



Open Clouds for Research
Environments

Buyers Group Use Cases

OCRE Face to Face Meeting

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OCRE receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 824079.

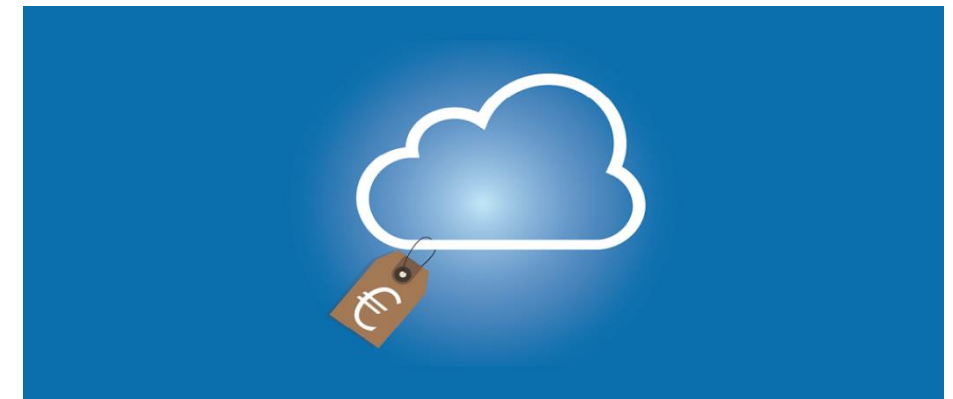
Where we come from?

○ Helix Nebula Science Cloud

- Provided an Hybrid cloud platform for the European research community
- Collective effort of 10 procurer Research Organisations forming the Buyers Group
- Expressing the need to increase the analysis capability and capacity offered to their users

