



# Helix Nebula Science Cloud Procurer Hosted event

Hands-on experience on HNSciCloud cloud services

Public session  
14 June 2018 @ 9:00 CEST  
CERN, Geneva, Switzerland

[www.hnscicloud.eu](http://www.hnscicloud.eu)

# HNSciCloud Overview

M-PIL-3.2, 14<sup>th</sup> June 2018

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CERN

IT department



- To provide a common cloud platform for the European research community



- Via a collective effort of 10 procurer Institutions forming the **Buyers Group**



Expressing the need to increase the analysis capability and capacity offered to their users to keep pace with the growth in scientific data

# Helix Nebula Science Cloud

## Joint Pre-Commercial Procurement



Procurers: **CERN, CNRS, DESY, EMBL-EBI, ESRF, IFAE, INFN, KIT, STFC, SURFSara**

Experts: *Trust-IT & EGI.eu*

Resulting IaaS services support use-cases from many research communities



Deployed in a hybrid cloud mode:

- procurers data centres
- commercial cloud service providers
- GEANT network and EduGAIN Federated Identity Management.



Co-funded via H2020 Grant  
Agreement 687614

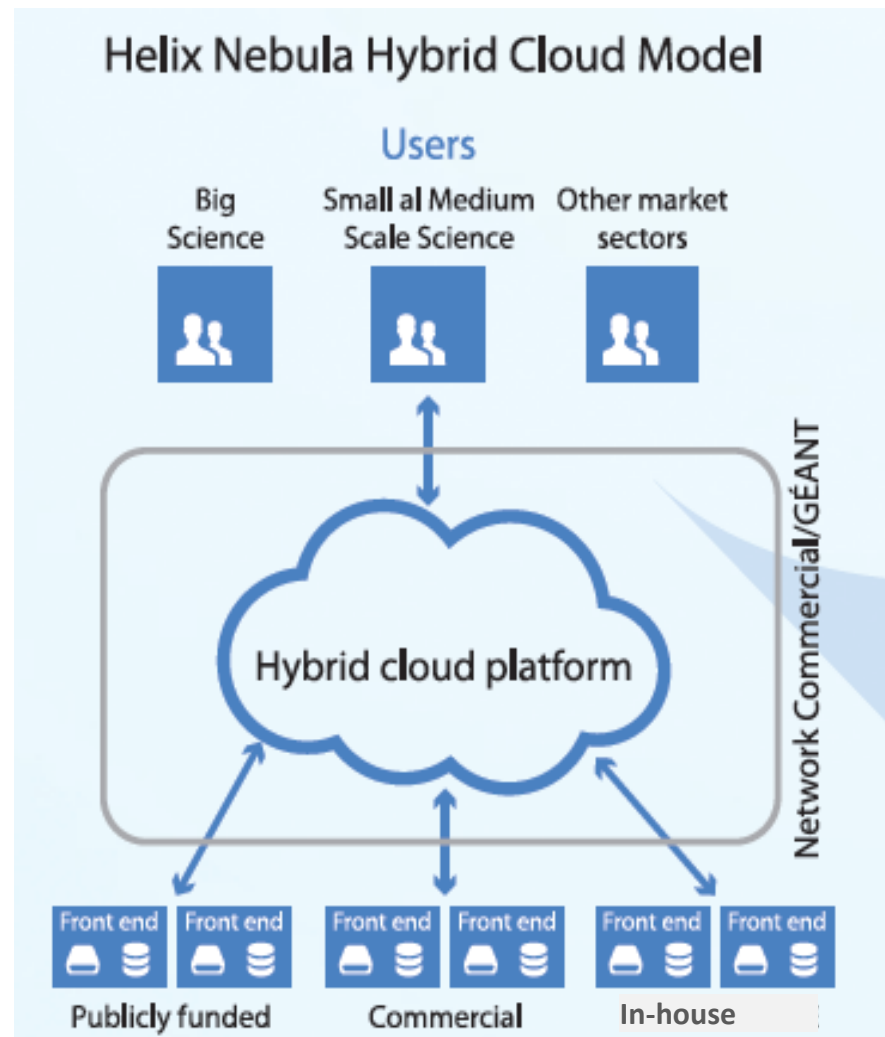
**Total procurement budget >5.3M€**

# The Hybrid Cloud Model

Brings together

- research organisations,
- data providers,
- publicly funded e-infrastructures,
- commercial cloud service providers

