



# GÉANT Community Clouds

Work achieved and the Delivery Plan

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## Today's Topics

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Introduction to the GÉANT cloud offerings  
(why we collaborate; what we offer)

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Commercial vs. Community

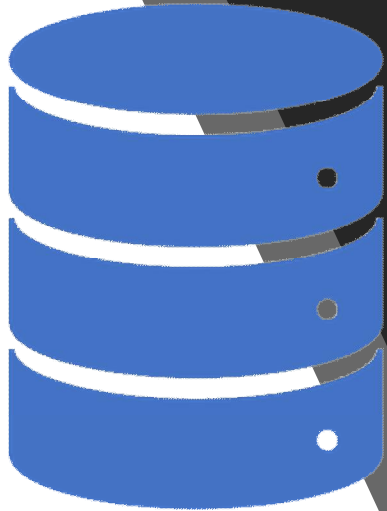
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What we have done so far regarding  
community clouds

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What we plan to do next

# Cloud Offerings: Objectives

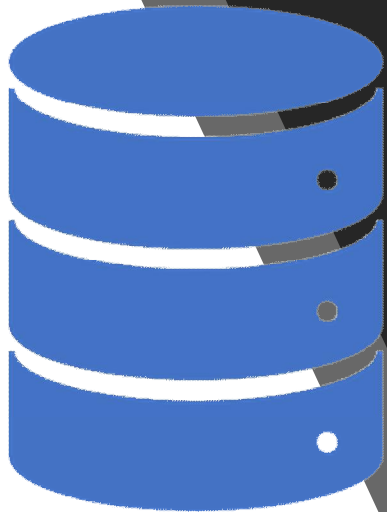


1. Aggregate and scale up capable national service offerings to a pan-European level.
  - Help NRENs identify suitable services to offer jointly
    - special attention to container-based virtualisation capabilities
  - Support and coordinate development efforts
    - with NRENs pooling resources

# Cloud Offerings: Objectives

2. Connect commercial and community service offerings to the GÉANT and NRENs infrastructures:

- Network peerings and connections  
(liaise between providers and the GEANT network teams)
- Trust and identity systems  
(liaise between providers and the GEANT IdM teams)
- Explore and provide multi-cloud management capabilities  
to manage workloads;  
move workloads between multiple providers,  
through a single interface.



NRENs in the  
community  
clouds team  
(GN4-3  
project)

CESNET  
GARR  
GRNET  
KIFÜ  
NORDUNET  
PSNC  
RENATER  
SURFNET

# Work Package 4: Online Services Development and Delivery

## Tasks

- Task 0: Work Package Leadership (Work Package Leader: Maria Ristkok –SURFnet)
- Task 1: Service Delivery: Platform and Business Desk (Task Leader: Garvan McFeeley –HEAnet)
- Task 2: Service Development: Videoconferencing Infrastructure (Task Leader: Bartlomiej Idzikowski –PSNC)
- Task 3: Service Development: Cloud Offerings (Task Leader: Dan Still -NORDUnet)
- Task 4: Service Adoption Support (Task Leader:–Darko Paric)



