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d.gTerritório Direção-Geral do Território

INSTITUTO GEOGRÁFICO NACIONAL

GOBIERNO DE ESPAÑA MINISTERIO DE FOMENTO

The development of cloud and web based Geospatial Data Access, Visualization and Processing Infrastructures

The experience of Deimos

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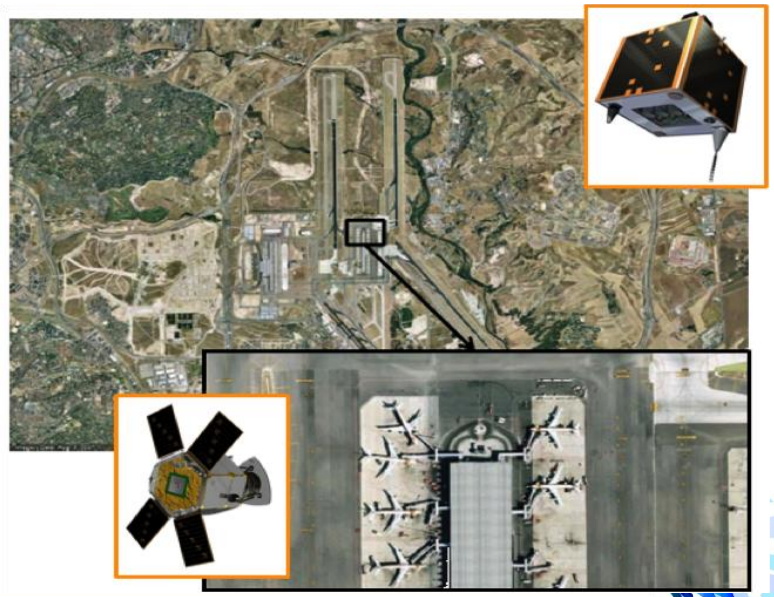
Earth Observation Applications/Data Systems

Deimos at a glance

- **Deimos mission**: to provide high-technology engineering solutions, as well as information systems, products and services of maximum quality, innovation and added-value to its customers.
- DEIMOS provides satellite systems including the development of turnkey operational systems for aeronautical and maritime applications, both civil and military, including UAV systems and solutions



Deimos at a glance

- SPACE is the core business of DEIMOS - launched two high resolution satellites:
- DEIMOS-1 (High-resolution 22metre, Red, Green, NIR, 600 Km swath, 3 days revisit)
- DEIMOS-2 (Very-high-resolution 75cm, Red, Green, Blue, NIR, 12 km swath, 150.000 km2 /day)
- Offices in 4 countries in Europe: Spain, Portugal, UK and Romania
- +200 people
- +15 years of expertise

What do EO services require?

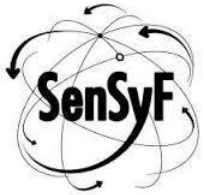
- EO based services/applications pipeline:
  - find and access the data they require
  - develop expert algorithms creating added value
  - scale up and process massive data volumes
  - visualisation and data analytics capabilities
  - link to users to assure informed decision support

Decision based on information, not on tweets!

How can we help?

- Collaborative EO support systems and services:
  - access to a wide range of geospatial data sources
  - powerfull distributed processing architecture
  - EO imagery pre- and post-processing toolkits
  - complete application integration environment
  - expert service development and integration support
  - advanced visualisation and data analytics

How are we getting there?



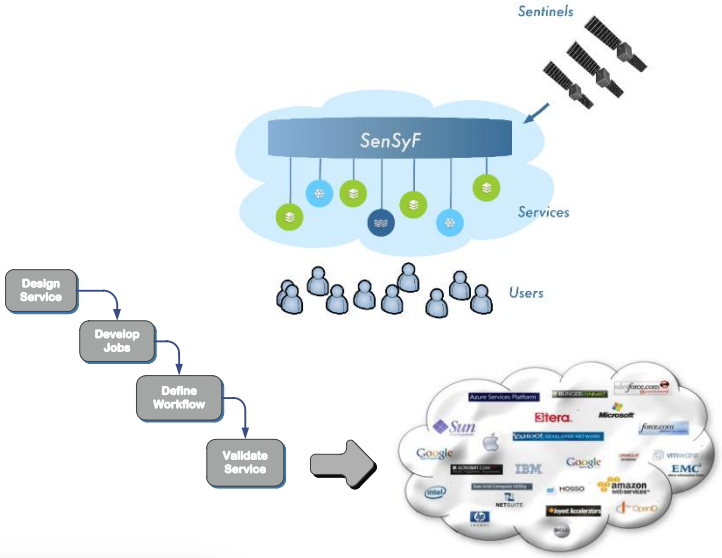
- H2020
- 2012-2015
- 2.5 Meuros

SenSyF

SenSyF - Sentinel Synergy Framework

Gaining experience

- **System**
  - First European EO Big Data Platform
  - Easy access to Sentinel data for EO Service Developers
  - EO processing toolkit for cloud architecture
  - EO Service development environment
  - ICT provider agnostic



