

*If there is one enabler that can accelerate achievement of the MDGs,
it is ICT. And if there is one Force needed to ensure that achievement, it
is the patronage of the United Nations Secretary-General”.-*

Chairman, GAID

Millennium Development Goals eCenter^{*}

ICT Solutions To Advance MDGs Quickly, Universally and Effectively

An Overview[†]

Executive Summary

Consider this scenario: a government official in a developing country wants to launch an ambitious digital initiative to advance the Millennium Development Goals (MDGs). The official has many questions: “how do I understand the basic issues, policies, and approaches”, “how do I develop a customized plan that is specific to my country”, “how do I successfully execute the developed plan”, “how do I monitor and evaluate the progress being made”, and “how do I do everything without re-inventing the wheel - what tools and solutions are available out there that I could use?” The official wonders if there is a “one-stop shop” where one could find answers to all such questions.

We are building such a “one-stop shop” that will answer the aforementioned questions. Specifically, we are constructing a comprehensive **eCenter for Millennium Development Goals** as a vital resource for the governments of developing countries and for all development practitioners. When fully operational, the eCenter, currently in its early stages of development, will comprise the following principal components:

- **Matrix of ICT (Information and Communication Technologies) Solutions to Advance the MDGs** that captures knowledge about existing ICT-based tools and solutions for specific development tasks
- A **Meta-Portal** (“Portal of Portals”) for quick access to key resources
- A **Compendium of Excellence in ICT for MDGs**
- A **Computer-Aided Strategic Planner** for developing country- and problem-specific plans

^{*} The name “Millennium Development Goals eCenter (MDGeCenter)” is a working title and may be changed as a result of discussions at the Preparatory meeting (1-2 September 2010, New York)

[†] The concept of the Matrix of ICT Solutions for MDG Advancement was conceived by Mr. Sha Zukang, Under-Secretary-General for Economic and Social Affairs, United Nations, and Dr. Talal Abu-Ghazaleh, Chairman of GAID. This overview is prepared under the leadership of the Chairman of GAID by the MDG eCenter Steering Group: Mr. Sarbuland Khan, Senior Advisor to the Chairman of the Global Alliance for ICT and Development; Dr. Jim Poisant, Secretary-General of the World Information Technology and Services Alliance (Senior ICT Industry Executive for GAID MDG eCenter); Prof. Amjad Umar, University of Pennsylvania (Chief Architect of the Strategic Planner), and Mr. Sergei Kambalov, Executive Coordinator of the secretariat of the Global Alliance for ICT and Development.

- **Implementation Tools** to support detailed planning
- **Simulations and games** that will help build relevant capacity
- **Monitoring Tools** for project control and quality assurance

This eCenter is intended to be a one-stop shop with a pool of informational plus decision support tools which could be useful for all actors (ICT and non-ICT) involved in development, in particular in developing countries. When fully operational (early 2011), the eCenter could also enhance transparency and provide a platform for exchange of knowledge/experiences among different players. It will also help Governments in strategic integration of all policy matters related to the use of ICT in national development strategies.

The prototype of the MDG eCenter has been presented and demonstrated in the WSIS Forum on 12-13 May 2010 in Geneva and at a High-level Seminar organized by the Secretariat-General of the Gulf Cooperation Council on June 14-15 in Riyadh. The presentations yielded very positive feedback and strong support from all stakeholders. An active user group consisting of over 30 members from more than 16 countries has been formed (the group is growing rapidly) to help in further development of the tool.

