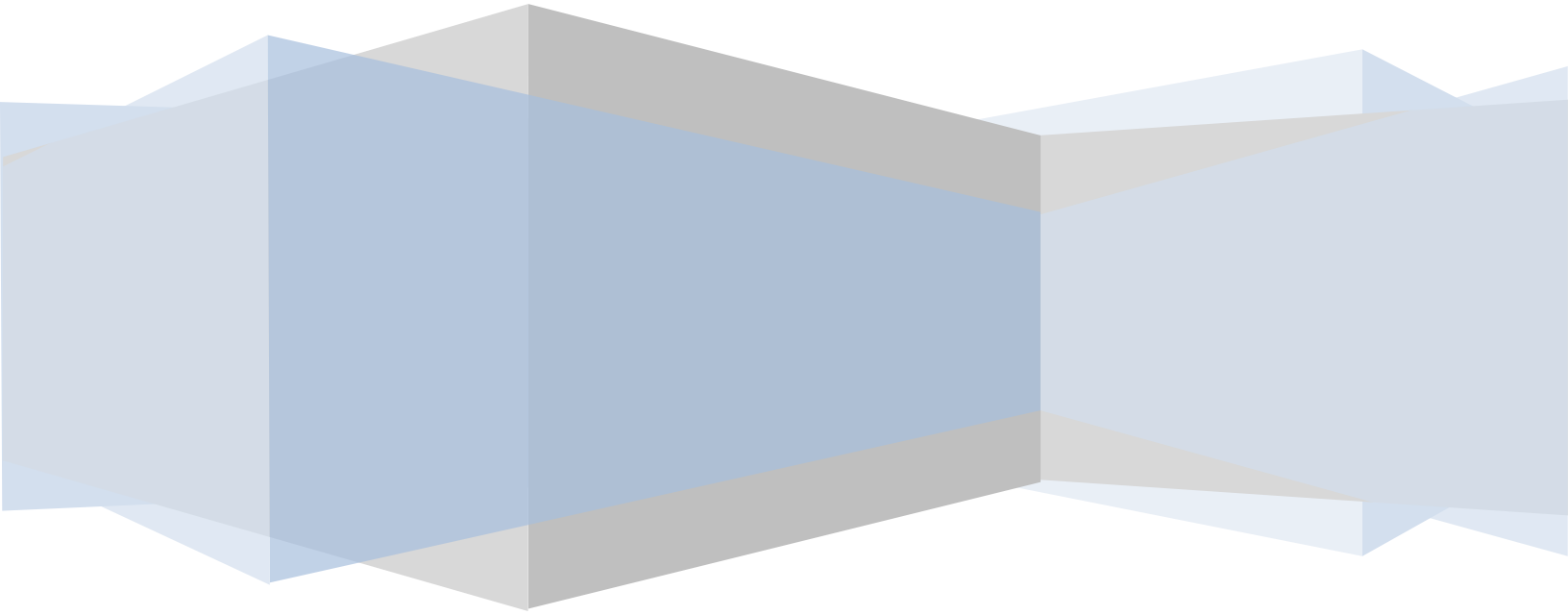
Designing the GIS/Website Interface

Millennium Earth Project: A Visual Framework for Sustainable Development (Virtual Global Earth Project)



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Summary of the project

To construct an online map viewer that will serve as the user interface for viewing and downloading information currently being developed by the Millennium Earth Project. The development of the virtual computer imaging and data collection methodology will create a more organized presentation of the facts regarding the current state of the world.

Users will be able to query the database by country or other predefined geography. This data will be given visual representation by providing pictorial images of the nations, states, cities and townships, and provide after images of a possible future change. The Millennium Earth Project will provide an educational tool in the areas of computer science, using GIS technology, urban planning, sociology, geography, agriculture, health, engineering, architecture, population science, design, mathematics, business, etc. Young people will be able to learn how all the systems that contribute to make a country work are integrated, and in a functioning whole.

Major Tasks

Data Collection and verification

Through the Millennium Earth Project's data collection methodology, we will synthesize the current data available and present the facts regarding the problems and possible solutions, as well as alternative solutions to the problems. In this way, the presentation of the problems and their solutions can be sustained by valid data, and solutions objectified and scrutinized to determine their possible outcomes.

We will create a central database of information and an organized presentation of data to nations, governments, non-profit organizations, philanthropists, and NGOs.

