*SAtellIte Near Real Time MOnitoring
Network of the Eutrophication Risk for the marine waters over the
Greek-Albanian crossborder area*

Production of the specifications of the SDHMS

*Stelios Bollanos
Planetek Hellas*

Objectives of SAIMON

Using satellite images for monitoring the quality of marine coastal waters (*eutrophication*) in near real time.

→Production of a Satellite Data Handling and Management System (SDHMS) that will provide satellite maps based on:

a.   Chlorofyll-a concentration (μg/l)

b.   Water Transparency (m)

c.   Sea Surface Temperature (°C)

The output will be provided daily, every 10 days, and also mean monthly values will be provided, as well as P90 analysis at 1km

From Input to Diffusion..

AUTOMATIC WORKFLOW

WebGIS

Input
- Data Input
- Crawling

Preprocessing
- Geocoding
- Cut

Image processing
- Processing raster
- WQ Algorithms
- Thematization
- Format

Catalog
- Metadata Catalogue

Diffusion
- Search
- View
- Download

Validation

MANUAL WORKFLOW

Services Workflow

Data

INPUT
Modis-Aqua
L2 products

PROCESSING
- Geo-references
- Chlorophyll-a calculation
- SST calculation
- WT calculation
- Flags application
- Mean value (10-days, monthly)
- Produce thematic maps

