GEO WEEK & MINISTERIAL SUMMIT 2023

Flash Talks

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In-situ observations requirements database

A tool to search for data that fit for the needs of the GEO initiatives

6-11-2023 11:00 Room Freesia

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What we have and what we need

The GEO Portal is a tool to discover and access what data GEO has

Users submit their queries with a hope that they will find what their need

What happens if "their" needs are not covered?

How we can know and organize user needs?

G-reqs: Geospatial in-situ requirements

As part of the strategy of the in-situ subgroup of the data working group, we want to work towards fulfilling user needs.

G-reqs is a database tool and a **standard method** to **collect requirements** for *in-situ* data for the benef

We what to know if current in-situ datasets meet u current data is only partially useful, if there are bar use, or if new data should be collected.

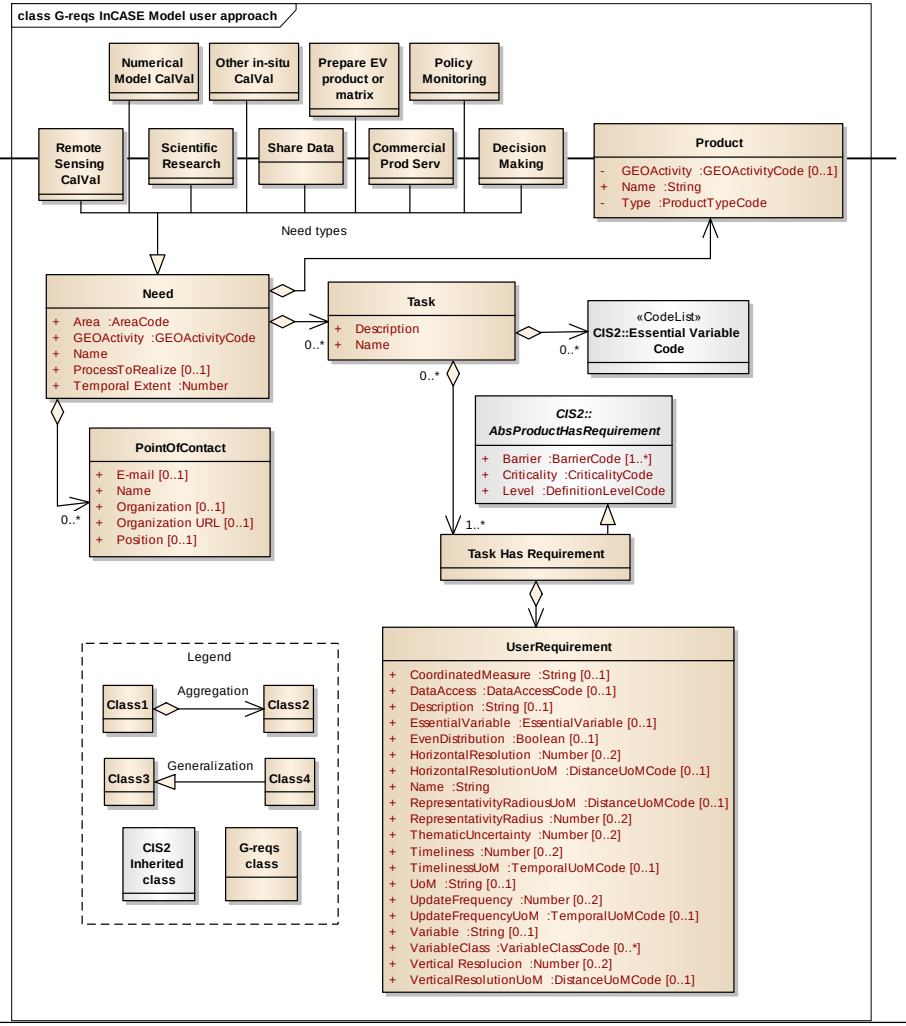
From a conceptual data model to a relational database

G-reqs is based on ISO 19101-1:2014 **reference data model** for standardization in the field of geographical information and previous practical implementation for collecting requirements such as WMS OSCAR and Copernicus CIS[2].

The G-reqs **conceptual data model** was elaborated in Unified Modelling Language (UML) focusing on precisely defining the concepts their relations and their properties. It is agnostic on the technological implementation

From this conceptual data model, a **logical data model** was derived to describe G-reqs database structure of tables

Finally a **physical data model** encoded in SQL tables was defined.



UML class diagram describing the G-reqs conceptual data model

Conceptual data model

Based on four main classes:

Need: problem or issue that can be addressed by using in-situ data

Task: process to be executed to cover the need

UserRequirement: technical characteristics expressed as metadata parameters to describe potential in-situ datasets

Product: output to be created by using in-situ data.

A Need is the problem or issue to be addressed using in-situ data used for…

Calibration and validation of Remote Sensing products
Calibration and validation of other in-situ data

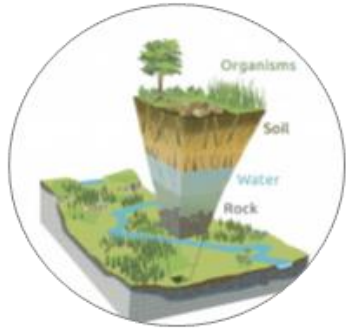
Input and assessment for a numerical model
Demonstrate a scientific hypothesis (scientific research)

Preparation of a harmonized Essential Variable product or matrix
Deploy a sharing data system or service

- Calculate a policy monitoring indicator
- Assist in a decision-making process
- Provision of a commercial service or product derived from the data
- Other…

