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InGeoCLOUDS indicators: Usability & QoS for end-users and IT users

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Abstract

Since the opening of Pilot1, consortium members could experience the path towards Pilot2 which is also opened for use by external partners. This permitted to contemplate a number of QoS and usability issues when using the platform for integration of datasets, of web services in every day operations. The feedback and usage facts cover both scientists (geologists) and IT teams. Additionally some surveys towards various communities give first insights on how InGeoCloudS can be perceived from the outside. This is a first intermediate version of the collection of feedbacks and facts that lead to decisions and adjustments in the development of Pilot2. A second iteration of this document is planned for M27 where additional external users inputs shall be available

Keywords List *Feedback, facts, surveys, QoS, usability, quality perceived, user satisfaction.*

DOCUMENT CHANGE LOG

Document Issue.	Date	Reasons for change
Version 1-Draft 1	2014-01-20	Creation of the document
Version 1-FinalDraft 1	2014-02-13	Final Draft 1.0 integrating all contributions and latest screenshots on contents.
Version 1-FinalDraft 2	2014-02-19	Final Draft 2.0 made available for review by Steering Committee
Version 1 – Approved	2014-02-20	For delivery

APPLICABLE AND REFERENCE DOCUMENTS (A/R)

A/R and Document Reference	Title
[A1] ICT PSP Grant Agreement N° CIP 297300	InGEOCloudS Grant Agreement and its annex (including the description of work)
[R1] D1.1-INGC	Project Quality Plan
[R2] D2.1-INGC v1.1	Use Cases for InGeoCloudS Data and Services
[R3] D2.2-INGC	Interface of Web Services and Models of Data
[R4] D3.1.1-INGC	Analysis and monitoring of clouds for geo-data services
[R5] D3.2-INGC	Cloud architecture, configuration and data access implementation
[R6] D6.1-INGC	InGeoCloudS Web Site
[R7] D4.1-INGC	InGeoCloudS Pilot1 on the Internet
[R8] D4.2_INGC	InGeoCloudS Pilot2 on the Internet
[R9] D3.3-INGC	InGeoCloudS Maintenance Plan and Service Profiling
[R10] D6.5.2-INGC	Pilot exploitation Strategy (2nd iteration of the document out of 3).
[R11] D4.3-INGC	Design and Implementation Report.

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1. INTRODUCTION

1.1. ACRONYMS AND DEFINITIONS

Term	Definition
N/A	Not Applicable
API	Application Programming Interface
DU	Data Users
DP	Data Providers
INSPIRE	Infrastructure for Spatial Information in the European Community
OGC	Open Geospatial Consortium
GUI	Graphic User Interface
VM	Virtual Machine
SSH	Secure Shell (secured exchange protocol)
WFS	Web Feature Service
WMS	Web Map Service

Table 1 : Main acronyms used in the document

1.2. OBJECTIVES OF THE DOCUMENT

The INGC pilot 1 and 2 are the technical implementation of the project requirements. The WP5 focuses on the evaluation of the project by users and is notably a source of information and new requirements for the technical developments held in WP3 and WP4. Since the opening of Pilot1, consortium members could experience the path towards Pilot2 which is also opened for use by external partners. While we cannot report a lot about external use in this iteration of the document, the systematic and regular participation of internal teams in the evaluation of the platform at its different stages permitted to contemplate a number of QoS and usability issues when using the platform for integration of datasets, of web services in every day operations.

This iteration of the document is dedicated to the evaluation of the infrastructure by the IT users (AKKA, CNR, BRGM, FORTH) as well as by project's data providers.

This D5.2.1 document gives a partial picture at month 24 and will be updated in later 5.2.2 release including more experience from IT and end-users, from surveys answers in M27.

1.3. OVERVIEW OF THE DOCUMENT

Chapter 2 "*Means implemented to get feedbacks*" tells about the status of feedback and proposes the means to reach users feedback for INGC.

Chapter 3 reminds about the different categories of users (including the survey and the consortium feedback) of the INGC platform and discusses the various experiences. The users' feedback is at this time the major issue on the project. This is mainly due to the delay of delivery for pilot 2. We have set a method detailed on chapter 2 to face that challenge.

This chapter details the user's feedback given mainly by the consortium actors at this time

Chapter 4 gives an overview on the infrastructure seen by all IT users.

The Chapter 5 mentions one of the objectives of the project: delivering "Blueprints".

Chapter 6 gives a conclusion at M24 about the INGC infrastructure.

