

# IGFS geoportal development for gravity, geoid, GGM and DEM data

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## 1. Introduction

The International Gravity Field Service (IGFS) Central Bureau (CB) has recently been established at DGS/AUTH and one of its main activities has been the promotion of IAG gravity-field related services along with the development of a new, user-friendly website. One critical issue that needs to be incorporated by IGFS is to answer user needs in terms of providing reliable feedback as to what kind and what type of gravity-field related data one can retrieve from IGFS. With that in mind, IGFS has developed a dedicated gravity-field related geoportal with the sole purpose of organizing a modern, user-friendly and coherent one-stop point where the interested user can visualize the current data availability within BGI, ICGEM, IGETS, ISG, and IDEMS. The developed geoportal is incorporated as an IGFS application within the dedicated IGFS application server using open-source solutions (GeoServer, OpenLayers, PHP, PostgreSQL) and the GSSH coastline for the presentation of a basic cartographic background. The geoportal itself is not intended to provide the data themselves, but it rather serves as a one-stop point for showing data availability and directing to the respective IAG service for data retrieval. In this work the main steps taken for setting up the server are outlined along with some examples of the available data and information that the user can retrieve.

## 2. Design and roadmap

The IGFS Central Bureau is currently developing three online applications where one of them is the  $\mu$ eta-Locator, which aims to serve as a geoportal for facilitating the discovery of data offered by the IGFS services - the other two under development applications (g- $\mu$ eta and N- $\mu$ eta) for creating metadata are discussed in another presentation. The main aim of the geoportal is to provide to the end-users an interface with suitable tools that will allow the user to search concurrently for different types of data (see Figure 1). The available types of data that is expected to be presented through the geoportal are: gravity (handled by the International Gravimetric Bureau – BGI), global gravity field models (handled by the International Centre for Global Earth Models – ICGEM), digital terrain and bathymetry models (handled by the International Digital Elevation Model Service – IDEMS), temporal variations of the gravity field and tides (handled by the International Geodynamics and Earth Tide Service – IGETS) and geoid models (handled by the International Service for the Geoid). It should be noted that currently there is no connection between the various services in terms of data distribution.