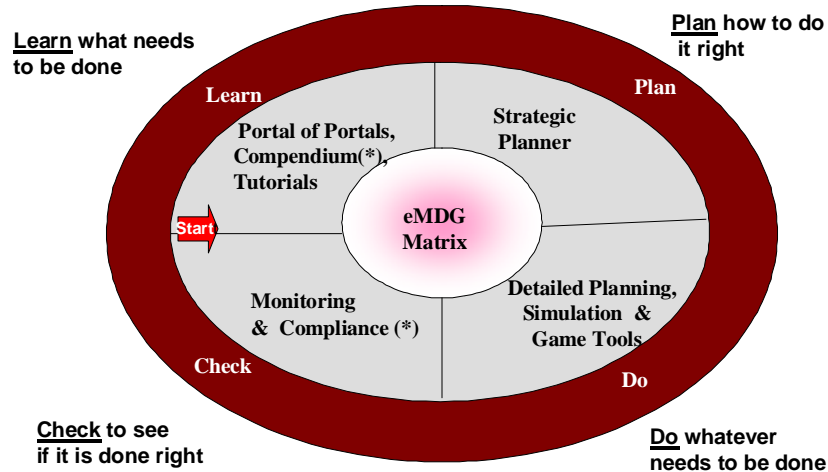
This short paper highlights the key features of the MDG eCenter, illustrates its use through an example, and highlights the overall game plan.

1. Overview

The MDGs are a major undertaking with profound global impact. The use of information and communications technologies (ICT) to advance the core MDG priority areas is an effective tool to speed up and strengthen development efforts. The Chairman of the Global Alliance for ICT and Development (GAID), Mr. Talal Abu-Ghazaleh, presented a proposal to the United Nations Secretary-General to design a powerful web-based Matrix of ICT Solutions for MDGs Advancement which can help transform the policy and operational environment and accelerate MDGs implementation by countries. This proposal has been endorsed by the Secretary-General who had graciously agreed to become GAID Honorary Chair.

To materialize this vision quickly, a small Steering Group has been formed by GAID. This team, supported by diverse partners including UNDESA, IT industry, and academic communities developed a vision of an “MDG eCenter” that spans the entire Learn-Plan-Do-Check cycle shown in Figure 1. To receive early feedback, a prototype version of the Center was presented and demonstrated in the WSIS Forum 2010 on May 12-13, 2010 in Geneva with very encouraging results. This early version, called MDG eCenter 0.1, was later presented to a seminar organized by the Gulf Cooperation Council on June 14-15, 2010, in Riyadh with very strong support.

The MDG eCenter is intended to be a one-stop shop with the following key capabilities (see Figure 1):



Note: (*) indicates that the capability will be developed later

Figure 1 MDG eCenter - Conceptual View in Terms of Learn-Plan-Do-Check

- **MDGs Matrix** that captures the ICT Solutions for MDGs Advancement and thus serves as the core knowledge base of the MDG eCenter. This Matrix links the individual Millennium Development Goals, their Targets/Indicators and the relevant Actions with ICT-based tools and solutions and is the foundation of the ICT Solutions Repository. The Matrix is being developed and populated in open and inclusive collaboration with all stakeholders.
- **Learning Capabilities** which include a “**Portal of Portals**” with “yellow pages” functionality displaying the content of major existing portals of value to MDGs and a **Compendium of Excellence in ICT for Development** that will be developed at a later stage to reflect highly successful eMDG initiatives. In addition, an Executive Program is under preparation to educate the leaders of the MDG initiatives in developing countries in using the capabilities provided by the MDG eCenter.
- **Planning Support** in the form of a Computer-Aided Strategic Planner that leverages the latest research in intelligent systems to produce highly customized plans. The Planner integrates the knowledge from diverse sources and produces situation- and country-specific plans. It assembles and customizes solutions based on the type of service (e.g., healthcare-specific or education-specific), country and region (e.g., rural versus urban) and user base (large versus small).
- **Implementation Support** in the form of Detailed Planning and ICT Simulation/Business Game Tools for detailed insights. These resources enhance the capabilities of the Strategic Planner and go beyond the reports and point to a wide range of available tools of potential value for governments and development practitioners in their work towards the achievement of the MDGs.
- **Monitoring Support** in the form of Project Controls and Verification to assure that the deployed services are producing the needed results and continue to work properly. These capabilities, to be developed later, will be based on the best practices in monitoring and controls as established by the Project Management Institute (www.pmi.org) and the Control Objectives for Information and related Technology (COBIT) organization (www.isaca.org).