PRODUCTS (1km)
- Chlorophyll-a
- SST
- WT

WebGIS

End Users
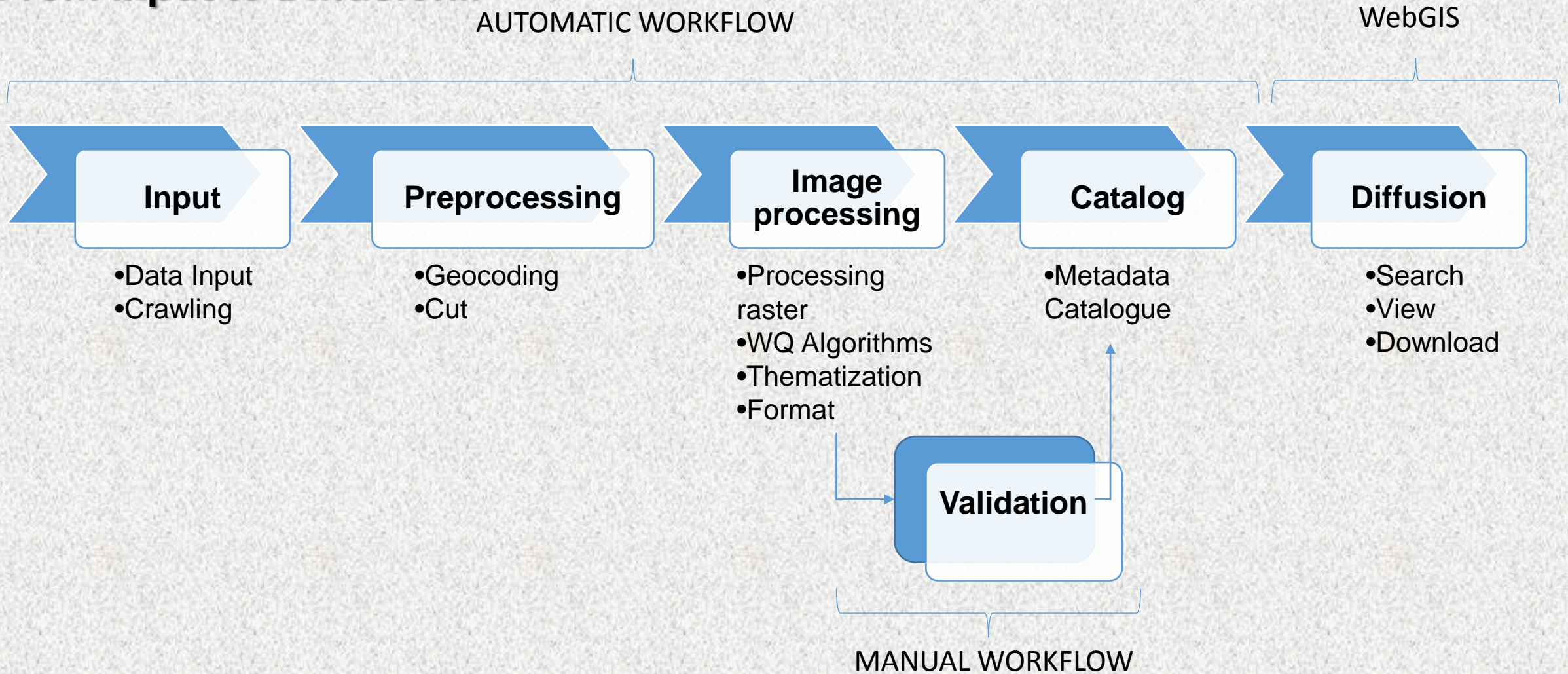