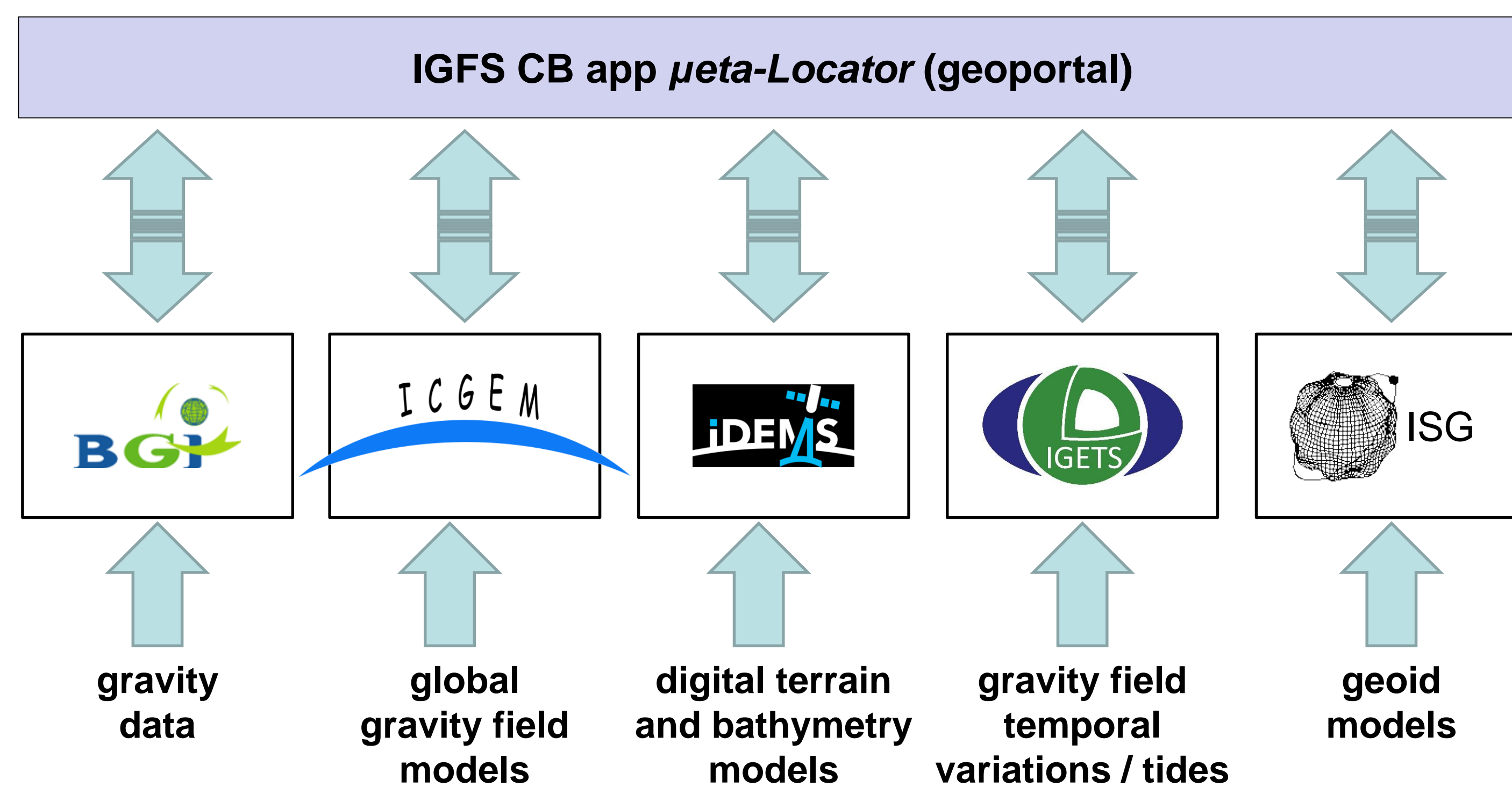


Figure 1: Data offered by IGFS services and connection with the geoportal.

The development of the geoportal faces significant challenges, where the two most are:

- To present different types of data and search through them from a common interface. This challenge exists because the geoportal does not aim to only list the available data but to provide a unified search experience.
- To connect the geoportal to the IGFS Services and retrieve the required metadata. Currently there is no common standard for sharing information about the data held by each service. Moreover, the connection should also involve the automatic update of the geoportal when new data are obtained by the services. This is still an issue that has not yet been resolved while some services have already implemented their own workflow that does not necessarily fit to the geoportal objectives.