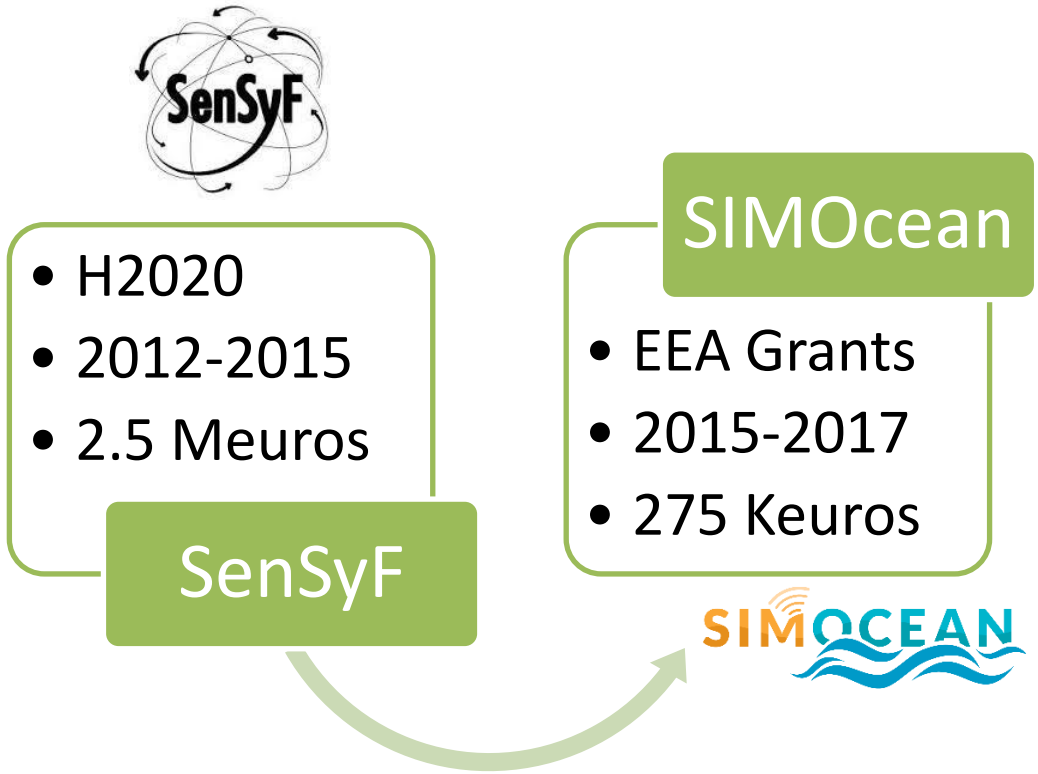
SenSyF - Sentinel Synergy Framework

Gaining experience

- **User communities**
  - 7 services covering the thematic areas of the Copernicus Services
  - Able to test system capabilities
  - Wide range of service developers needs
  - Insightful feedback on the framework
  - Hands-on experience on integrating EO services on cloud based platforms

- Monitor of Continental Fresh Water
- Arctic-Alpine Growsing Season Mapping
- Soil Freezing/Thawing Products
- Spectro-Temporal Integration
- Multi-Temporal Land Cover Classification
- Agriculture Support Service
- Tools for Optical Sensor Calibration and Analisys