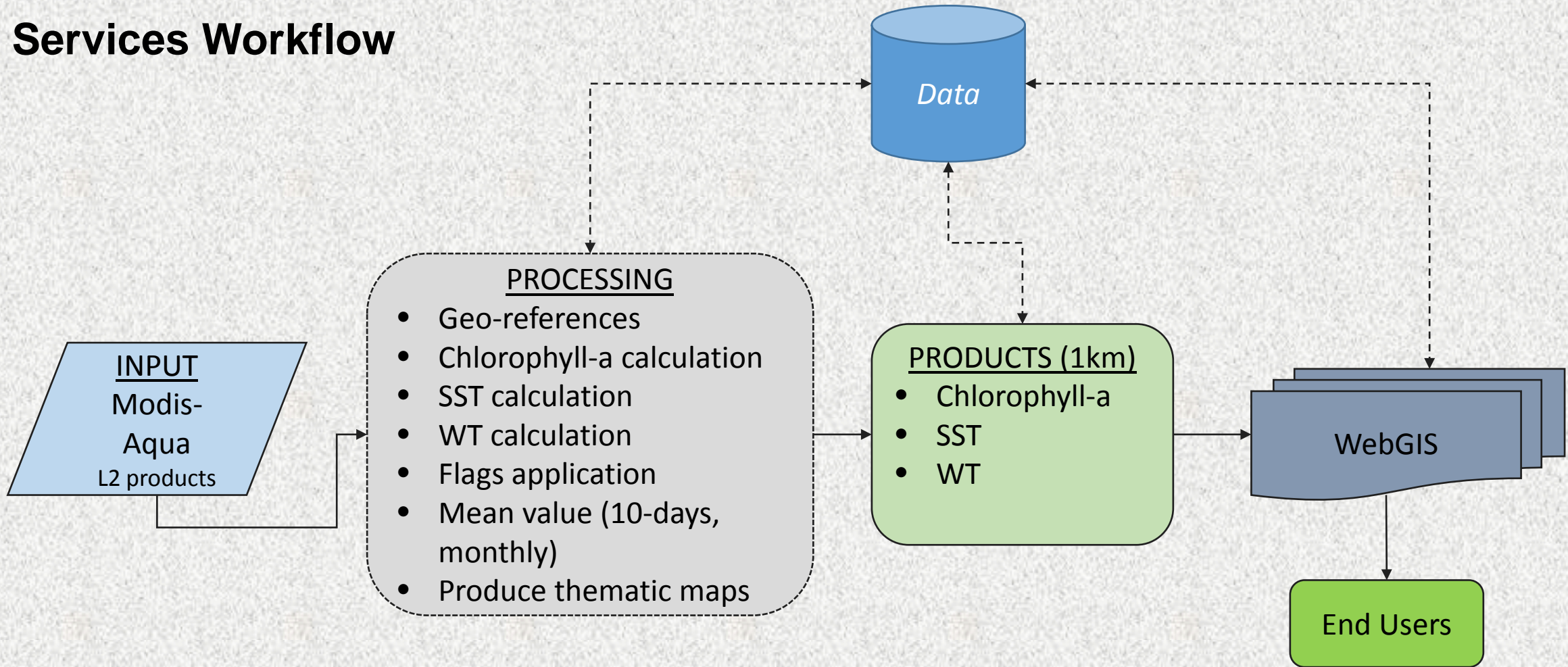
Abstract Architecture of the WebGIS
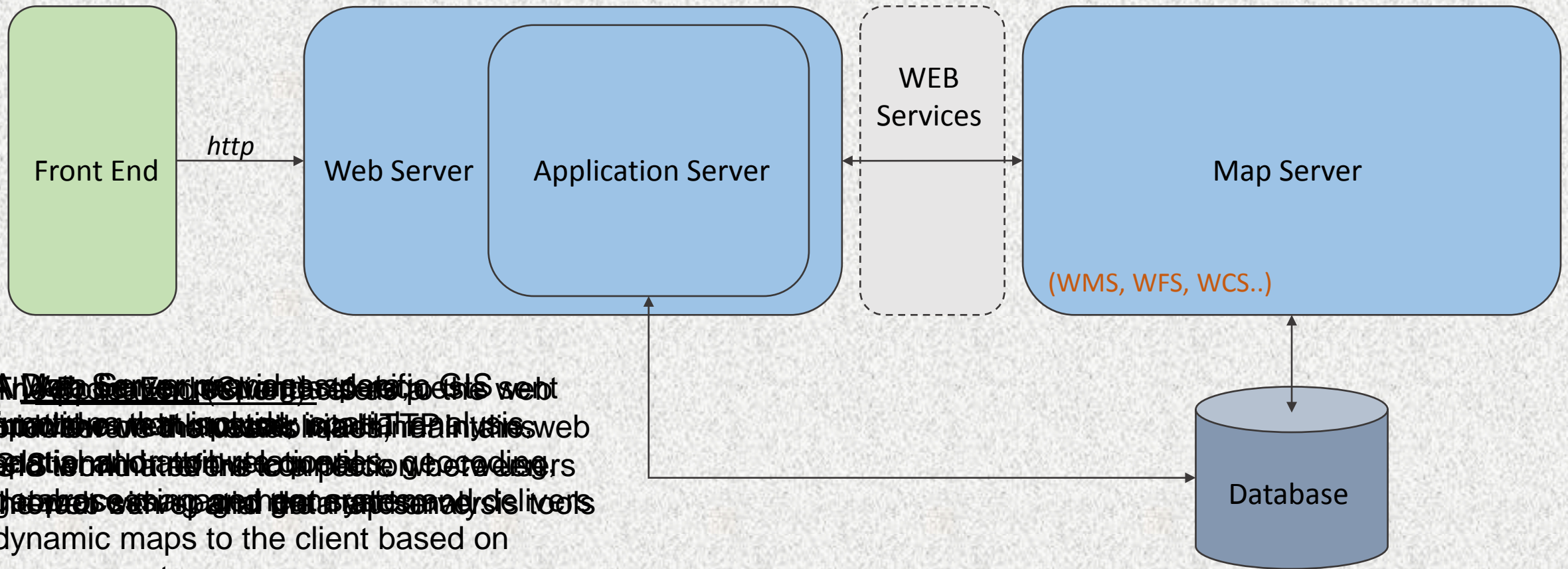
Front End

