



## Big science teams up with big business

Helix Nebula – the Science Cloud is addressing the technical, legal, and procedural issues to build a federated commercial cloud service

### About Helix Nebula

Helix Nebula is a new, pioneering partnership between big science and big business in Europe that is charting a course towards the sustainable provision of cloud computing - the Science Cloud. This game-changing strategy will boost scientific innovation and bring new discoveries through novel services and products. Procurement processes and governance issues for a framework of a public/private partnership will be appraised over a 2-year period, helping to define the next steps of the Science Cloud Strategic Plan.

### The Partnership

The scale and complexity of the Helix platform is far beyond what can be provided by any single company. The Helix Nebula public/private partnership brings together supporters as communities of interest. Partners and supporters boast a rich diversity of experience and skills to drive the Helix Nebula vision: Atos, CERN, CloudSigma, CNES, CNR-IREA, Cloud Security Alliance, Dante, DLR, EGI.eu, EMBL, ESA, Interoute, Logica, SAP, SixSq, T-Systems, Terradue and The Server Labs.

### How to become a member

Helix Nebula welcomes new members to join the initiative through a formal acceptance procedure. Membership implies alignment with the Helix Nebula cloud strategic vision and willingness to work with partners and other members.

Different types of members are welcome on board.



**Users:** a space or scientific organisation bringing at least one flagship use case for cloud computing as a Proof of Concept.



**Service providers:** an organisation committing a minimum set of cloud computing services and performing at least one Proof of Concept for a flagship use case.



**Adopters:** an organisation using Helix Nebula products and services on a pay-per-use basis and providing feedback but without acting as a flagship use case.

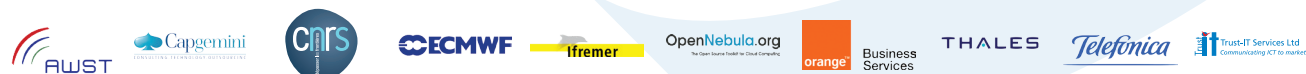


**Interested parties:** an organisation wishing to be kept informed of the work being done by Helix Nebula.

### Helix Nebula Participants



### Adopters



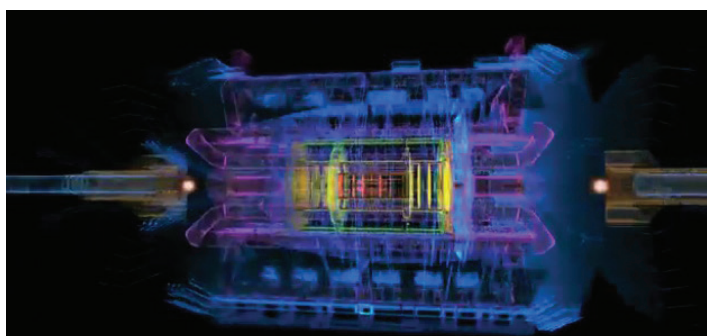
# Helix Nebula Use Cases

Helix Nebula will deploy and test three flagship projects proposed by CERN, EMBL and ESA.



## Atlas High Energy Physics

ATLAS is a particle physics experiment at the Large Hadron Collider at CERN, Geneva. The ATLAS detector is searching for new discoveries in the collisions of protons of extraordinarily high energy. ATLAS will learn about the basic forces that have shaped our Universe since the beginning of time and



that will determine its fate. This flagship use case is focused on evaluating the use of cloud technologies for ATLAS data processing; the transparent integration of cloud resources with software and services implementing the ATLAS cloud model.

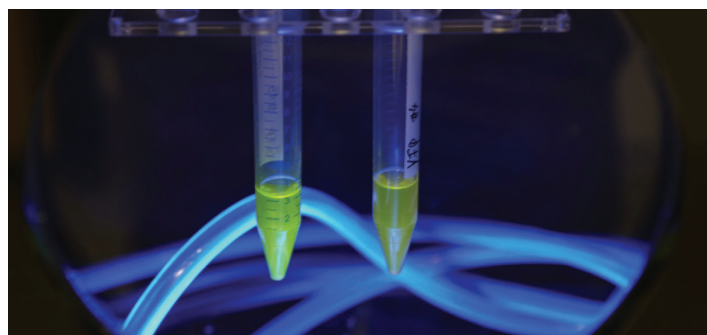


*"CERN's computing capacity needs to keep up with the enormous amount of data coming from the Large Hadron Collider and we see Helix Nebula- the Science Cloud as a great way of working with industry to meet this challenge"*


Frédéric Hemmer, head of CERN's IT department

## Genomic Assembly in the Cloud

Next Generation DNA Sequencing technologies have had a huge impact on how biological and medical research is performed today. The European Molecular Biology Laboratory (EMBL) is leading a flagship use aimed at facilitating genomic assembly and annotation and enabling deeper insights into evolution and biodiversity across a



range of organisms. A leading bioinformatics pipeline will be developed to perform fast and on-demand genomic data analysis, making de novo assembly and genome annotation affordable to many more laboratories. This cloud-based approach will lay the foundations for future extension of genomic research using cloud computing infrastructures.

EMBL  *"The quantities of genomic sequence data are vast and the need for high performance computing infrastructures and bioinformatics expertise to analyse these data poses a challenge for many laboratories. Our flagship will allow scientists at EMBL and around the world to overcome this challenge by providing the right infrastructure on demand"*

Rupert Lueck, head of IT services at EMBL

## SuperSites Exploitation Platform

Geohazard Supersites is an international partnership of projects, organisations and scientists, involved in monitoring the dynamic and complex solid-earth system and the assessment of geohazards. This flagship use case



is centered on an open-source, unified e-infrastructure for solid earth data with enhanced data products for monitoring and secure data sharing, enabling international cooperation and adoption by a larger user base than is possible today.



*"Helix Nebula - the Science Cloud is a partnership with the potential to support the utmost exploitation of ESA satellite data, as well as to bring other communities on board to better understand the geophysical phenomena of our planet"*

Volker Liebig, ESA Director for Earth Observation Programmes