2. MEANS IMPLEMENTED TO GET FEEDBACKS

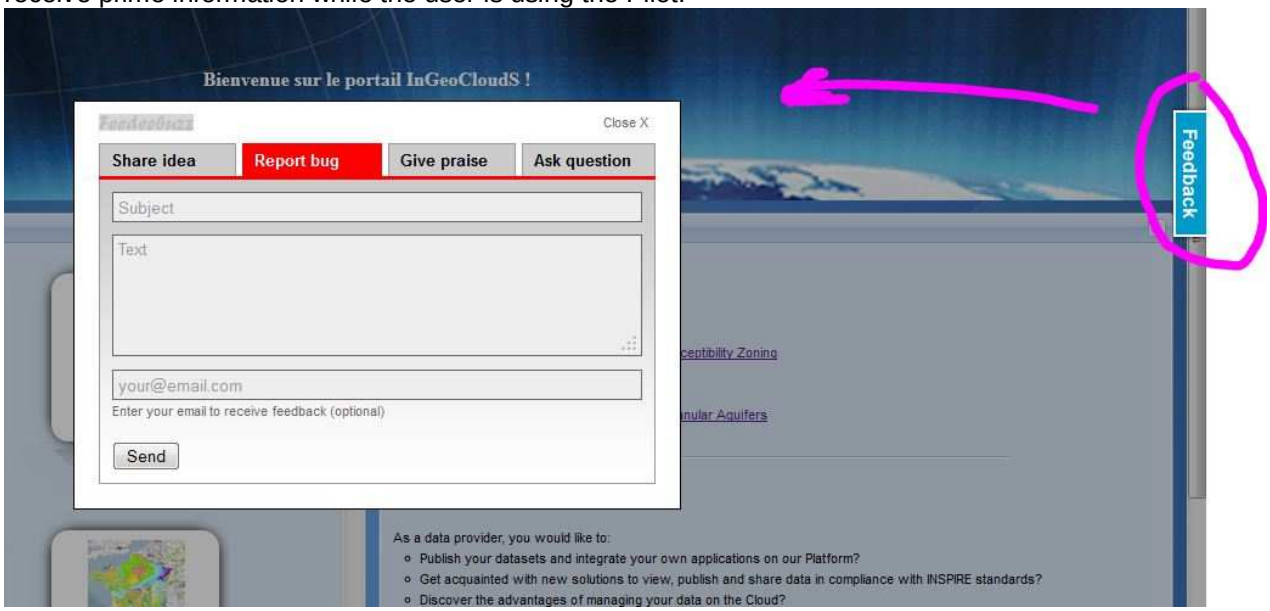
This innovation project has to meet user's requirements in order to develop. At the time this document is edited (Month 24), the INGC platform has not been used by a large number of people out of the consortium.

Nevertheless multiple-tools strategy was implanted to let all the people who may need a Cloud platform to process or distribute their data, including:

- Direct feedback channels
- Users and IT users surveys,
- Workshops demonstrations,
- Active communication towards potential users

2.1. DIRECT FEEDBACK CHANNELS

As described in the note accompanying D4.2 [R8], a Feedback form is systematically present on each page of the portal, including geo applications related to the different use cases in order to receive prime information while the user is using the Pilot.



An email is then sent to a generic address that covers a team composed of several partners' collaborators that are thus informed and required to handle the feedback according to helpdesk/support service processes defined in D3.3 (see [R9]).
The generic support/contact email addresses are also mentioned at different places in the Pilot and on the WWW site in order to invite readers/users to communicate with the project's helpdesk
Partners of the project also have direct to the Mantis bug and issues tracker tool for an ordered and systematic reporting of bugs, improvement suggestions, etc.

2.2. USERS AND IT USERS SURVEYS

Chapters 4.1 give the detail of the survey(s) submitted to INGC Users and IT users to get feedback and evaluate accurately the strength and weaknesses of the project.

2.3. WORKSHOP AND DEMONSTRATION

Pilot 2 has been demonstrated in Brussels during the 2nd international workshop. This included in particular a hands-on session and insights into Technical Aspects of the Pilot2:

- Browsing the Architecture
- ElasticDB and DataImport Services
- User Management, Authentication, Authorization
- Application and Services Integration

Unfortunately the majority of the participants were not IT and the interest was limited. But nevertheless, among others, the security aspects and private and secured Workspaces for data providers has been in particular praised: each data provider is the owner of its workspace and manages its own file hierarchy. Only the data provider itself can access its workspace.
Means for ensuring an overview on the resources used (and their costs) have also judged as primordial for usage of a cloud-based infrastructure.

Some other demonstrations to more limited audiences by the various partners did not bring significant new usability / QoS considerations with regards to what the consortium already identified. Since this statement only concerns punctual and time-limited demos, we of course, further pursue our efforts in engaging external users for longer periods in these evaluations.

2.4. ACTIVE COMMUNICATION TOWARDS USERS

The British Geological Survey and the French Ministry of environment have been kindly proposed to give their view on the project.
The network of the 'Carmen' platform users have been invited (by personal mail) to use the 'Geopublication' module of InGeoCloudS (which covers very similar use cases to those they practice in their averyday's work) in order to give their feeling about a cloud implementation of the Carmen services, and about the INSPIRE services provided.
The Joint Research Center has welcomed the IngeCloudS consortium for a day-time exchange around InGeoClouD (Feb 4th, 2014).
The European Environment Agency has been asked for a meeting and a date shoud be found in spring time. We hope to get a positive communication from this institution to get users.

More comprehensive list of contacts made during the last period might be found in D6.5.2 deliverable annexes ([R10].

3. INFRASTRUCTURE SEEN BY USERS

The users feedback is at this time the major issue on the project. This is mainly due to the delay of delivery for pilot 2. We have set a method detailed on chapter 2 to face that challenge.

This chapter details the user's feedback given mainly by the consortium actors at this time.

3.1. METHODOLOGIES TO ACQUIRE USERS' FEEDBACK

In order to examine what the users' needs and practices are concerning online services (as these provided by INGC) for the publication and sharing of geodata, we created a questionnaire. The questionnaire is firstly addressed to consortium partners as they are direct users of the platform. We intend also to campaign an online survey by sending the questionnaire (slightly revised) to as many as possible end users through the list of participants of our workshop and to personal contacts acquired during each partner's professional life.

