



Enabling

infrastructure and
data services to an overarching cross-
domain e-infrastructure



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Agenda

- Helix Nebula on 1 slide
- Why does ESA as a data provider needs services of an overarching cross-domain e-infrastructure?
- How to get a science driven cross-domain ecosystem started?
- Helix Nebula Marketplace (HNX)
- Vision for an e-Infrastructure Commons Marketplace



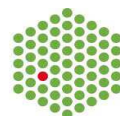
Strategic Plan

- ▶ Establish multi-tenant, multi-provider cloud infrastructure
- ▶ Identify and adopt policies for trust, security and privacy
- ▶ Create governance structure
- ▶ Define funding schemes



To support the computing capacity needs for the ATLAS experiment

EMBL



Setting up a new service to simplify analysis of large genomes, for a deeper insight into evolution and biodiversity



To create an Earth Observation platform, focusing on earthquake and volcano research



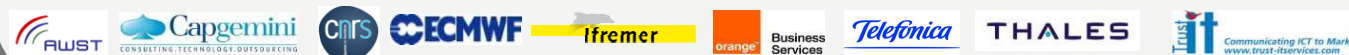
PIC
port d'informació científica

To improve the speed and quality of research for finding surrogate biomarkers based on brain images

Suppliers



Adopters



Satellite control, data reception, data processing, dissemination and archiving facilities to maximise the beneficial use of ESA and partner satellite data

To stimulate a balanced development of science, public utility and commercial applications consistent with ESA obligations and objectives

