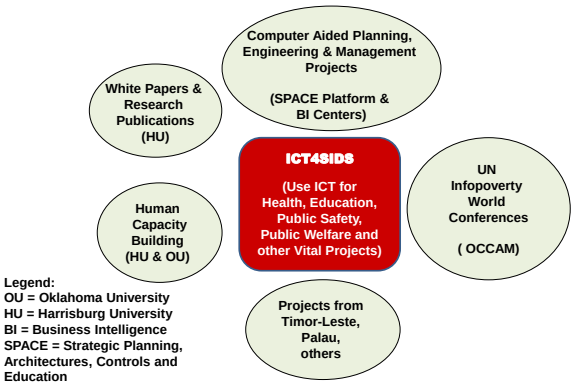

Figure 2: The Partnership Roles

- **Harrisburg University's Graduate Programs in ICT** (Analytics, IS Engineering and Management, and IT Project Management) have more than 600 students who are engaged in Graduate research that will result in white papers and research publications on different aspects of ICT for small islands.

- An innovative computer aided environment called **SPACE** (Strategic Planning, Architectures, Controls and Education – website www.space.com) is used heavily to quickly enable more than 100 ICT services in healthcare, education, public safety and public welfare sectors in developing countries. SPACE currently supports UN OCCAM and Infopoverty initiatives, is being used to support human as well as technical capacity building initiatives. En developed by NGE Solutions.

The BluePrint Methodology and Approach

Our methodology, shown in Figure 3, consists of feasibility, strategic planning, implementation and governance phases. In addition:.

- Each phase produces an output that is used in the next phase and a Blueprint for Action, shown in Figure 3, is produced in the first phase and drives the rest of the phases.
- The BluePrint contains analysis of the proposed opportunity and a determination of what should be undertaken or not based on financial, technical, business and/or regulatory considerations.

Figure 3: Our Methodology

- The main output produced is an overall vision that suggests the services to be provided by the Project and the type of training and technical assistance needed to make the Project a success.

How Does Computer Aided Advising Help

We are using SPACE (Strategic Planning, Architectures, Controls and Education) to automate the aforementioned methodology. Specifically:

- SPACE, spinoff of the United Nations eNabler Project, reduces the time and cost of implementing a project by 70%.
- The architectural view of the SPACE Environment, shown in Figure 4, highlights the role of the Planner in producing the needed outputs.
- The Planner is a family of intelligent "advisors" (expert systems) that collaborate with each other to cover phases P0 to P4, shown in Figure 4
- The advisors invoke the games, patterns, and BIG Data to generate the needed outputs that can be further customized by local experts.

The Planner requires only a few inputs. shown in Appendix A, to get started. Additional information about SPACE can be found at the website www.space.com and research papers [4, 5].

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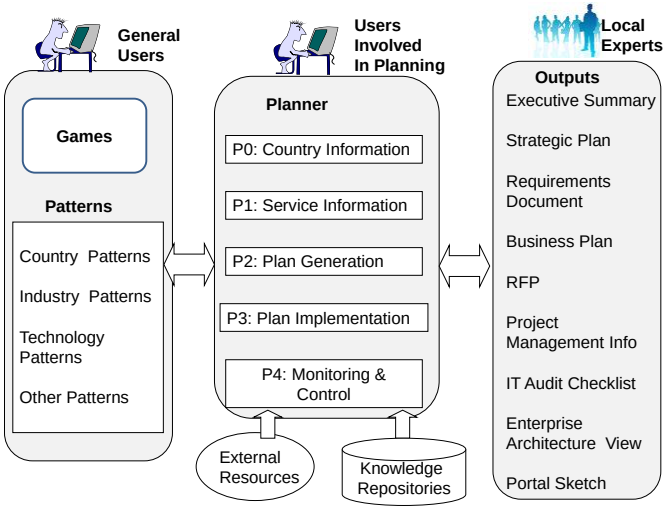

Figure 4: SPACE Architectural View

Results Produced So Far

We are currently working with 5 islands and have established a powerful ICT Center that will have the following resources for SIDS:

- Computer Planning and decision support capabilities that can be used to rapidly enable ICT services in target Islands. Theses capabilities are already operational as the SPACE Environment that automates the methodology shown in Figure 3.
- A sample Business Intelligence (BI) Center that provides specialized decision support and business intelligence for tourism, disaster management, food safety and healthcare services needed by the SIDS. The BI Center can be customized by the partnering islands and can serve as a powerful resource for the central government of an Island. SPACE can be used to quickly form a BI Center in an Island.
- A sample Digital Community Center (DCC), also known as eService Center, that can be used

in rural areas of islands. DCCs are very popular in rural areas of India, China, Africa and the Far East .The DCCs are used as one stop shops for eservices in remote areas where the public can go to make payments of their bills (one place instead of many places), buy bus and train tickets, get adult learning lessons, get some help on food and agriculture, and even some telemedicine services. DCCs can be of very high value to rural areas in each island. SPACE can be used to rapidly deploy DCCs in many islands.

The ICT Center is being developed jointly by the NGE and HU staff and should be operational in February, 2014. Based on the lessons learned so far, we have also launched a pilot project for Timor Leste (TL) that has been subdivided into the following concurrent tasks, displayed in Figure5 (similar pilot projects are underway with other islands):

- Task1: Establish an ICT4SIDS-Center that can be used as a sample starting point by TL. This virtual Center (website) will initially show a sample Digital Community Center (DCC) and also a Business Intelligence (BI) Center.
- Task2: Establish a BIG Data Repository that can support the ICT4SIDS-Center and also the ICT4SIDS Centers. A basic Big Data Repository already exists to support SPACE – it contains data from World Bank, World Economic Forum, UN Public Admin Network, the UN DOS (Dept of Statistics) data.
- Task3: Establish a local ICT4SIDS-Center in the Island based on the sample ICT4SIDS Center. It will initially provide basic DCC and BI services during the pilot project to be expanded later
- Task4: Develop the "Train the Trainer Program" that concentrates on human capacity building in the small island; This is primarily being developed in collaboration with HU.
- Task5: Publish the work in white papers and also present results in UN conferences such as the Infopoverty World Conference 2015, to be held in New York City in April 2015.