http

Web Server

Application Server

WEB Services

Map Server

(WMS, WFS, WCS..)

Database

dynamic maps to the client based on user requests

OGC - Open Standards

- Catalog Service for the Web (**CSW**), exposes a catalogue of geospatial records in XML on the Internet (over HTTP), made up of records that describe geospatial data, geospatial services, and related resources.
- Web Map Service (**WMS**), provides a simple HTTP interface for requesting geo-registered map images from one or more distributed geospatial databases.
- Web Feature Service (**WFS**), offers access to geographic information at the feature and feature property level.
- Web Coverage Service (**WCS**),offers multi-dimensional coverage data representing space/time-varying phenomena that relate a spatio-temporal domain to a wide range of properties.

WMS   CSW

OGC®
Making location count.

WFS   WCS

Web Services – INSPIRE

- Discovery Service allows to search for spatial data, spatial data sets and network services based on corresponding metadata stored in data collection system. It is based on the open standard CSW 2.0.2 ISO Profile and has been developed in accordance with the specifications of the directive 2007/2/EU (INSPIRE).
- View Service allows the visualization of dynamic spatial data in the form of digital image files. It is based on the standard WMS 1.3.0 of OGC and it is compliant with the directive 2007/2/EU (INSPIRE).
- Download Service allows downloading spatial data. It is based on the standard WFS 2.0. that enables access to particular data and reach resources of spatial information.
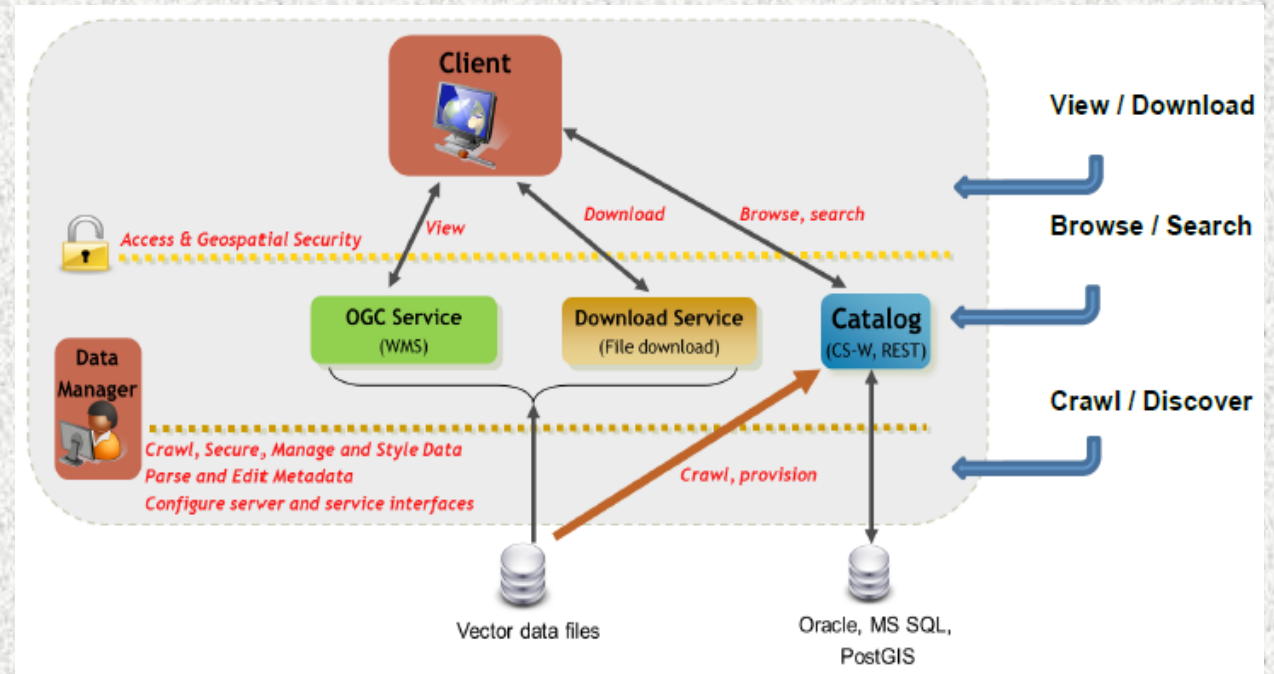
Rheticus Platform #1

Rheticus is a cloud-based data and services hub able to deliver Earth Observation added-value products through automatic complex processes

Most relevant features of Rheticus are:
- Integration towards external data sources with strong emphasis for Open Data;
- Ability to calculate geospatial indicators generated as results of the knowledge about any given geographic area;
- Capacity to involve and coordinate back-office operators claimed to operate throughout the production workflow;
- Accessibility as Cloud service (Software As a Service - SaaS)
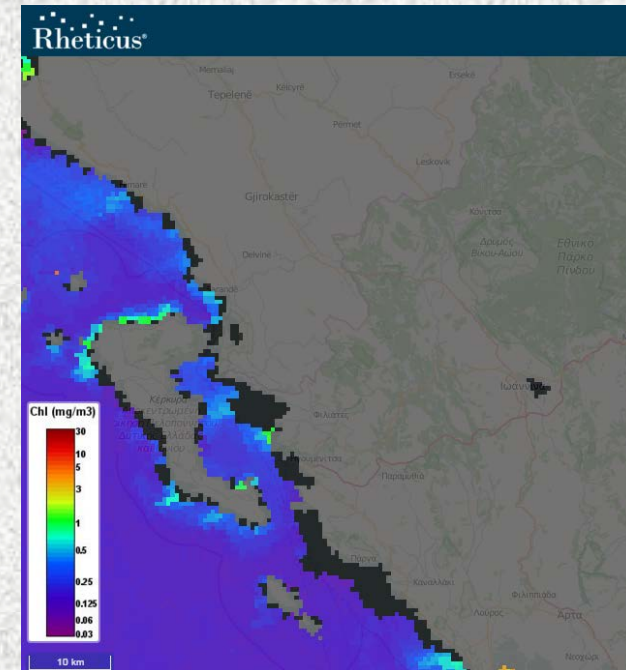
Rheticus Platform #2

