



GÉANT Community Clouds

Work achieved and the Delivery Plan

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Today's Topics

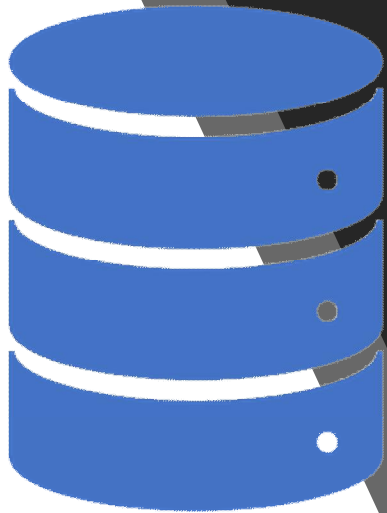
Introduction to the GÉANT cloud offerings
(why we collaborate; what we offer)

Commercial vs. Community

What we have done so far regarding
community clouds

What we plan to do next

Cloud Offerings: Objectives

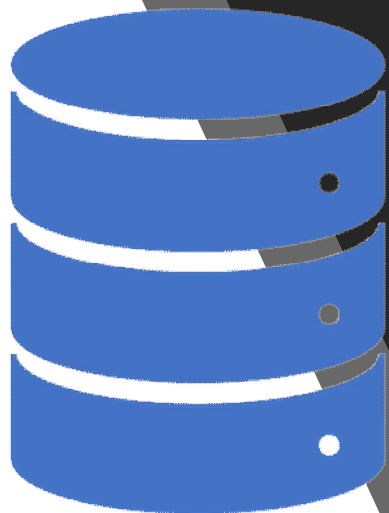


1. Aggregate and scale up capable national service offerings to a pan-European level.
 - Help NRENs identify suitable services to offer jointly
 - special attention to container-based virtualisation capabilities
 - Support and coordinate development efforts
 - with NRENs pooling resources

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 –EENet of HITSA)
- 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 - CARNet)



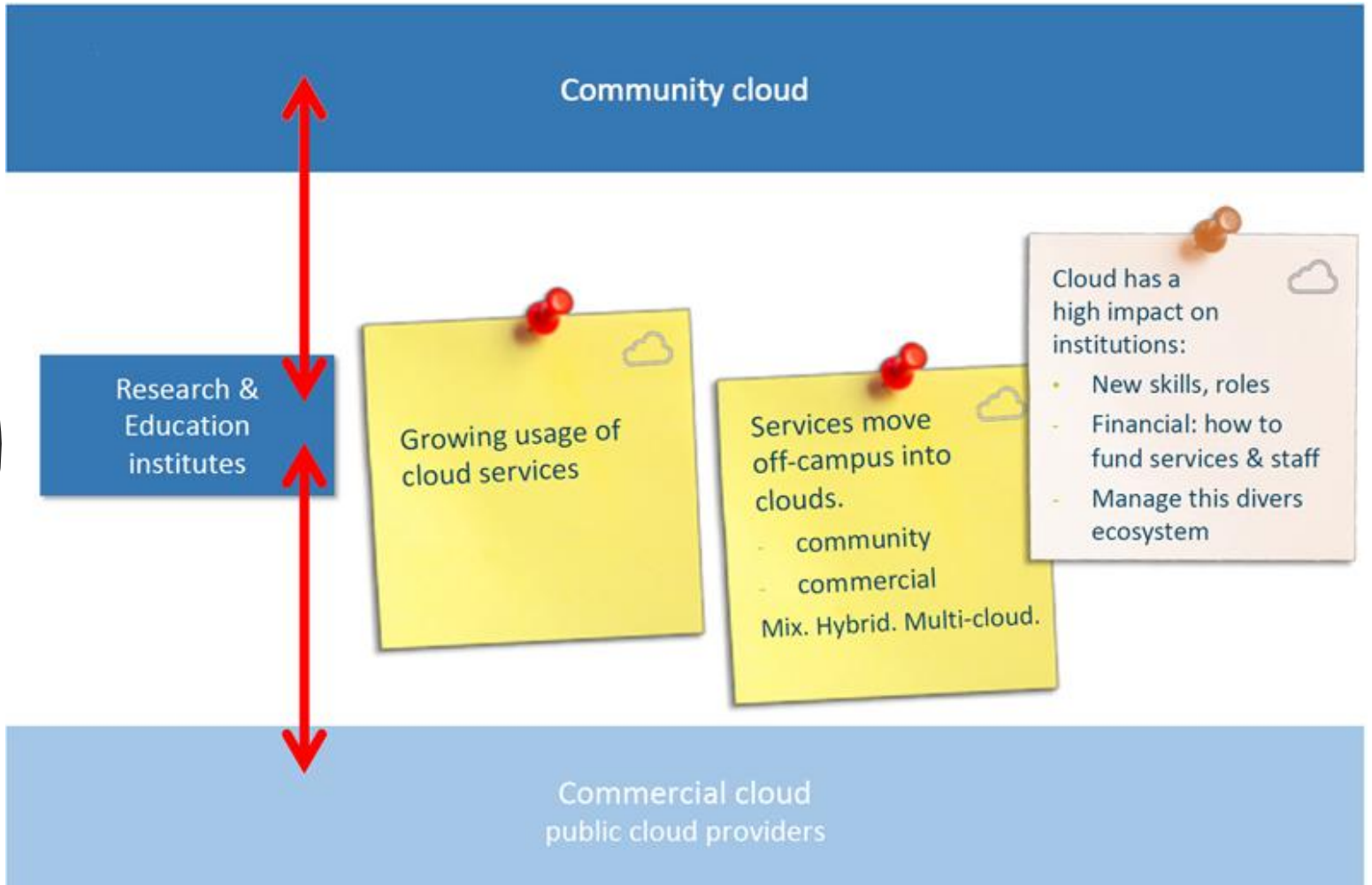
WHAT'S
NEXT?