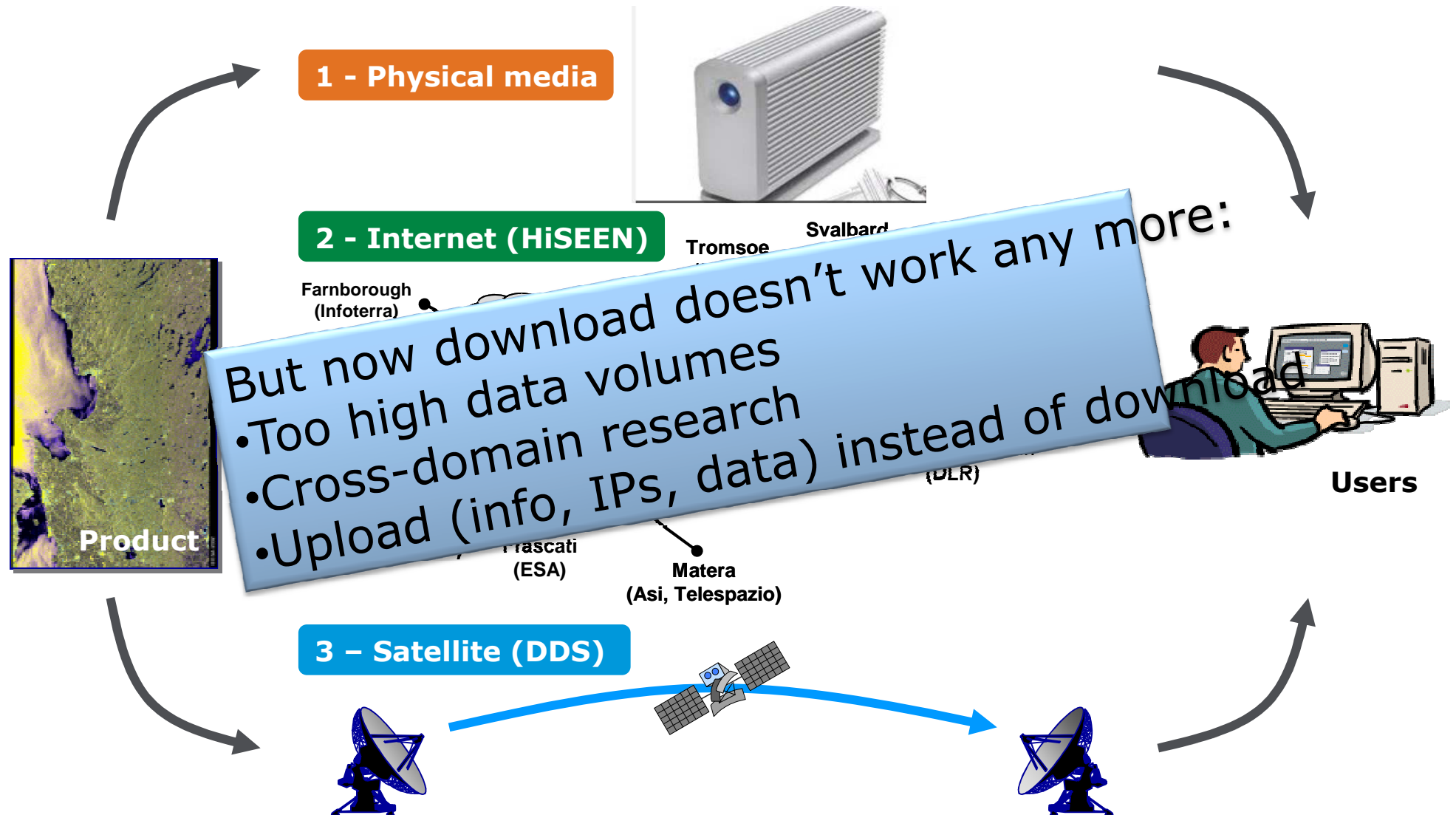


ERS

International Receiving Stations



DATA DISSEMINATION



ESA GROUND SEGMENT: COMPONENTS

European Space Agency

How to get a science driven cross-domain ecosystem started?

Example



GEO Home

Home

who we are

what we do

documents

contacts

SUPERSITES:

Los Angeles

Vancouver/Seattle

Hawaii

Istanbul

Tokyo-Mt Fuji

Mt Etna

Vesuvius

Event SUPERSITES:

Haiti

Chile

Tohoku-oki

Wenchuan

Other Events

Welcome to the Geohazard Supersites and Natural Laboratories

New Partner [ASI contributing to Supersites!](#)

The Supersites have data for the study of natural hazards in geologically active regions, including information from Synthetic Aperture Radar (SAR), GPS crustal deformation measurements, and earthquakes. The data are provided in the spirit of GEO, ESA, NASA and the National Science Foundation (NSF), that easy access to Earth science data will promote their use and advance scientific research, ultimately leading to reduced loss of life from natural hazards.

Click on a site in the map below, or see the regions listed below in Geohazard Supersites and Geohazard Natural Laboratories.



Summary

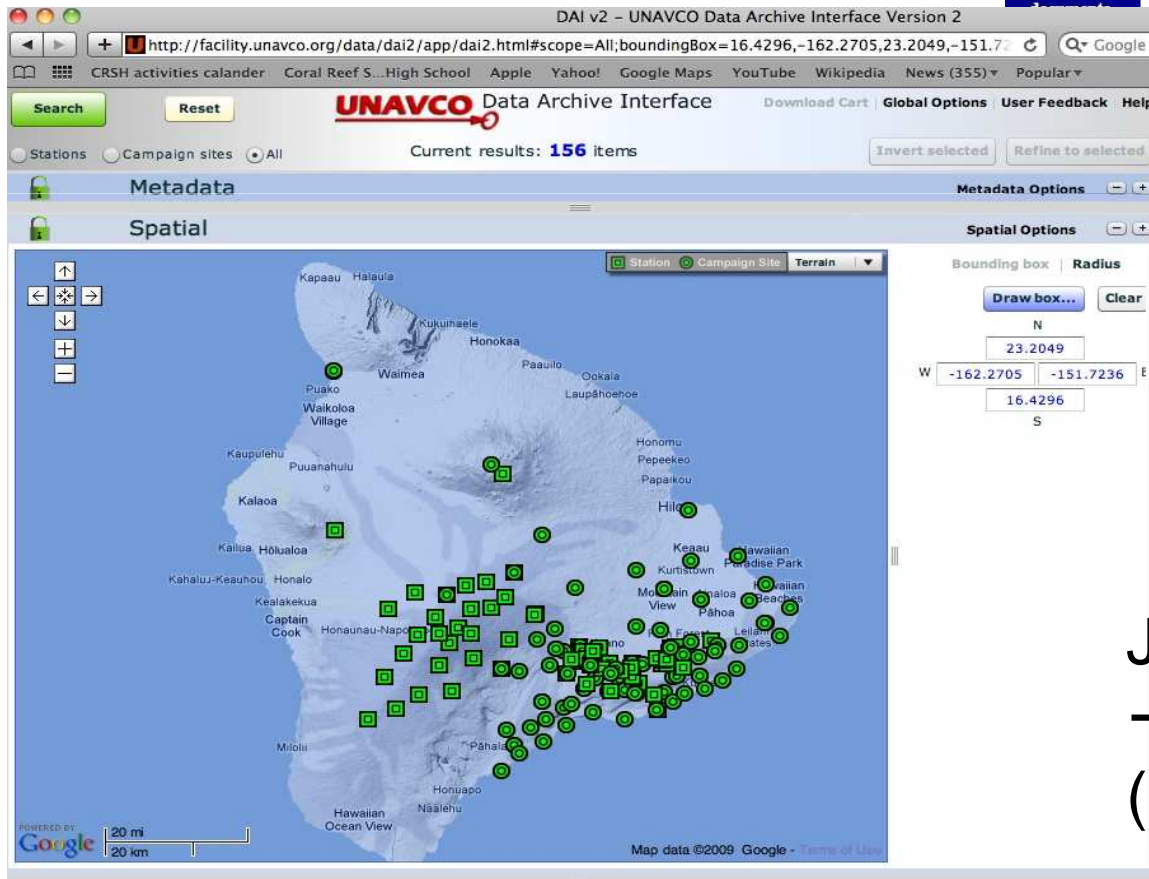
Supersites is an initiative of the geohazard scientific community. The Supersites provide access to spaceborne and



