The future for science in Europe is bright – and full of clouds!

It may be named after a dying star, but the Helix Nebula project is very much alive. Now half way through its pilot phase, the project is moving ahead with new organizations coming on board.

ESA's ESRIN facility in Frascati, Italy, where yesterday's event
was held. Image courtesy ESA.

Last week, the Helix Nebula consortium held an event at the European Space Agency's ESRIN facility in Frascati, Italy, to review the success of the project's proof-of-concept phase. Helix Nebula aims to pave the way for the development and exploitation of a European wide cloud computing infrastructure. While this is initially based on the needs of IT-intense scientific research organisations in Europe, Helix Nebula intends to also serve governmental organisations and industry and, as such, will also reflect the needs of these stakeholders. According to the project's website: "This pan-European partnership across academia and industry is working to establish a sustainable European cloud computing infrastructure, supported by industrial partners, which will provide stable computing capacities and services that elastically meet demand."

Posted on JAN 23 2013 7:16AM

Andrew Purcell
European editor

Share this story

Republish

Tags

CERN | cloud | computing | EMBL | ESA. | EU | Europe | European Commission | Helix Nebula | project

"Helix Nebula is a partnership that was born out of a vision," says Maryline Lengert a senior advisor in the IT department of the European Space Agency (ESA), a founding partner of the initiative. "We want to operate as an ecosystem. Today, the market is fragmented, but we want to bring it together and by doing so we will benefit from the stability of diversity." To support this, Lengert highlights the fact that the Helix Nebula consortium has already grown from 20 to 34 partners in just the last year alone. Hans Georg Mockel, who is director of human resources, facility management and informatics at the ESA, says that the project has so far worked very well for his organization. "The proof-of-concept phase has demonstrated the feasibility of the [Helix Nebula] strategy and now we're starting the next phase."

"Space missions and their expectations have changed with the evolution of the internet," explains Mockel. "People want to have access to large amounts of mission data immediately. We need to do it [dissemination] in an efficient, economical way and we want to do it with other scientific organisations in similar situations." He says that the solution is for organizations to go beyond providing their own infrastructure and to federate things on a European level through the science cloud.

Flagships flying high

ESA, is working in collaboration with the French and German national space agencies, as well as the National Research Council in Italy, to create an

Earth observation platform focusing on earthquake and volcano research. However, the maps created through this project can take over 300 hours of sequential computation time to complete, explains ESA's Sveinung Loekken. "We want to put the processing of the maps onto the cloud, rather than on somebody's workstation, which obviously struggles to handle it," says Loekken. "We want to give people access to large data processing capabilities. This is the *raison d'être* of the scheme."

This project is one of three flagship projects undertaken during Helix Nebula's two-year pilot phase. Ramon Medrano Llamas presented findings from CERN's flagship project, which has seen the organization gain access to more computing power to process data from the international ATLAS experiment at its Large Hadron Collider accelerator. This has allowed CERN the possibility to dynamically acquire additional resources when needed. "The proof-of-concept deployment has been very successful," concludes Llamas. "Processing in the cloud clearly works." Over the longer term, it is also hoped that use of commercial cloud resources could become a useful addition to very large data centres owned and managed by the scientific community.

Helix Nebula's third flagship project involves the European Molecular Biology Laboratory (EMBL), headquartered in Heidelberg, Germany. Rupert Lueck, head of IT at the organization, explained how they have been working to establish a large-

scale next generation genome analysis facility on Helix Nebula. "Biology and life sciences have a big need for high-performance computing and for e-infrastructure which can cope with a large amount of data, says Lueck. "In order to understand DNA, we need to analyze sequences of up to three billion base pairs. It's a lot of information and you have to make sure all the information is in the right place." However, not all biology laboratories have the infrastructure to process this amount of data, explains Lueck. "That's why we have need for fast, shared file systems," he says. Many of the computational tasks carried out by EMBL researchers can also take a very long time to complete - often over a week. This dictates the need for the cloud storage to be very stable, as researchers certainly don't want to have to restart these jobs if something gets lost. However, Helix Nebula has so far proven up to the task, reports Lueck.

Interdisciplinary innovation

"It's not enough to simply produce data, we need to make sure data is fully exploited and that there's an economic return in what we find," says Thierry van der Pyl, the European Commission's director of 'excellence in science'. "Europe is in a difficult economic situation. This means, more innovation. And for science it means it's important to better translate research into products and values... this is the driving force." Pyl believes that the Helix Nebula project already provides a good example of exactly how this should be done.

Despite this, Pyl is keen for Helix Nebula to branch out into new fields in the future. "How can we use the science cloud as 'a lead market' to stimulate development of cloud in Europe beyond science?," he asks. "I urge you to work beyond silos and to find commonalities between disciplines. We need to avoid re-inventing the wheel each time, as we all too often do," warns Van der Pyl. He concludes: "Helix Nebula is paving the way for working across disciplines and is helping to make Europe more innovative."

Finally, Robert Jenkins, CEO of CloudSigma, one of the participating organizations on the supply side of the project, also spoke at last week's event. He neatly summed up the situation for the project during his talk: "Helix Nebula is really trying to push the envelope in terms of what's possible with cloud and we're dealing with some very thorny problems. That's why we've come together to try to solve them."

Do you have story ideas or something to contribute? **Let us know!**

OUR UNDERWRITERS

Thank to you our underwriters, who have supported us since the transition from International Science Grid This Week (iSGTW) into Science Node in 2015. We are incredibly grateful.

View all underwriters

CATEGORIES

Advanced computing
Research networks
Big data
Tech trends
Community building

CONTACT

Science Node
Email:
editors@sciencenode.o
Website:
sciencenode.org