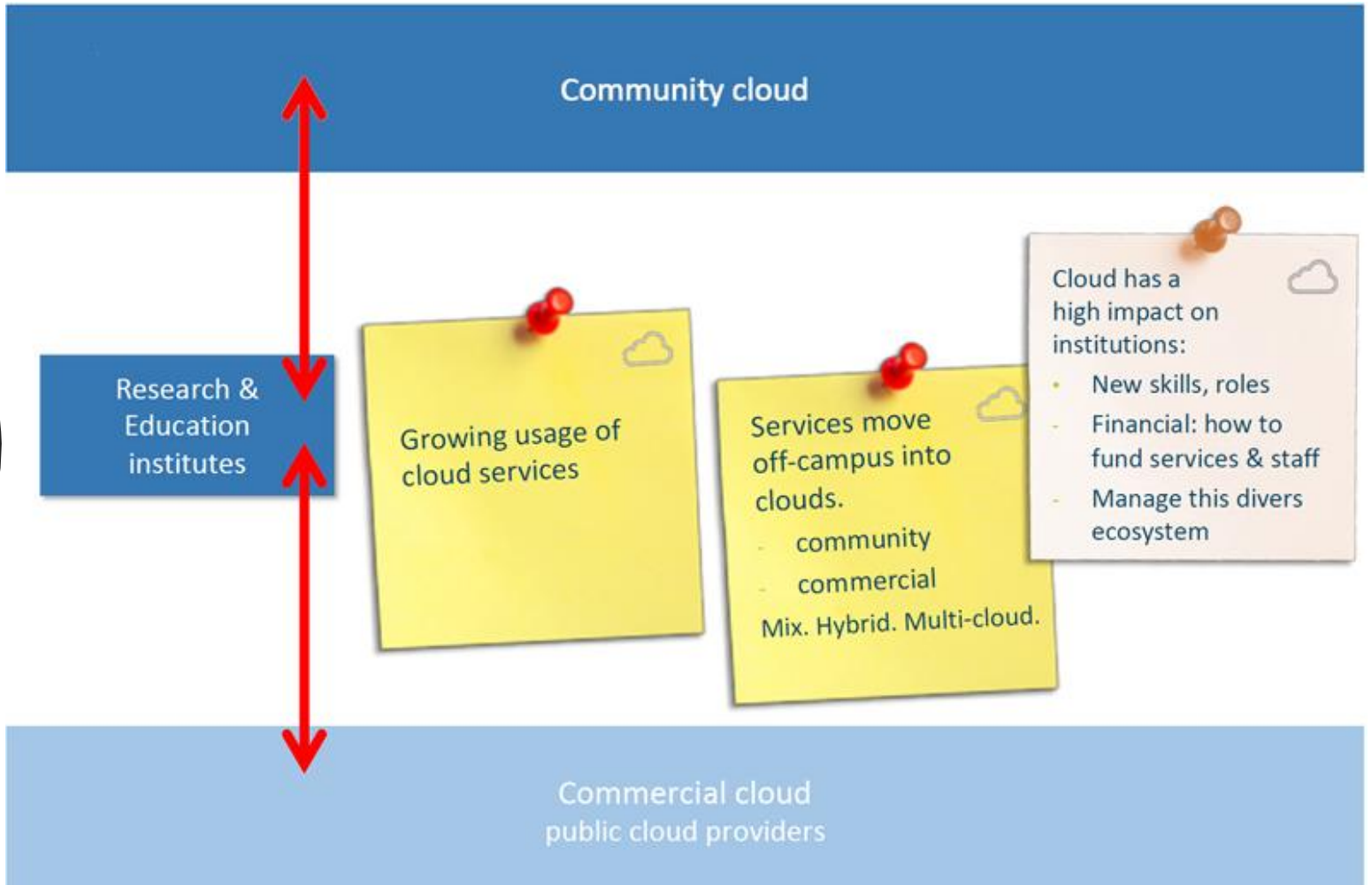
WHAT'S  
NEXT?

## Community Cloud Developments

Community services:

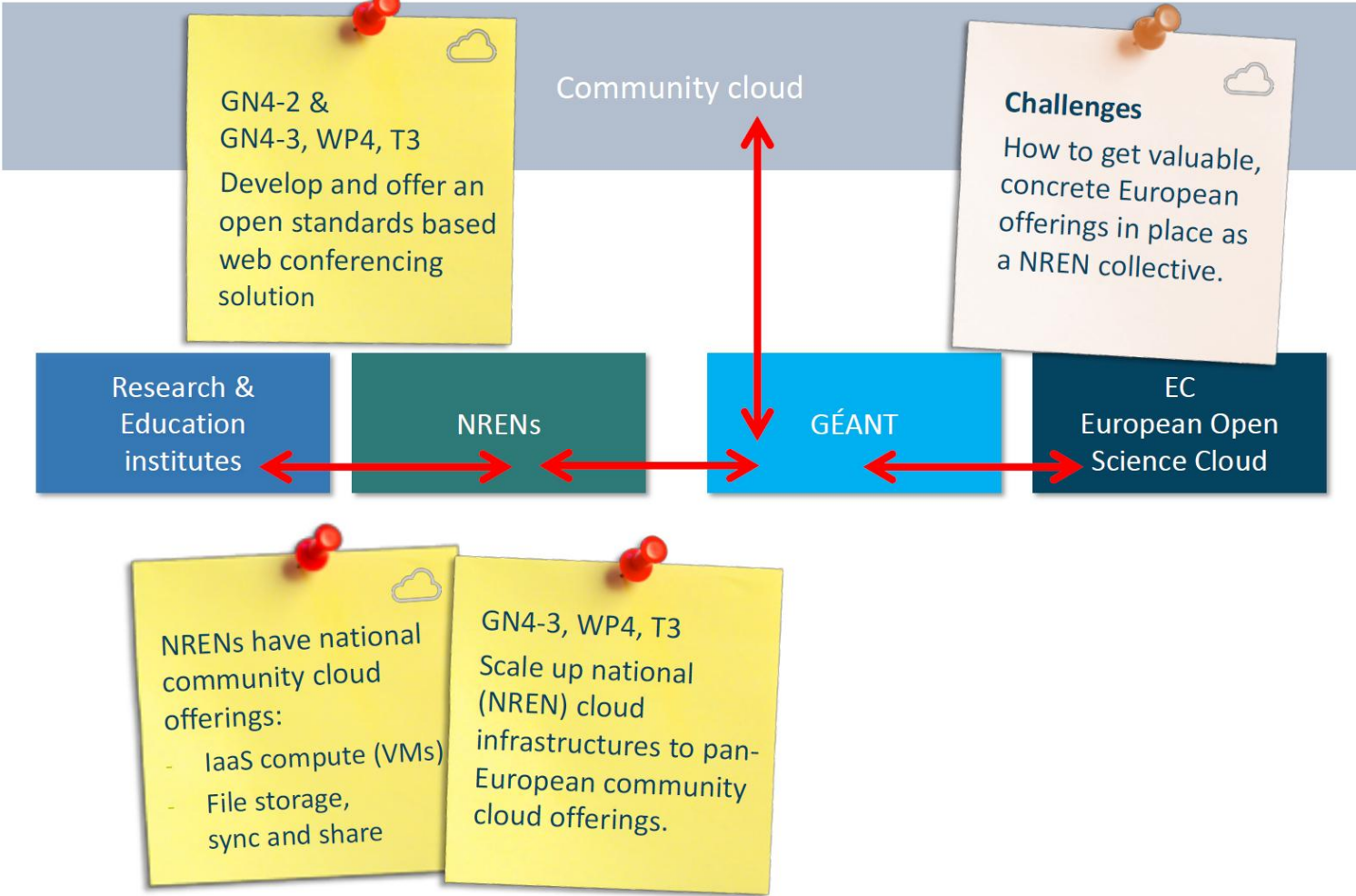
- GÉANT community clouds (IaaS, storage)
- GÉANT web conferencing service
- GÉANT videoconferencing infrastructure service

