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# ***Computer Aided Strategic Planning for the MDG Matrix***

## **An Instrument To Support MDGs Quickly, Universally and Effectively**

Amjad Umar, Ph.D.

Director and Professor of eBusiness and eGovernment, Harrisburg University of Science & Technology

Adjunct Professor of Telecommunications, University of Pennsylvania

Senior Technical Advisor, United Nations GAID (Global Alliance for ICT Development)

email: [umar@amjadumar.com](mailto:umar@amjadumar.com)

### **Abstract**

This document introduces a strategic planner that is being developed to support the MDG (Millinium Development Goals) Matrix. This computer aided planner serves as an instrument to advance the MDGs quickly, universally and effectively. As compared to the related efforts that primarily provide documents on the subject matter, this comprehensive planning tool goes much farther -- it systematically guides the user through strategic planning steps and supports a wide range of capabilities such as a portal of portals, intelligent decision support tools, and simulations/games. In particular, the strategic planner is part of a comprehensive planning environment that offers capabilities for entrepreneurship, industry analysis, and detailed planning. A working prototype of this planning tool has been already developed and a fully operational version will be available in May 2010.

### **1. Overview and Motivation**

The MDGs (Millinium Development Goals) is a major initiative with profound implications. The use of information and communications technology (ICT) to advance the core MDG priority areas (Poverty Eradication and the Financial Crisis, Climate Change, Governance, Health, Education, Gender, and HIV) is an active area of work. Although many issues listed in various columns of this matrix have been and are being discussed, real progress towards MDGs is slow as observed in the UN-GAID Conference at Monterrey, Mexico (Sept 2-4, 2009). The major challenge is how to support this MDG matrix:

- Quickly (i.e., without any further delays),
- Uniformly (i.e., to all segments of the civil society),
- Universally (i.e., to all people around the globe), and
- Effectively (i.e., to make a real difference in practice)

To meet this challenge, discussions led at Monterrey by Dr. Amjad Umar, Dr. Alexei Tickimorove, Mr Sarbuland Khan, Dr James Poissant, and others focused on utilizing “best practices” because many such practices have accumulated in using ICT for economic development, healthcare, education and other areas of interest. However, best practices mentioned in Monterrey consisted mainly of published reports and web links, at best. While possibly useful, there is little known data that shows or proves if these documented best practices have been used to actually assist decision makers in making intelligent, well informed decisions that resulted in effective and efficient implementations and results.

A significant exception at the Monterrey Conference was a session on “Educating ICT Leaders Through ICT: An Innovative Approach” that showed results from a three year R&D project focusing on best practices [1]. The main output of this research is an innovative computer aided planning toolset that captures best practices and working solutions to specific problems under certain conditions as patterns [2, 3, and 4]. These patterns can be stored, retrieved, modified and combined with other patterns to form larger and more complex patterns to represent complex best practices. This tool illustrated how best practices can be used effectively to make a wide range of decisions within the overall scope of IT planning, integration, security, administration and entrepreneurship.