3.1.2 SURVEYING THE USER POPULATION

The delivery of pilot 2 delayed its usage by the end users. The INGC platform has not been used by a large number of people out of the consortium. Nevertheless a strategy was implemented to collect the feedback through: direct channels (personal contacts), surveys targeting IT and end users of the platform and attraction of potential users after workshop demonstrations activities. The consortium has created a questionnaire to potential end users (see Appendix). Questions about:

- the criteria of the quality of Service (QoS) such as availability, performance, security and documentation
- the usability of the platform (smart queries, sitools (portal), api, wiki, mantis bug tracker, documentation and the use cases of the pilot2)
- Support / maintenance of the deployment of services and bug tracking.
- The usefulness of the sitools, the wiki and the smart queries.

A preliminary result of this questionnaire as answered by the consortium data providers' show that a serious issue is the "security" of the data being in a cloud, while it is not clear what is really meant in terms of security (which can cover several aspects).

3.2. USERS FEEDBACK

3.2.1. LANDSLIDES

The system is predicting the areas where the probability of triggering landslides is increased due to higher precipitation levels. The endangered zones are predicted using the combination of:

- A landslide susceptibility model.
- Precipitation forecasts.
- Landslide triggering threshold values.

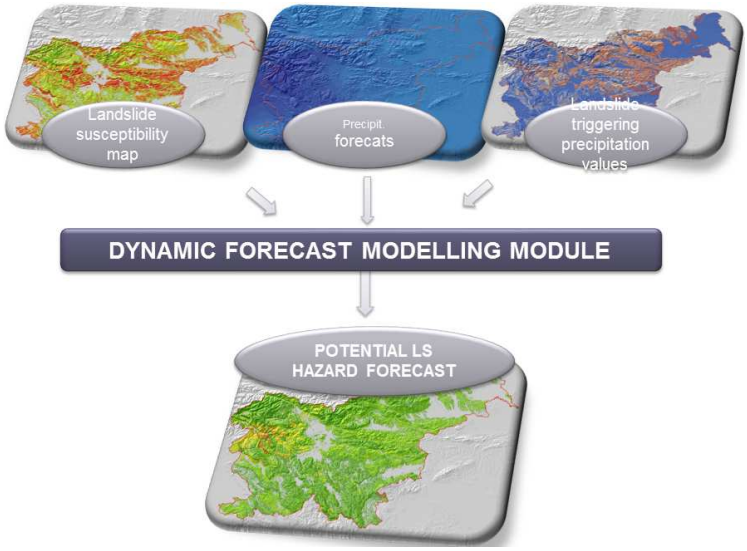


Figure 1: InGeoClouds Landslide process

The comments given by the consortium users are:

- The implementation and operation of the system on INGC has been relatively straight forward,
- Performance and availability of the service 24/7 has been ensured,
- The performance of complex calculations is good.

3.2.2. PERSTICIDES IN GROUND WATER DATA

The most critical constraint that was posed on the Pesticides in Groundwater UC application was the integration of the specialized user interface into the shared portal. The use of specialized user interactions and special geographical projections made it difficult to standardize.

The most critical difficulty that was posed on the groundwater data was the integration and continuous maintenance of the data within the triple store. The data is easily maintained and kept up-to-date within the PostgreSQL environment, but the automatic synchronization between the PostgreSQL environment and the triple store was not addressed by the INGC platform at first hand. Complete integration within the triple store is necessary for the benefits of increased re-usability, utilization of some built-in OGC and INSPIRE services and integration with other datasets, which the INGC platform provides. But continuous maintenance of the data within the triple store was not addressed by the INGC platform in its first version. Since then came the **Linked Data Importing** methods. In the case the data of the provider is in relational model, the provider only needs to provide a mapping specification defined in the R2RML language from his data model to the GSOM model as input to the respective API method (***addR2RMLMappings***). Then, the system will take care of controlling the synchronization between the relational and the respective LD. This means that not only the respective LD will be generated but will be also updated as soon as the corresponding relational data are updated.