Push from  
Institutions

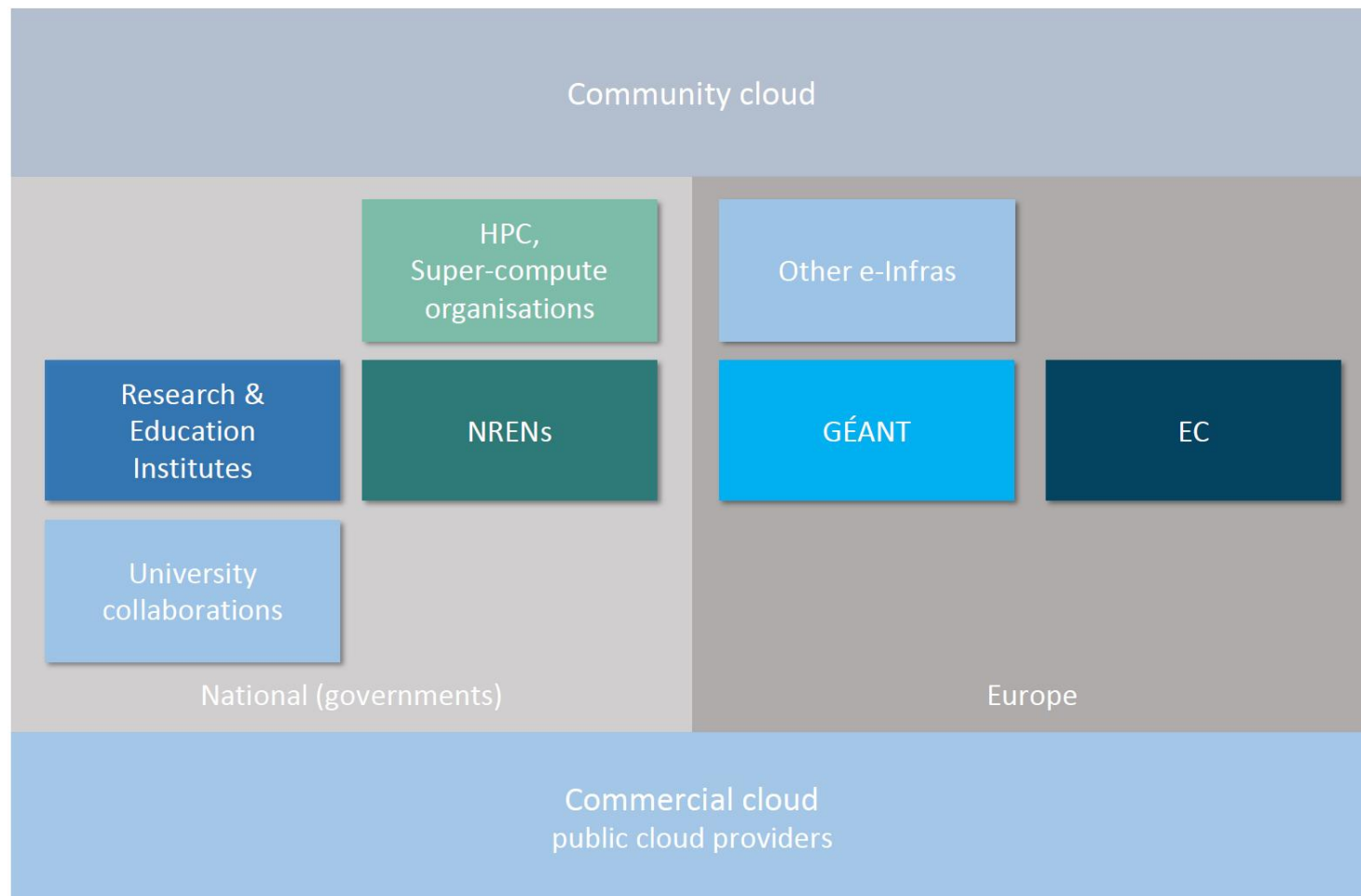




# Community Clouds



# The Cloud Landscape - Stakeholders



# Community Clouds: EGI



## Partnership

### Resources

- **13 NGIs provide 22 certified resources**
- 4 NGIs currently integrating resources
- 5 NGIs with interested resource providers
- Worldwide interest & integration
  - Australia\* (NeCTAR)
  - South Africa\* (SAGrid)
  - South Korea\* (KISTI)
  - United States\* (NIST, NSF A.C. Centres)



.org



# Efforts Scheduled for 2019

Community clouds delivery plan services selection, business models and development roadmap

- Identify suitable services to offer in a community clouds model in interaction with SIG-MSP and SIG-CISS.
- Put in place a delivery and 'business' plan for community clouds, using the GÉANT PLM.

Commence the development of the 1st community clouds offering

Start working on a business case for multi-cloud orchestration system

- to assess suitable roles for NRENs and GÉANT

# Questions

How can we help more NRENs deliver cloud services at a larger scale?

Balance between commercial and community clouds  
How to scale up national clouds to a pan-European level?

Our position and visibility as GÉANT and NRENs in the European Open Science Cloud

# Suitable Services Identification and Business Plan: Methodology



## 1. Lean Canvas Session (Prague April 2019)

LC is a single-page format for quickly formulating possible business models.

The blocks offer a guide of logical steps starting with your customer problems through to your 'unfair advantage'

### Key findings

- Problem

Easy federated access and trust factor (data not deposited in commercial clouds) were considered the top issues.

- Solution

Community run services (OpenStack, Kubernetes, services on top like Jupyter notebooks) supported by federated identity

# Suitable Services Identification and Business Plan: Methodology

## 2. Future Service Workshop (Amsterdam May 2019): SWOT Analysis

### Aims:

- to get strategic level guidance and feedback from NRENs
- build consensus on GÉANT network and cloud service evolution.