In short, this Center will provide an extensive array of resources to advance MDGs through the use of ICT. Provision and use of these resources raises several governance issues that need to be resolved before widespread use of the Center commences (see Exhibit 1). Section 2 compares the MDG eCenter with existing sites and Section 3 introduces the MDG Matrix that is at the foundation of the eCenter. Sections 4 and 5 illustrate the use of the eCenter through examples and Section 6 presents the overall project plan. The concluding remarks include frequently asked questions and key features suggested during our interactions with the participants in Geneva and Riyadh.

Exhibit 1: Governance Issues

We are at present in the process of developing a governance structure for the MDG eCenter. This structure will answer the following important questions:

- Who will key in the data and who will be allowed as reviewer to the data.
- What will be the role of different players such as the UN, government agencies, international organizations (e.g., the Red Cross, WHO and the African Union), inter-governmental organizations, private sector, NGOs and the civil society.
- What will be the process for collecting data, resources and success stories. In particular, how will the collected success/failure stories be verified so that the Center does not become a propaganda tool.
- How will the knowledge be managed to guarantee the credibility and comprehensiveness of the content and information in the portal.

These are all important questions that must be answered to develop a sound governance structure. To answer these and other questions, we have started discussions about the governance structure. Our aim is to have a governance structure in place before the Center is made available for active external use.

2. Comparison with Other Efforts – How We Are Different

We believe that this project is unique, for a variety of reasons. First of all, it has the United Nations as its convener which brings to the project the universality, legitimacy and neutrality of the United Nations. It has strong support of the Secretary-General who is the Honorary Chair of the Alliance.

Second, the project is truly multi-stakeholder: it not only brings together different stakeholders (governments, the private sector, civil society, international organizations) but also different players within each of these constituencies, such as ministries of education, health, environment and other relevant entities within each government, and both IT producers and IT users in the private sector, for example. Furthermore, the eCenter is going to be built and maintained as a grand collaboration of partners and participants dispersed globally and contributing in a “managed wiki” process.

Thirdly, the functionalities of the eCenter will give it a very distinctive character and scope. As mentioned above, it will be a “one-stop shop” for ICT-based tools and solutions to address

specific development issues and advance MDG progress. It will serve as an intelligent agent in helping development practitioners to make decisions and to do their jobs more efficiently and effectively. It will be user-driven (instead of prescriptive), interactive and customized. It will enhance its own accuracy, scope and comprehensiveness through an iterative process. It will provide tools for building capacity for development practitioners. And, it will be free – no cost to users.

Our goal is to go beyond the websites that contain marketing materials or portals that serve as document repositories with search capabilities or software development sites that house a collection of disconnected tools. There are, for example, some portals that include MDG indicators and measure the performance of each country towards MDGs. Some of these portals are subject-oriented and others are general such as the MDG Monitor. Another group of portals addresses specific countries such as the local portal for Brazil, for example. There are many other websites and portals that offer guidelines, success stories, documents and resources on MDGs.

Instead of duplicating existing websites and portals, we aim to provide a comprehensive center that covers the entire “Learn-Plan-Do-Check” cycle with different capabilities that can be used to solve a wide range of problems (see Figure 2). The capabilities, as shown on the left side of Figure 2, range from simple document storage, search and display to planning, monitoring and control. These capabilities are needed to deal with simple informational queries to complex problems with many steps (shown on the right side of Figure 2).

Again, the objective of the MDG eCenter is to provide ‘One-Stop Shopping’ capabilities for the development practitioners to address the people, processes and technology issues in advancing MDGs. We are hoping that the Center will improve transparency, facilitate information sharing, and encourage self-monitoring. Exhibit 2 further elaborates on our differentiators.