Procurement and governance approaches suitable for the dynamic cloud market



Innovative IaaS cloud services integrated with procurers in-house resources to support a range of scientific workloads

## • ***Compute and Storage***

- Support a range of virtual machine and container configurations including HPCaaS, working with datasets in the petabyte range, accessible transparently

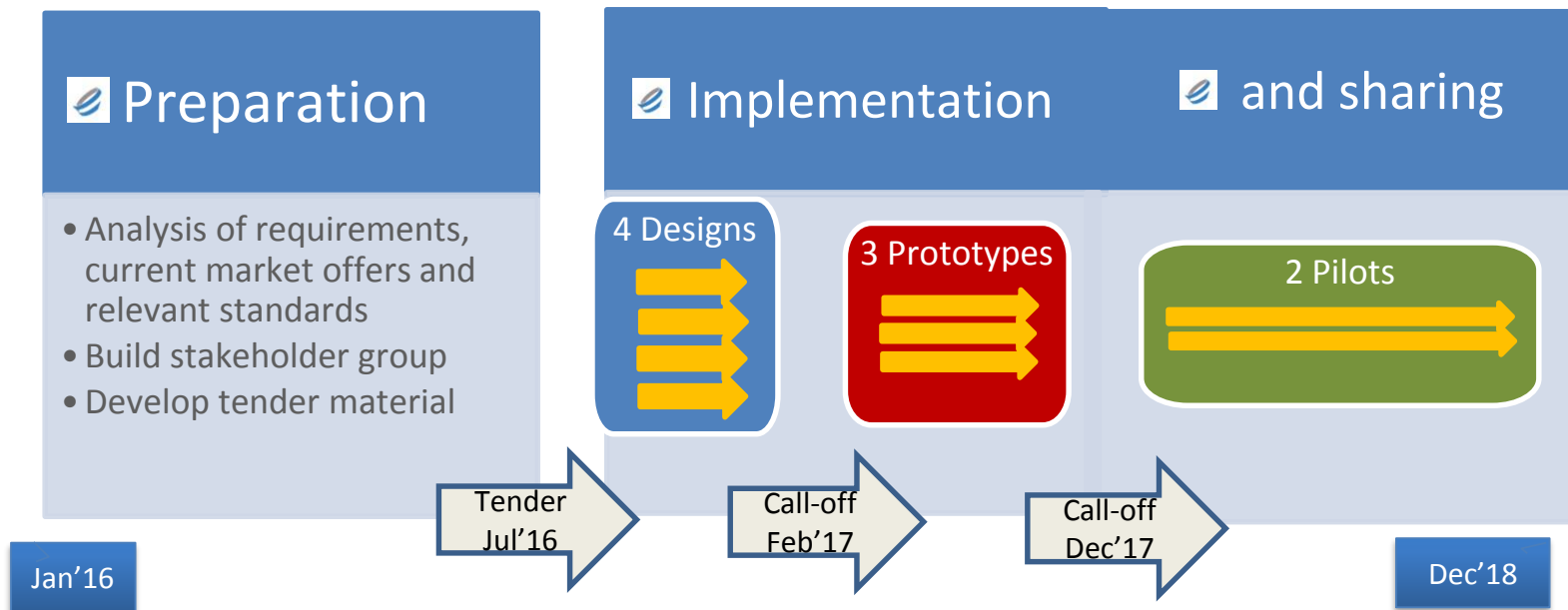
## • ***Network Connectivity and Federated Identity Management***