○ GEANT IaaS Framework

- Provision of Infrastructure as a Service (IaaS) for the NRENs



Helix Nebula Hybrid Cloud Model

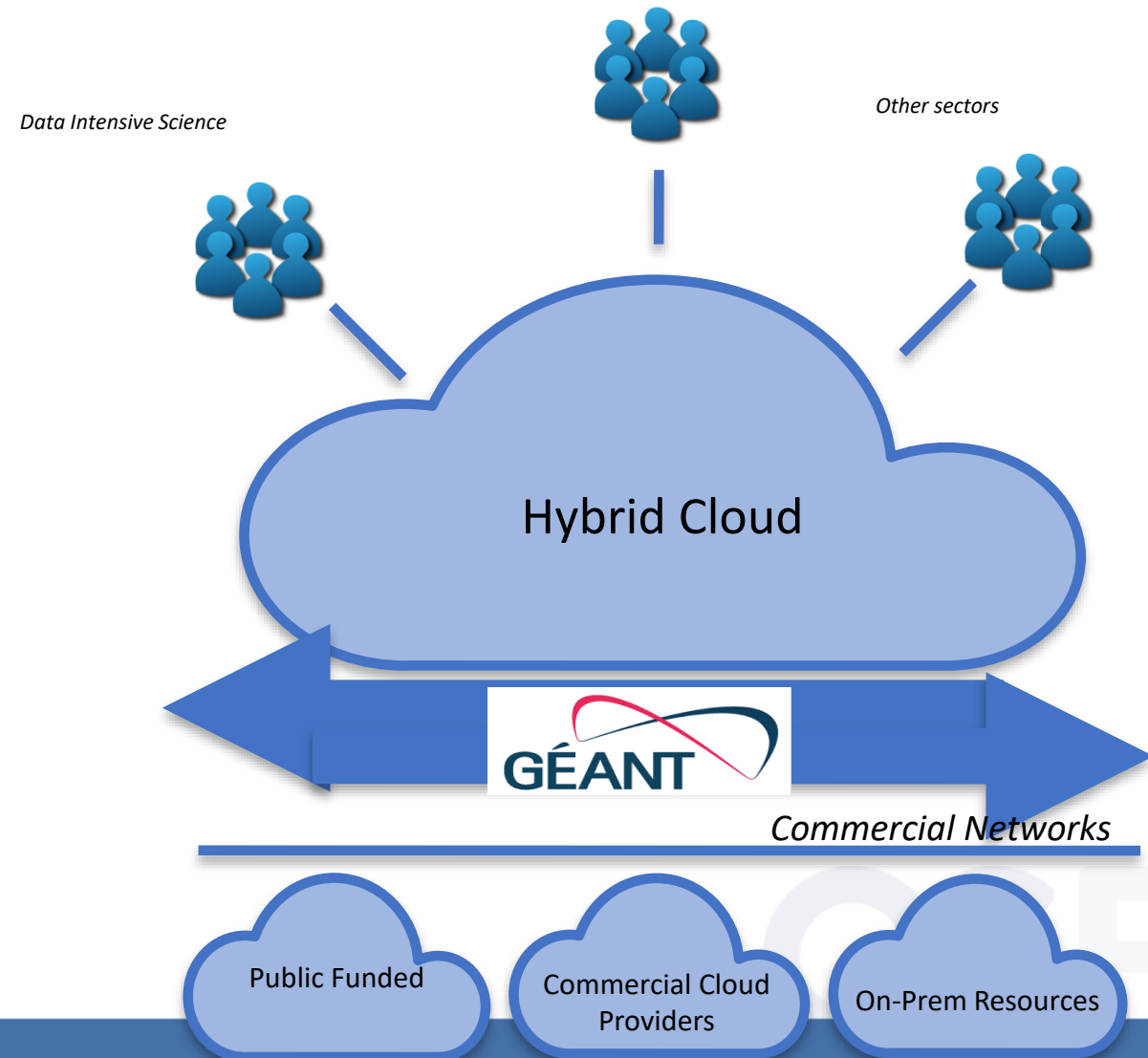
Medium Scale/Long Tail

Bringing together:

- Research Organisations
- Data Providers
- Publicly funded e-infrastructures
- Commercial cloud providers

with:

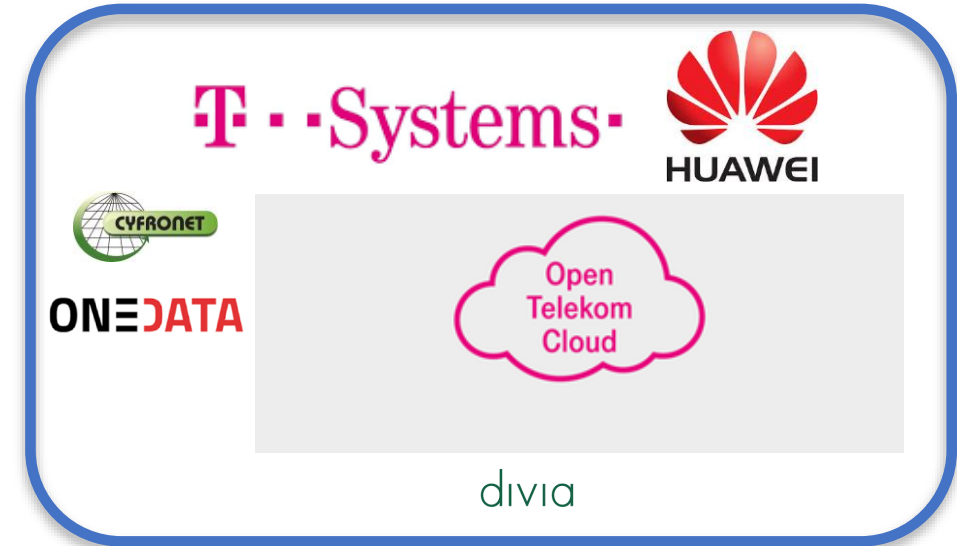
Procurement and Governance
suitable for the dynamic cloud market