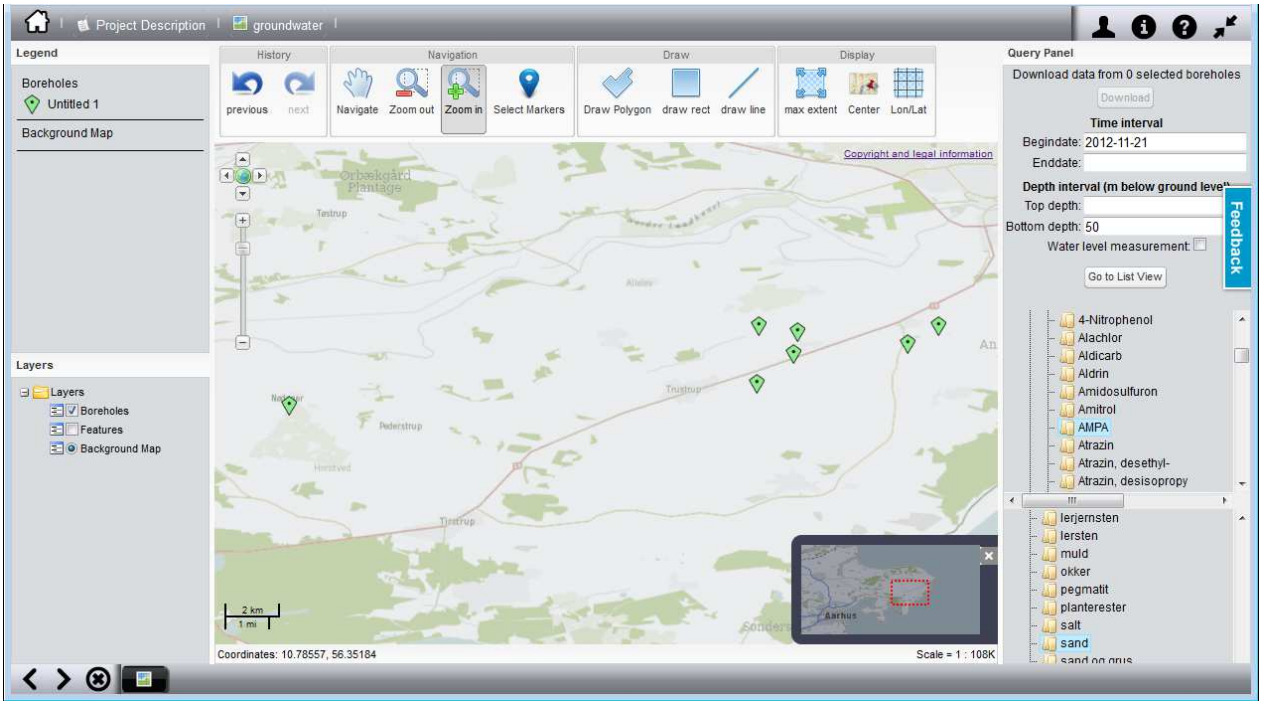


Figure 2: Pesticides map under InGeoClouds

The comments given by consortium users are the following:

- The implementation work is comparable to the work for “normal”, locally hosted systems.
- The main difference is the delta updates synchronization mechanism. It requires quite a lot of programming, and is not used yet for Triple Stores.
- The integration within the defaultWebGISClient and in SiTools is easy, but some limitations exist.
- Triple Stores: it is a very flexible model. Some queries are fast, but others not. This issue might be solved by optimization. Integrating more data will be tested with PGI. (Polish Geological Survey).

3.2.3. GROUNDWATER RESOURCES MANAGEMENT AND LANDSLIDE INVENTORY

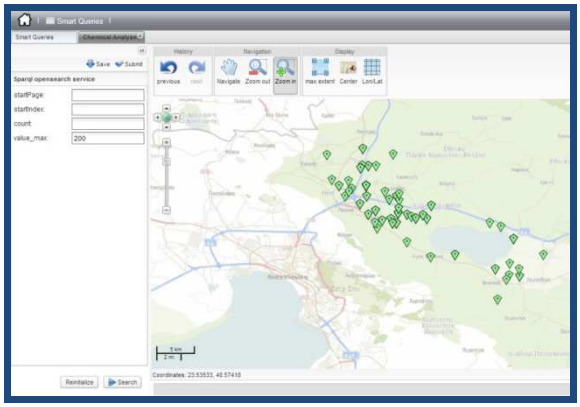


Figure 3: analyses query: Select a compound [Ca], [Mg], [Na], [K], [HCO3], [Cl], [SO4], [NO3], [F] having concentrations (=, >, <, interval) or (=, >, <) the maximum accepted limits

EKBAA use case 5: (Groundwater resources management). The presentation of this UC during the workshop in Greece showed that the market (including both public and private sector companies) needs certified geo-environmental data aggregating in a place. These data need to be updated as frequent as possible.

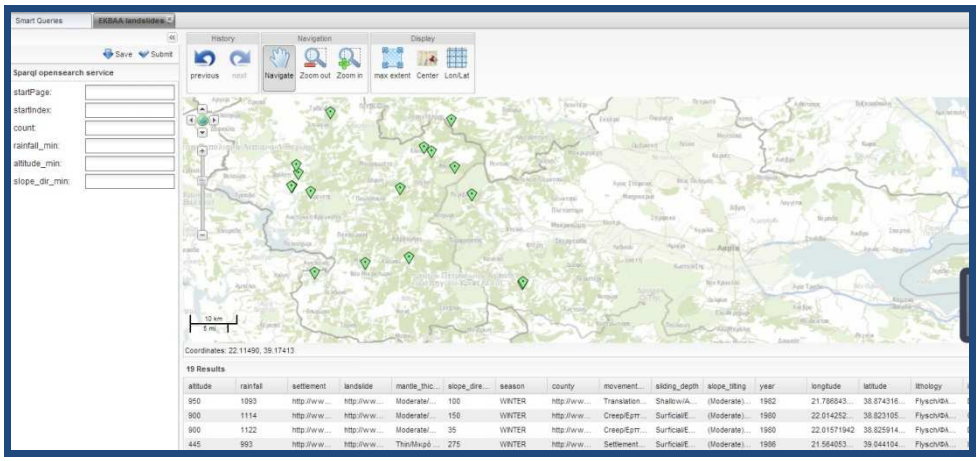


Figure 4: EKBAA landslides query: Show landslide events where rainfall is (a value) in (attitude) and having (slope direction)

EKBAA use case 6: (Natural hazard management. Landslides). The users, mainly companies acting in constructions and the public sector's agencies (like civil protection of national or local level) are intended to pay for certified and updated data.

The implementation of UC5 and UC6 demonstrates a "from Excel sheets to Triple Store and linked Data" case. The datasets have been mapped and imported into InGeoCloudS triplestore using LD API. With the general objective of offering to data providers simplified means for exposing their data through the use of the triple store, the SmartQueries tools idea has emerged and has been decided. The tool is composed of several authoring utilities for making the re-use of SPARQL requests as simple as possible between users based on a kind of FAQ that can be enriched incrementally by isers and geoscientists. A viewer part allows for execution of queries, potentially using filters and parameterization. This is a significant example of services that have been designed along general feddback of data providers when using the linking& integration facilities of the platform. More details about the tools can be found in D4.3 ([R11]).