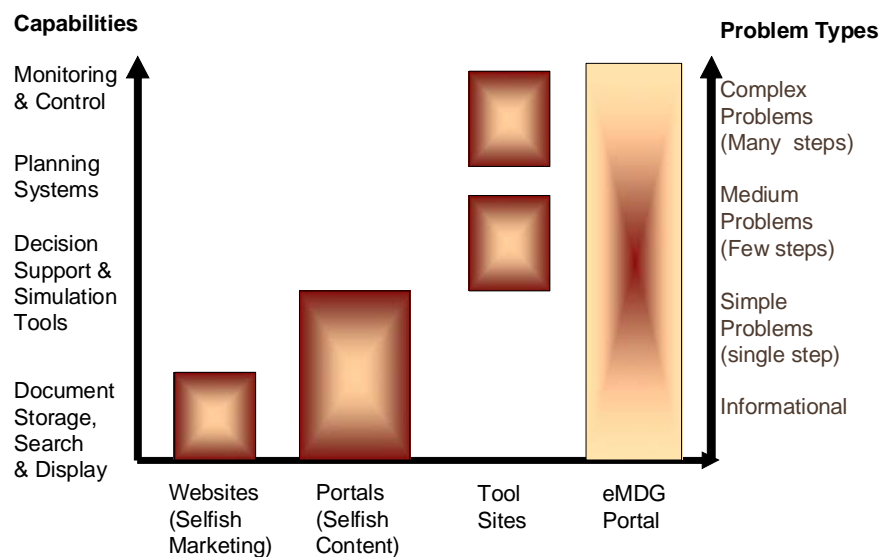


Figure 2: Comparison with Other Sites

Exhibit 2: Key Differentiators of the MDG eCenter

- **Focus:** Our focus is on Millennium Development Goals (MDGs) that concentrate on reducing poverty, improving education, combating HIV, reducing infant mortality, and improving maternal health instead of improving the typical corporate efficiencies of customer relationship management and procurement.
- **Support “have-nots” versus “have-gots”:** we are primarily interested in helping the developing countries, local and municipal governments and small to medium businesses that do not have sufficient financial resources and technical know-how to cross the digital-divide.
- Convened and spearheaded by the **United Nations** with its unparalleled legitimacy, universality and neutrality
- Truly **multi-stakeholder** character
- **Educate and Empower the Users:** For sustainable economic and social advances, it is essential that the developing countries and other have-nots are properly educated and empowered to make their own decisions instead of relying on others to solve their problems. Thus MDG eCenter explicitly includes “Learn” capabilities and the Strategic Planner has been used in educational settings.
- **Global Perspective:** The Strategic Planner in the Center explicitly includes global country and region specific information such as provided by the World Economic Forum and the UN. This information is used to guide the user interviews and customize the answers. The Strategic Planner is a lightweight tool (users can access it remotely) that spans all aspects of ICT planning (business, technologies, management) and can be used for planning one service at a time (e.g., mobile health clinic). Planning tools of this nature are not readily available to the developing countries.
- **Free Access:** The Center is free to UN-GAID users and can be used by managers and decision makers instead of technical staff.

3. The Matrix of ICT Solutions for MDGs Advancement

The Matrix of ICT Solutions for MDGs Advancement will be the core of the MDG eCenter. It will be searchable based on keywords/tags and will be integrated with the other capabilities of the Center (e.g., the Meta Portal and Strategic Planner). We fully realize that an undertaking of such scope and complexity can only be accomplished as a grand collaboration of all stakeholders: governments and the private sector, international organizations and civil society, academics and development practitioners. The Matrix will be built and populated in an open, wiki-type mode through web-based contributions of diverse dispersed partners and discussion forums, including using social media. All stakeholders are invited to engage actively in the discussion and development of the Matrix.

A current prototype of the architecture of the Matrix is presented below.

MILLENNIUM DEVELOPMENT GOALS	Actions to achieve the MDGs	Barriers and Gaps	ICT Tools, Solutions and Innovations	Major Programmes	Leading Actors	Best Practices and lessons learned	Financial Mechanisms

The logic of the proposed sequencing of columns is the following. For each of the MDGs (Column I), a hierarchical set of targets/sub-targets and indicators will be presented in Column 2. The formulation of the targets and actions in this column will be taken, to the extent possible, from established sources such as the Millennium Project Report.