Data sets

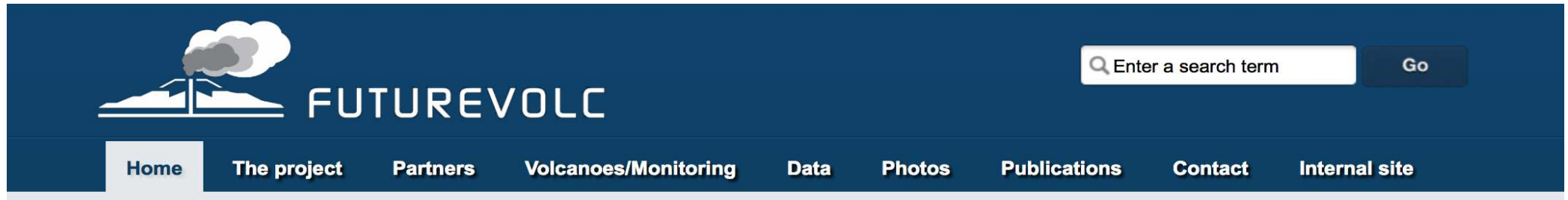
- Seismic, GPS
- SAR (radar data)
- (gas, gravity change)

volcanoes: time delay for ground-based data as desired by observatory



Japan Natural Laboratory
→ complete ESA data set
(>10,000 scenes)

Federation is essential



Welcome to FUTUREVOLC

European volcanological supersite in Iceland: a monitoring system and network for the future



Iceland supersite project news



Volcanic plume height correlated with magma pressure change at Grímsvötn Volcano, Iceland - New paper published in Nature Geoscience

The changes in the height of the volcanic plume from the 2011 Grímsvötn Volcano eruption in Iceland correlated with changes in ground deformation...



The largest eruption on Earth in the last 100 years - Chris Newhall

Events

28? October: Artificial ash cloud over Bay of Biscay. Experimental test by Fred Prata and colleagues of the AVOID sensor.

23-25 September: Futuruvolc 1st annual meeting, Hótel Hekla, Iceland

1-13 September: University of Cambridge servicing broad-band seismometers round Vatnajökull

1-16 August: UCD fieldwork, Vatnajökull to install 2 x 7-station seismic arrays

1-14 July: University of Cambridge installing

Iceland Geo-hazard Supersite

- ESA SSEP is currently federating with Iceland Futurevol. All ERS data covering Iceland will be stored in Iceland using **ESA SSO**
- Technically federation is being established thanks to GEANT connection
 - tests have achieved performances of some 200 Mb/s up to 1 Gb/s
 - ESA SSO is currently being installed



Geohazard Supersites and Natural Laboratories GEO - Group on Earth Observations

Search

Found 1644 results in 17 digital repositories

From 1 Jan, 1992 to Apr 22, 2014

Orbits from to
Tracks from to
Frames from to
Paths

About Search My Data

ERS-2 SAR Image SAR Annotated Raw Data
Product Level 0 (ER02_SAR_RAW_OP)
[Found 5 results]

ER02_SAR_RAW_OP_20000512T123214_20000512T123231_ESR_26459
ER02_SAR_RAW_OP_19971010T123219_19971010T123235_ESR_12932
ER02_SAR_RAW_OP_19971010T123203_19971010T123220_ESR_12932
ER02_SAR_RAW_OP_19970523T123204_19970523T123220_ESR_10928
ER02_SAR_RAW_OP_19951006T123228_19951006T123245_ESR_02411

