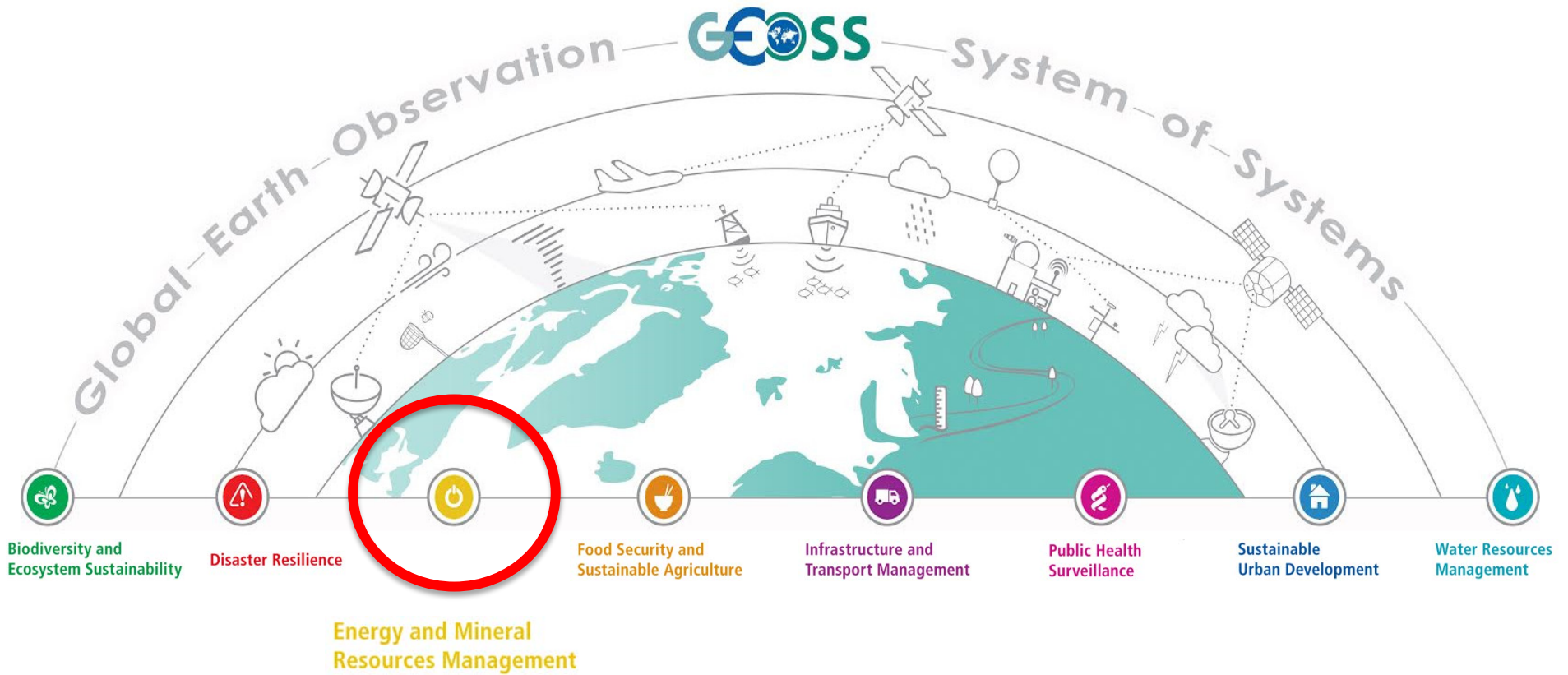


GEO VENER: GEO Vision for ENERgy

- Thierry Ranchin
Lionel Ménard

Centre Observation, Impacts, Energy – MINES ParisTech



- **GEO Initiative** supporting the “Energy and Mineral Resources Management” Societal Benefit Area (SBA)
- Support the development of Earth observation **products and services** for energy management;
- Consider information to **support end-to-end energy production systems** (including planning, generation, transmission, distribution);
- Promote collaboration between **users and providers** of Earth observation and information;
- Encourage the use of Earth observation and information for renewable energy **policy planning** in developing and developed countries.
- **Contributors**
- *Members:* Denmark, **France**, Germany, USA.
- <https://www.earthobservations.org/activity.php?id=121#>

- Support of the EU H2020 programme through the ConnectinGEO and the ERA Planet, ERA NET Plus NEWA and **NextGEOSS** projects;
- Support of **Copernicus** Atmosphere Monitoring Service (**CAMS**) to Solar radiation service;
- Support of **Copernicus** Climate Change Service (**C3S**) to ECEM project;
- In-kind contribution of France (MINES ParisTech) of the Spatial Data Infrastructure **webservice-energy.org**;

<http://www.webservice-energy.org>

IRENA

CAMS

IEA PVPS Task-12

SMEs
InSunWeTrust

Content Management System – Applications Gallery

Energy Community Catalog
Metadata (CSW – GEOS Data CORE)

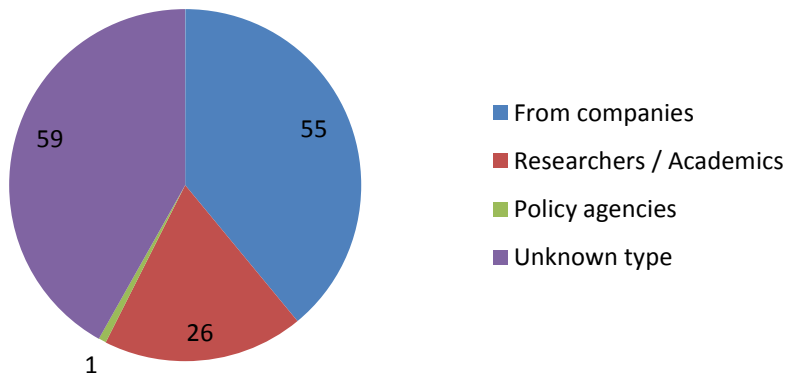
Application Servers–Web Services (WMS, WFS, WCS, SOS, WPS)