The comments on the use of this case are the following:

- Performance and availability of the service is indeed 24/7 all the year,
- InGC provides aggregated GIS mapping services,
- InGC provides OGC and INSPIRE compliant services,
- Re-usability of data through Linked Data compliance and OGC services is fully met,
- Platform stability and reliability are good,
- Resource consumption is only as needed, only during the calculation (geo-processing).

3.2.4. SHAKEMAPS

The most critical constraint that was posed, during the deployment of the Shake Maps UC, was ensuring the performance and availability of the service at all times. The objectives of the Shake Maps UC were:

- Minimization of setup, operation and maintenance costs,
- Making available GIS mapping services,
- Offering OGC and INSPIRE compliant services,
- Enhancing re-usability of data (Linked Open Data and OGC services),
- Letting other EQ data provider to utilize the service.

For the adaptation and integration of the service a dedicated server in the cloud was setup, which initiates and performs the necessary computation and then terminates.

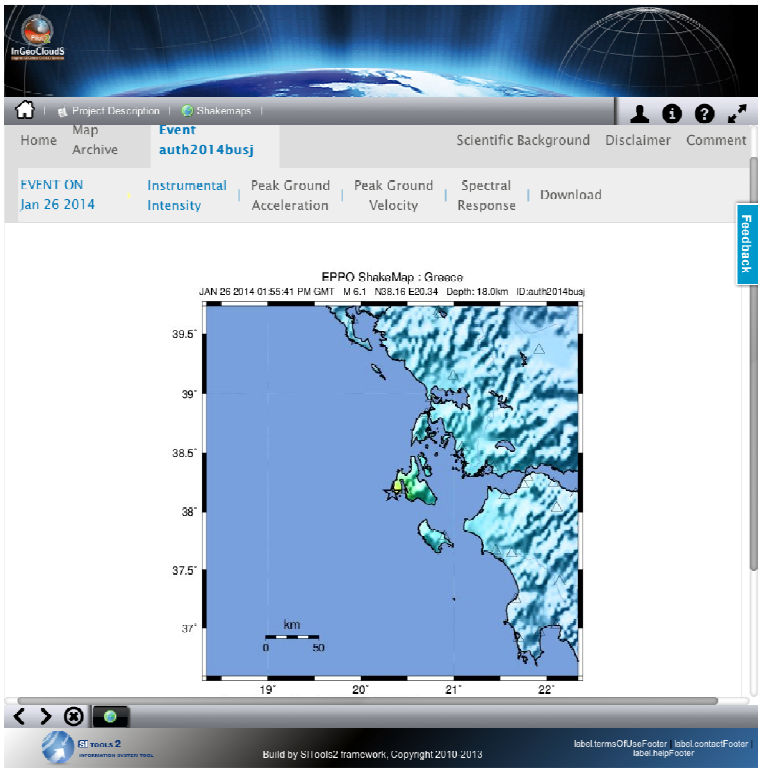


Figure 5: Real time integration of a Shakemap after an earthquake event

The infrastructure features that form the basis for the Shake Maps UC can be categorized as follows:

1. Performance & availability
   - The platform is characterized by stability and reliability, a feature which is critical in cases of big earthquakes. Cloud guarantees for 99,9% availability,
   - The cloud ensures scalability of the service,
   - The same level of availability & scalability would require a very expensive local infrastructure. However, the system has not been tested in a real situation of heavy load.

2. Minimization of setup, operation and maintenance costs.
   - Resources are allocated only when needed. More specifically, the computing resources are utilized only during the calculations, which average to four hours per day,
   - Storage scales as needed,
   - No extra costs are required for hardware maintenance.

3. Enhancing re-usability of data.
   - The shake map data are compliant with the GSOM model,
   - All data can be exported as Linked Open Data,
   - All data can be exported in INSPIRE compliant format.

Summarizing:

- High availability and scalability was ensured at a very low cost,
- The platform offers the option to explore and integrate with other services that are not available in local infrastructure.

3.2.5. GEOPUBLICATION

The following advantages are identified:

- The application allowed to customize the GUI tools and according to the needs,
- Access to GeoNetwork account from the application is convenient, especially since the integration of SSO in Pilot2. The application allows creating metadata data and joining them to data from GeoPublication. In addition, the automatic generation of services metadata saves effort for data providers.
- Display of all URL is generated and available for dissemination towards communication with peers.
- The default base map (based on Open Street Map) is useful.

The main issues identified:

- The site to drop data files is separated from the application. It is necessary to install a dedicated application (eg Filezilla) at the data provider site,
- The Graphic User Interface for map creation is not very ergonomic,

  Opening data (GIS or database) takes almost a minute. The EC2 instance the consortium has chosen, used on AWS (Amazon Web Services) is a mid-range choice. The performance is not a good value.
- The map display provides a poor library of symbols by default.

Errors encountered:

- Uploading raw maps in the GeoPublication mobile had some issues (pending…),
- The switch between creation interface and viewing interface caused a reset of the creation interface. It was necessary to re-open the map each time,
- Some French words were not translated from the French Carmen basic bricks.

