

# JENNIFER3

## WP5 on Computing

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JENNIFER3 WP5 Meeting

20 May, 2025

Phone

Dr. Silvio Pardi for the Computing Group

# Involved People

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Sophie King

Silvio Pardi

Nick Prouse

Mathieu Guigue

Marcko Bracko

Cristiano Bozza

Other people interested?

# Milestones for Jennifer3

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## Two main topics for Task 5.1 and Task 5.2

- Cloud Technologies
- Network Data Challenge

## Milestones

D.5.1 Organization of a workshop on the usage of cloud computing technologies in the context of Belle II, T2K and Hyper-K (month 24)

D.5.2 Report on the joint Data Challenge Session testing the network links from Japan to the main EU Data Centres involved in Belle II and Hyper-K (month 36)

# Organization of a workshop on the usage of cloud computing technologies in the context of Belle II, T2K and Hyper-K

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Define the Scientific Committee

Define the Location ( Recommended in Japan for using the JENNIFER3 secondments)

KEK in October 2026?

We should start to collect in the next months all the activities, experiences related Cloud, test done in Cloud or applications that can be potentially deployed on Cloud within the tree experiments Belle II, T2K, HK.

## Task 5.1 Cloud Technologies

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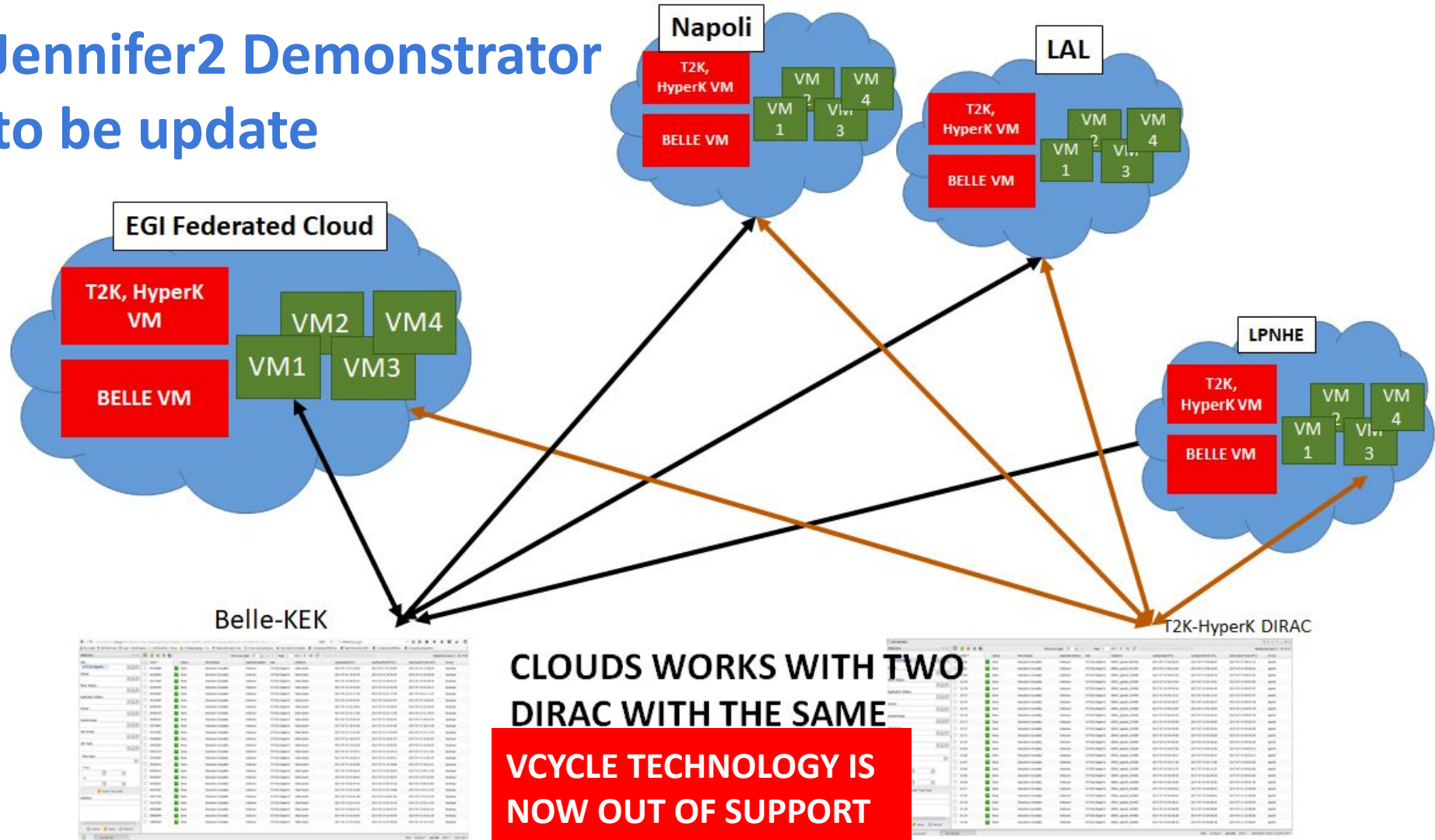
### Investigate Cloud Computing for Analysis and MC

Study how to exploit the Cloud technologies by integrating resources, in a stable way, into the computing model of three experiments, Belle II, T2K and Hyper-K.