Column 3 will identify obstacles, barriers and gaps that may complicate action presented in the column to the left.

The next column is central to the Matrix: it presents specific ICT-based tools, solutions and innovations that can help address specific action listed in Column 2 and, if required, related obstacles of Column 3. Modalities of peer review need to be developed for filtering (vetting) inputs received to ensure that the tools/solutions that will be presented by the Matrix are, in fact, proven, replicable, scalable and self-sustainable (in terms of resources and capacity).

The next two columns contain information about major existing activities relevant to the entries in columns to the left, and on major actors (organizations, providers of services/equipment, etc.)

The next column "Best practices and lessons learned" may include examples. The last column will present options for securing funding for action of Column 2 and use of tools and solutions of Column 4, including resourcing through public-private partnerships.

Views and proposals on the architecture and components of the Matrix and on possible mechanisms for peer review of inputs can be submitted by clicking here (<http://tinyurl.com/GAID-OnlineForum>).

If you wish to submit information on an ICT-based tool/solution to populate the Matrix, please find a template for submissions by clicking here (<http://tinyurl.com/ICT4MDG-Survey>).

4. Illustrative Examples

The MDG eCenter, even in its preliminary prototype stage, can support planning and deployment of a wide range of eservices such as eLearning, eHealth, eEmployment, and others to advance MDGs. Consider, for example, a government that wants to become a digital government. Is there a central place (a one stop shop) that could help in understanding the basic issues, identify worthwhile policies, help in developing a plan, and then assist in executing and measuring the success of the plan, and how to do all this without reinventing the wheel. As explained previously, the Center is intended for such situations – it goes far beyond informational documents, and provides decision support tools with capabilities to assemble and customize solutions based on specific situations. By using the Center, a user can learn about, plan, and monitor the execution of the plan for services such as the following:

- online course delivery
- an entrepreneurship portal
- a health information network
- an emergency response unit to be used by a city government
- connect different government agencies
- broadband network
- social networking
- cloud computing

5. Detailed Example: Mobile Health Clinic[‡]

To explain how the eMDG Solutions Center could be used in practice, let us take the example of a Mobile Health Clinic. It is well known that these clinics, combined with the mobile computing technologies, have been highly effective in combating HIV and malaria, improving maternal health, and reducing infant mortality in Peru, South Africa, Uganda, and the Philippines. In particular, location-based text messaging applications have been highly effective to attract young people to mobile clinics that provide informational, testing, and/or clinical services. Thus a mobile health clinic addresses three goals of the MDGs (goals 4, 5 and 6).

While there are many success stories about mobile clinics, numerous failures have occurred due to logistical issues (e.g., running out of supplies in the middle of nowhere), technology issues (no wireless signal in the area), procedural problems (healthcare professionals could not get visas on time), and social issues (some parents did not like their kids to be invited to a clinic without parental consent).

A *Mobile Clinic Support System* is needed to address the people, process and technology issues and thus assure repeatable success of these clinics. Figure 3 shows a conceptual view of a support system that leverages the latest ICT developments to serve the physicians, the patients, the healthcare facilities, the suppliers of materials and the regulating authorities. Such a support system could profoundly impact the delivery of healthcare to different parts of the World and could be of value to central governments, municipalities, cities, or NGOs (non-governmental agencies) with interest in operating mobile health clinics around the globe. How can the aforementioned Learn-Plan-Do-Check cycle be used to assure success? To gain some insights, let us go through the said capabilities of the eMDG Center:

[‡] This scenario was actually demonstrated in Geneva on May 13, 2010.