For further information:

« GeologyFrance.map » contains : France Geology - Surface Geologic Unit and France Geology - Simplified lithologic map

URL of the map : http://geopublication.ingeoclouds.eu/front//BRGM/geologyFrance.map

WMS Service : http://maps.geopublication.ingeoclouds.eu//WMS/BRGM/geologyFrance.map&service=wms&version=1.3.0&request=getcapabilities

WMS Metadata : http://ec2-54-217-199-159.eu-west-1.compute.amazonaws.com/geonetwork/srv/eng/metadata.show?uuid=322e84a5-5c3a-4684-934f-7b95f585cbb6

WFS Service Metadata :	http://ec2-54-217-199-159.eu-west-1.compute.amazonaws.com/geonetwork/srv/eng/metadata.show?uuid=21c3cba2-1c1d-458f-83df-d9d73e470b6b
ATOM Service :	http://geopublication.ingeoclouds.eu/atom/BRGM/geologyFrance/geologyFrance.atom
ATOM Service Metadata :	http://ec2-54-217-199-159.eu-west-1.compute.amazonaws.com/geonetwork/srv/eng/metadata.show?uuid=adfde0ec-5aa1-45c5-8cae-7e84aa775da9

4. INFRASTRUCTURE EXPERIENCED BY IT USERS

This chapter reviews the design and implementation and gives feedback at month 24.

4.1. IT USERS SURVEY

In order to get feedback from users, a survey is built. All IT users have been asked to contribute in commenting the Infrastructure.
The survey is attached as an appendix to this document.

4.2. EXPERIENCE AND PRACTIVE

4.2.1. FACTS

4.2.1.1. Technical view

Advantages of a cloud infrastructure

IT Users have observed strong advantages including:

1. 'Unlimited' storage, processing and machine allocation. It basically allows to resize applications on demand by allocating more virtual machines, or by duplicating instances,
2. The load balancing and elasticity of instances allows, theoretically to keep an high level of availability and optimal time latency,
3. Easy deployment: deploying an instance can be made directly via the Web Amazon Instance or automatically thanks to project API,
4. Fast internet access : the bandwith and time latency have always been estimated as good by IT Users,
5. Saving datasets and machines can be made as an one-click action,
6. InGeoCloudS global installation was simple with respect to an IT infrastructure,
7. IngeClouds in particularly capable to host any machine or virtual machine difficult and costly to maintain in small or even big infrastructure.

Limits and issues

Also, some limits are observed, mainly due to the cloud infrastructure, such as:

1. **Floating IP**. The IP are arbitrary managed by Amazon on demand. An IP changes when an instance is restarted or recycled. These floating IP cause issues when a project uses several IPs in a multi-nodes architecture with cross-referencing of instances (which is the case of most of the project).
   For example in November 2013 the instance hosting the Database has been redeployed.
   This problem can be technically solved, but is inherent to Cloud infrastructures, and has human and technical costs.

Example of impact on infrastructure and services development: A solution envisaged and planned for Period#3 for WP3 and WP4 consists in using the concept of a virtual private network that allows administrator to define a range of local IP addresses and assigning on a fixed-manner each reserved local address to a particular node of the architecture (see D4.3 [R11]).

2. **Value**. The machines allocated are not a good value. The price of each virtual machine is very high with respect to comparable VM in standard infrastructures

3. **Maintenance by the CSP**. Amazon maintenance operations can come anytime with a short time prior notification. Although we are told a few days in advance, the impact is strong. For example en January 2014 the Gluster FS and API instances have been recycled. Sometimes Amazon just informs a machine is going to stop and the IT team has to manage to redeploy it.
This weakness of the cloud has also an impact in terms of human resources (IT people action is required to anticipate shutdown).

   Example of impact on infrastructure and services development: An usual and simple solution to the issue encountered is to have duplicate instances and high-availability architecture (1 instance active, 1 instance inactive) for these kinds of sensible elements of the system. The infrastructure is now improved in WP3 in order to cope automatically with such a situation.

4. **Security** The security protocol SSH has been used for data providers to access instances with their identifiers. We thing it is a security issue: a data provider could theoretically be able to access data belonging to others, or use system resources above its limit of CPU/Memory.

   While InGeoCloudS platform was implemented, we had to use EC2 instances for test and development. Early in the development phase, we changed the authorization/authentication data in all used instances in order not to be easily infected by malicious software. Although this is standard practice for any platform deployment, doing it on Amazon's Cloud requires particular attention since intrinsic openness to the Internet must be taken into account for each action. In a typical project, it is usual to consider security early but to have it fully implemented towards the end of the project when the system goes in production for example.

4.2.1.2. Economical point of view

Billing and accounting are two crucial factors for the IGC platform. First, we highlight that in this document we discuss billing and accounting as a mean to understand what is the resource usage by each user of the platform, being aware that the actual billing ultimately depends on the business plan. The information gathered through the kind of low level billing described below might be exploited to devise a proper business plan. Our goal is thus to find a fair split of the cloud platform costs (i.e., Amazon bill) among the users of the platform.

The billing provided by Amazon is very detailed. It includes several entries; some of them are exemplified below:

- Amazon EC2 running Linux/UNIX, $0.065 per M1 Standard Small (m1.small) Linux/UNIX instance-hour (or partial hour), *total Hrs*, *total cost in USD*;
- Amazon EC2 EBS, $0.095 per GB-Month of snapshot data stored, *total GB-Mo*, *total cost in USD*;
- Amazon EC2 EBS, $0.11 per 1 million I/O requests *total IOs*, *total cost in USD*;
- Amazon EC2 EBS, $0.11 per GB-month of provisioned storage *total GB-M*, *total cost in USD*;
- Amazon Data Transfer $0.120 per GB - first 10 TB / month *total GB*, *total cost in USD*;

There are two aspects that make splitting the costs among users not trivial. First, it is often impossible to track how some operations generated some cost, e.g. how to measure how many million I/O requests were issued because of the visualization of a specific map. Second, some services are shared among users, e.g. consider the Elastic Database that is hosting the whole collection of data.