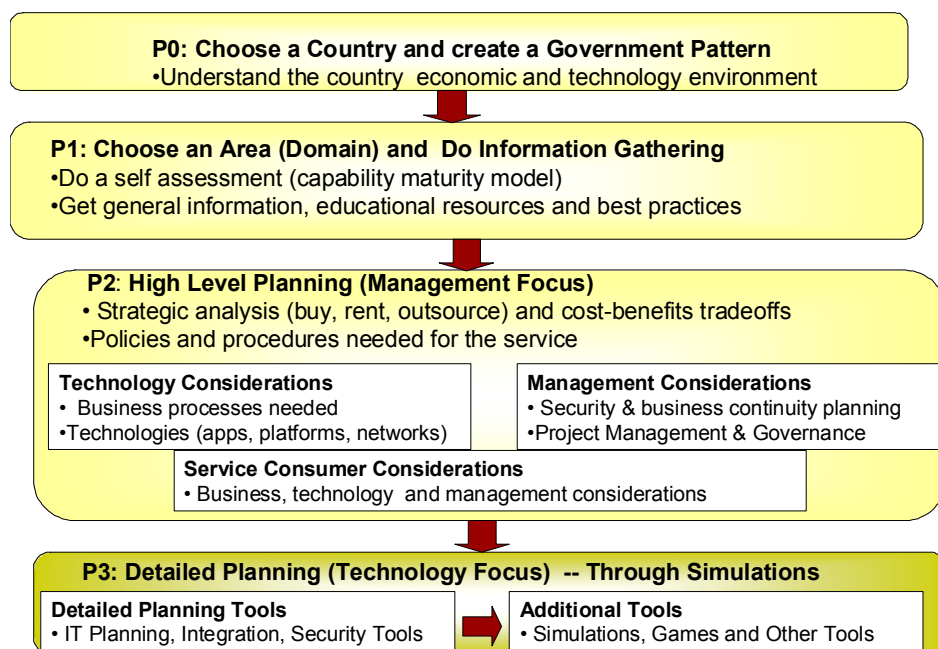
*A major conclusion of this discussion was that documents and websites that simply list best practices are not very valuable because they leave the task of customizing and assembling of best practices into solutions to the user – a daunting task. In addition, most users can handle simple retrieval and display situations themselves but need help when best practices need to be customized and assembled into solutions. Thus the documents and links to best practices do not help where the users do need help.*

Follow on discussions led to a decision to go beyond debates and to build an extensive strategic planning tool that can be actually used by governments and their constituents to quickly, uniformly and effectively advance MDGs. This computer aided strategic planner is expected to play an increasingly important role in guiding the decision makers through the maze of choices as the technology landscape changes more rapidly and becomes more complex. Instead of disconnected efforts in different directions and documents containing best practices with no ideas about how and when and where to use them, we will offer a high quality planning environment that will allow storage, retrieval, customization and manipulation of ICT best practices to meet the challenges in education, healthcare, and economic development. The strategic planning environment is introduced in Section 2 and explained in Section 3.

A working prototype of this planning environment has been already developed and a fully operational version will be available in May 2010.

## **2. Computer Aided Planning for MDG Matrix– An Overview**

Figure 1 shows a conceptual view of the overall computer aided planning environment that will support the MDG Matrix. This comprehensive tool systematically guides the government officials and system implementers through different phases of a planning process. This planning tool is based on the premise that it is not enough just to inform the government officials – they need to be systematically guided through the maze of decisions in different planning phases to make a difference on the ground. Figure 3 shows a high level view of the Strategic Planner and illustrates how the planning phases P0 (initialization), P1 (information gathering), P2 (strategic planning), and P3 (detailed planning) execute in sequence. The following example illustrates the overall flow of the system to introduce broadband access in a developing country. The purpose here is to help the governments widely provide broadband access services (through wired or wireless means) to its constituents. The following description shows the flow of the Planner, as shown in Figure 1:



*Figure 1: Computer Aided Planning Environment )-- Key Components and Flow*

- In the P0 phase, the user (government agency) chooses a country (e.g., Nigeria).
- In the P1 phase, the user selects a service to be deployed (broadband). It then goes through a self assessment (based on the capability maturity model) and gets access to general information, educational resources and best practices (e.g., reports from UN, other links, university courses etc) on broadband access.
- In the P2 phase, the government agency is led through strategic analysis (buy, rent, outsource) and cost-benefits tradeoffs associated with the broadband service. It also is guided through policies and procedures needed for the broadband service. It is very likely that the government agency will choose the strategy of “outsource”, i.e., the actual development and deployment of broadband will be done by the third parties (e.g., telecom providers). Thus:
  - The focus of Service Provider (SP) part of phase P2 will be on how to manage the third parties through good project management practices.
  - For Service Consumers (SCs), this advisor will suggest simple solutions (e.g., DSL or cable modem) for individuals but for organizational units (e.g., businesses) provide general advice on developing a detailed IT plan and hooking the network to the broadband.
- In the P3 Phase, the detailed planning environment can be developed through an extensive IT planning, integration, security and administration (PISA) tool. Detailed IT plans can be developed easily by PISA for around 18 business types such as healthcare, manufacturing, education, telecommunications, retail, finance and many other industry segments. The user may choose other simulations, games and decision support tools for detailed planning.