### The objective of the SWOT:

Gain better insight into NREN cloud capabilities in relation to other stakeholders in the NREN cloud ecosystem.



# SWOT Analysis: Strengths

What advantages do we have over others?

- We can organise our community to move together: integrate network and skills (invested in our user needs).
- Can support data and/or network intensive research.
- Large number of end users. Contacts to customers is very good.



# SWOT Analysis: Weaknesses

## What weaknesses do we have relative to others?

- Too bureaucratic, on the other hand community clouds are not well documented.
- Pace is hard to keep going because we have different funding models, priorities. Plus, these discussions in the academic community are taking place late. Not enough manpower in every NREN.
- We are amateurs regarding commercial solutions (Azure, AWS, etc.)

SWOT  
Analysis:  
Opportunities

## What can we do to exploit our advantages?

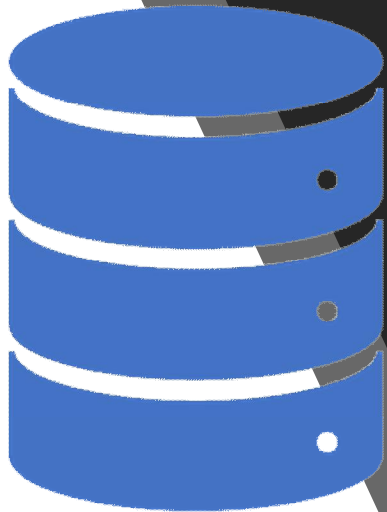
- Interfaces for hybrid cloud platforms (including OpenStack, etc.)
- Our expertise on community clouds.
- When universities do not supply standard services, but user groups need something specific we need to understand this and fill the gap.

## SWOT Analysis: Threats

### What could negatively impact us?

- Some NRENs are just commodity providers.
- Being engaged only on the economic factor, we need some other differentiator.
- All data becomes a hostage in commercial providers' environments.

# Suitable Service Types: IaaS (Area A)



The service model is based on:

- Community demand
- Current willingness
- Abilities of the NRENs

Approach

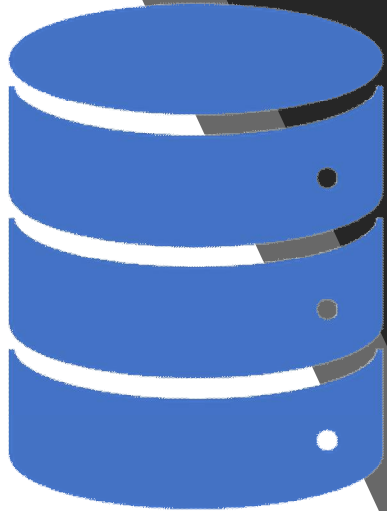
Step 1: Start with an offering that scales up the NRENs' capabilities to a pan-European scale

- By sharing expertise and infrastructure resources
- To create a European community cloud platform for running VMs

Step 2: Evolve to handle containers and potentially SaaS-type offerings

- Jupyter notebooks or equivalent services

## Suitable Service Types: File storage - sync & share (Area B)



### Approach

Step 1: Evolve technical capabilities - federating file storage platforms.  
CS3MESH4EOSC project:

- is a consortium of NRENs and CERN,
- has received funding from the EC (INFRAEOSC-02-2019 call) to establish technical capabilities.
- aims to create an open, federated interconnected community cloud ecosystem.

The results could be delivered to the European R&E community via GÉANT GN4-3 WP4 Task 3.

PSNC, NORDUNET as Task members participate in the CS3MESH4EOSC.

Step 2: GN4-3 WP4 Task 3 could pick up the delivery of CS3MESH4EOSC

- to evolve these technical components developed, into the GÉANT service offering.

# Implementation

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The results of the Services Selection

NREN capabilities, the Business Canvas exercise, the SWOT analysis and the Capability Matrix indicate:

- IaaS - most mature type of service.
- Cloud Team needs a better understanding of user needs.
- Current needs still mostly focused on IaaS, some not too complex services (databases, collaborative platform similar to the Google suite).

