SPACE (Strategic Planning, Architecture, Controls & Education)

Big Data, Patterns & Smart Decision Support for eBusiness & eGovernment

Executive Summary

Highlights

- Simulates a team of experts that collaborate with each other to solve real life problems
- One Stop Shop that uses Big Data, games, online courses, and planning tools
- Works as a computer aided advisory system to reduce time and cost by 70-80%
- Quickly (in less than an hour) produces executive summaries, detailed technical plans, RFPs and project management guidelines for more than 100 eservices for 150+ countries
- Also produces a working Portal that can be easily customized for a quick launch
- Spinoff of the United Nations eNabler Project, available as a free online resource
- Being used by 12+ countries, 15+ universities, and in IT Officials training

Key Capabilities of SPACE that cover the entire Learn-Plan-Do-Check Cycle (see Figure1)

- **Patterns and Big Data Sources** that capture the core knowledge needed by SPACE (100+ services in 10+ sectors such as healthcare, education, public safety and public welfare).
- **Games and Simulations** that support decisions in strategic analysis, mobile services planning, interagency integrations and health exchanges, application migration versus integration tradeoffs, risks and failure management, and quality assurance.
- **A Computer Aided Planner (the outermost circle)** for the IT officials in governments and the private sectors who need to actually plan, architect, integrate, and manage the needed IT initiatives quickly and effectively by using the best practices.

Main Outputs Produced by SPACE (see Figure2) in less than an hour

- Strategic IT plan, executive summary, and a sample portal. Generates essential support documents such as requirements documents, business plans, RFPs, governance plans, IT audit lists, project management guidelines, and enterprise architecture views
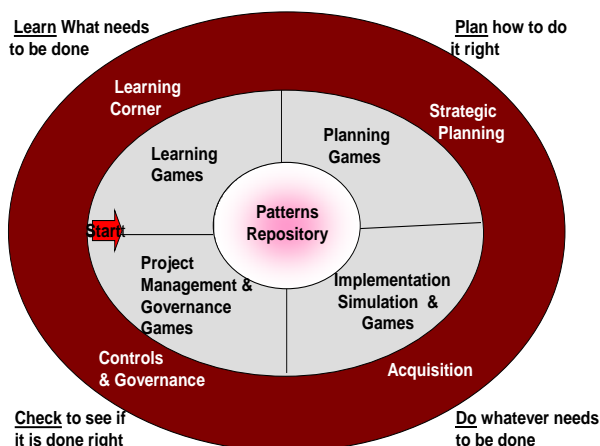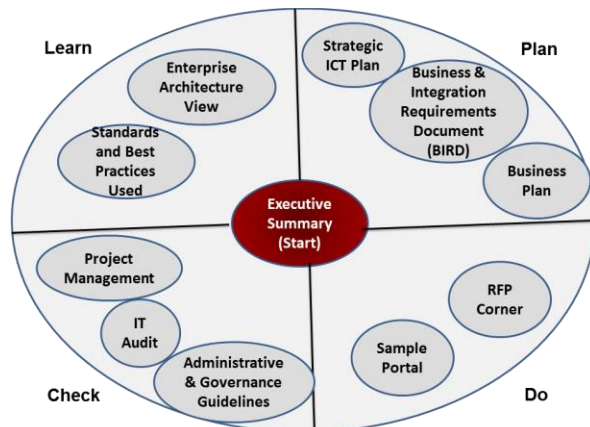
Figure 1: SPACE Capabilities

Figure 2: SPACE Outputs

SPACE (Strategic Planning, Architecture, Controls & Education)

A Closer Look

What is SPACE

SPACE (Strategic Planning, Architecture/Acquisition, Controls, and Education) is a smart decision support environment for eBusiness and eGovernment. Instead of focusing on one narrow area, SPACE, a spinoff of the UN eNabler Project. covers the entire Learn-Plan-Do-Check cycle for ICT (Information and Communication Technology) services at a global level. The users of SPACE range from beginners to specialists who can learn about and plan over 100 high impact ICT services in health, education, economic development, transportation, public safety, public welfare, manufacturing, telecommunications and other vital areas. These individual services can also be combined into powerful "composites" to represent:

- Enterprise-wide services that combine several individual services to form a department, a company, a government agency, a city, or a large entrepreneurship network.
- Inter-enterprise services for B2B and G2G exchanges such as information exchange networks between different government/business agencies, an entrepreneurship network, or supply chains for food distribution.

A user of the SPACE Environment selects a service (e.g., mobile health clinic) for a given country (e.g., Nepal) and *generates the following outputs in less than an hour (it takes almost a year to produce similar outputs manually):*

- 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
- Training and public awareness campaigns needed for success
- Enterprise architecture (EA) views for overall governance

Why is SPACE Needed

There is a tremendous demand for new ICT services and improvement of existing ones around the globe. However, almost all ICT service providers are struggling to do more with less. Specifically, how to offer more ICT services to more, and diversified, customers, businesses and government agencies with less money, time and staff. In addition, many ICT projects fail, i.e., they are never used by the intended users (the well known Standish Group Chaos reports indicate failures in the 50% to 65% range).