ERS-2 SAR Image Mode source packets
Level 0 (ER02_SAR_IM_OP)
[Found 1155 results]

[Showing from 0 to 19]
[first](#) [next](#) [last](#)

ER02_SAR_IM_OP_20100917T123315_20100917T123332_UPA_80567_0000
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ER02_SAR_IM_OP_20100826T122414_20100826T122431_UPA_80252_0000
ER02_SAR_IM_OP_20100826T122359_20100826T122416_UPA_80252_0000
ER02_SAR_IM_OP_20100826T122344_20100826T122401_UPA_80252_0000
ER02_SAR_IM_OP_20100823T121843_20100823T121900_UPA_80209_0000
ER02_SAR_IM_OP_20100823T121828_20100823T121845_UPA_80209_0000
ER02_SAR_IM_OP_20100823T121813_20100823T121830_UPA_80209_0000
ER02_SAR_IM_OP_20100813T123301_20100813T123318_UPA_80066_0000
ER02_SAR_IM_OP_20100813T123246_20100813T123303_UPA_80066_0000
ER02_SAR_IM_OP_20100813T123231_20100813T123248_UPA_80066_0000
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ER02_SAR_IM_OP_20091015T122445_20091015T122502_UPA_75743_0000
ER02_SAR_IM_OP_20091015T122430_20091015T122447_UPA_75743_0000
ER02_SAR_IM_OP_20091015T122415_20091015T122432_UPA_75743_0000
ER02_SAR_IM_OP_20091012T121915_20091012T121932_UPA_75700_0000
ER02_SAR_IM_OP_20091012T121900_20091012T121917_UPA_75700_0000
ER02_SAR_IM_OP_20091012T121845_20091012T121902_UPA_75700_0000

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Next steps

- ESA SSEP access using GEANT will be extended to US partners, Japan, Australia and South Africa, considering space & terrestrial communities
- A participant to HN can/will have several sources of resources coming from different parties
- HNX shall support easy “shopping” across domain using multiple resources

