

Computer Aided Implementation Methodology for Launching Pilot Projects

Implementation of Smart Hubs at a massive scale is a non-trivial task due to the technical, management and logistical challenges summarized in Figure 1. These are serious barriers that must be addressed systematically. Unfortunately, many ICT projects are not carefully addressing these challenges and are experiencing a failure rate of 60-85% due to expensive retries, especially in developing countries. Smart hub projects are no exception. In response, we have developed a careful methodology, discussed below, that is supported by the integrated set of tools shown in Figure 1 to do more (provide more services to more customers) with less (time, money, trained staff and risk). This methodology and the associated tools have been improved and enriched successively through the hands-on experience and practical insights gained through more than a dozen pilot projects.

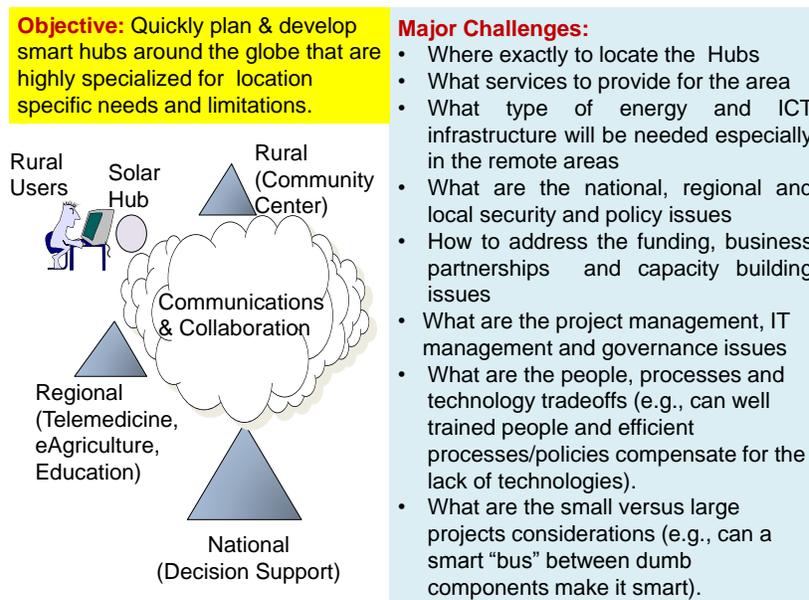


Figure 1: Summary of challenges facing large scale planning and deployment of smart hubs

Figure 2 shows our systematic computer aided planning methodology that addresses these challenges. This methodology relies heavily on a powerful computer aided planning and decision support environment, called SPACE (Strategic Planning, Architecture, Controls and Education) and other tools. The SPACE environment (www.space4ict.com) addresses the challenges faced in Figure 1 and produces a highly customized portal to support different smart hub configurations within hours. Most importantly, SPACE supports individual services that can be combined into complex “*service bundles*” to represent offices, community centers, corporations and even cities. This allows us to plan and architect very simple to very large and complex scenarios for smart hubs. This methodology is based on the insights gained by implementing the pilot projects and will be further refined and used in the future. The methodology consists of the following phases.

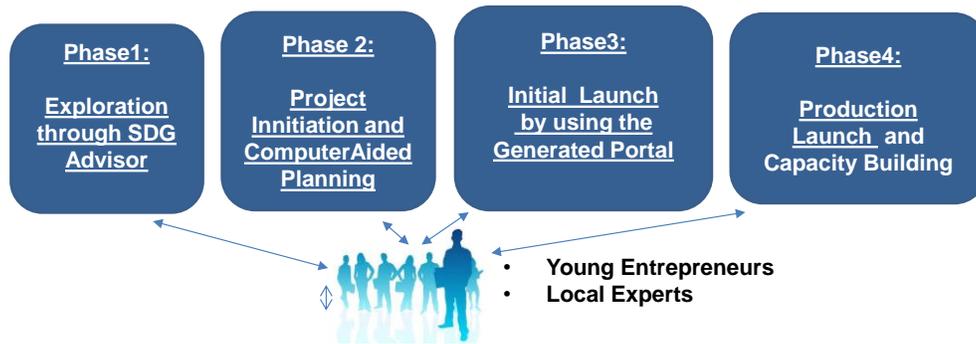


Figure 2: Computer Aided Implementation Methodology for Launching Pilot Projects

PHASE 1: Using the SDG Advisor to Get Started

Phase 1 of our methodology conducts a quick feasibility study by using the SDG Advisor and then helps a user to select and launch low cost but high impact pilot projects. The overall objective of the SDG Advisor is to accelerate the implementation of UN Sustainable Development Goals (SDGs) through ICT at local, regional and national levels. Specifically, the SDG Advisor initiates our methodology by answering the following questions:

- What is the status of my country/region as calculated by the SDG indicator (good/bad)
- What type of services could improve the needed status
- What are the costs versus benefits of launching a service and how exactly can a service be launched quickly and inexpensively within the local context

The SDG Advisor, shown in Figure 3, is a working prototype that begins to answer these questions by systematically walking the users through a three-step process displayed in Figure 5. These steps are described in more detail below.



Figure 3: Conceptual overview of the SDG Advisor

STEP 1: Select a country/region and initiate the process

The user selects a country/region and the SDG Advisor fetches all open information about the location from sources such as the World Bank, UN Department of Statistics, World Economic Forum, and others.

STEP 2: Select an SDG for status and service recommendations

The user selects an SDG and the SDG Advisor shows how well the country/region is doing based on SDG indicators. Figure 4 displays a screenshot of the SDG Advisor that shows the following:

- The user selected SDG3 (Health) for Jamaica as a country.
- The Advisor shows status of Jamaica based on UN-specified SDG indicators for healthcare such as number of physicians and hospitals per 1000 people.
- The status is indicated as red, yellow and green to show if the status is below, OK, or above the desired levels. As shown in Figure 4, Jamaica needs to improve its status in terms of the number of physicians and hospitals per 1000 people while life expectancy at birth for male as well as female is quite good.
- The Advisor also recommends a number of ICT-based services that could improve the status. This recommender feature is based on our knowledgebase of business patterns and heavily utilizes analysis performed by well known studies such as the ITU-CISCO, Columbia-Erickson, and others. We are constantly updating our database.
- The user can select any of the displayed services and perform basic cost-benefit analysis to make an initial judgement if the service is worth pursuing. Ideally, the users should select the services that are low cost but high benefit and impact.
- If the user believes that the service is worth pursuing, then the user presses the Explore button that is processed in Step 3.