## 2. Design and roadmap (continued)

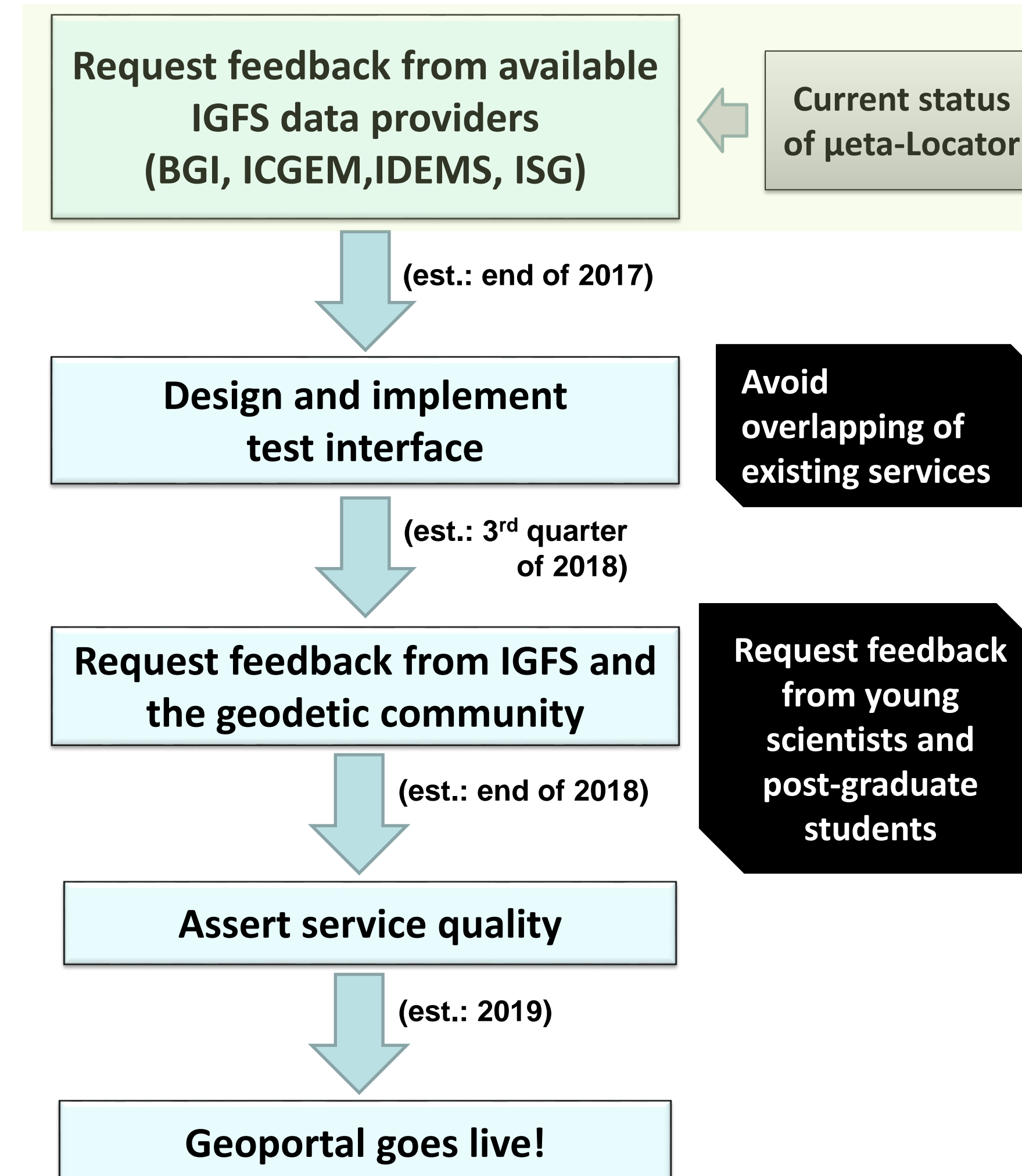


Figure 2: Development roadmap for the geoportal.

In order to tackle all challenges and complete the implementation of the geoportal the IGFS CB has set a development roadmap (see Figure 2). The first step involves the collaboration of all services in order to provide feedback on the requirements and the role of the geoportal as well as the mechanism for exchanging information. This part is essential since it is mandatory to avoid overlapping between the geoportal and existing services. Next, design and implementation activities will take part. The design of the geoportal will aim to provide a clean and easy to navigate user interface. Moreover, the design should also foresee the connection with other services as well as the evolution to a more intelligent system. After the implementation of a test interface, feedback will once again be requested both from the service providers as well as the geodetic community. It should be noticed that feedback will also be requested from young geodesists since the geoportal would be equally useful them. Based on the feedback received additional changes will be made to the geoportal and an assessment will be made on the service quality. Finally, the geoportal server will be made operational and publicly available. The time periods provided in Figure 2 are estimates for the completion of each task. It should be noticed that these estimates are subject to change and depend upon the availability of resources in the IGFS CB for handling the development of the geoportal.

The geoportal will also require a geodatabase for presenting the various layers of information. The specifications of the geodatabase are also part of the design and implementation stage. As this information may be proven useful for existing applications or other stakeholders the geoportal could provide it as a service in order to integrate it in existing applications.

## 3. Implementation

For the implementation stage of the geoportal, the IGFS CB endorses the use of open-source free software for its services (see Figure 3). The IGFS CB has already setup a web server for hosting its online applications. Debian Linux was selected for the operating system of the server and the Apache HTTP server for handling web requests. The geoportal will utilize the GeoServer software for sharing geospatial data with its end-users while the interface will take advantage of the OpenLayers API for providing dynamic maps. For the database of the server there are currently two possible options, the use of PostgreSQL (PostGIS) or MySQL.



Figure 3: Technologies used for the deployment and development of the geoportal.

## Call for participation

If you are interested in participating in the development or in the testing stage of the geoportal please get in touch with the IGFS CB (<http://igfs.topo.auth.gr/>).