**Federated identity
management needed at global
scale.**

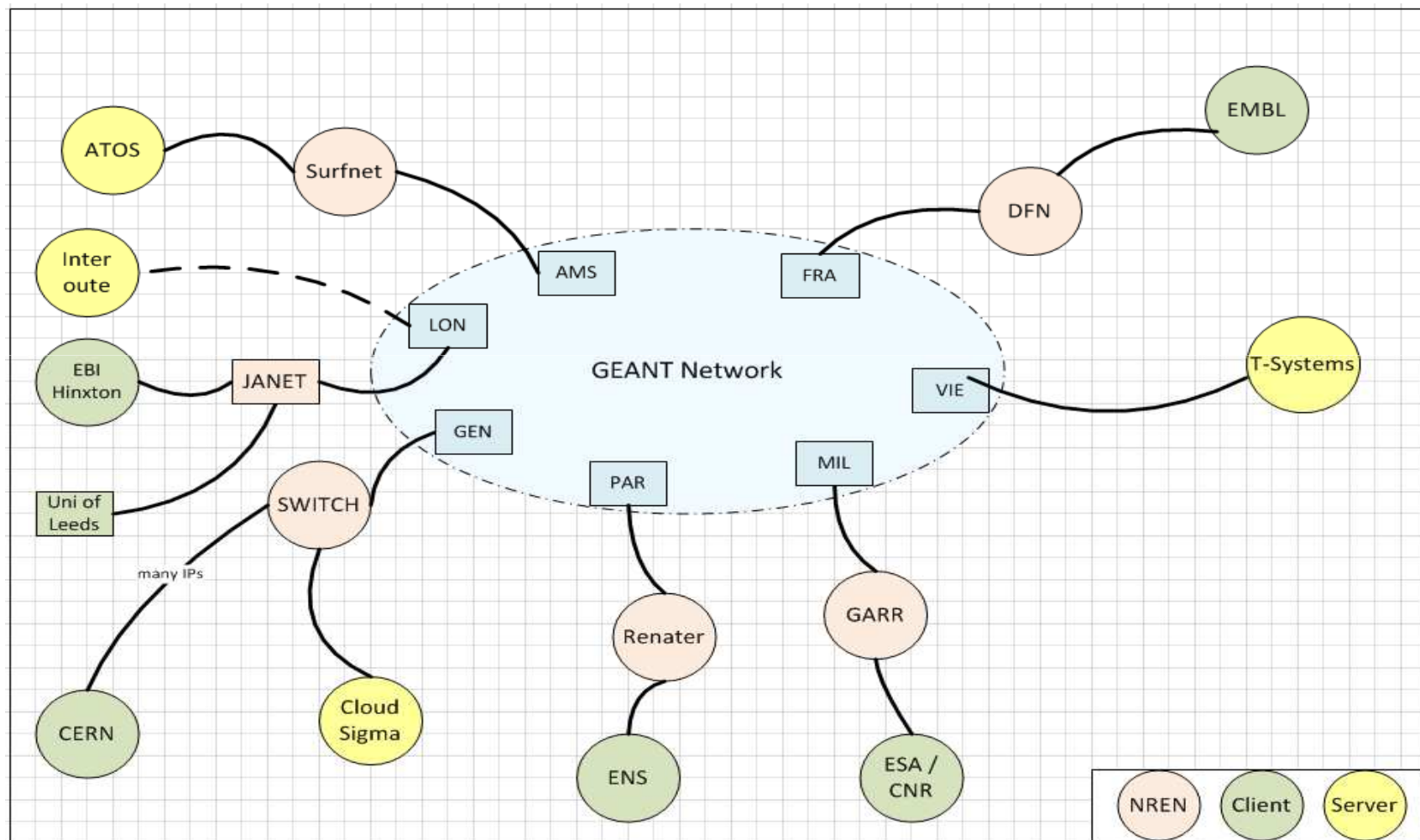
The Power of Federation

Each data provider remains
**fully in control of the
implementation of its data policy**

Allows to create fast
the critical mass of IT providers

Building a growing hybrid cloud

Connecting commercial providers to the GÉANT/NRENs



Vision for an e-Infrastructure Commons Marketplace



- The [e-commons infrastructure marketplace](#), driven by the European Research Area, will provide public and private researchers with access to worldwide and world-class resources and services through a dynamic and sustainable marketplace.
- This [overarching infrastructure](#), built on public and commercial assets, will cover the entire scientific workflow from research to production, from problem-solving to discovery and innovation.



24 & 25 February 2014
Brussels, Belgium

Position Papers

www.cloudscapeseries.eu | info@cloudscapeseries.eu | [#cloudscapevi](https://twitter.com/cloudscapevi)



Google for:

*Position Paper
Cloudscape
EMBL*

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Helix Nebula General Assembly at CERN: 14 May public event



<http://www.helix-nebula.eu/>



BIG SCIENCE TEAMS UP WITH BIG BUSINESS

Helix Nebula is a new, pioneering partnership between big science and big business in Europe that is charting the course towards the sustainable provision of cloud computing - the Science Cloud.

[Home](#) · From cloud ACTIVE to cloud PRODUCTIVE, 14 May 2014, CERN Globe for Science and Innovation in Geneva, Switzerland

From cloud-ACTIVE to cloud-PRODUCTIVE, 14 May 2014, CERN Globe for Science and Innovation in Geneva, Switzerland

Join us at the Helix Nebula event! [REGISTER NOW!](#)

The event will focus on showcasing the Helix Nebula production platform, characterized by:

- A hybrid & federated 'science cloud' integrated with commercial providers to create an open cloud services market;
- A growing set of innovative flagships;
- Future directions and roadmap of the overall Helix Nebula Initiative. Attendance is free of charge, travel and lodging will be at the cost of participants.

[BECOME A NEW MEMBER](#)

Events

[Helix Nebula @ Open e-IRG Work...](#)
[Helix Nebula @ Workshop on clo...](#)
[Helix Nebula @ EGI Community F...](#)
[Helix Nebula @ Fourth General...](#)
[From cloud-ACTIVE to cloud-PRO...](#)

Last Publications

[Deliverables](#)

[D7.2 Synthesis and Analysis of...](#)



Helix Nebula Marketplace

A Federated Cloud Services Marketplace

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The Vision

A new federated European Cloud Marketplace supported by European Cloud Providers.
Integration with existing e-Infrastructures, e.g. EGI and GÉANT, to form a hybrid cloud
Computing Marketplace and reach out to Europe's research communities.
Trusted cloud services through compliance with EU regulations and legislation.



Welcome to the Helix Nebula Marketplace

The Helix Nebula Initiative has been established by public and private organisations to build a multidisciplinary cloud platform for data intensive science.