Agenda

- The Project
- AAI
- Challenges
The Helix Nebula Science Cloud
public-private partnership

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

March 2016

To support the computing capacity needs for the ATLAS experiment

To set 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

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

Additional Users: [List of users]

Suppliers:
- [List of suppliers]

Adopters:
- [List of adopters]
The Helix Nebula Initiative

The preferred model for public research organisations is a hybrid cloud that combines in-house resources with public e-infrastructures and commercial cloud services.

The Helix Nebula initiative has brought together research organisations, data providers, publicly funded e-infrastructures and European commercial cloud service providers to develop a hybrid cloud model with procurement and governance approaches suitable for the dynamic cloud market.
HNSciCloud Pre-Commercial Procurement

Procurers: CERN, CNRS, DESY, EMBL-EBI, ESRF, IFAE, INFN, KIT, STFC, SURFSara
Experts: Trust-IT & EGI.eu

The group of procurers have committed
• Procurement funds
• Manpower for testing/evaluation
• Use-cases with applications & data
• In-house IT resources

To procure innovative IaaS level cloud services integrated into a hybrid cloud model with
• Data centres operated by the procurers
• European e-Infrastructures

Resulting services will be made available to end-users from many research communities. Co-funded via H2020 Grant Agreement 687614

Total procurement budget >5M€
Pre-Commercial Procurement Process and Timeline

R&D (Product Driven Research + Pre-commercial Development)

CURIOSITY DRIVEN RESEARCH

SOLUTION EXPLORATION

SOLUTION DESIGN

SOLUTION PROTOTYPING

PILOT

2016

Jan

June

Dec

2017

June

Dec

2018

June

Project Starts

TENDER LAUNCH

TENDER AWARD

Project Finishes

Commercialisation of products/services

UPTAKE/COMMERICALISATION

9/17/2017 Bob Jones, CERN
What will be procured

A hybrid cloud platform for the European research community

Combining services at the IaaS level to support science workflows

The R&D services to be developed are to be integrated with resources in data centres operated by the buyers group
Challenges

Innovative IaaS level cloud services integrated with procurers in-house resources and public e-infrastructure to support a range of scientific workloads

**Compute and Storage**
- Support a range of virtual machine and container configurations working with datasets in the petabyte range

**Network Connectivity and Federated Identity Management**
- provide high-end network capacity for the whole platform with common identity and access management

**Service Payment Models**
- Explore a range of purchasing options to determine the most appropriate ones for the scientific application workloads that will be deployed

Bob Jones, CERN
AAI

• Each procurer must provide SAML AuthN
  • Enable federated login to cloud management portals
  • Generate tokens for API access based on federated credentials
  • Both ELIXIR & EduGAIN
SP troubles

- How do I join eduGAIN?
- How do I test things before joining eduGAIN?
- How do I know which attributes I’ll receive?
- Which attribute is the ID?
- How do I map the different attributes?
Decisions

Procurers should join eduGAIN directly (rather than create a HNSciCloud federation, for example)

Expected attribute bundle is equivalent to R&S (agreed among the buyers group)

Procurers should demonstrate compliance with GEANT Code of Conduct where possible

Authorization should be managed locally to the cloud provider
## A few findings…

<table>
<thead>
<tr>
<th>The Good</th>
<th>The Bad</th>
<th>The Ugly</th>
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<tbody>
<tr>
<td>eduGAIN support is useful!</td>
<td>Understanding FIM is complicated 😞</td>
<td>Standards are not respected</td>
</tr>
<tr>
<td>R&amp;S is a useful concept (even if cloud procurers may not be R&amp;S SPs)</td>
<td>Testing without user involvement is impossible</td>
<td>IdPs are still unable to be flexible, attribute release and policies</td>
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<td></td>
<td>Testing with user involvement is painful</td>
<td>Some SPs expect user blocking by the IdP</td>
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<td>SPs expect AuthZ with AuthN</td>
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Testing

- SPs struggle to test
- Consortium struggles to understand how flexible the solution is – will this serve the wider community?
Proposal

• Maybe create a test for eduGAIN under AARC?
  • SP & IdP compatibility test
  • Try and limit interaction with user, as much as possible
  • Perfsonar style test, each entity deploys a testing element (?)
Next Steps

• 1 Procurer will be eliminated based on performance

• The 2 remaining are expected to have fully enabled SAML, thorough testing needed

• Policies must be solidified (Sirtfi, Data Protection)