This can be done through the implementation of a common interface such as the DIRAC Cloud Computing Element, for integration of virtual machines into the MC factory and for testing the PaaS/SaaS services offered by INFN and CNRS Clouds.



# Jennifer2 Demonstrator to be update



# Cloud Technologies

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The usage of Cloud for Code Testing/Development or Analysis is another hot topic in high energy physics.

A discussion could be open on the possible usage of PaaS/SaaS service.

Some interesting technologies: JupyterHub, Dask, Kubernetes, Cluster service on demand, distributed database application.

Possibility to make synergy with other tasks of WP5

# Potential Cloud Resources

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INFN Cloud - IaaS/PaaS Infrastructure

Napoli Open Stack Infrastructure

LPNHE Open Stack Infrastructure

EGI Federated Cloud - IPHC Open Stack Infrastructure



## Task 5.2 Networking

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### **A Joint Network Data Challenge:**

The goal of this task is to test the speed of the international networks links connecting Japan vs EU institutes, assess the efficiency and stability of the data management tools. It will be done by performing a set of joint stress tests sending data from storage to storage from the sites in Japan to the European-based Belle II and Hyper-K data centres such as CNAF, CC-IN2P3, DESY, KIT, SIGNET, NCBJ, Napoli and RAL.

A set of common tools will be used to monitor the network links and the performance will be compared with the estimated requirements of the two experiments.

# WLCG Data Challenge

- WLCG has mandated to execute data challenges (DC) for HL-LHC

- Demonstrate readiness for expected HL-LHC data rates by a series of challenges
- Increasing volume/rates
- Increasing complexity (e.g. additional technology)
- A data challenge roughly every two years

- DOMA is the coordination and execution platform

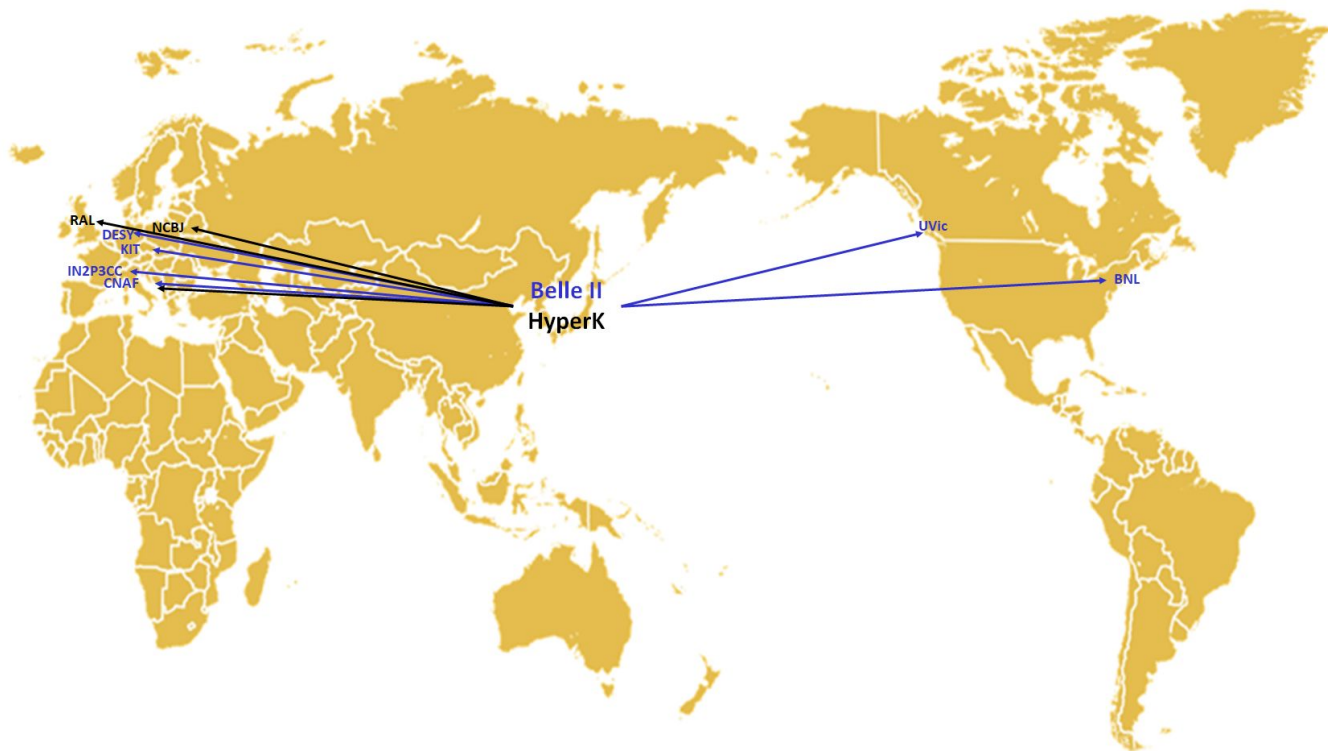
- Data Organization Management & Access
  - Forum across all LHC experiments to address **technical** challenges
- DC coordination across the LHC experiments and beyond
  - Suited dates
  - Reasonable targets
  - Functionalities
- Help in orchestration

- No pressure on sites to increase their capacity

- But can we improve the existing infrastructure?