EO Data Storage– 70T

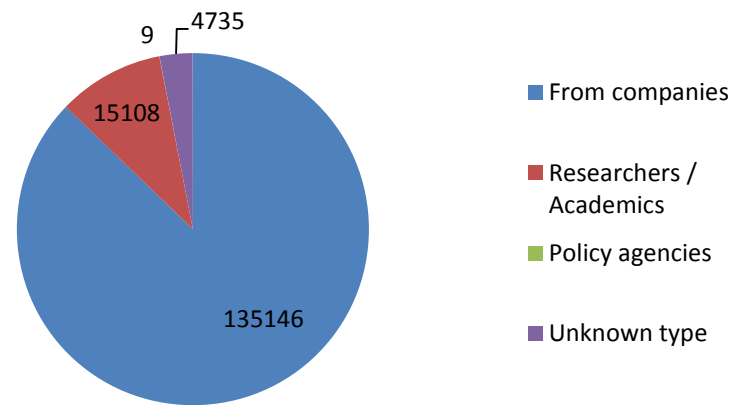
- **Objectives:** collect, document, disseminate and promote the use of EO spatial data within renewable energies domain
- **Targets:** National and international stakeholders from RE domain, *i.e.* institutes, research labs, universities, community, NGO and private sector
- Operational since 2008
- **Characteristics:**
 - Open – based on Open source tools, platforms and applications
 - Standards - OGC (Open Geospatial Consortium), ISO (International Standard Organisation), INSPIRE (European Directive)
 - Interoperable through Web services

Object	Layers	Attributes	Maps	Executables	In-situ	Catalogue
Standard	WMS	WFS	WCS	WPS	SOS	CSW

Registered active users Q1, 2017



Number of requests to Q1, 2017



SMEs
InSunWeTrust

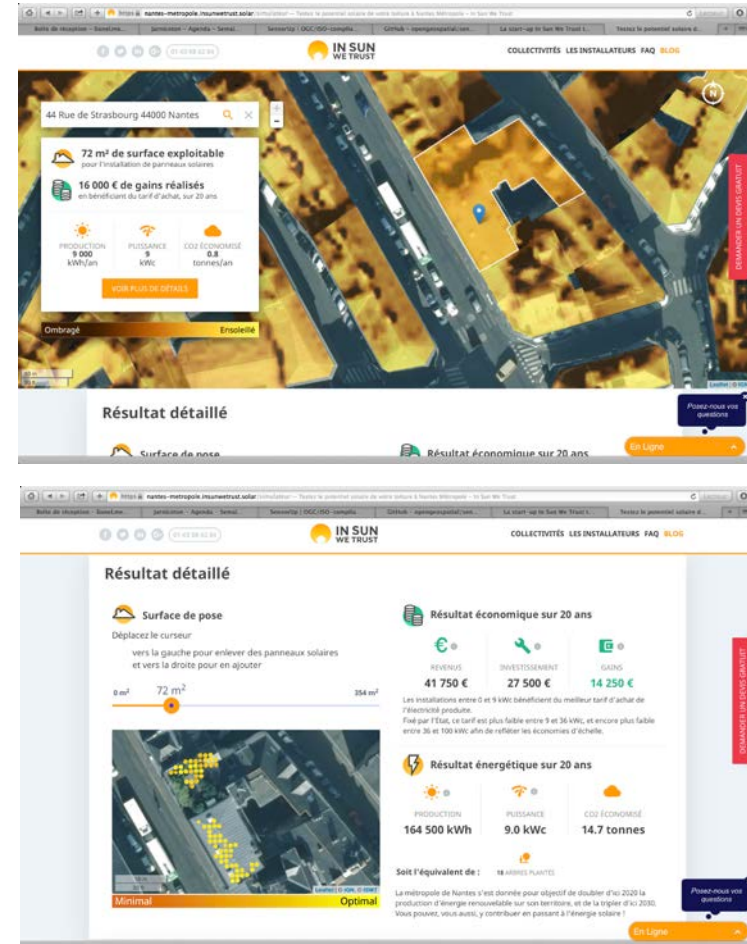
Host **WPS** for an on-the-fly computation for high-resolution sun-roof business potential assessment

Advantages

- Based on Open Standards (OGC)
- Solar resource and solar rooftop potential
- Map display of potential and economic analysis
- Nice and intuitive GUI

Limits

- Pre-computed historical radiation layer (Monthly mean over 12 years- 12 values)
- Computation time for pre-computed layers (400 s is required for a zone of 100 m x 100 m)



<https://nantes-metropole.insunwetrust.solar/>
<http://www.insunwetrust.solar/>

– Challenge and Opportunity: **New cloud based architecture !**

- *“Combine Earth data sources, validate new ways to process them*
 - *Integrate compute-intensive workflows on a high-performing Cloud platform”*
- #1 : NextGEOSS **cloud based solution to reduce computation time**.
Currently 15 s per one single point. **Need to address** 1000 km x 1000 km area of 10 km grid cells (**10 000 cells at the same time**)
 - #2 : NextGEOSS **cloud based solution to reduce computation time** to access to a **real-time rendering** of local solar mapping for an urban area of interest. Currently, 400 s is required for a zone of 100 m x 100 m

<http://www.nextgeoss.eu>

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- <http://www.webservice-energy.org>