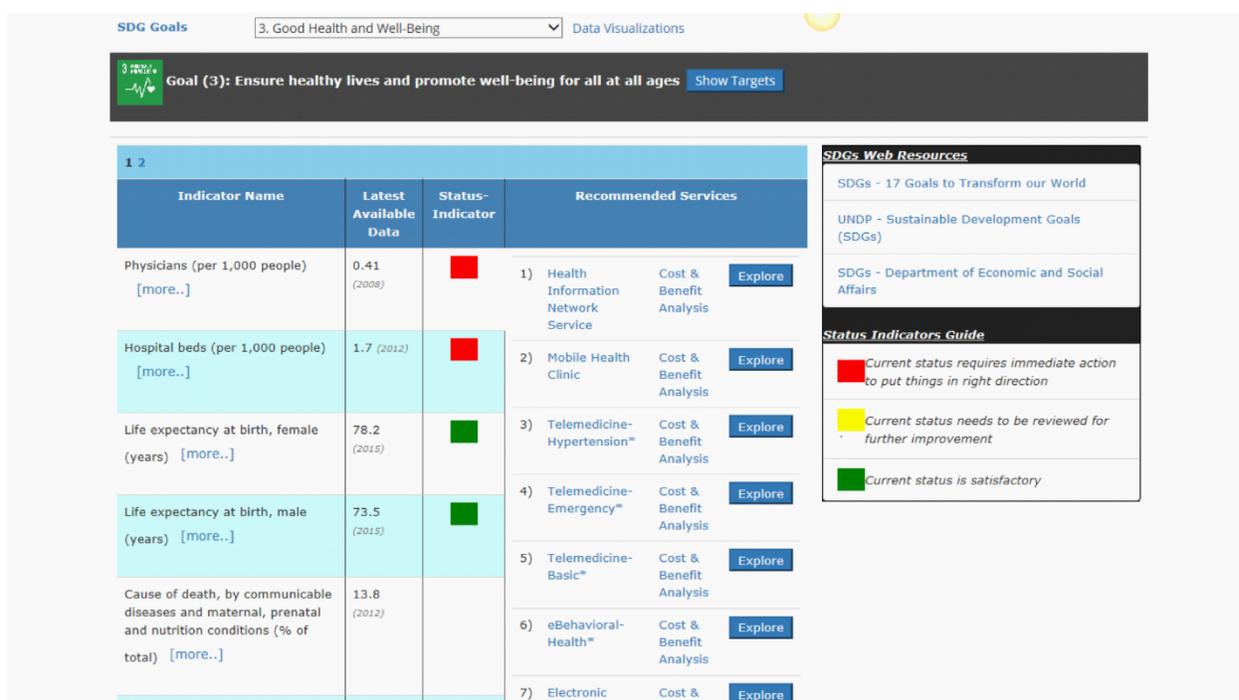


Figure 4: Screenshot of the results produced by step 2 of the SDG Advisor

STEP 3: Exploration and launching/implementing needed services

The SDG Advisor goes beyond recommendations, to enable implementation of the needed ICT-based services through the SPACE computer aided planner. The launched services are Samoa Pathway compliant ICT hubs that directly support SDGs in Health, Education, Public Safety and Public Welfare services through ICT. The SPACE e-Planner conducts a feasibility study and generates extensive reports such as a strategic planning report to show the overall vision and architecture with business/technical justification and standardized RFPs (Requests for Proposals) that can be used to attract vendors for bidding. A very important feature of SPACE is that it automatically generates a sample portal that can be quickly converted to an actual working system. All these outputs and the working portal can be used to initiate a free pilot project with ICT4SIDS Partnership or any other organization to implement the needed services quickly. The following section presents a quick tour of using SPACE to launch a service.

PHASE2: Using the Computer Aided Planner to launch a service

A user of the Planner selects a service (e.g., mobile health clinic) for a given country (e.g., Nigeria) as recommended by the SDG Advisor and quickly generates a working portal for the smart hub plus the following reports (see Exhibit 1 for more details about these reports):

- Business plans that can be used for obtaining funding
- Detailed Planning Reports (DPRs) that show the architecture, the policies needed, and enabling technologies for the chosen service
- Standardized RFPs (Requests for Proposals) that can be used to attract the needed vendors through an open bidding process
- Project management, disaster recovery and governance guidelines for monitoring and controlling the development activities
- Education, training and public awareness campaigns needed for success

Let us briefly review how these outputs are produced by using Figure 5, which shows a more detailed view of the Planner. *Simply stated, the Planner is a set of intelligent apps (“advisors”) that are integrated around common resources.* These advisors collaborate with each other to cover five phases (P0 to P4), shown in Figure 7. These advisors invoke the games, patterns, and other resources to generate the outputs shown in Figure 5. These outputs can be customized by local experts and/or end-users. Suppose that a user wants to develop the strategic plan for an e-learning service in Nigeria. P0 helps the user to capture Nigeria specific information and P1 helps in specification of the e-learning service. P2 generates a customized plan based on P0 and P1. P3 generates the information for RFP (Request for Proposal) and requirements & integration. P4 generates outputs to support project management and governance. The outputs can be customized by the users or local experts manually, or by invoking specialized games and simulations. Our goal is to produce the outputs that require less than 30% of local modifications.

Using Big Data: The Planner fetches, uses and customizes extensive big data resources such as a set of knowledge repositories that provide links to a wide range of case studies and educational materials, and external resources such as the UN Public Administration Network (UNPAN), World Economic Forum (WEF), and World Bank Institute initiative on open data. Rules in different phases of the Planner retrieve needed data and use it to produce outputs and/or modify decisions.