Community Cloud Developments

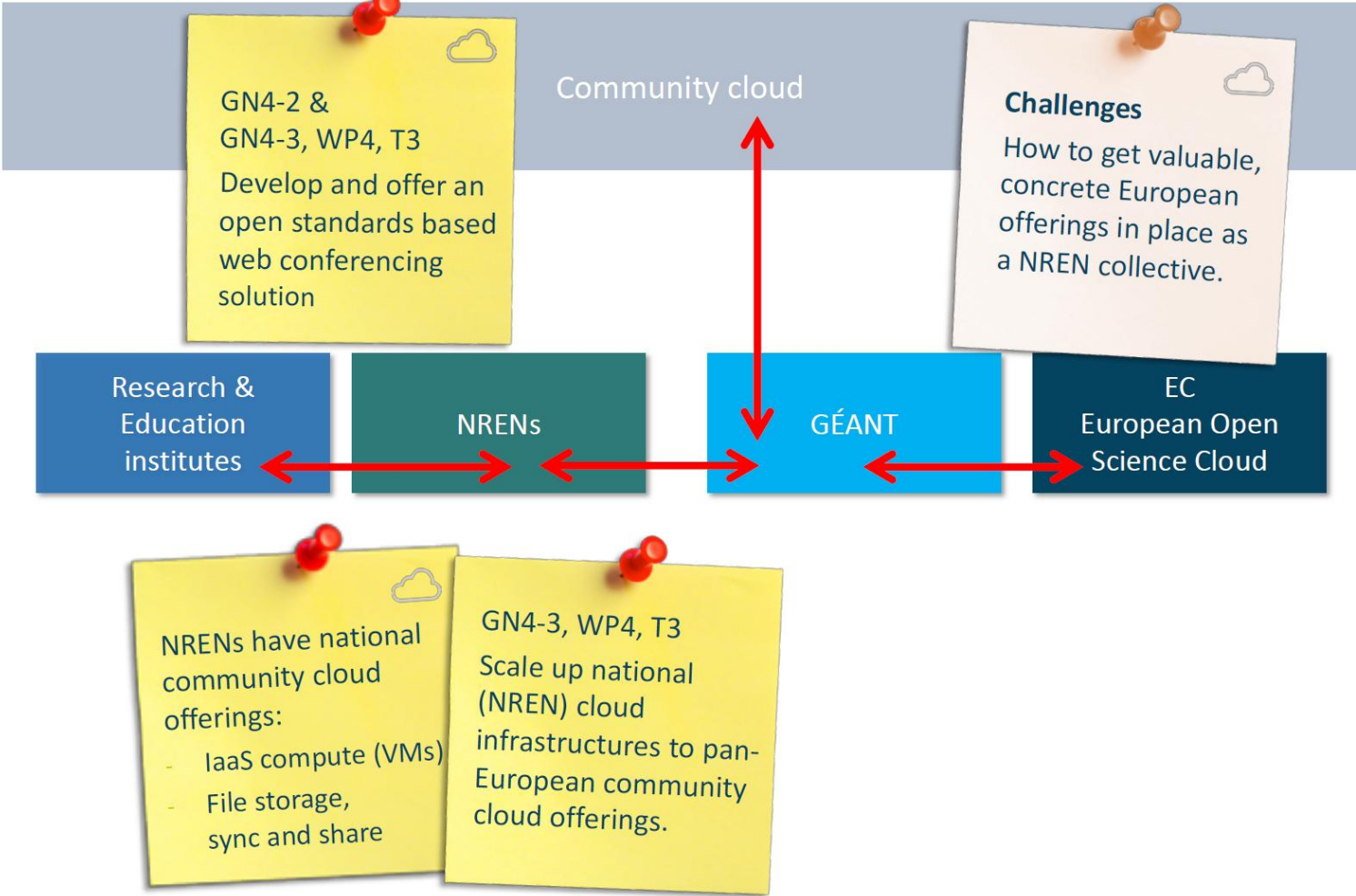
Community services:

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

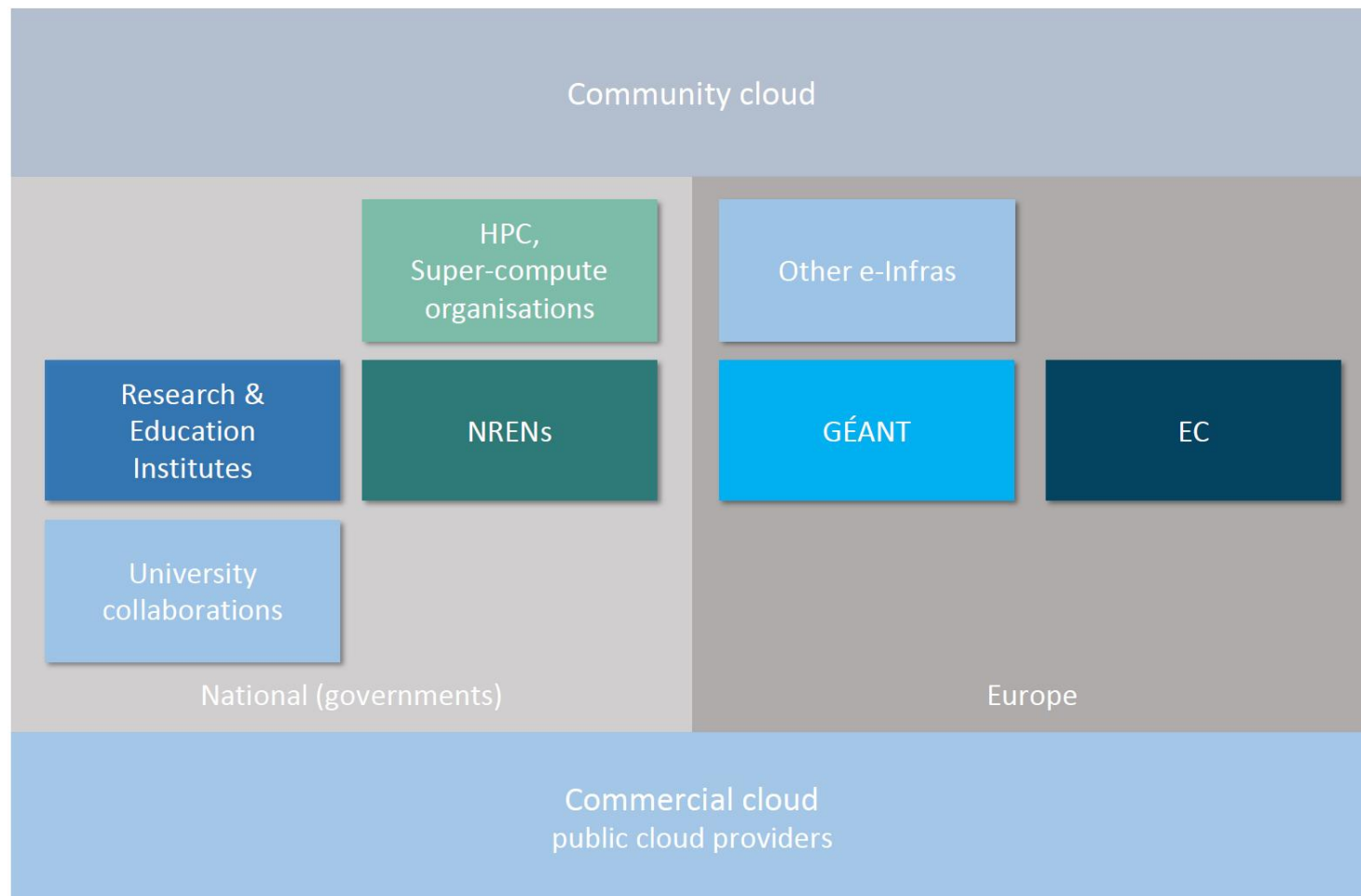
Push from
Institutions



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?