There are very good data collecting and reporting agencies like the OECD working with the World Bank and the IMF in their reporting and the Inter-Agency and Expert Group on MDGs Indicators led by the Department of Economic and Social Affairs and other NGOs. We will work with these and other reputable agencies to get the most up-to-date information for our database.

The first phase of this plan is to work with the Department of Economic and Social Affairs whose role among many is to analyze, generate and compile a wide range of data and information on development issues, to acquire data on these countries. We will speak to the personnel who have visited and worked with these countries and who have extensive knowledge of issues that have been most prohibitive to the proper functioning of that country, always working in conjunction with a senior member of each

country, crosschecking the data, and getting a local understanding of the issues and the solutions.

We will work very closely with the citizens of these countries who are living abroad and who represent their countries as diplomats abroad with the United Nations and other organizations of that type. It is important that we do not appear to think that we know more about what is best for their country than they do. In consultation with these in-country citizens, we will become engaged in a realistic assessment of their country's needs and the challenges to achieving our desired objectives.

Design the online mapping application

Because this is a web mapping applications, a Graphical User Interface (GUI) design will be developed. This includes individual screens (the look and feel of the map) and a GUI storyboard. During this phase we will validate any quality of service requirements (e.g. performance), and confirm the planned system environment can meet them.

Design Steps

1) Hold workshops with key stakeholders to refine requirements, confirm environment/IT specifications, identify workflows, and develop a GUI concept and accompanying storyboard.
    a) Develop specifications, including detailed requirements and GUI mockups.
    b) GUI Concept
        (i) **Banner information** along the top that will be viewable on all pages (Home, Map, Countries)
        ii) **Tools tabs** that would include "Map" "Search" and a "Statistics" tab—these would be found right beneath the banner information.
        iii) **Tools panel** dealing with each tab.
        iv) **Results panel**—the actual map or statistical graphs