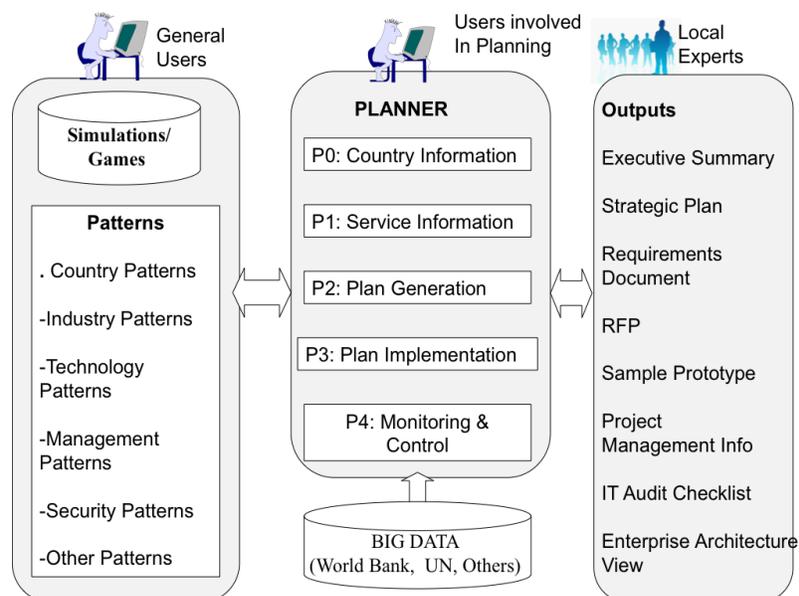


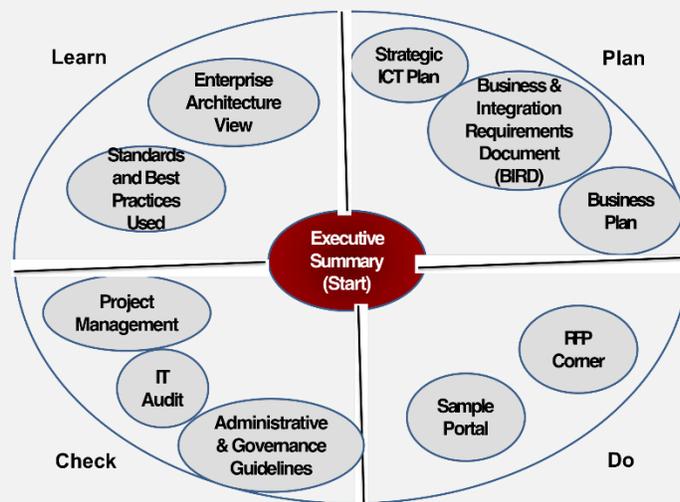
Figure 5: A Conceptual View of SPACE

Exhibit 1: The Outputs Produced by the Planner -- The Checklist

A user of the SPACE Environment selects a service (e.g., mobile health clinic) for a given country (e.g., Nepal) and generates a working portal that supports the smart hub in Nepal. In addition, it generates the following outputs to make the smart hub a success:

- Strategic planning report that shows the overall vision and architecture with business/technical justification
- Requirements documents for system development
- Business plans that can be used to obtaining funding
- Standardized RFPs (Requests for Proposals) that can be used to attract vendors for bidding
- Project management, policies and procedures, disaster recovery and needed governance guidelines
- Education, training and public awareness campaigns needed for success
- Enterprise architecture (EA) views for overall governance
- Suggested standards and best practices

These outputs, displayed graphically below, cover the entire Learn-Plan-Do-Check cycle, are produced *in less than an hour (it takes almost a year to produce similar outputs manually)*.



PHASE3 and PHASE4: Deployment and Capacity Building

In Phase 3 and Phase4, the results of the feasibility study are analyzed/revise and a final smart hub is created in collaboration with the POCs (typically young entrepreneurs) and local experts. Specifically:

- The final hub is “registered” in the Collaboration Matrix and also in the appropriate Global
- All local stakeholders go through an intensive training and refining the hub based on local needs.
- A production version is created as a repeatable asset and the results are published in the Donor Portal for attracting funding sources, business partners and system builders.

Funding models accessible by this process include, public, private, or even “crowd sourcing” which allows individuals to contribute to specific projects. The Donor Portal also serves as a connector hub for micro financing. The Pilot Project concludes when the hub portal is launched for regular use.