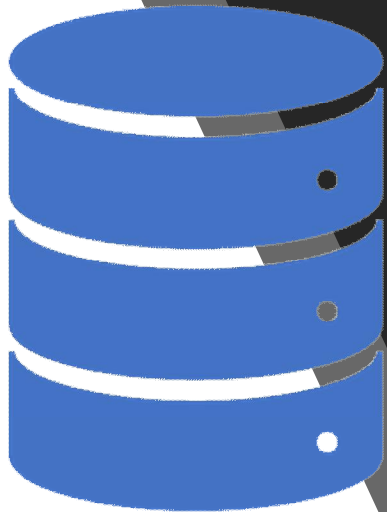
- Interfaces for hybrid cloud platforms (including OpenStack, etc.)
- Our expertise on community clouds.
- When universities do not supply standard services, but user groups need something specific we need to understand this and fill the gap.

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

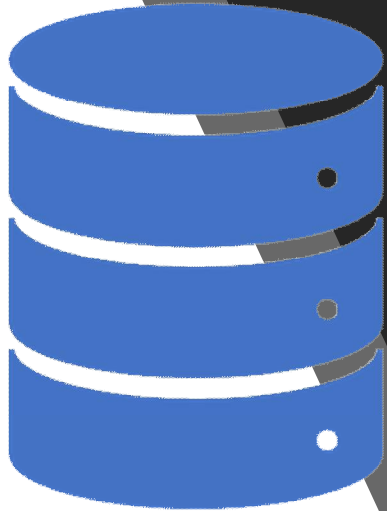
Step 1: Start with an offering that scales up the NRENs' capabilities to a pan-European scale

- 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



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



- 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.

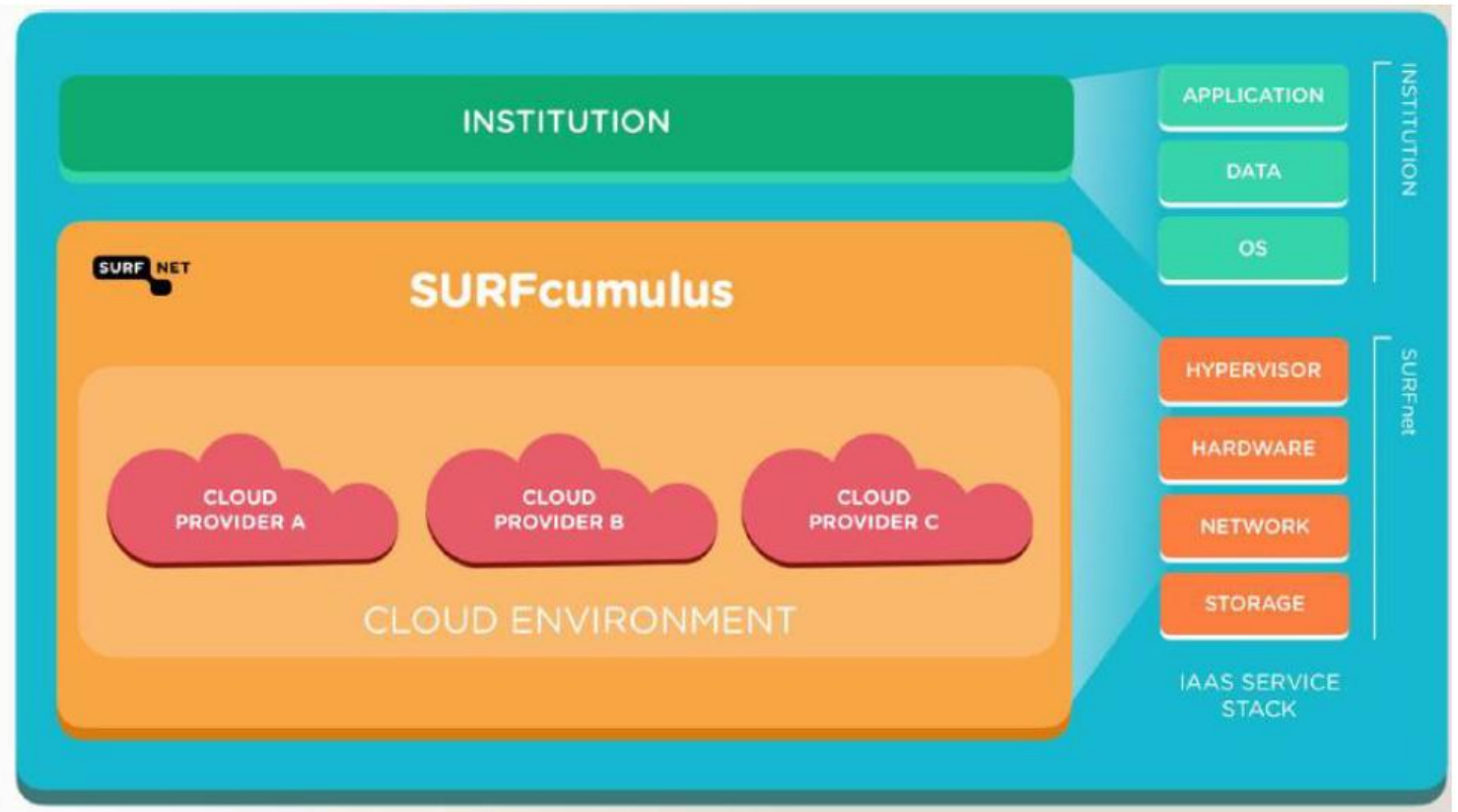
Build a mechanism for access to the services - a core GÉANT capability