The situation for certain sectors is worse than others. In particular, there is a very large financially strapped *underserved sector* that consists of developing countries (out of the 193 countries recognized by the UN, almost 150 are considered developing, with 52 in the least developed category). Inner cities and small to medium enterprises in all countries also belong to this "have nots" sector. This large underserved sector (60 to 70% of the world population) has higher failure rates (around 85%) and also lacks financial and human resources. This is very unfortunate because this sector can neither afford expensive trial and error approaches nor hire good and expensive consulting firms.

The core problem is the re-invention of the wheel throughout the system life cycle. The needed know-how exists. The challenge is: how to transfer the needed know-how about all phases of life cycle to all users rapidly, economically and globally.

How SPACE Addresses These Challenges

SPACE, shown in Figure 1, provides a one-stop shop that concentrates on the aforementioned challenges and addresses the entire Learn-Plan-Do-Check cycle. It systematically guides the users through all phases to eliminate the chances of oversights and redundancies.
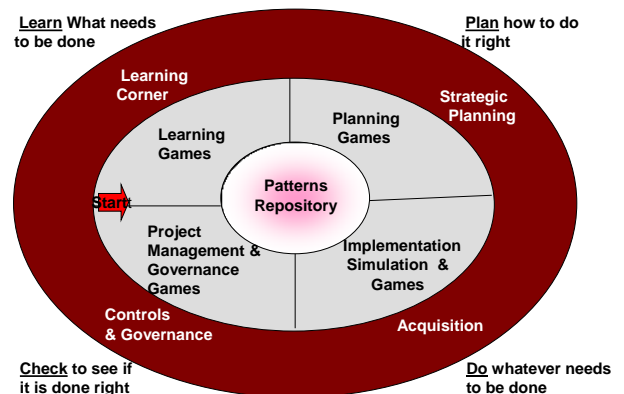

Figure 1: Conceptual Model of SPACE

The core capabilities of SPACE, as shown in Figure1, consist of a) a Patterns Repository that contains core knowledge about several countries, industries and technologies; b) several Games that support different aspects of the life cycle; and c) a Planner (the outermost circle) that supports the strategic planning, architecture, acquisition, governance and educational needs. SPACE:

- Simulates a team of experts that collaborate with each other to solve real life problems. Specifically, SPACE provides almost a dozen expert systems ("advisors") and several games that guide the users through strategic

analysis, business planning, technology planning, security planning, and project management issues. . .

- Exhibits smart capabilities by *detecting* problems early, *adjusting* to the situation quickly by automatically invoking the needed advisors thus addressing the shortage of skilled staff issues, and *learning* to better handle similar situations in the future.

- Supports a computer aided consulting model (similar to LegalZoom.com) that can be used by anyone around the globe thus contributing to global equality. This model gets 70% of the work needed to deploy an IT service done within an hour – the rest of the refinements can be done by local experts and/or consultants

SPACE offers significant benefits to the users because it results in tremendous reduction of time (from 5-6 months to less than a day) and rapid replication of best practices and standardized operations throughout its user community. It also introduces and enforces the same standards and best practices quickly and uniformly across all users. In addition, it can be used as a training and educational tool.

How Does SPACE Really Work

Figure 2 shows an architectural view of the SPACE Environment that highlights the role of the Planner in producing the outputs. The Planner is a family of intelligent "advisors" (expert systems) that collaborate with each other to cover five phases (P0 to P4), shown in Figure 2. These advisors invoke the games, patterns, and Big Data resources to generate the outputs shown in Figure 2. These outputs can be further customized by local experts and/or end users.
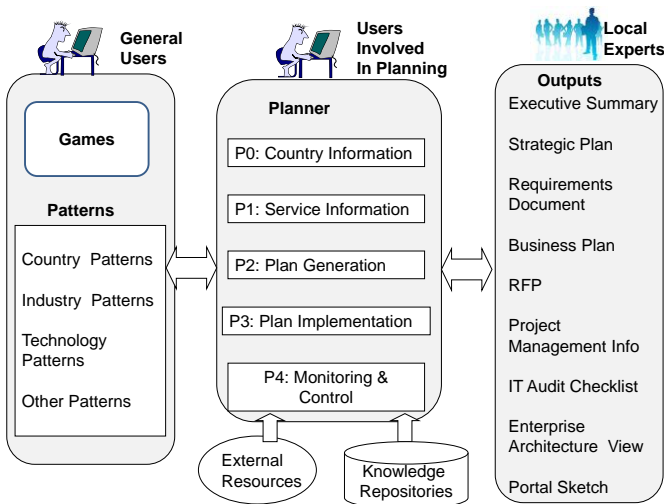

Figure 2: SPACE Architectural View

Suppose that a user wants to develop the strategic plan for an eLearning service in Nigeria. P0 helps the user to capture Nigeria specific information and P1 helps in specification of the eLearning service. P2 generates a customized plan based on P0 and P1. P3 generates the information for RFP and requirements & integration. P4 generates outputs to support project management and governance. The outputs produced can be further customized by the users or local experts manually or by invoking specialized games and simulations.