The solution adopted by InGeoClouds exploits Amazon Cost Allocation Report, and analysis of application logs.

The Amazon Cost Allocation Report (CAR) exploits the possibility to tag almost every resource present on the platform, e.g. running instance, EBS storage. The CAR provides a breakdown of the billing according to the user provided tags. For instance, if we tag the Elastic Database instances and the Elastic File Server instances, not only we have an easy way to identify the cost of the corresponding running instances, but we can also deal separately with the data transfer cost due to database activity w.r.t. file system activity. In the IGC platform all resources are tagged according to the service they provide, so that the impact of each service on the total cost of the platform is immediately available.

In order to identify the share of usage of each service, we exploit the logs generated by the applications of the platform, e.g., the database log, the portal access log, the map server access log, etc. By analyzing the logs it is possible to measure the number of service invocation generated by each user. Anyway, this analysis leads to an approximate estimate, since the entries registered in the log may induce a different workload. We finally decided to focus on one of the most important tasks, i.e. task visualization. We parse the access logs of the map server and of the tile cache server, and we estimate the share of load generated across the platform on the basis on the number of accesses registered. We name this estimate *usage indicator*. Whenever it is not possible to precisely split the cost of a service among the users, we use the usage indicator.

4.2.2. FEEDBACKS

4.2.2.1. Technical feedback

Floating IP

In order to fix dynamic IP issues, we fixed the issue by giving DNS names to critical machines such as Database, GlusterFS and API to make the IP change transparent… This is a temporary solution. The best option is to uses VPS's.

Security

In order to fix the SSH security issue, we recommend to set a dedicated to SSH instance for a DataProvider that would be independent of the rest of the infrastructure
As a service resizeable, the Cloud for InGeocloudS has shown it power to be able to answer a specific need: the sudden and huge allocation of ressources (calculation and distribution of information) with the specific Shake Maps and Geoprocessing Use Cases. Any other kind of infrastructure would not be able to answer such a need (at a reasonable cost).

About EC2 Amazon cannot ensure EC2 instances are secured (although Amazon provides a basic firewall by default which is enough for the INGC needs); user agreement states that this is the EC2 customer's responsibility to ensure their running EC2 instances and applications are protected, e.g. against intrusion using technical account credentials (Linux, Tomcat, PostgreSQL, etc.). We implemented several good practices such as using Security groups, secure software configuration to avoid well-known attacks, and set up strong passwords

Map server

The server (and the "template" server defined as a AMI image) dedicated to the publication and dissemination of geo-data information is optimised to guarantee good performance and has been easily deployed in the cloud infrastructure. The AWS infrastructure does not generate specific constraints regarding the installation, configuration and maintenance of the map component.

The map component is based on HTTP and stateless exchanges to provide data and images (OGC principles). As a result, the scalability of this component is provided through the replication of the server

(using the “template” server with on demand management) and the use of a load balancer on top of the map service. The experimentation of scalability was concluding.

4.2.2.2. Financial feedback

Having a very precise figure of the amount of resources (e.g., CPU clock cycles) consumed by each partner is not very important. The approximation we provide is currently sufficient. In fact, the final billing to be applied to the end users depends on the business plan. Suppose for instance that the billing is of the kind fee-per-GB of storage, as for many popular data sharing services. In this case, we have the precise information of the amount of GB used by each user. Nevertheless, the detailed billing and accounting we discussed above is necessary to evaluate the feasibility of a fee-per-GB plan.

In general, it is very important during the design of a platform to evaluate its measurability (see chapter 3 of the D3.3), i.e. with which level of detail this can be monitored (see chapter 3 of D4.3 for more about this) so as to derive its cost in function of the users’ usage patterns. In InGeoCloudS the access log seems sufficient.
Additional evaluation might be conducted in the future.

5. BLUEPRINTS

During the period between month 24 and month 30, the consortium will build practitioner “blueprints” documents.
At this time of the project, as pilot 2 was delayed by 3 month, we were not able to produce them
These documents will tell about the project achievements: operational, organizational and technical guidelines reflection on the experience and elaborated incrementally during the course of the project.
These documents will be made available to users identified as users of in each Case as well as in IT providers networks.

The Blueprints shall be targeted with respect to the public we want to reach:

- Blueprints for Public Organizations that need to move their geospatial data to the cloud
- Blueprint for IT developers/managers in Public Organizations that need to move their geospatial data/services to the cloud
- Blueprint for moving information to the cloud (security/availability/financial issues/public vs private clouds/data linking/etc.)

6. INGEOCLOUDS INFRASTRUCTURE OUTCOME

Conclusion of the consortium use at month 24

The usage of both Pilot1 and Pilot2 by IT teams and by geoscience users during their phases of development and of production revealed several usability and perceived QoS issues during the last year. They are systematically registered in various forms in meeting minutes, in bug tracker tool and are addressed by the InGeoCloudS infrastructure development and configuration tasks.
As Pilot2 is deployed and the consortium has used it in a wide field, we are now expecting more feedback from end users that are external to the consortium in order to refine the various needs and have a more comprehensive view of the market needs.
The next version of this D5.2.2 document shall be more consistent on that concern.