# Implementation

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- The providers need to be able to price their services.
- In order to provide cloud services there needs to be an understanding of the real cost.
- A significant amount of work is typically needed to run a cloud service in production.
- The ability to price the service is a key measure of organisational readiness to provide a professional service.

Build a mechanism for access to the services - a core GÉANT capability

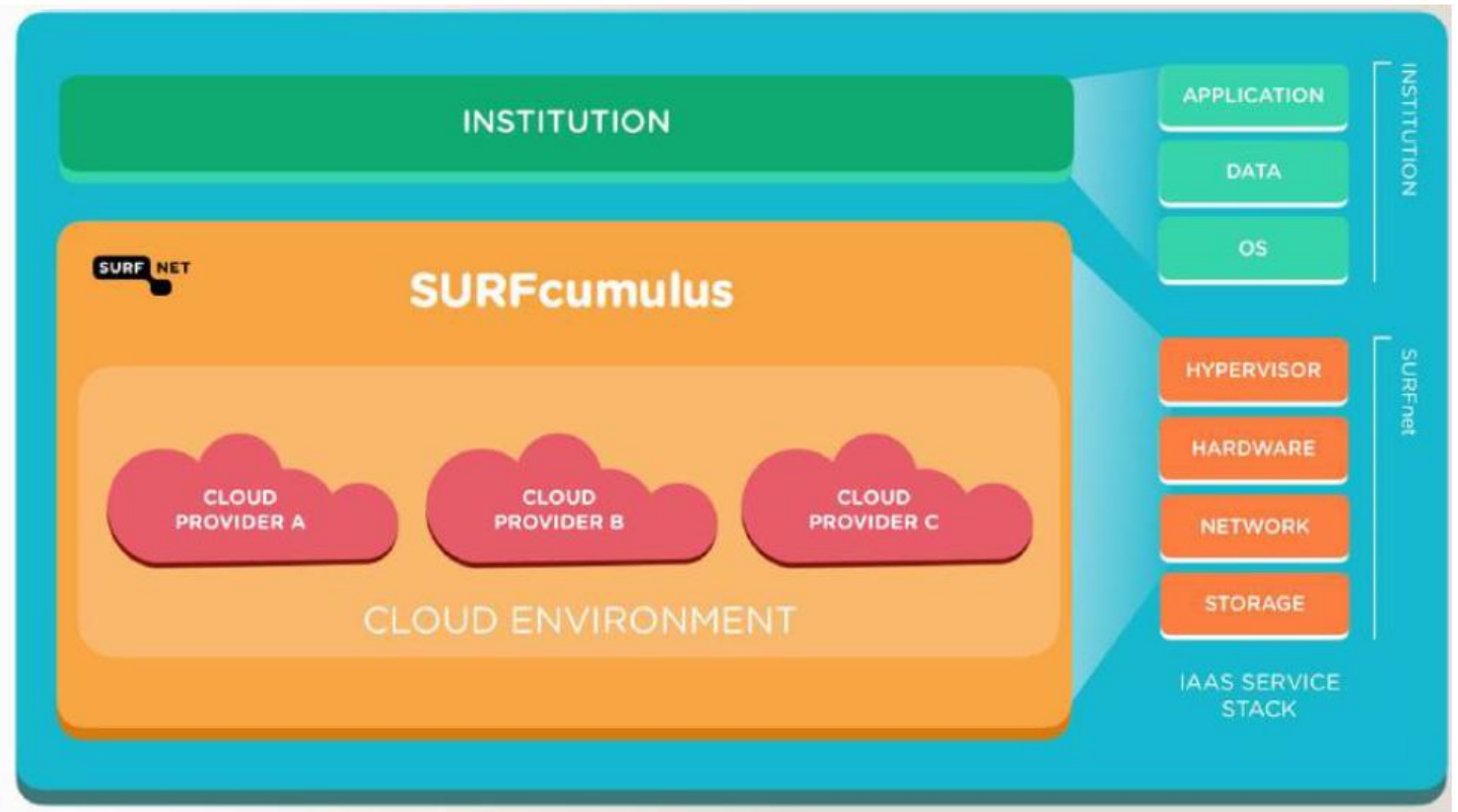
Groups concept to access cloud services (described in Step 2) - OpenStack regions concept or similar

Cloud Team will work in close collaboration with AAI experts in the GN4-3 project.