The Planner fetches, uses and customizes extensive information from Big Data sources such as 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 & modify decisions.

Are There Any Examples of SPACE Usage

The participating countries, businesses and educational institutions have conducted experiments such as the following:

- Mobile health clinics (MHCs) for remotely located populations. MHCs are the *primary* healthcare method for countries like Southern Sudan where no established hospitals exist. Special considerations are also needed for mobile clinics in the Far East where remote populations can be reached only by boats.

- Online education for primary school teachers to address the urgent need of improving primary school education and also online education of the government officials in Cambodia, Myanmar and Niger to properly plan and manage ICT projects.

- Support social welfare projects such as ICT-based assisted living facilities shelters against domestic violence in Central Europe and Asia. These facilities are being developed to support populations that choose to move to developing countries for economic reasons.

- Mobile computing apps, especially location based services, to support large numbers of users that need wireless access to existing eGovernment and eBusiness systems such as online purchasing, customer relationship management and other portals.

- Generation of a detailed plan for a digital city in Hetauda County in Nepal. The plan was generated to obtain public acceptance and funding.

- Information exchange G2G networks between different government/business agencies for industrial growth in countries such as Macedonia.

- Work with Southern Sudan Network (an NGO) that wants to rapidly build Southern Sudan by using ICT. In other words, SPACE is evolving from planning of eGovernment services to planning of cities and even countries such as Southern Sudan.

Concluding Comments

SPACE is a unique environment for computer aided planning and gamification of eBusiness and eGovernment at global levels. SPACE is fully operational at present as a Beta (test) site and is being used by more than a dozen developing countries and 20 small to medium businesses. SPACE is also being used by more than 15 universities to support graduate courses in strategic planning and enterprise architectures and is being used for hands-on workshops for the CITO (Certificate for IT Officials) Program for developing countries. Exhibit 1 shows a sample list of services that are currently being supported by SPACE.

Exhibit1: Sample ICT Services Supported by SPACE

SPACE supports almost 100 services in sectors such as economic development, education, healthcare and others (see the table below). In addition, the ICT infrastructure is a horizontal sector that supports all vertical sectors. These services can also be combined into "Service Bundles" that represent inter and intra enterprise composites such as villages, communities, cities and B2B marketplaces. This is a very powerful capability that can be used to build models of a large number of configurations in public and private sectors.

Economic Development	Education	Healthcare	Public Safety	Transportation & Agriculture	Public Welfare & Environment Services	Common Services
Entrepreneurship Micro-Entrepreneurship Micro-Financing Information Systems e-Employment e-Tourism e-Library (public)	Educating Primary School Teachers e-learning for the handicapped e-Learning Support System e-Library (school)	Mobile Health Clinic Electronic Health Records Emergency Medical Service m-Health (General) Hospital Information System Patient Information System Decision Support for Health Telemedicine e-Behaviourial Health	Disaster Management and Recovery Services Weather Alert and Travel Warning Food Quality and Drinking Water Purity Police & Fire Services Police Crime Investigation Services Social Network Services for Governments Additional Law and Order Services	Optimal Route Planner Alert Systems Automobile Licensing e-Agriculture 2.0 E-Agriculture Phone2SMS Eservices for Food Safety Precision Agriculture eServices for Agriculture	Social Services Citizen Welfare Services Public Healthcare Service eLearning for Needy Children Assisted Living eCare for Aging Populations Entrepreneurship Welfare Programs Clean Air Environmental Monitoring Environmental Analytics	Business Intelligence (BI) Services Corporate Management Services Customer Services Marketing Services Sales Services e-Payment EFT – Electronic Fund Transfer Credit Card Detection System e-Banking System

ICT Infrastructure Services (Horizontal)

- Broadband Access, Network Management, Social Networking (*e-Participation, e-Voting), Cloud Computing

Enterprise-Wide Service Composite (Service Bundles that Combine Many Individual Services)

- Offices, Departments, Small Islands, Villages, Initiatives (e.g., MDG, Mobility, Telemedicine, Aging Population) Services, Firms, Business Units, Cities, Communities, Government Specific Initiatives

Inter-Enterprise Service Composites (Service Bundles for B2B and G2G Integrations)

- G2G Services (Interagency Exchanges), Supply Chain for Food Distribution, Health informational Networks, Educational Networks, Entrepreneurial Networks, B2G Services

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