HNSciCloud Pilot Deployments

OT-Systems

- IaaS based on OTC



ORHEA

- IaaS provided by Exoscale



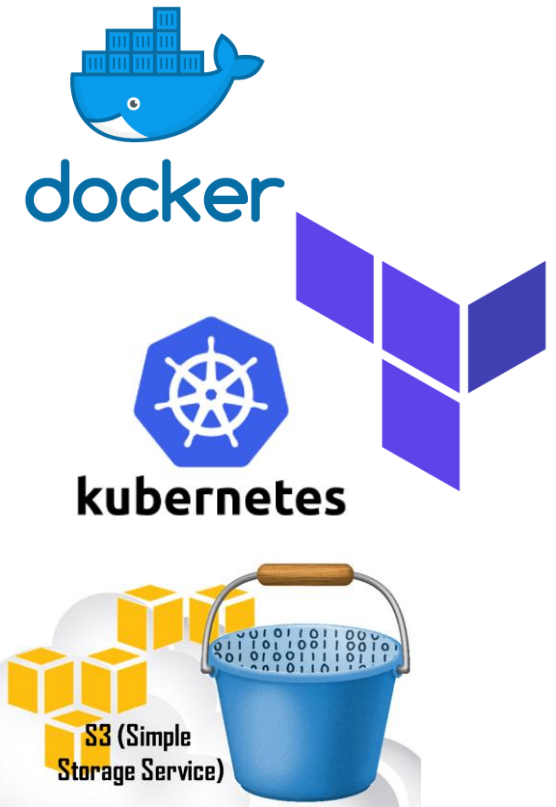
Lessons Learned

- Formation of a Buyers Group
 - Aggregating requirements and demand
- Call offs in 2020 and 2021
 - Valid for 1 year or more
 - Expression of commitment by several organizations
 - Discussion with other members of the EIRO forum
 - Co-funded by the research organisations and EC
- Range of Payment Models
- At the framework time, a test suite will be part of the validation of the suppliers



OCRE Test Suite

- ***To validate all cloud services selected in the OCRE Framework, based on tests assembled by HNSciCloud***
 - Provision of the stack with Terraform
 - Deployment of tests on Docker containers to Kubernetes cluster (abstraction layer)
 - Simple YAML configuration
 - Results: JSON on S3 bucket on CERN infrastructure
- ***Tests areas:***
 - Compute
 - Storage
 - HPC
 - GPUs
 - Network connectivity performance
 - Advanced containerised cloud application deployments
 - Data Repatriation
- ***Will be made public as part of the tender***
 - Happy to receive your feedback



Examples of Buyers Group Use Cases

- **Integration of commercial cloud capacity in production batch services**



- **On demand computing facilities generation**

- CMS Data Reduction Facility – Physics Analysis with Apache Spark
- Hybrid Cloud auto-scaling with Kubernetes
- Scientific Data Management integration with commercial clouds
- Lightweight WLCG sites deployments
- Interactive user analysis services



- **S3 object stores**

- Hybrid S3 services for data replication using Ceph
- Use S3 for AODs for preparatory analysis jobs



- **Deep Learning for Simulation**

- Scale out model training for Neural Network optimization on GPUs
- Extend to other hardware accelerators (FPGAs) for inference
- Generalise the approach to satellite imagery analysis and medical applications



Voucher Credits

From HNSciCloud to OCRE



Experience from HNSciCloud

- Needed a simple & flexible way to distribute part of the procured capacity to end-users.

Encourage the uptake of services deployed in HNSciCloud by Long Tail of Science (LToS)

Perform R&D on cloud providers infrastructure & to **validate** resources before wider use

- Explored use of vouchers in the pilot phase

- Voucher providers:  **EXOSCALE**



The Process

Definition of scheme characteristics

- Face value: 250€
- Validity: 1 Year
- To be redeemed under existing Buyers Group tenant

Tests by the Buyers Group

- Usage monitoring
- Data repatriation
 - Access to the resources after credit exhausted with additional vouchers

Distribution to end-users

- To individual researchers
- Selected by external organisation (Eurodoc)
- Feedback via survey form

Lessons learned

- Based on the feedback received
- Apply in OCRE



Essential Features of the Voucher Scheme



Simplified user interface & Up to date documentation
and trainings



Cost Calculators



Compatibility with Data Management Plans



Clear data repatriation policies & Long-term data
storage solution



Vouchers in OCRE

○ **First call off - Q2 2019**

- Suppliers selected from the GEANT IaaS Framework
- First batch of 500 K€
- Vouchers from July 2019 onwards
- Distribution to individual researchers via external organisations
 - > responsible for the selection criteria
- Request for feedback

○ **Further call offs ran by the Buyers Group in 2020 and 2021**

- Part of the capacity -> reserved as vouchers
- Main use case: R&D to be performed on cloud provider infrastructures





OCRE

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Thank you



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