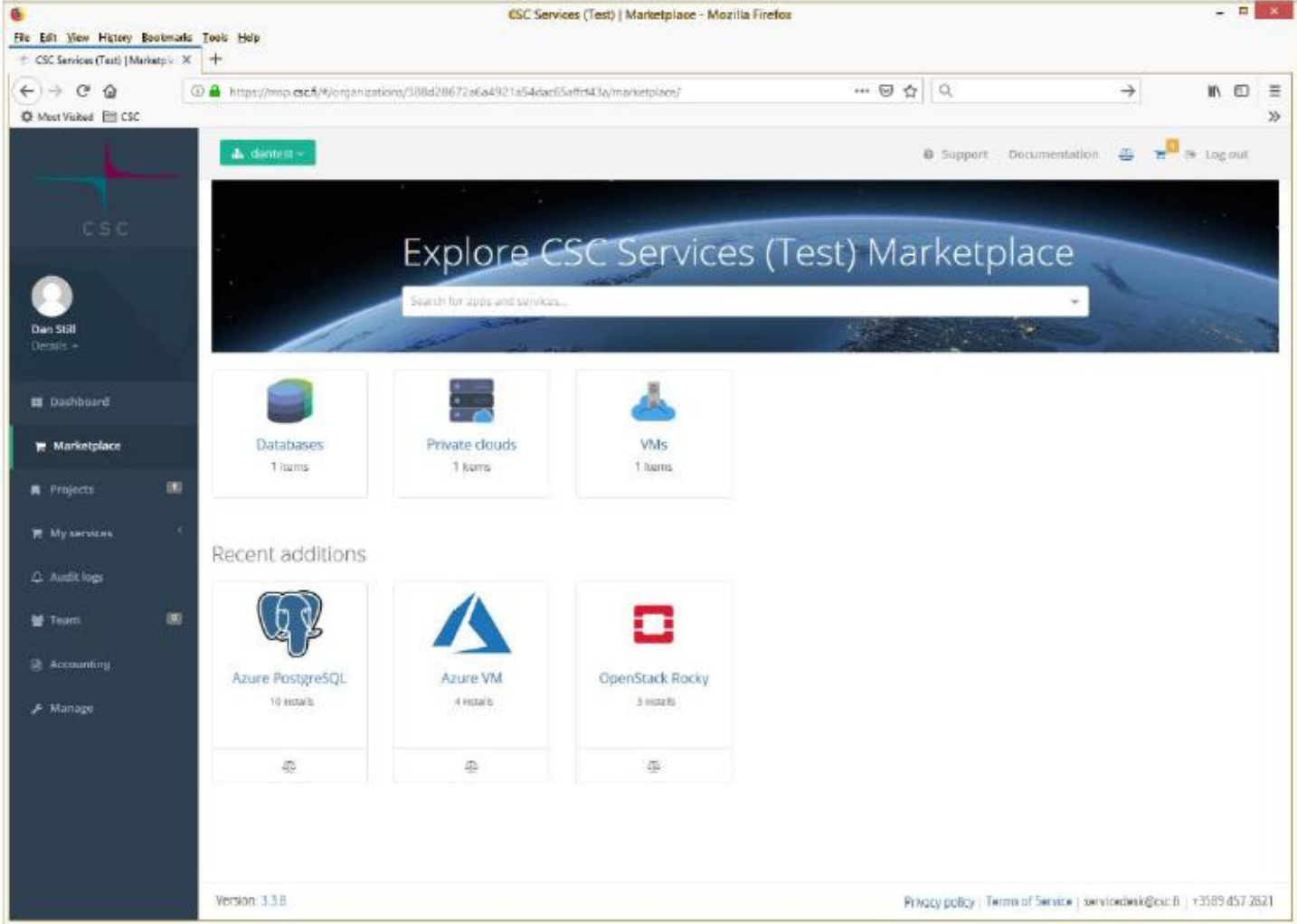
# Implementation



Multi Cloud  
Management  
Platform:  
SURFcumulus



Portal Screenshot



# Implementation



Compare pricing to that of commercial providers.



Benchmarking of community provider capability needs to be continued.