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

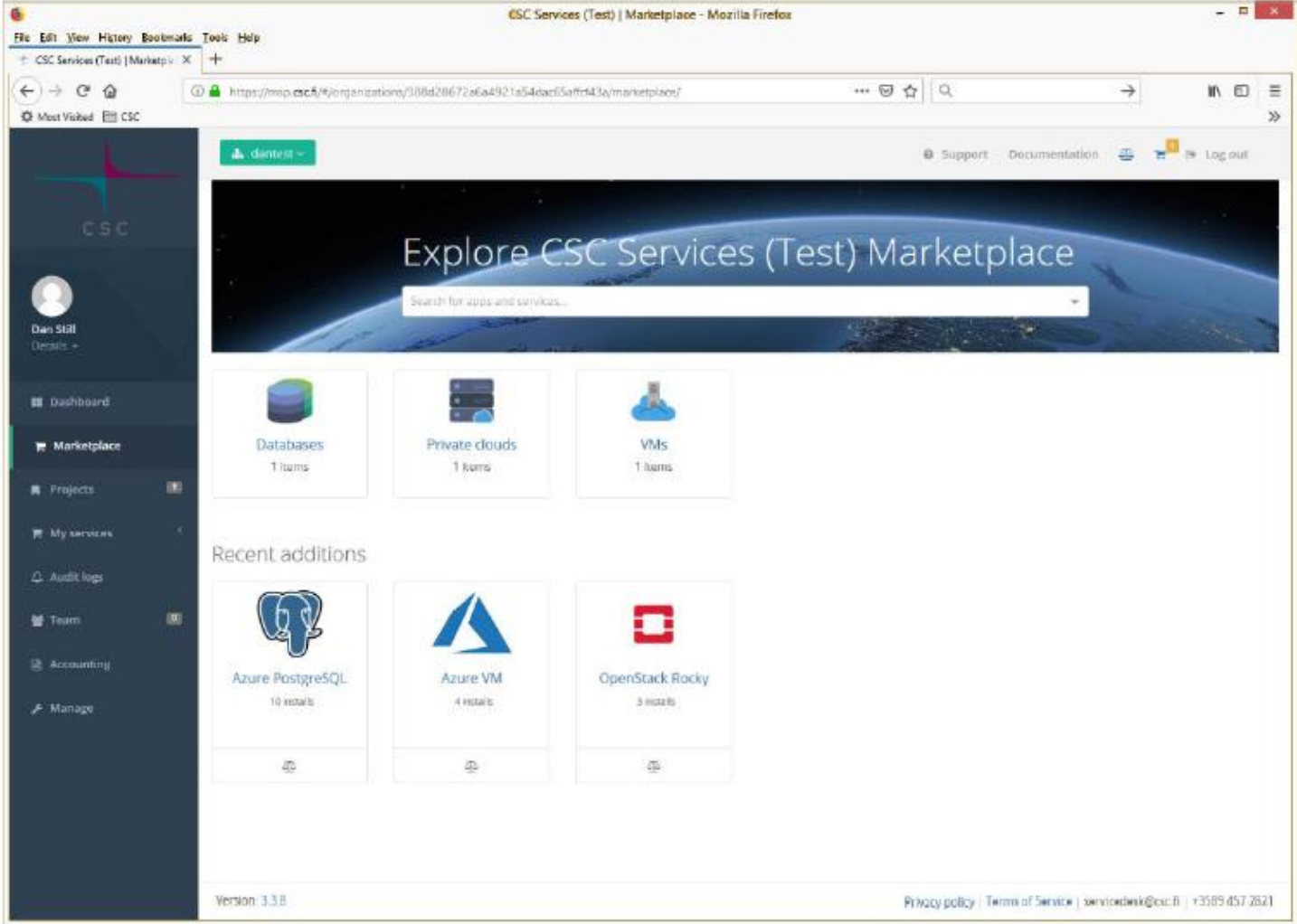
Cloud Team will work in close collaboration with AAI experts in the GN4-3 project.