Finally, Rheticus:
- Is a system based on a geographical content management system (GeoCMS)
- Provides an interface of WebGIS for the consultation of the data/maps
- Provides data via Web Services
- Is a cloud based platform and it provides all the functionalities using the technology "Software as a Service"

Navigation

➢The WebGIS will be responsible for the delivery and the visualization of geographic layers and related data, through a viewer.

➢The system will support English, Greek and Albanian languages.

➢It is based on a Content Management System capable of managing geographic information and divided into 2 sub systems:

- Administration Console: Managing the settings of the overall system
- Web client: Description, search, visualization, discovery and download data
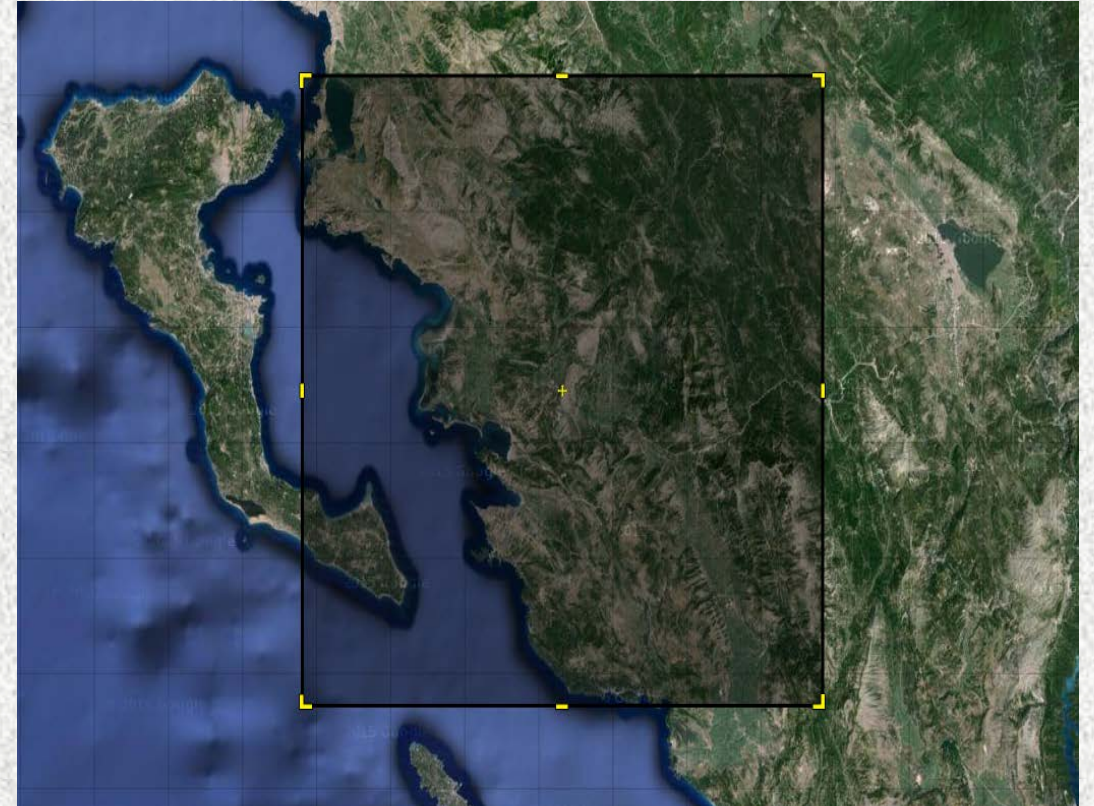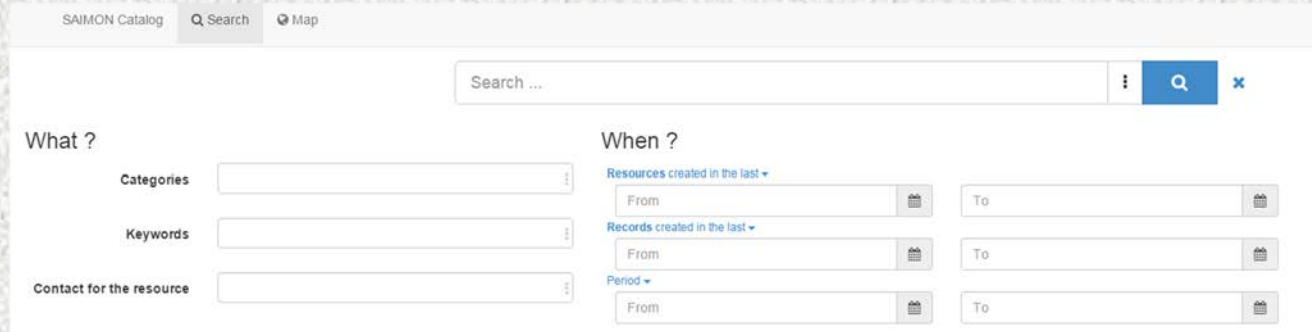
Search