This short example highlights the main flow of the planning environment. At the end of each phase, extensive documentation is provided to support the next phases. For example, at the end of P3, extensive

documentation is made available to the users to support the later phases of implementation and monitoring/control.

Best practices are being used in all phases of the Planner to introduce ICT services quickly and effectively in developing countries. Our goal is to go beyond the websites that contain marketing materials or portals that serve as document repositories with search capabilities. Instead, we aim to provide a comprehensive planning environment with the following distinguishing features (see Figure 2):

- Portal of a Portal (meta portal) that serves as yellow page to a wide range of existing valuable portals
- Step-by-step planning guidance based on best practices and standards
- Automation of the planning steps through a family of intelligent tools
- Recommendation of solutions based on best practices as patterns (core knowledge that can be specialized and customized)
- A set of intelligent decision support tools that are integrated around a common knowledgebase, instead of yet another standalone and fragmented tool
- Games and simulations for experimentations and what-if analysis
- Remote planning support (anyone from anywhere can use this system)
- Solution of important but complex problems (e.g., strategic planning, system integration, disaster recovery) through a family of advisors

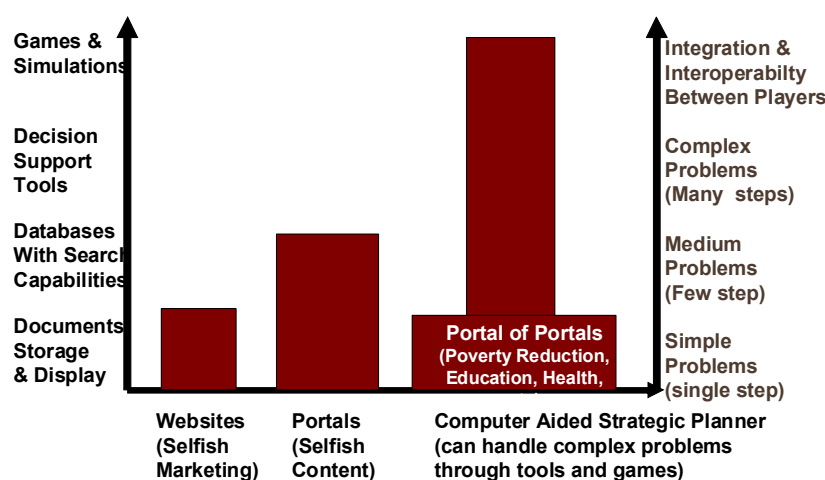
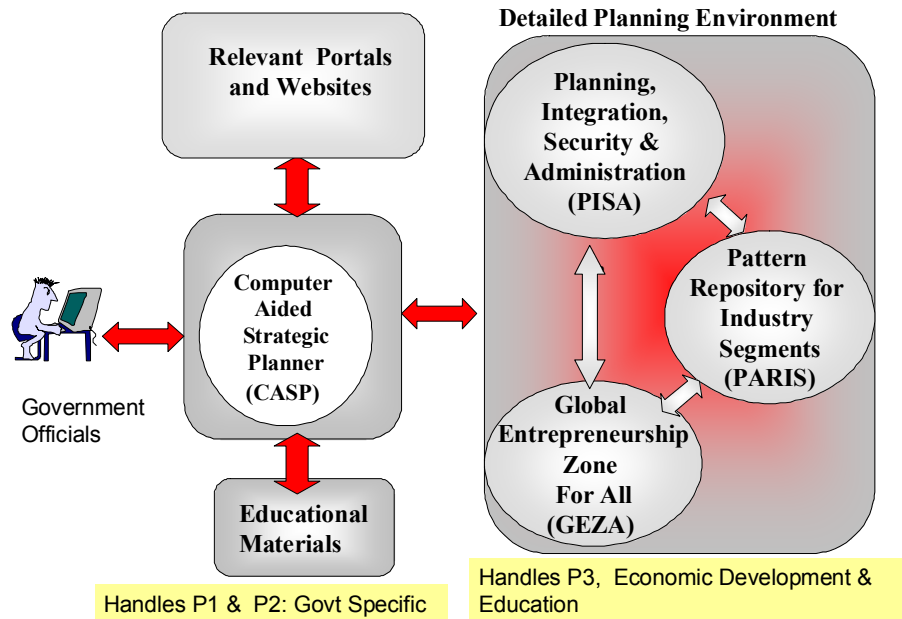