- Provide high-end network capacity via GEANT for the whole platform with common federated identity and access management
  - AAI activities have been described as a 'pilot' use-case in a AARC2 project deliverable: <https://aarc-project.eu/wp-content/uploads/2018/06/DSA1.1-v1.1FINAL.pdf>

## • ***Service Payment Models***

- Explore a range of purchasing options to determine those most appropriate for the scientific application workloads, including vouchers or other means of easy integration in the organisations procurement models

# HNSciCloud project phases

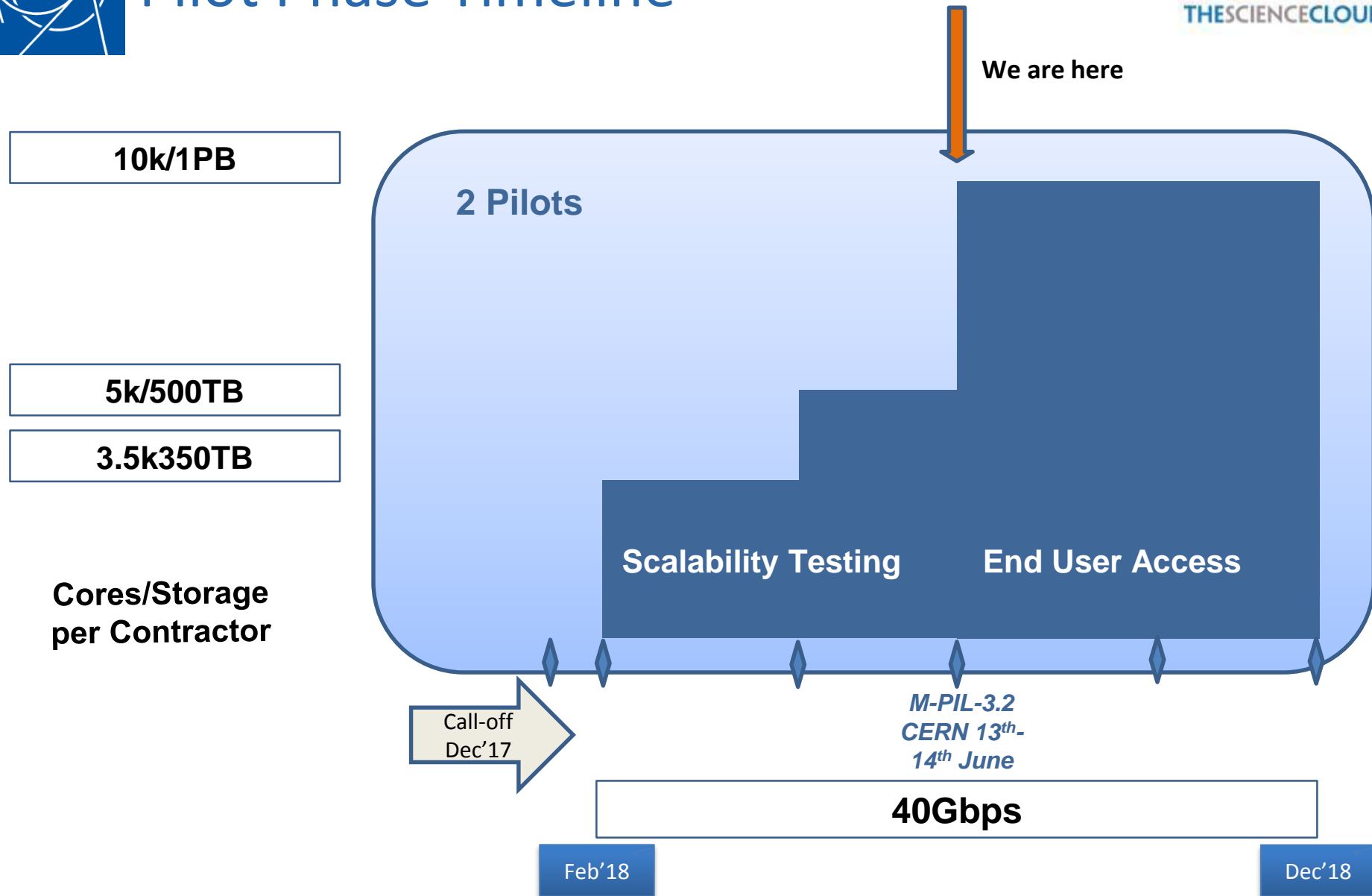


Phases of the tender are defined by the Horizon 2020  
Pre-Commercial Procurement financial instrument