Figure 5 shows these key tasks and the inter-relationships between these tasks. This vision is based on lessons learned by working with Timor Leste (TL) and is being expanded to other islands.

Concluding Comments and Getting Started

This paper has briefly explained the vision being developed by the ICT4SIDS Partnerhip to support the Samoa Pathways and the UN Post 2015 Agenda. The Partnership is focusing on high impact ICT services in health, education, public safety, public welfare, and other vital sectors for SIDS countries. Specifically, we have developed a Blueprint for Action for SIDS that is supported by a systematic methodology and a powerful computer aided planning environment that quickly produces highly customized plans for more than 100 ICT services for SIDS and other underserved populations around the globe by using the latest thinking in ICT. As a starting point, we have already established an ICT4SIDS Center that can provide human capacity building (e.g., training) and technical capacity building (e.g., quickly enabling vital ICT services) for SIDS. We are primarily working on projects of high value to the Islands by using the following simple approach:

- We ask the customers to identify a point of contact (POC) who will lead the ICT4SIDS in the island
- The POC works with us to identify projects of high value
- We initiate a one year joint pilot project which may result in formation of a Center or Centers at a local level
- No money exchanges hands for the duration of the pilot project

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References

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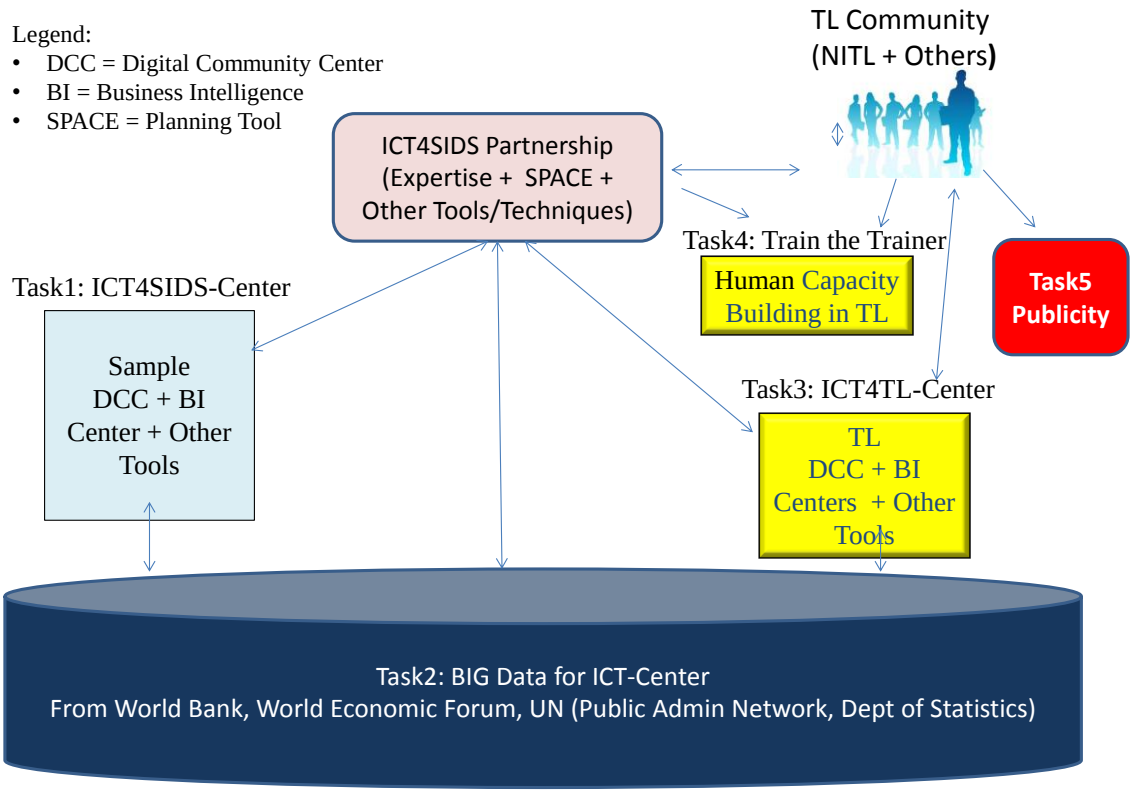

Figure5: Detailed View of ICT4SIDS Center (Based on Experience with Timor Leste)

APPENDIX A: The Questions to be Answered by the Customer To Get Started

P0: Country Information

- What is the region/country involved (e.g., Rwanda, Samoa). You can specify any country including a least developed country, landlocked country or a small island.

P1: Service Information

- What is the sector name you are interested in (e.g., health, education, public safety, public welfare, etc).
- What is the name of the service you are interested in (e.g., telemedicine, disaster recovery, tourism, remote education, etc) . Please also add a para (5-10) lines that describes the service.
- Is this service for Urban or Rural areas. _
- How many users will be served.
- Will it operate at a local, city, state or country level.
- Will the service be informational (e.g., advertisements) or transactional (e.g., online purchasing of the advertised item). It may be an Infrastructure service (e.g., a network)
- Will it use web technology at a low, medium or high level.
- Will it use mobile computing technology at a low, medium or high level.

P2: Self Assessment

- What are the major benefits and the major costs.
- Do the users need to be trained for maximum benefits.
- Do you need trained staff to deploy this service.
- What are possible sources of funding.