User Requirements

In G-reqs, you will be asked for "simple" metadata properties about the in-situ data you require

Topic	Area	Quality	Time	Barriers	Specifics
					
• Essential Variables classes and names	• Geographic scope and specific area	• Thematic uncertainty • Spatial resolution	• Update frequency • Timeliness • Historical data	• Data access • Privacy	• Even distribution • Coordinated measures • Representability radius

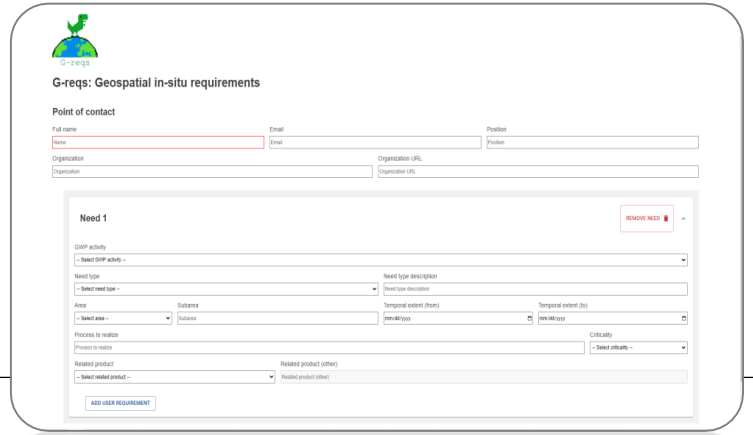
Implementation

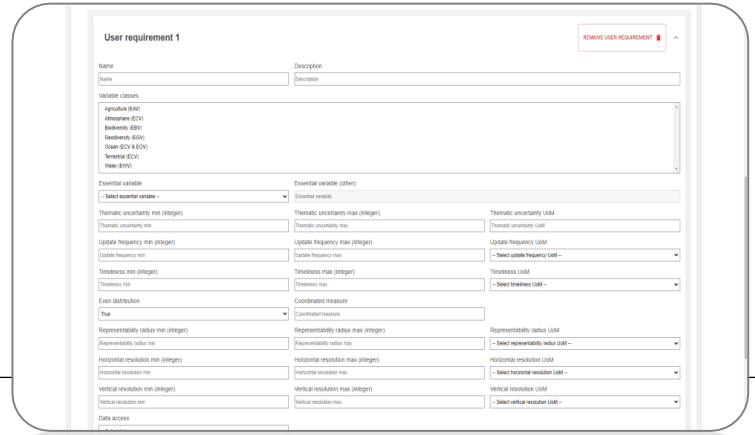
G-reqs is available at: https://www.g-reqs.grumets.cat/

A **web application** was developed and can be accessed at: https://maps.eea.europa.eu/EuroGEO/dev/

You can also ask for an interview where we will guide you in the process

We provide FAIR access to the user requirements





GWP Initiatives involved in G-reqs design/testing so far. THANKS!

GEO AQUA WATCH

GEOGLAM Global Agricultural Monitoring

GEO GOS4M GLOBAL OBSERVATION SYSTEM FOR MERCURY

GFOI Global Forest Observations Initiative

GEO LAND DEGRADATION NEUTRALITY

e-shape

ARCTIC GEOSS Global Earth Observations for the Arctic

GEO MOUNTAINS Observing Mountain Environments

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1 User has a need

Identifies the process to realize the need

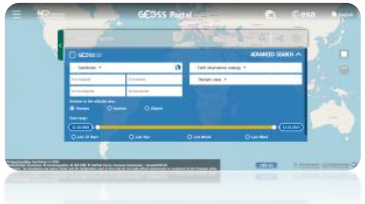
2 Looks for necessary in-situ data

3 Provides precise requirements

G-reqs

Checks for available data in GEO portal

Lack of appropriate data



4 G-reqs contacts in-situ data providers that could know about this kind of data

5 Providers respond with the existing data, barriers, instructions or recognizing a gap

6 GEO aggregates requirements

Addresses barriers and makes FAIR recommendation

New

Promotes capturing more data

Scientific Paper in *Remote Sensing*

If you want to know more about this work:

- DOI: https://doi.org/10.3390/rs15061589

remote sensing

MDPI

Article

G-reqs, a New Model Proposal for Capturing and Managing In Situ Data Requirements: First Results in the Context of the Group on Earth Observations

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Abstract: In the field of Earth observation, the importance of in situ data was recognized by the Group on Earth Observations (GEO) in the Canberra Declaration in 2019. The GEO community focuses on three global priority engagement areas: the United Nations 2030 Agenda for Sustainable Development, the Paris Agreement, and the Sendai Framework for Disaster Risk Reduction. While efforts have been made by GEO to open and disseminate in situ data, GEO did not have a general way to capture in situ data user requirements and drive the data provider efforts to meet the goals of its three global priorities. We present a requirements data model that first formalizes the collection of user requirements motivated by user-driven needs. Then, the user requirements can be grouped by essential variable and an analysis can derive product requirements and parameters for new or existing products. The work was inspired by thematic initiatives, such as OSCAR, from WMO, OSAAP (formerly COURL and NOSA) from NOAA, and the Copernicus In Situ Component Information System. The presented solution focuses on requirements for all applications of Earth observation in situ data. We present initial developments and testing of the data model and discuss the steps that GEO should take to implement a requirements database that is connected to actual data in the GEOSS platform and propose some recommendations on how to articulate it.

Keywords: in situ; requirements; datasets; Earth observations; Group on Earth Observations

check for updates

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