The WebGIS includes a search form allowing users to display search results on the map.

The user can combine the following Search criteria :
• alphanumeric criteria, by identifying text or keywords,
• temporal criteria for the selection of the time period (from → to) , and
• geographical criteria , by designing the area of interest directly on the map
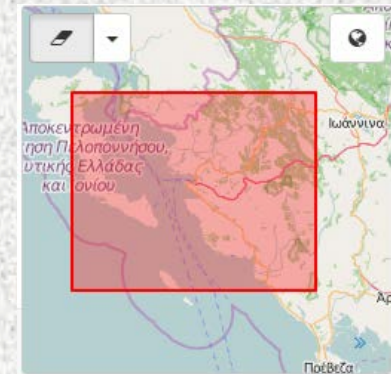
History

The WebGIS allows the user to browse maps for different points of time covering the same area. This enables the user to discover when a phenomenon changes. In the image below the slider and the Historical control buttons:

1. The user activates the tab "Time" in the toolbox

2. Using the slider bar or a date, the user can select the time period for which he is interested.

3. Using the control buttons the user can see the time change of the selected period.
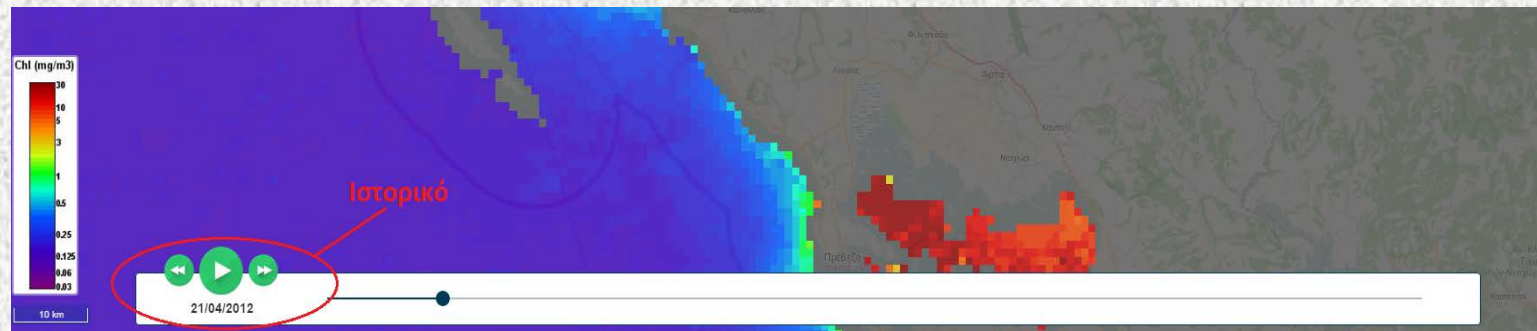
Administration Panel

The system is equipped with a private section that guarantees administrators the maintenance, management and updating of the information published. Once connected , the system will display an index of the various segments of management:

- User profiles
- Security
- Scheduling
- Editing and updating Metadata

LIVE DEMO

http://kim.planetek.it:8080/marine/#/

The End