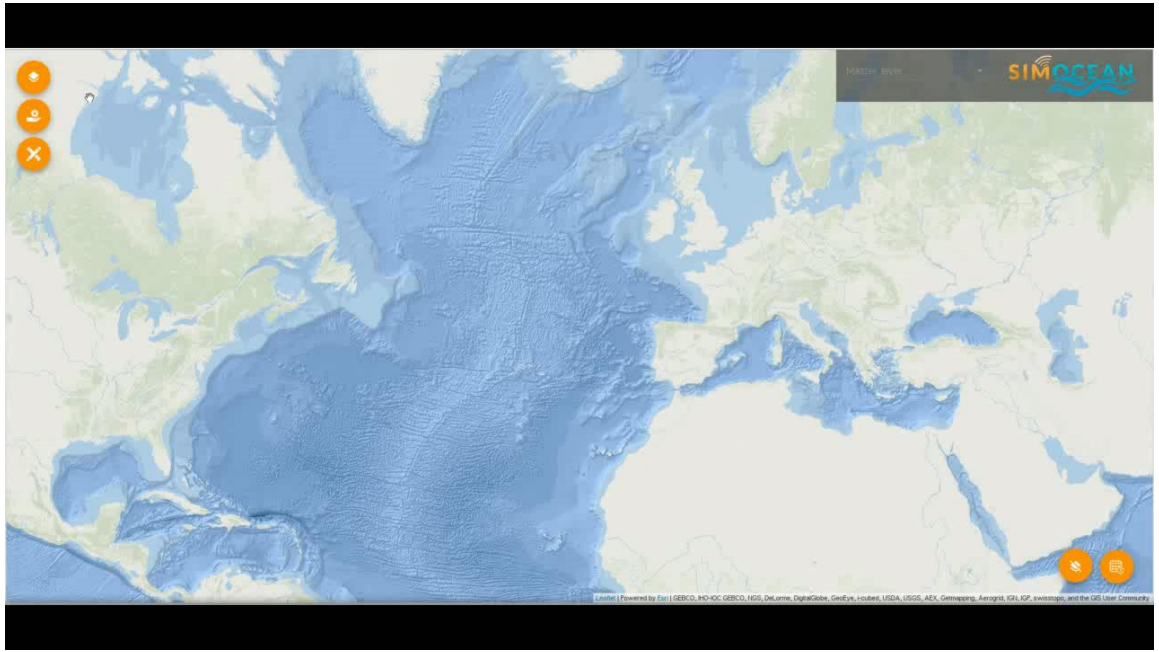
How are we getting there?



SIMOcean: System for the integrated Monitoring of the Ocean

Consolidating the system

- **System**
  - Consolidate and improve EO Big Data Platform
  - Open data for Maritime services
  - Optimised EO data catalogue
  - Advanced service output visualization tool



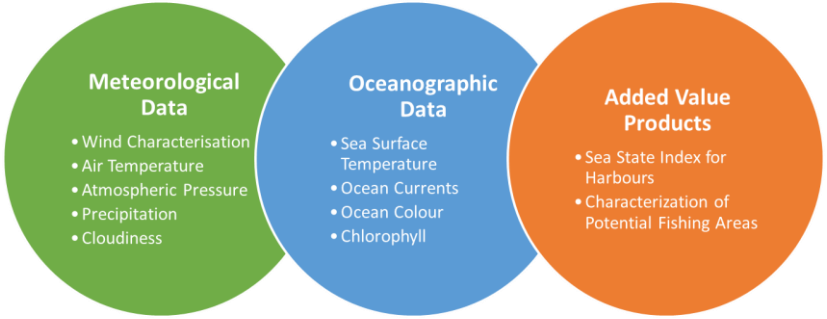
http://catalogue.simocean.pt

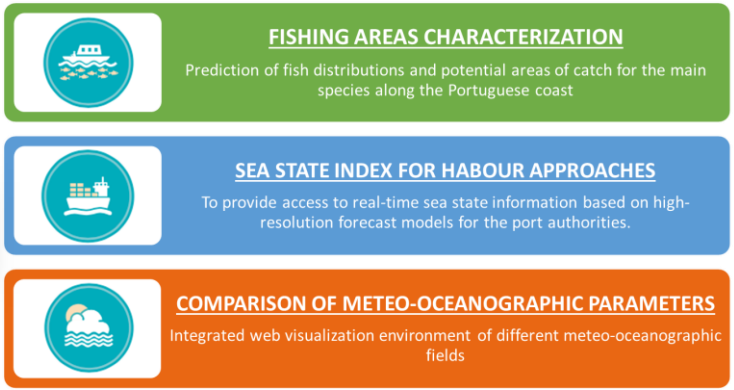
http://geoportal.simocean.pt

SIMOcean: System for the integrated Monitoring of the Ocean

Consolidating the system

- **User communities**
  - Experience on open data standardization - INSPIRE
  - 3 services generating added value from open data
  - Further integration of heterogeneous applications
  - Involvement of end users in services development