Figure 3: Conceptual View of a Mobile Health Clinic Support System

- **Learn:** A user (government agency or NGO) could query the Meta Portal for a broad view and information sources on different aspects and case studies of mobile health clinics. The Portal of Portals (meta portal) provides “yellow pages” type capabilities to a wide range of existing valuable portals instead of a single portal with “selfish” content.
- **Plan:** Go beyond case studies and actually develop a plan for mobile health clinics by using the Strategic Planner that generates a country and situation specific plan by using patterns. The Planner, based on research published in peer reviewed journals, provides step-by-step planning guidance for the mobile clinics for the chosen country through a family of intelligent “advisors”. These advisors guide the users through the maze of decisions in cost-benefit analysis, business process modeling, technology selection, system integration, disaster recovery, and information security that is specific to the country in which the mobile clinic is supposed to operate.
- **Do:** The generated plan serves as a solid starting point by the implementers to refine and operate mobile health clinics for different situations in different regions of the world. A wide range of simulations and business games could be used to create and exercise some what-if scenarios such as running out of supplies, loss of key staff, and technology failures.
- **Check:** The operation of the mobile health clinics, the problem encountered, and the solutions that work and the ones that did not, can be monitored through project management techniques and support through technologies such as “management dashboards”. The lessons learned could then be used to reiterate, refine and improve the deployment of future mobile health clinics

6. High Level Project Plan and Concluding Comments

As mentioned previously, the current version (v. 0.1) is a very preliminary prototype that will be gradually developed into a powerful instrument in the next few months. Figure 4 shows the

timeline and the teams involved (UN, IT industry, and university researchers). Specific checkpoints are:

- **May-June 2010:** Demonstration of v.0.1 in Geneva (May) and initiation of the Testing Phase in which almost 20 users from different countries volunteered to participate .Basically the sessions in Geneva resulted in formation of an “MDG eCenter User Group” that consists of around a dozen countries (e.g., Algeria, Egypt, Ethiopia, Ghana, Indonesia, Macedonia, Mexico, Nigeria, Senegal, Uganda), four NGOs (including Red Cross and WHO) and several researchers. The session in Riyadh (June) resulted in additional participants from Saudi Arabia, Bahrain, UAE, Kuwait, Qatar, and Oman.
- **September 2010:** Demonstration of v.0.5 with additional features for more rigorous testing. This version will be used by more users (we are hoping more than 30 users).
- **March 2011:** Demonstration of MDG eCenter 1.0 (the production version) for widespread use.
- **January 2012:** Announcement of MDG eCenter 2.0 (a much richer version based on one year of field use) for extensive use.
- **January 2013 and later:** Announcement of MDG eCenter 3.0, 4.0 and so on (once a year, with more powerful capabilities than the year before).

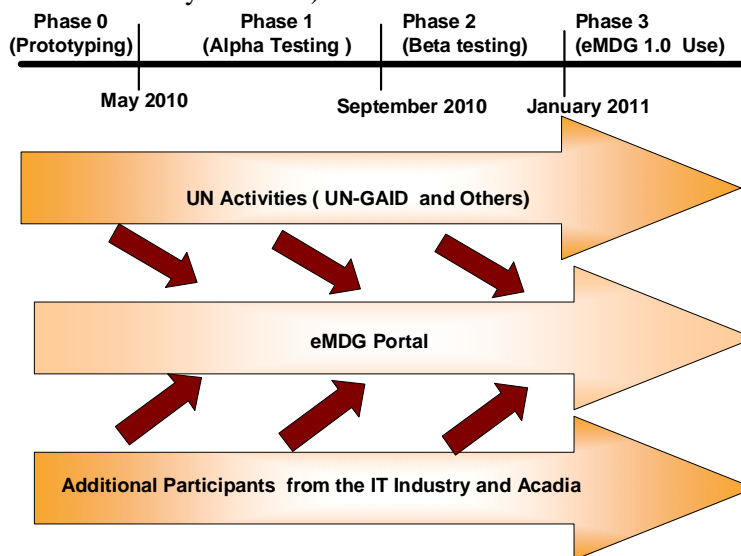


Figure 4: Overall Project Plan

To conclude, we are in the process of developing a powerful instrument to advance the MDGs quickly, universally and effectively. The components of the instrument will be designed to advance the MDGs (e.g., economic development, healthcare, and education) through ICT by supporting the Learn-Plan-Do-Check cycle. We are primarily focusing on the Learn and Plan capabilities this year and will provide extensive Do and Check capabilities next year. Our goal is to make a production version (MDG eCenter 1.0) available for free general use in March 2011. Based on field use and feedback for one year, an improved system (MDG eCenter 2.0) will be made available at the end of 2011. Exhibit 3 lists the most frequently asked questions so far and Exhibit 4 captures the key ideas suggested by the user group and the participants in Geneva and Riyadh. While discussions and debates on different approaches to eMDGs will and should

