

SPACE (Strategic Planning, Architecture, Controls & Education)

Computer Aided Planning, Engineering & Management for Digital Enterprises

What is SPACE

SPACE (Strategic Planning, Architecture/Acquisition, Controls, and Education) is a computer aided planning, engineering and management environment that supports the entire life cycle activities of digital enterprises. Specifically, the SPACE tools help the key players to *Learn* what needs to be done, *Plan* how to do it right, *Do* whatever needs to be done, and *Check* to see if it is done right (see **Error! Reference source not found.**1). Although, a great deal of knowledge about best practices, standards, and methodologies is accumulating, the actual *use* of this knowledge to make crucial decisions is sparse. The main objective of a computer aided planning, engineering and management environment is to systematically walk the users through the key decisions and automatically include the needed best practices, standards and knowledge repositories when needed.

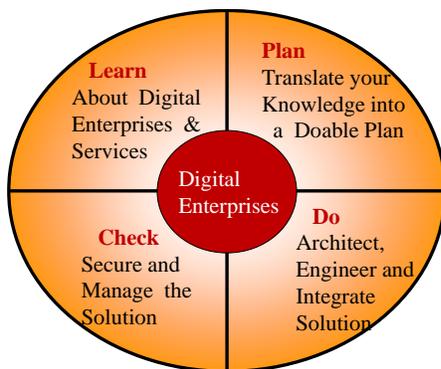


Figure 1: Computer Aided Planning, Engineering and Management Environment

Why is SPACE Needed

There is a tremendous demand for digital innovations, also known as ICT services, 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 failure rates for the financially strapped *underserved populations* is much higher (around 85%). This is very unfortunate because this population 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 2, 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. The core capabilities of SPACE, as shown in Figure2, are:

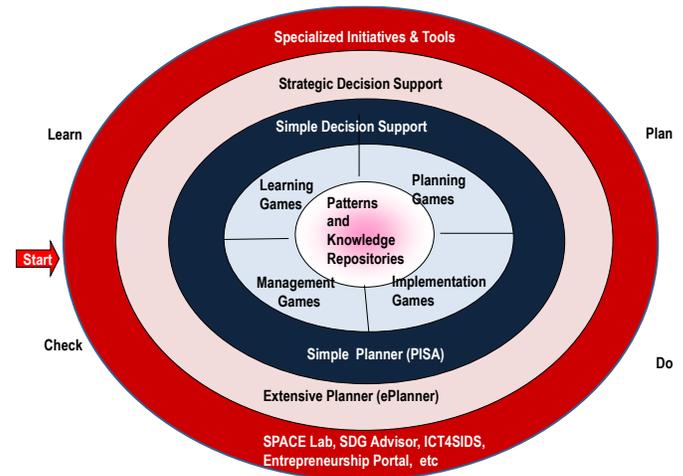


Figure 2: Conceptual View of SPACE

- Patterns Repository for Industry Sectors (PARIS) that capture the core knowledge needed by SPACE (more than 100 services in more than 10 sectors such as healthcare, education, public safety, public welfare, transportation and others).
- 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.
- Simple Planner (PISA) that can be used to quickly build real life business scenarios for small businesses and then guide the user through IT planning, integration, security and administration tasks by using best practices.
- Extensive Planner (ePlanner) that can be used for small to large scale government and the private sectors who need to strategically plan, architect, integrate, and manage the needed IT initiatives quickly and effectively by using the best practices.
- Specialized Initiatives and Tools that are built on top of the SPACE environment. Examples of these tools are the SPACE Lab, a UN SDG (Sustainable Development Goals) Advisor, the ICT4SIDS (ICT for Small Islands

Developing States) Partnership, and an Entrepreneurship Portal. More tools and initiatives are always being added to this layer.

SPACE in its present form is an extensive environment that:

- 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

Benefits to the Users: Reduction of time (from 5-6 months to less than a day) and cost savings (around \$50K). SPACE 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 - An Example

Suppose that a user wants to develop the strategic plan for an eLearning service in Nigeria. Figure 3 shows how the SPACE Environment can be used to generate such a plan by using the ePlanner. The ePlanner is a family of intelligent “advisors” (expert systems) that collaborate with each other to cover five phases (P0 to P4), shown in Figure 3. These advisors invoke the games, patterns, and other resources to generate the plan (the outputs) shown in Figure 3. The plan plus a working portal are generated in less than an hour and are 70-80% complete. These outputs can be customized by local experts.

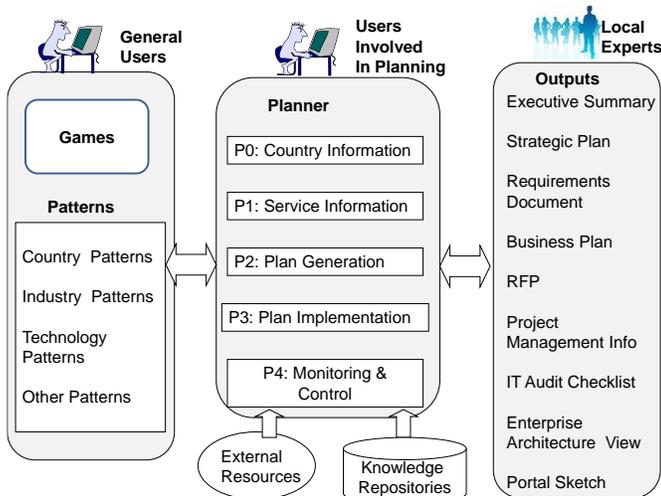


Figure 3: SPACE Architectural View

To start, 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 and 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 ePlanner fetches, uses and customizes extensive information from a set of Knowledge Repositories that provide links to a wide range of case studies and educational materials, and Big Data from UN Public Administration Network (UNPAN), World Economic Forum (WEF), and World Bank Institute initiative on Open Data. Rules in different phases of the ePlanner retrieve needed data and use it to produce outputs and/or modify decisions.

What Type of Experiments Can be run on SPACE

A user can conduct experiments such as the following:

- Use the Patterns Repository to understand a business or government Sector by browsing through the patterns.
- Use the games to perform cost-benefit analysis, understand security vulnerabilities, develop mobile application architectures, and reduce project failures.
- Use the PISA Simple Planner to develop a complete IT plan for a small health clinic, ecommerce center, retail store, or an educational institution. PISA automatically invokes the needed games and patterns to produce results.
- Use the ePlanner to develop plans for Mobile health clinics (MHCs) for remotely located populations anywhere in the world and build small, medium and large scale organizations by bundling several services from health, education, public safety, public welfare and other vital sectors. ePlanner automatically invokes the games, patterns and PISA capabilities to produce results.
- Use the Specialized Initiatives and Tools that have been built on top of the SPACE capabilities. For example, the SPACELab provides a set of courses that can be taken by the users to develop background in enterprise planning, architectures and engineering; ICT4SIDS site can be used for collaboration between different islands, Entrepreneurship Portal can be used to start a new business, and the SDG Advisor to check the status of UN SDG goals.

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.