Figure 2: Comparison with Other Efforts

### 3. Computer Aided Planning -- A Closer Look

Figure 3 shows a more detailed view of the planning environment and displays the key components that are designed to offer the aforementioned capabilities. For example, the front-end will support the educational and strategic planning activities through a Computer Aided Strategic Planner (STRAP) – a new system currently under development. A Detailed Planning Environment, already operational, will help the government agencies and constituents in detailed IT planning, integration, security, administration, entrepreneurship, and industry analysis. The overall planning environment shown in Figure 3 will also serve as a portal of portals by integrating and aggregating the information already available in portals such as the United Nations Public Administration Network ([www.unpan.org](http://www.unpan.org)) and the UN-GAID website ([www.un-gaid.org](http://www.un-gaid.org)). In addition, we will provide access to useful educational and training materials for government agencies and ICT educators. The key components of the portal are discussed below.



*Figure3: Computer Aided Planning– Detailed View*

The computer aided planning environment, shown in Figure 3, is a toolkit that provides a set of integrated planning tools. Specifically, this environment consists of a frontend (STRAP) that concentrates on strategic planning that is supported by a backend detailed planning environment. By using this environment, constituents in a developing country should have access to the same quality of ICT services as in a developed country. The front-end will serve as an entry point to an extensive decision support environment that captures the key findings and best practices of services in education, health, job creation and economic development. The front-end will provide an integrated view for users ranging from policy makers to general public in developing countries. At the core of this front-end will be an extensive knowledgebase (KB) that will contain best practices, patterns, and rules needed to address various areas of interest in education, healthcare, and economy. This KB will support the following capabilities that will be built gradually over the duration of the project

- Information storage/retrieval and search capabilities for eGovernment, education, healthcare, and economic growth.
- STRAP, shown in Figure 3, that will produce a strategic management plan to include policies, procedures, business activities, security risk analysis, business continuity planning, and project management. STRAP will have the ability to handle the situations where decisions depend on each other and thus require customization and assembly of best practices to recommend solutions.
- Social networking features and other communication capabilities
- Games and scenario simulations for what-if analysis

Research on using computer aided planning for best practices [16-21] is important because effective planners regularly use best practices and play dual roles of problem solvers as well as educators. The main output of this research is a set of detailed planning tools, displayed in Figure 3. Currently these tools consist of:

- **A detailed planning system called PISA** that can be used to quickly build real life business scenarios and then guides the user through IT planning, integration, security and administration tasks by using best practices. PISA is based on the best research thinking [6-15] and uses a set of automated consultants (“advisors”) that collaborate with each other to develop an IT plan, thus working with PISA is like working

with a team of experts. PISA produces completely documented IT plans based on best practices that include application plans, network plans, platform plans, security plans, business continuity plans, and project plans. PISA supports 18 industry segments that include many within the scope of public administration (e.g., education, energy, health, and transportation) and provides basic capabilities for composing larger and more complex scenarios that include multi-region offices, supply chains, mergers, acquisitions and business networks. This comprehensive tool also provides extensive capabilities for integrating different systems by using SOA (service oriented architecture) and supports open interfaces so that gaming and simulation tools can be easily plugged in. It is also connected to an extensive global entrepreneurship portal.