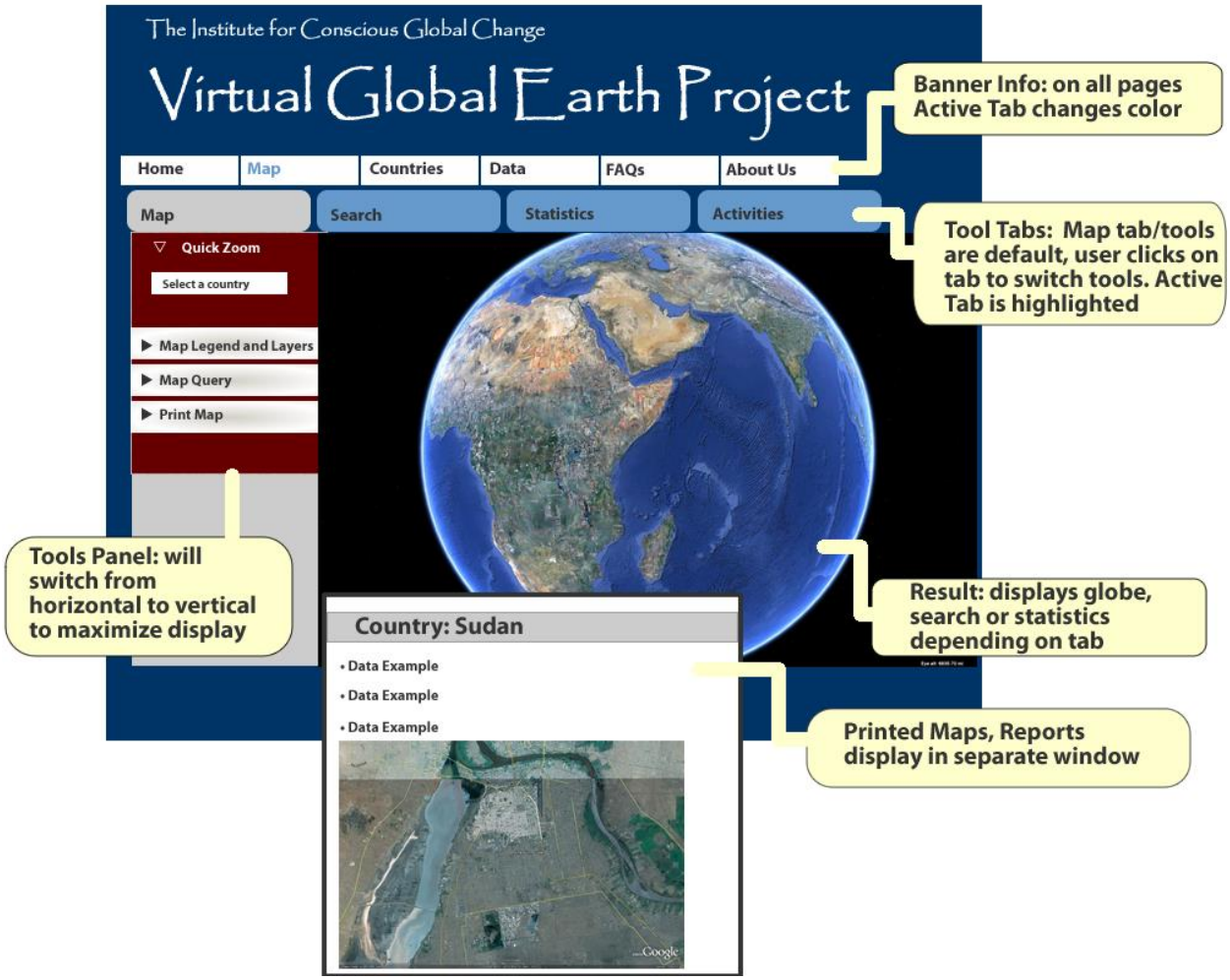

Figure 1. Example GUI Mock-up Map page.

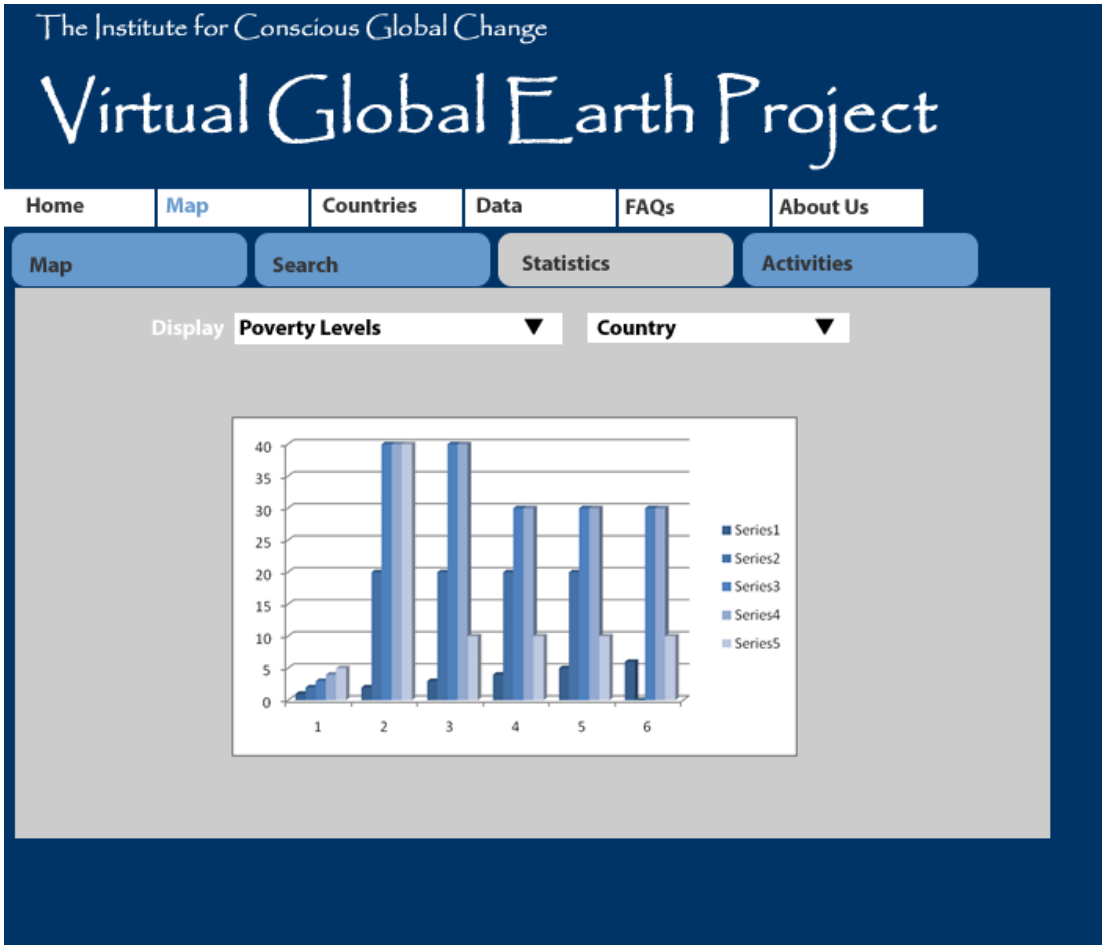

Figure 2. Example GUI Mock-up Statistics page.