# Pilot Phase Timeline





# What HNSciCloud is *not*



- ☛ ***Not a zero cost research grant***

- ☛ Contractual Relationship: Important to understand how to integrate commercial cloud services into scientific activities

- ☛ ***Not a one-off test***

- ☛ A predictable production-quality contribution to the scientific programme of the organisations involved

- ☛ ***Not just a technical evaluation***

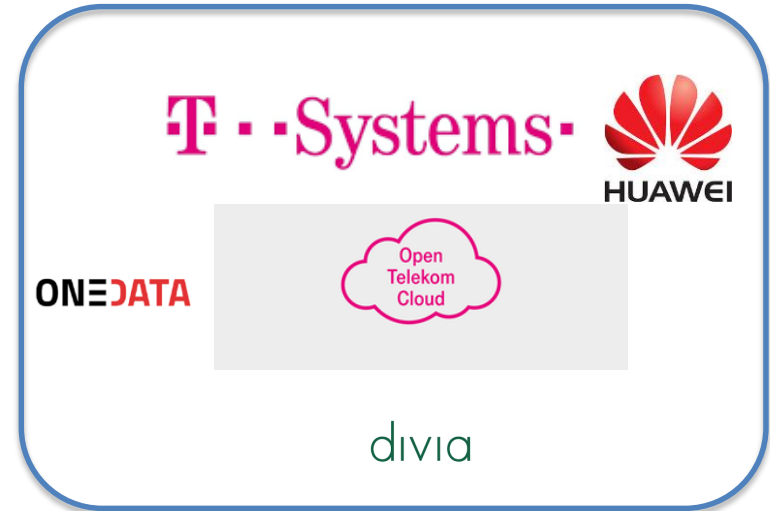
- ☛ **Legal:** Where is the data stored? Under what jurisdiction? What are the contractual terms and conditions?
- ☛ **Commercial:** what are the commercialisation plans after the project? How much will it cost to use them in production? What purchase models are available?

- ☛ ***Not a walk in the park***

- ☛ It took 2.5 years of intense collaboration for procurers and companies to get here
  - ☛ From common requirements specification for workloads of multiple scientific disciplines to tender launch, design and prototype phases
  - ☛ Required significant effort by the procuring organisations to follow the process, provide all the necessary material and performing tests on the developed services.

- **T-Systems**

- *IaaS based on OTC*



- **RHEA**

- *IaaS provided by Exoscale*





# HEP Use-Case Deployments Overview



- WLCG Experiments
  - ALICE, ATLAS, CMS and LHCb
- CERN Batch Service (IT Dep.)
- Container Federation (IT Dep.)
  - *Live demo during lunch*
- Interactive Analysis for End Users (IT & EP Deps.)
  - *Live demo during lunch*
- Deep Learning for Fast Detector Simulation using GPUs (IT Dep. - CERN openlab)



- 8/10 procurers are actively supporting the LHC programme
  - Operating sites in WLCG
  - Hybrid Model bringing together WLCG sites and commercial cloud providers data centres linked via GEANT or/and NRENs

More WLCG procuring organisations can participate via the early adopter programme (see Andrea's slides):

<https://www.hnscicloud.eu/the-hnscicloud-adopter-group>





# European Open Science Cloud



## EOSC SUMMIT

11 June 2018 - Brussels

Centre de Conférence Albert Borschette

**European Open Science Cloud**  
FROM VISION TO IMPLEMENTATION



HNSciCloud promoted as a working example of an Open Science Cloud by the EC High Level Expert Group