- **A knowledge portal for entrepreneurship, called GEZA**, that provides a set of knowledge services ranging from starting a business to international partnership and outsourcing opportunities. GEZA capabilities include business solutions for developing and implementing business strategies, a comprehensive yellowbook directory of SMB portals, an outsourcing center for service providers and consumers, an international center for doing business internationally, an education center for entrepreneurs, and links to PISA for IT solutions and to PARIS for industry patterns.
- **An industry pattern repository called PARIS** that houses business patterns for more than 20 industry segments including education, healthcare, transportation, telecom, and manufacturing. PARIS provides overviews, examples, specializations and sources of information for each industry segment; examples and best practices of how ICT is being used effectively in different industry segments; business process patterns, requirement patterns and information model patterns in UML; and interfaces to support PISA advisors and GEZA services.

PISA, GEZA and PARIS collectively can be and have been used for educational as well as consulting services. Instead of several disconnected tools that address parts of the problem, the detailed planning environment captures the complex interdependencies between the business and technology building blocks of real life situations. The users can directly invoke the needed tools or access them through business games and simulations supported by textbooks and course materials.

### ***e-Learning Resources***

A collection of papers, presentations, demos and training sessions on different aspects of ICT will be offered through this portal. Specifically:

- Distance learning, online textbooks, course syllabi and projects will be made available to ICT educators.
- Materials to support university and corporate training courses in strategic IT planning, enterprise architectures and integration, SOA, business modeling, and entrepreneurship.
- Suitable textbooks and course materials on eGovernment and ICT in government will be listed
- Graduate level programs for ICT leaders will be posted
- Hands on experiment with the portal will be described and suggested in detail

### ***Access to Other Relevant Resources and Yellow Pages (Portal of Portals)***

Many existing portals are somewhat self-centered – they only show resources developed by the portal owners or business partners. Thus a user interested in best practices in, say, managing ICTD projects has to search many portals. This portal will serve as a portal of portals by providing links to many other portals. As illustrated in Fig 3, the PIDS frontend will interact with multiple sources through RSS feeds or application programming interfaces (APIs), if available. In particular, we will provide links to the vast amount of information made available by different UN initiatives and also provide a Global eGovernment Yellow pages directory that the users can search and display. Specifically we will provide access to the following:



- United Nations Public Administration Network ([www.unpan.org](http://www.unpan.org))
- UN-GAID website ([www.un-gaid.org](http://www.un-gaid.org)).
- WSIS and ICTD conference materials
- Global eGovernment Yellow pages directory that will provide links to eGovernment portals around the globe.
- Others as needed

## 4. Concluding Comments and Next Steps

We are in the process of developing a powerful instrument to achieve the MDGs quickly, universally and effectively. The components of the instrument will be designed to advance the MDGs (e.g., economic development, healthcare, education, etc.). Table 1 shows how exactly the capabilities needed (columns) will be supported by the various components of the proposed planning instrument (rows). A basic demo version of this planning instrument is already operational and a public demo is targeted for May 2010 in Geneva. A production version (Release 1) will be available for general users in Fall 2010. Based on field use and feedback for one year, an improved system (Release II) for global use will be available in Fall 2011.

*Table 1: Support Provided by the Planning Environment to MDG Matrix*

	<b>Economic Development</b>	<b>Education</b>	<b>Healthcare</b>	<b>eGovernment</b>
<b>Strategic Planner (STRAP)</b>	Access to Best Practices	Strategic Planning for eLearning	Strategic Planning for Healthcare	Strategic Planning for eGovernment
<b>Detailed Planner (PISA)</b>	IT Planning for SMBs	PISA Tutorials & Detailed Planning for eLearning	Detailed Planning for Healthcare	Detailed Planning for eGovernment
<b>Entrepreneurship Planning (GEZA)</b>	Entrepreneurship Support	Entrepreneurship Education Section		
<b>Industry Analysis (PARIS)</b>	Industry segment knowledge	Education Industry Segment Knowledge	Healthcare Industry Segment Knowledge	eGovernment Industry Segment Knowledge
<b>Portal of Portal (Yellow Pages)</b>	Access to Other Relevant Portals and Best Practices in Economic Development	Access to ICT Leadership Courses and Programs from Selected Universities	Access to Other Portals such as WHO (World Health Organization)	UN eGovernment site(UNPAN), World Bank Infodev, and Other Portals ,

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