Currently, there are no major issues for end-users to use of the project, and the IT Users have a real interest in using the Cloud for Geographic data display, processing and INSPIRE access.

APPENDIX – SURVEY TOWARDS INGEOCLOUDS USERS AND IT USERS

InGeoClouds Users feedback – Your opinion counts!

1. How did you get to know InGeoClouds platform?

- o Professional sphere
- o Friend
- o Internet browsing
- o Communication action
- o Others:……

2. Which context do you use InGeoCloudS platform in ??

- o Professional
- o Personal

3. What is the main reason why you chose the InGeoCloudS platform?

- o Functionalities (I need one of the applications included)
- o Cloud processing (powerful, keeps my data, can get it anywhere…)
- o Both
- o Other reasons: ……

4. Here follows a list of InGeoCloudS product and service items. Could you rate your satisfaction for each item?

Very Unsatisfied, Unsatisfied, Neutral, Satisfied, Very Satisfied, Not Applicable

- o GeoHazard ……
- o Smart Queries ……
- o Shake maps ……
- o Geopublication ……
- o Geocatalog ……
- o GeologyFrance ……
- o BoreholesFrance……
- o GroundWater ……
- o WellsFrance ……
- o GeoProcessing ……
- o Others : ……

5. Considering the speed for uploading and downloading data. Would sayInGeoCloudS's performance is ?:

- o Very Poor (1)
- o Somewhat Unsatisfactory (2)
- o About Average (3)
- o Very Satisfactory (4)
- o Superior (5)

6. How long have you been using the InGeoCloudS?

- o Less than 1 month

- 1 to 3 months
- Never used

7. How often do you use the InGeoCloudS platform?

- Once a week or more
- 2 to 3 times a month
- Once a month
- Every 2or 3 months
- Less often
- Do not use

8. Compared to other/similar available platforms , would you say that the InGeoCloudS is?

- Much better
- Somewhat better
- About the same
- Somewhat worse
- Much worse
- Don't know or never used

If a comparable platform is better from your point of view, please give some reasons:……

9. Will you use the InGeoCloudS platform again?

- Definitely will
- Probably will
- Might or might not/ maybe
- Probably will not
- Definitely will not
- Never used

10. Overall, how satisfied are you with the InGeoCloudS platform?

- Very Unsatisfied
- Unsatisfied
- Somewhat Satisfied
- Very Satisfied
- Extremely Satisfied

11. How likely are you to recommend the InGeoCloudS to others?

- Definitely will recommend
- Probably will recommend
- Not sure
- Probably will not recommend
- Definitely will not recommend
- Never Used

12. Would you please take a few minutes to explain why you are not satisfied with the product?

13. What is your opinion on the documentation about InGeoCloudS (wiki, FAQ, tutorials…) :

- o Very Poor (1)
- o Somewhat Unsatisfactory (2)
- o About Average (3)
- o Very Satisfactory (4)
- o Superior (5)

14. If you previously indicated that the customer service was unsatisfactory, could you please describe what happened?

15. If you would like us to contact you, please enter your contact information below.
Name:
Email:
Profession:

InGeoClouds IT Users feedback – Your opinion counts!

1. How did you get to know InGeoClouds?

- o Professional sphere
- o Friend
- o Internet browsing
- o Communication action
- o Others:……

2 In which context do you use InGeoCloudS platform??

- o Professional
- o Personal

3. For what reason do you choose/use InGeoCloudS platform? (several answers possible)

- o Functionalities (I need one of the applications included)
- o Cloud processing (powerful, keeps my data, can get it anywhere…)
- o Price
- o Other reasons: ……

4. Do you have previous experience using the Cloud?

- o Yes. Please give some details here: ……
- o No

5. What , in your opinion, are the strengths of InGeCloudS platform?

- o Publish GIS easily
- o Strong processing power
- o Large availability of the data
- o Other: ……

6. How long have you been usingthe InGeoCloudS platform?

- o Less than 1 month

- 1 to 3 months
- Never used

7. How often do you use the InGeoCloudS platform?

- Once a week or more often
- 2 to 3 times a month
- Once a month
- Every 2or 3 months
- Less often
- Do not use

8. Compared to your existing Infrastructure platforms, would you say that InGeoCloudS is?

- Much better
- Somewhat better
- About the same
- Somewhat worse
- Much worse
- Don't know or never used

If from your point of view a comparable platform is better, please give reasons :

……

9. How did you find the monitoring?

- Very good
- Good
- Medium
- Bad
- Extremely Bad

10. What is your feedback about the use of specific capabilities (schema mapping, use of Gluster FS…)?

- Very Unsatisfied
- Unsatisfied
- Somewhat Satisfied
- Very Satisfied
- Extremely Satisfied

11. What is your opinion on InGeoCloudS security?

- Very Unsatisfied
- Unsatisfied
- Somewhat Satisfied
- Very Satisfied
- Extremely Satisfied

12. Would you please take a few minutes to explain why you are satisfied/not satisfied with the product?

13. What is your opinion on the documentation about InGeoCloudS (wiki, FAQ, tutorials…) :

- Very Poor (1)
- Somewhat Unsatisfactory (2)
- About Average (3)
- Very Satisfactory (4)
- Superior (5)

14. If you tried to add services to InGeoClouds, what is your opinion about it?

- Very Unsatisfied
- Unsatisfied
- Somewhat Satisfied
- Very Satisfied
- Extremely Satisfied

15. If you would like us to contact you, please enter your contact information below.
Name:
Email:
Profession:

**** End of the document ****