continue, we are striving to make the latest thinking and practical tools directly available to the developing countries for an actual difference on the ground.

Acknowledgments

The capabilities provided by this eCenter are being developed by the NGE Solutions team (Kamran Khalid, Nauman Javed, Adnan Javed, Abdul Qadir, and Hannan Dawood). We are grateful to H.E. Mr. Ivo Ivanovski, Minister of Information Society for the Republic of Macedonia, for volunteering to be the first user of the Center and for his valuable suggestions for improvement. Background research is being aided by graduate students at the University of Pennsylvania and Harrisburg University, and consulting help is being offered by senior government officials and healthcare professionals.

We are also indebted to the eMDG User Group for their suggestions on the previous version of this document. In particular, the constructive suggestions from H.E Ivo Ivanovski (Macedonia), Joy Muller (Red Cross), Salma Abbasi (e-wwg.com), and Zeinab Omran (MCIT, Egypt) are greatly appreciated. Short agreement messages from Ghana, Nigeria, Sudan, and Morocco are also appreciated. We are grateful to the participants of the GCC meeting in Riyadh for their enthusiastic support and discussions (many suggestions in Exhibit 4 originated in Riyadh).

Exhibit 3: Most Frequently Asked Questions

Note: The following questions have been asked most frequently so far. We are preparing a separate document that will answer these questions.

Q1: What will be the Governance Structure for the MDG eCenter that will define the roles and responsibilities of various players (e.g., UN, government agencies, international organizations such as the Red Cross, inter-governmental agencies, private sector, NGOs and the Civil Society)

Q2: How does this Center differ from other portals and websites

Q3: How will the Center, especially the Planner, be used in practice

Q4: How will the needed content be created quickly

Q5: How will the content be updated and improved gradually

Q6: How will the plan generated be checked and maintained for quality

Q7: How can a larger system be developed from smaller ones (integration and interoperability between systems)

Q8: How will you assure the success of this Center and what type of approaches will be used

Exhibit 4: Key Features Suggested

Note: These suggestions are primarily based on the highly interactive discussion sessions in Riyadh on June 14-15. These are all excellent suggestions and will be incorporated in the future releases of the eCenter (they have been included in the project plan).

S1: Education and training must be an important part of the Center. An executive program is needed for on-going education and training.

S2; Ongoing technical support of the Center is an important part of the eCenter operation and should be considered early in the development process

S3: The eCenter should provide advisory and capacity building support services to help the developing countries

S4: An ICT News Agency relevant to MDGs will be part of the eCenter for on-going news of interest to the users

S5: Guidelines for country specific applications need to be developed

S6: eCenter should provide region-specific applications

S7: Each government should designate a focal point in each ministry authorized to make changes in the country pages

S8: The data in the eCenter must be properly authorized, comprehensive and useful

S9: The users should be able to override the factors reported by international organizations such as the World Economic Forum (WEF). This suggestion was based on the observations that sometimes incorrect data is intentionally reported to international organizations, for various reasons. The users should be, if needed, able to override the external data with their own data that they know is more accurate.

S10: Most countries have their own development plans. The strategic planner should be able to include these development plans

S11: International standards must be used in the tools provided by the eCenter

S12: Statistical modeling and analysis tools such as provided by SAS should be used where possible.

S13: The eCenter should include ICT infrastructure services (e.g., broadband access, cloud computing) in addition to eservices in health, education, economic development, etc.

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