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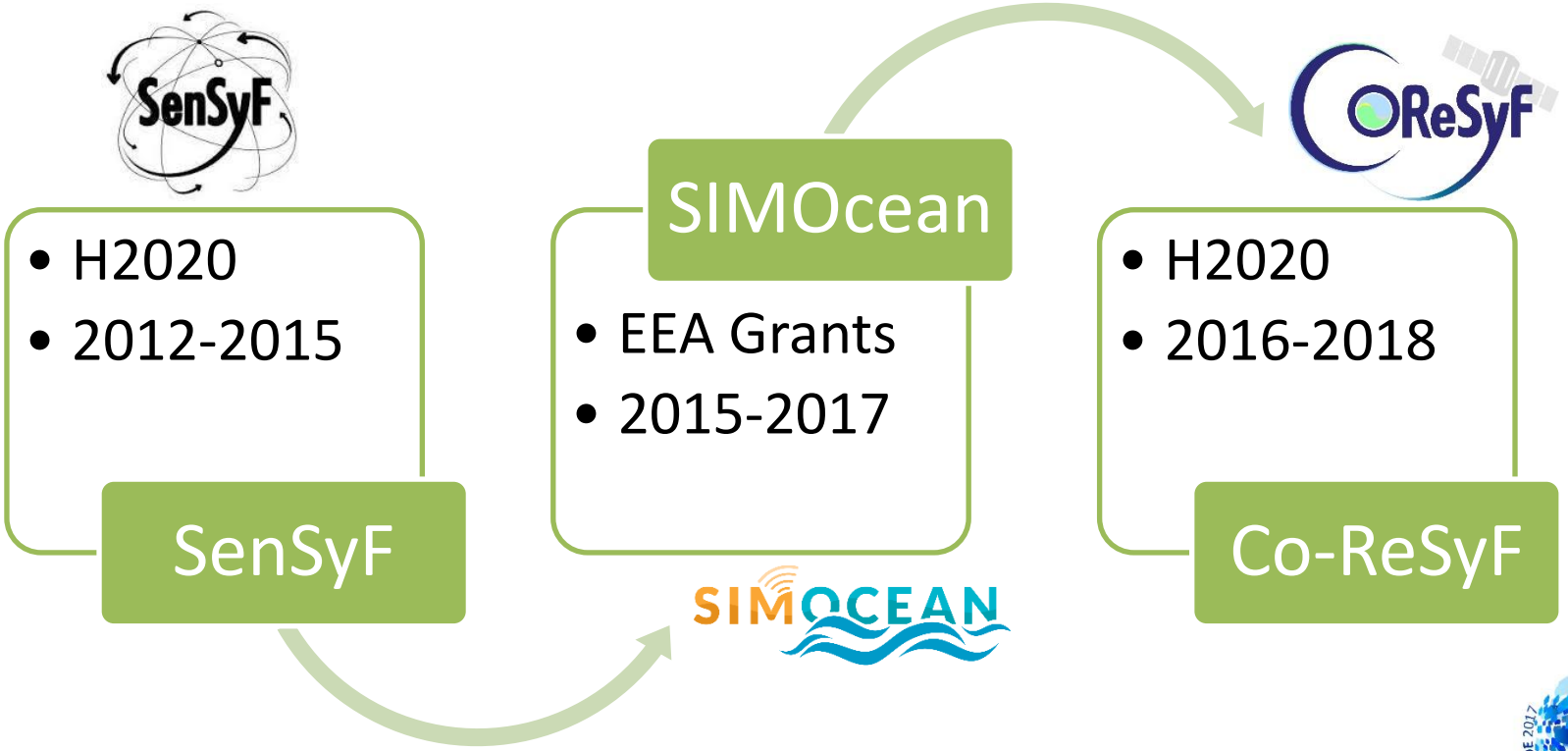
ipma instituto português do mar e da atmosfera

How are we getting there?