Run Platform-as-a-Service (Kubernetes) as a technical exercise.

# Implementation

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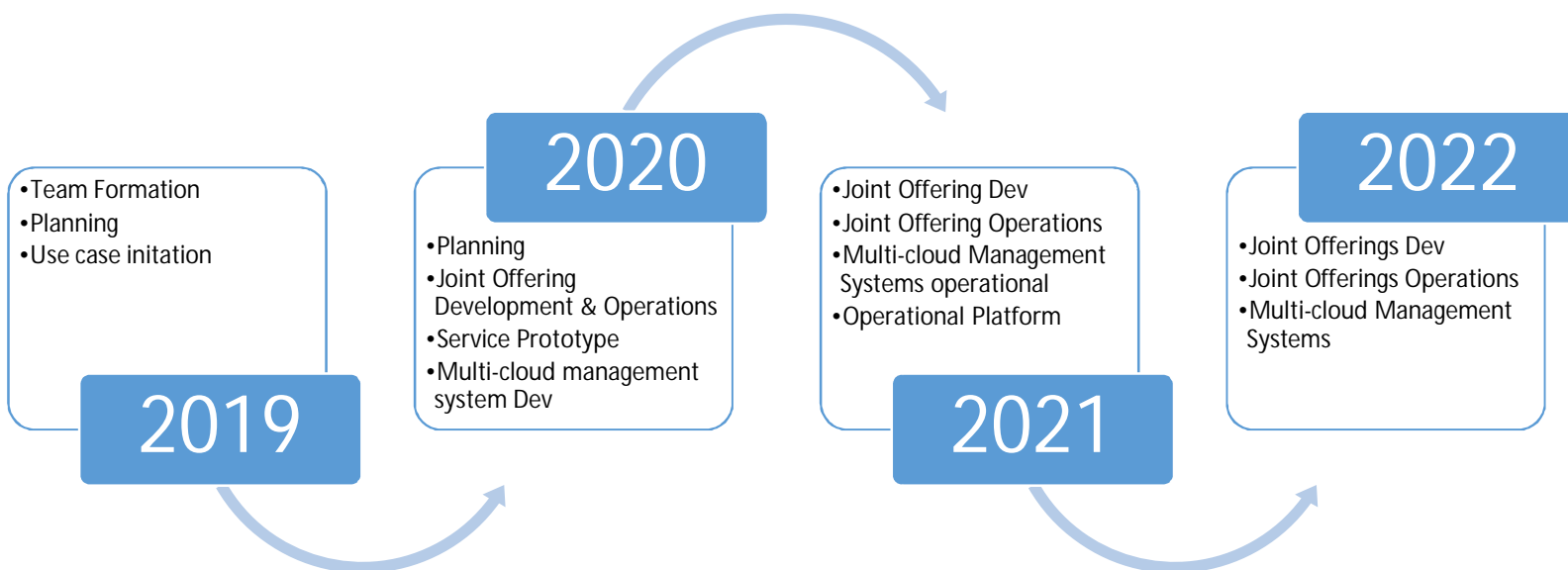
- Geo-redundancy – regions for Infrastructure as a Service (IaaS) – potential for collaboration.
- Provide a multi-cloud portal (like the SURFnet service SURFcumulus).
- The Cloud Team will:
  - investigate alternative platforms
  - implement pending feasibility

# Implementation

Determine whether the Cloud Team should allocate effort to Sync & Share.

- CS3MESH4EOSC project starting in early 2020.
- Services at the GÉANT Cloud team participating NREN sites are primarily national in scope.
- EUDAT services are already included in the EOSC service catalogue.
- A close collaboration seems like a natural next step.
- Members of the GÉANT Cloud Team participate in the CS3MESH4EOSC project.

# Timetable



# The grander vision



Campaign to influence policy makers



The European research community needs significant cloud resource in Europe a 'la Euro HPC.

# Questions

- Who is willing and able to be part of a pan European scale?
- Multi-cloud orchestration system, to assess suitable roles for NRENs and GÉANT?
- Comments & thoughts on federated platforms and duplication of data?
- File sharing and cloud storage: sync & share?
- The current status of NREN container-based virtualisation capabilities?
- Selection of cloud delivery models (IaaS, PaaS, SaaS, ...)?