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



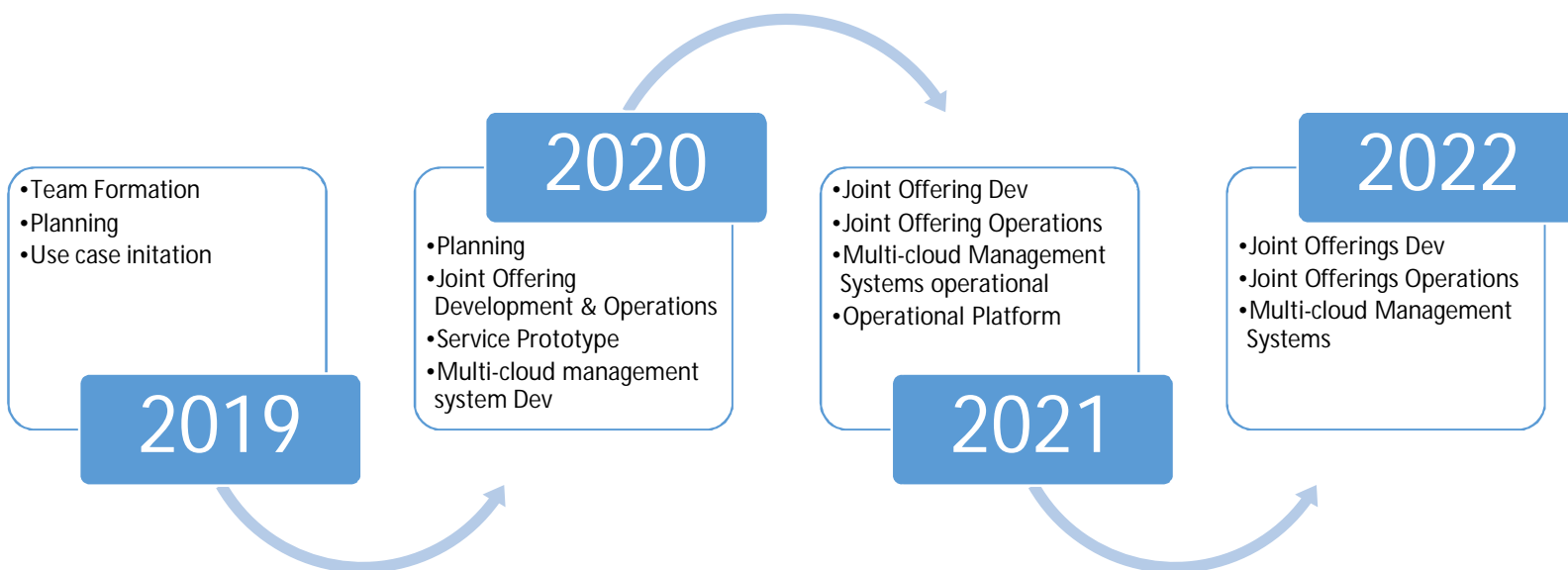
- Geo-redundancy – regions for Infrastructure as a Service (IaaS) – potential for collaboration.
- Provide a multi-cloud portal (like the SURFnet service SURFcumulus).
- The Cloud Team will:
 - investigate alternative platforms
 - implement pending feasibility

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, ...)?