European science champions score an early goal for cloud computing

Geneva, 9 July 2012.

'Helix Nebula – the science cloud', set up earlier this year to support the massive IT requirements of European scientists and create a cloud computing market for the public sector in Europe, has today announced the initial deployment of its first flagship applications in high energy physics, molecular biology and natural disaster risk management.

A collaboration between big science and big business, Helix Nebula joins the forces of leading IT providers and three of Europe's leading research centres (CERN[1], EMBL[2], and ESA[3]), and has now received €1.8 million funding from the European Commission. The initiative strongly supports the Commission's Digital Agenda for Europe: It stresses a unified approach to data protection regulations and lightweight, efficient governance; it also has ambitions to support European economic development by making its services available to the wider community.

First results of the initiative's on-going Proof of Concept (PoC) phase now show that CERN, EMBL and ESA succeeded in deploying challenging scientific applications each involving tens of thousands of jobs running at data centres operated by Atos, CloudSigma and T-Systems.

By getting the ATLAS experiment's flagship application deployed quickly, CERN was able to run simulations that had previously been executed on the Worldwide LHC Computing Grid, helping to build the case for the recent announcement related to the Higgs boson search. "*These initial deployments have confirmed that building a multi-tenant, multi-provider public cloud infrastructure is a massive undertaking that will need a number of steps to complete. However, the first results are very encouraging and we are confident we can reach our goal during the two year pilot phase,*" said Frédéric Hemmer, Head of CERN's IT Department.

EMBL's team successfully deployed and tested their novel software pipeline for large-scale genomic analysis on the different cloud provider infrastructures. Using real world large genomic data sets originating from EMBL's sequencing machines, EMBL's PoC extensively evaluated key elements such as scalability, performance and on-demand provisioning of resources for high performance computing and fast data storage in these clouds. Paul Flicek, Head of Vertebrate Genomics at EMBL's European Bioinformatics Institute explained: "*Setting up sufficiently powerful computing infrastructures for genome analysis in the cloud is not trivial. Hence, we are very happy with the initial results from the PoC. These are important milestones towards making our software available to scientists worldwide later during the Helix Nebula pilot phase*."

"*ESA has successfully tested large-scale data processing and dissemination from its radar satellites (ERS, Envisat) using different cloud provider infrastructures. The results have demonstrated that these applications can run on multiple providers, despite using different technologies. Thanks to these cloud assets and the modern communication tools, the global science community will be able to better exploit ESA's large-scale data archive covering 20*

years of Earth Observation and foster collaboration of science communities working in different domains," commented Volker Liebig, Director for ESA Earth Observation Programmes.

Atos, CloudSigma and T-Systems have provided the cloud computing resources to host the flagships and were instrumental during this PoC phase.

Atos has been active in opening up its existing cloud services to research organizations. Michael Symonds, its Principal Solutions Architect, confirmed that: "*Setting up a public style cloud for very demanding research organisations is very different to providing private enterprise cloud services to companies. It has taken a lot of effort but we are all pleased with these early results and are confident we can build on this in the future.*"

Robert Jenkins, CTO of CloudSigma, which already operates a public cloud service, said: "*Not only does this early success show we are on the right track but it is also helping us identify new business opportunities for cloud services in the public sector that we hope to develop during this pilot phase.*"

Jurry de la Mar, Head of International Sales – Public Sector at T-Systems, the company which has been driving the work to define the governance model for this public-private partnership, concluded: "*Like any successful team, we needed a small core to get things going. During 2012 we will be studying how to expand the consortium membership to include more suppliers, more applications and more public sector organisations.*"

In addition to the infrastructure providers, SME's such as SixSq, Terradue and The Server Labs were vital to get the flagship applications up and running. More scientific organisations and service providers are welcome to join Helix Nebula- the Science Cloud.

Helix Nebula current participants are: Atos, Capgemini, CERN, CloudSigma, Cloud Security Alliance, CNES, CNR IRIA, DLR, EMBL, ESA, European Grid Infrastructure, Interoute, Logica, the OpenNebula Project, Orange Business Services, SAP, SixSq, Telefonica, Terradue, Thales, The Server Labs, Trust-IT, and T-Systems.

For more details and updates about Helix Nebula - the Science Cloud, please consult our website, visit us on Facebook, follow us on Twitter or send an email to contact@helix-nebula.eu.

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1. CERN, the European Organization for Nuclear Research, is the world's leading laboratory for particle physics. It has its headquarters in Geneva. At present, its Member States are Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom. Romania is a candidate for accession. Israel and Serbia are Associate Members in the pre-stage to Membership. India, Japan, the Russian Federation, the United States of America, Turkey, the European Commission and UNESCO have Observer status.

2. The European Molecular Biology Laboratory (EMBL) is a basic research institute sponsored by public research funding from 20 member states (Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom) and associate member state Australia. Research at EMBL is conducted by approximately 85 independent groups covering molecular biology. The laboratory has five units: the main laboratory in Heidelberg, outstations in Hinxton (the European Bioinformatics Institute), Grenoble, Hamburg, and Monterotondo near Rome. The cornerstones of EMBL's mission are: to perform basic research in molecular biology; to train scientists, students and visitors at all levels; to offer vital services to scientists in Member States; to develop new instruments and methods in the life sciences, and to actively engage in technology transfer activities. Around 190 students are enrolled in EMBL's International PhD programme. Additionally, the laboratory offers a platform for dialogue with the general public through various science communication activities such as lecture series, visitor programmes and the dissemination of scientific achievements.

3. The European Space Agency (ESA) is Europe's gateway to space. Its mission is to shape the development of Europe's space capability and ensure that investment in space continues to deliver benefits to the citizens of Europe and the world. ESA is an international organisation with 19 Member States. By coordinating the financial and intellectual resources of its members, it can undertake programmes and activities far beyond the scope of any single European country. ESA's job is to draw up the European space programme and carry it through. ESA's programmes are designed to find out more about Earth, its immediate space environment, our Solar System and the Universe, as well as to develop satellite-based

technologies and services, and to promote European industries. ESA also works closely with space organisations outside Europe.