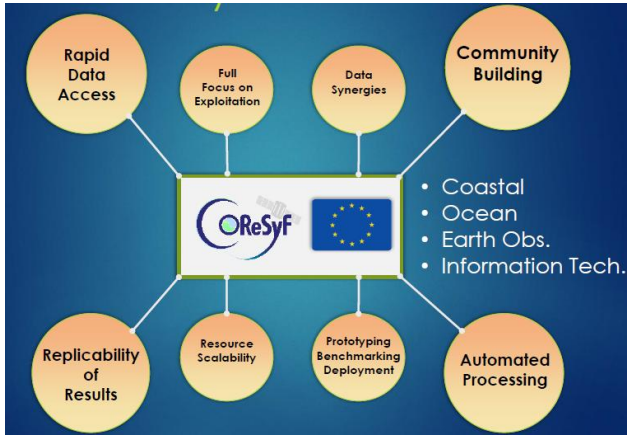


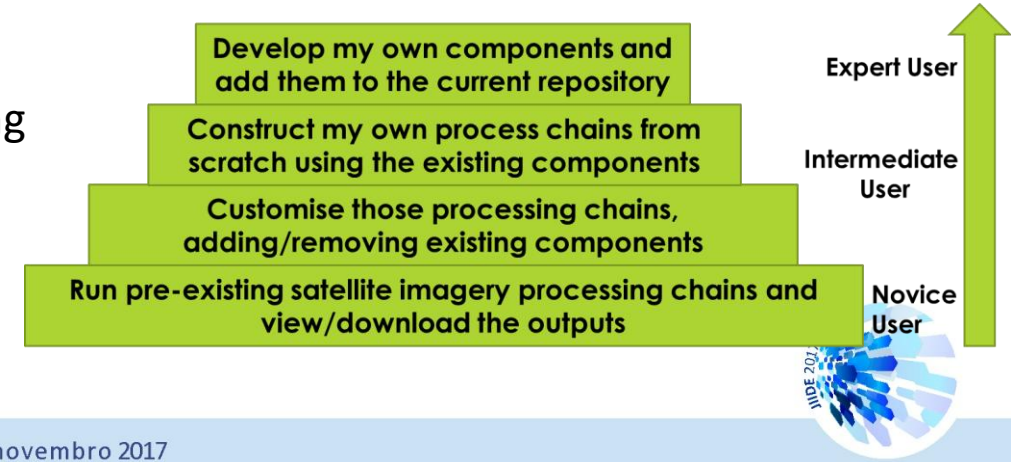
Co-ReSyF: Coastal Waters Research Synergy Framework

http://www.coresyf.eu

From research to service

- **System** http://geoportal.coresyf.eu
  - Collaborative platform to share and reproduce knowledge and results
  - Easy data discovery, packaging and application deployment
  - Community toolkit repository
  - Metadata models for data, processing components and workflows
  - Processing chain composition
  - Knowledge support systems for non-expert users

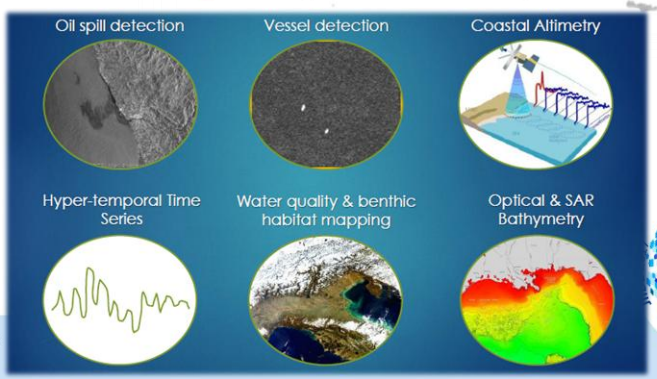




Co-ReSyF: Coastal Waters Research Synergy Framework

From research to service

- **User communities**
  - 6 coastal related Research Applications brought by consortium partners
  - Bringing in new researchers to EO: Call for Ideas and Summer – 8 new applications
  - Researchers using the platform are users, beta testers and contributors
  - Creating an EO coastal research community more aware of the capabilities of EO that can use or create knowledge, tools and applications



How are we getting there?

NextGEOSS: Next Generation Technologies for GEOSS

Standardizing and scaling up

- **Large collaborative project – 27 partners**
- **System**
  - European GEOSS data hub for access to key EO datasets
  - Connected to wide pool of ICT resources
  - Advanced data discovery and analytics
  - User feedback mechanism
  - Quality of Service
  - Service Support Desk
  - OGC interface standards compliance
  - Complete process for pilots integration

http://www.nextgeoss.eu

NextGEOSS: Next Generation Technologies for GEOSS

Standardizing and scaling up

- **Pilots**
  - Focus on addressing Sustainable Development Goals
  - Several readiness levels and diverse needs putting requirements on system
  - Test system to unprecedented scale
  - Provide opportunity to scale up operations
  - Bring their own user communities

NextGEOSS: Next Generation Technologies for GEOSS

Where do we go from here?

- EO systems and services should be developed in close collaboration between:
  - System developers
  - Value added service developers
  - End users and decision makers
- Use of standards is key for interoperability:
  - be agnostic to ICT providers
  - provide common interfaces for components developed by different institutions
  - reach a wider range of service developers and end users
- Other key aspects:
  - easy access to a wide range of EO and non-EO data
  - flexible and scalable ICT resources
  - easy service integration process

Where do we go from here?

- Deimos focused on creating a comprehensive ecosystem that:
  - provides access to wide range of EO data (Level 1 and 2 and also higher level)
  - connection to any ICT provider providing flexible and scalable resource allocation
  - provides easy integration of new services with expert guidance
  - provides standard interfaces between different system components and to external users
  - fosters the entry of new service developers
  - fosters the link between service developers and end user/decision makers

Thank you!

For more information please contact:

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