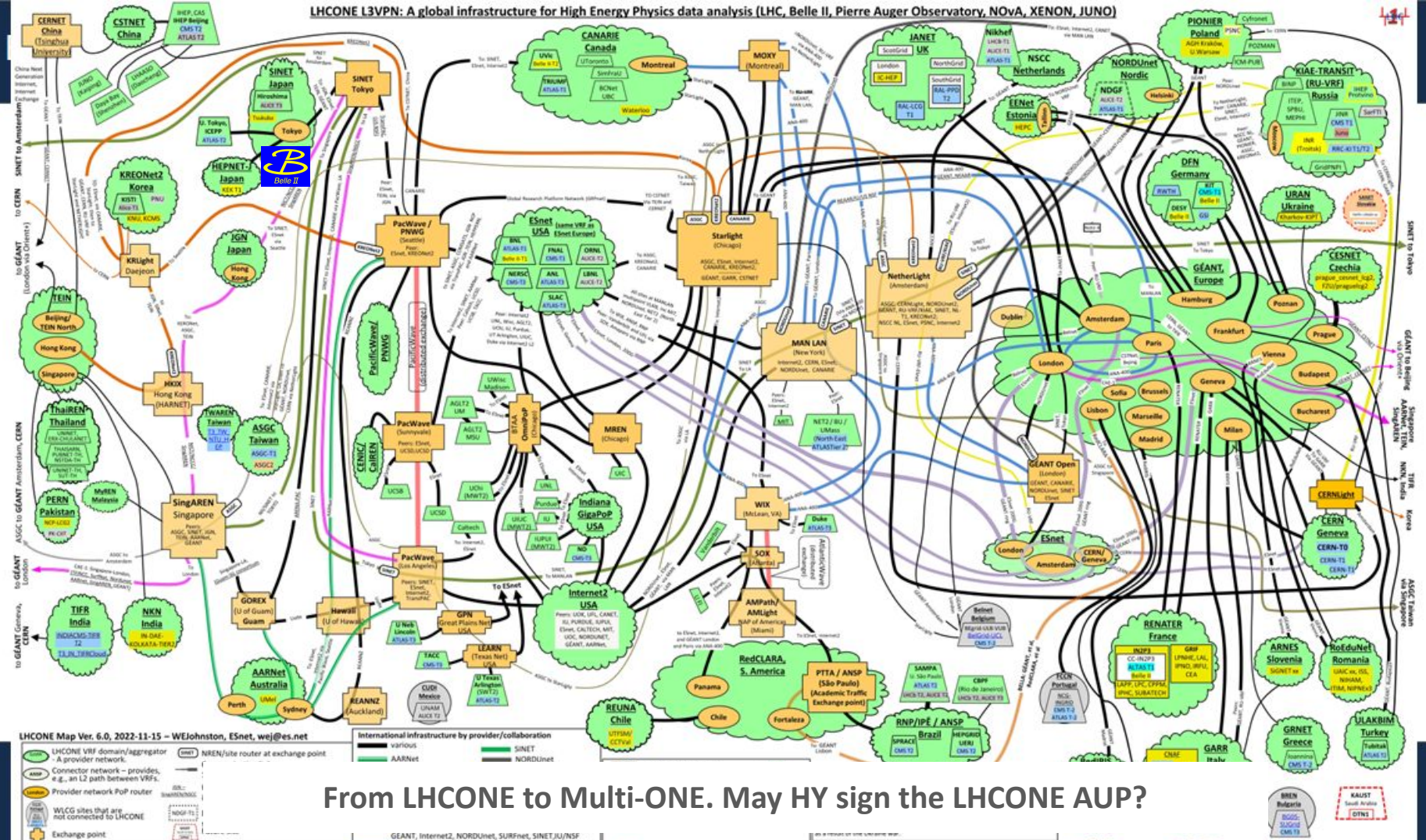
Year	% of HL-LHC
2021	10%
2024	25%
2027	50%
2028?	100%

# Belle II and Hyper-K in DC27



The idea is to organize a joint Belle II/Hyper-K data challenge session and integrate these tests within the context of WLCG DC27. This will involve stressing the specific network links connecting Belle II and Hyper-K sites to Japan, concurrently with the traffic generated by LHC experiments.





From LHCONE to Multi-ONE. May HY sign the LHCONE AUP?

# WLCG Next Data Challenge 2027

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The new Data challenge Campaign is under organization by WLCG.

We should start to define the involved sites in the for the DC

Contact KEK for checking the resource for both experiments

Contact other sites

Define the tools to be used, i.e. the FTS servers, DDM or other tools

Schedule a mini-challenge to be run this year or next year.