2) We will use hands-on approach to workshops to walk through requirements and how specific application workflows or GUI Storyboards will meet these requirements.

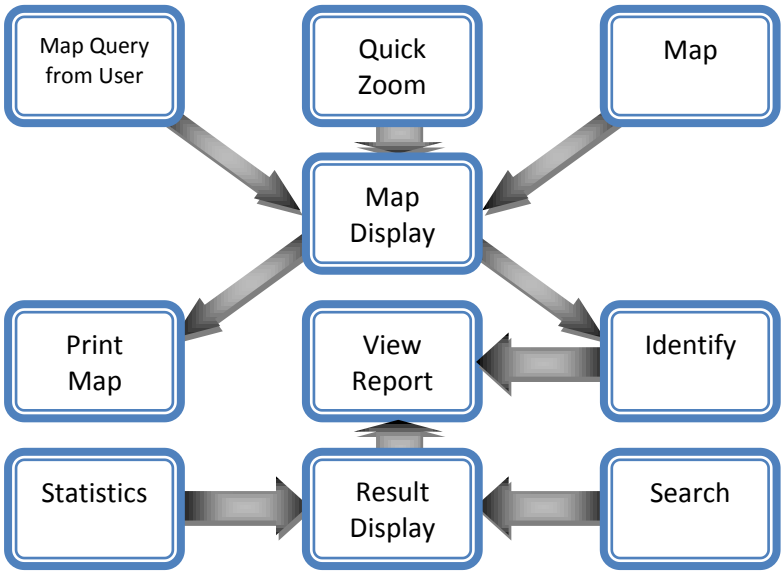

Figure 3. Designing the GUI Workflow

3) Use visual aids to develop the storyboard including screen mockups, simple application prototypes.
4) Provide GUI and workflow alternatives for users to choose from.
   a) Discuss design concepts and implementation approaches around the capabilities of existing products or infrastructure.
   b) Script and style interface based on mockup selected.
   c) Initial Google Maps API setup, includes standard navigation and base map options
   d) Add function for toggling administrative boundaries, etc.
   e) Create query function for fetching data from the primary database, based on predefined geographies including:
      i) Simple Query: List of predefined queries
      ii) Advanced Query: Custom queries based on available data
   f) Create legend for datasets, as necessary
   g) Revise map, interface, and report outputs based on TPL review
   h) Transfer of all html, scripts, and other files for website hosting.
5) Proceed with development and testing.

By July 31, 2013, we intend to build a prototype of all three countries highlighting what the overall project will look like. During this initial phase of our actual operations, we will recruit the staff needed to develop the prototype for addressing the issues in the areas outlined above in the countries identified for the first phase. We will develop a representative model for each region of the world to be used for the larger project.

Development and Testing

During the development and testing stage, we will translate the requirements and design into a functioning GIS application. This phase includes application code and data, and interim development demonstrations and reviews.

1) Setup development and test environments, including source control, defect tracking, and an independent build/test environment.
2) Install and configure off the shelf components of the system.
3) Develop a test plan.
4) Develop custom code and databases.
5) Test custom code and databases.
6) Package and deliver completed system components for installation, final testing, and deployment.
7) Track development progress.

Deployment

This involves installation of the system in the production environment, performance tuning and final testing, and completion of system documentation. This stage include

the final software installed in the production environment, and an installation and user guide. The following steps will be completed.

1) Develop a deployment checklist.
2) Build the installation package and associated instructions. The content of an installation packages depends on the type of application and the platform.
3) Transfer the installation package to the hosting environment.
4) Install and configure the application in the hosting environment.
5) Perform final testing and tuning.
6) Develop end user documentation, including and installation and user guide.

Support

This stage includes technology transfer and training, post deployment resolution of software issues, system tuning, and collection of post-deployment feedback for future releases.