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CCIN2P3 site report

Hepix fall 19, Amsterdam

## Resources

80 agents (65 IT engineers)  
budget : 7M€

## Facilities

1700 m<sup>2</sup> over the two computing rooms  
24/7/365 operation

## Computing

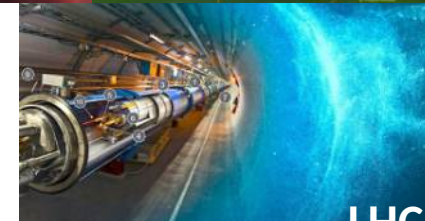
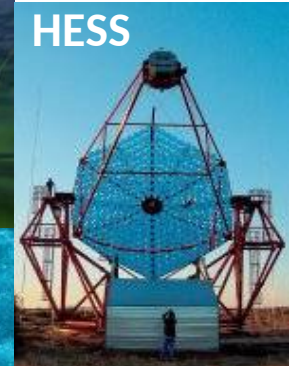
1000 servers, 40k threads, 440kHS06

## Storage

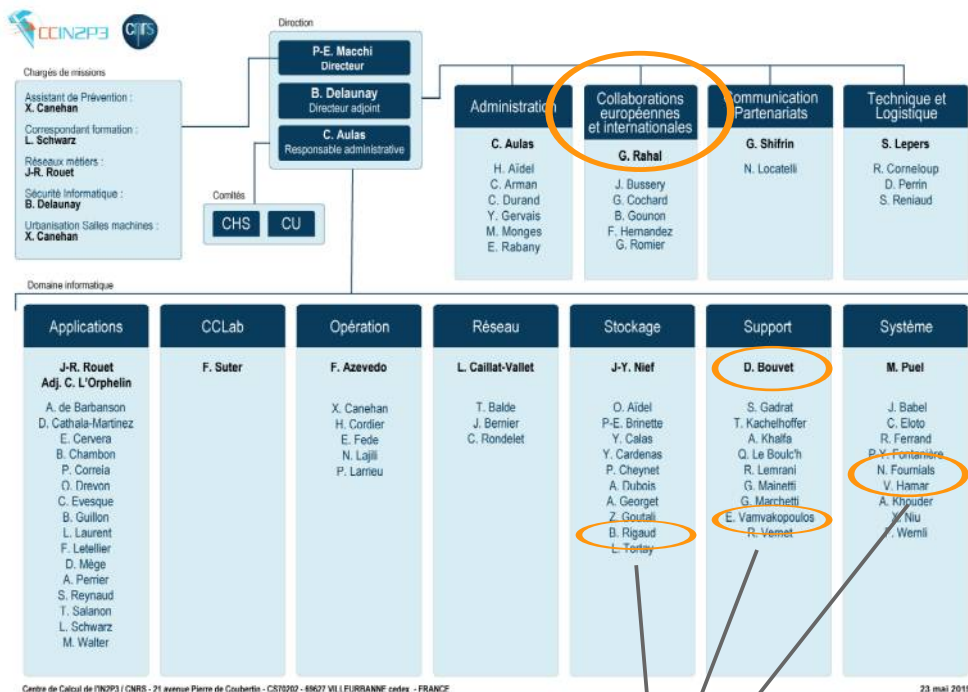
Tapes : 70 PB  
HDDs : 30 PB

## Networks

20 Gbps to Renater  
40 Gbps to CERN  
40 Gbps to LHCONe/WLCG



# ORGANISATION – some movements in the organisation charts



- ▶ Two new teams :
  - CEI (Ghita Rahal)
  - Computing (Vanessa Hamar)

- Opened positions :
- ▶ 1 network admin
  - ▶ 1 quality engineer
  - ▶ 1 devops
  - ▶ 1 computing engineer

→ <https://cc.in2p3.fr>

+1 FTE  
open position !

Computing

- ▶ Q1 18 Ceph in production, backing Openstack : 600TB
- ▶ Q2 18 SPS (distributed FS for HTC/HPC)
  - moving from Spectrum Scale to Isilon NFS filer
  - Spectrum Scale future is uncertain at CC-IN2P3 (licenses issues)
- ▶ Q3 19 Tapes : acquiring a Jaguar tape library (20PB)
  - aim at easing possible migration away from reluctant vendors :)
- ▶ Q4 19 AFS phasing out, planned to end in 19'
  - migrated usages to Isilon NFS filer







local, institutional, national users  
HPC/GPGPU use cases

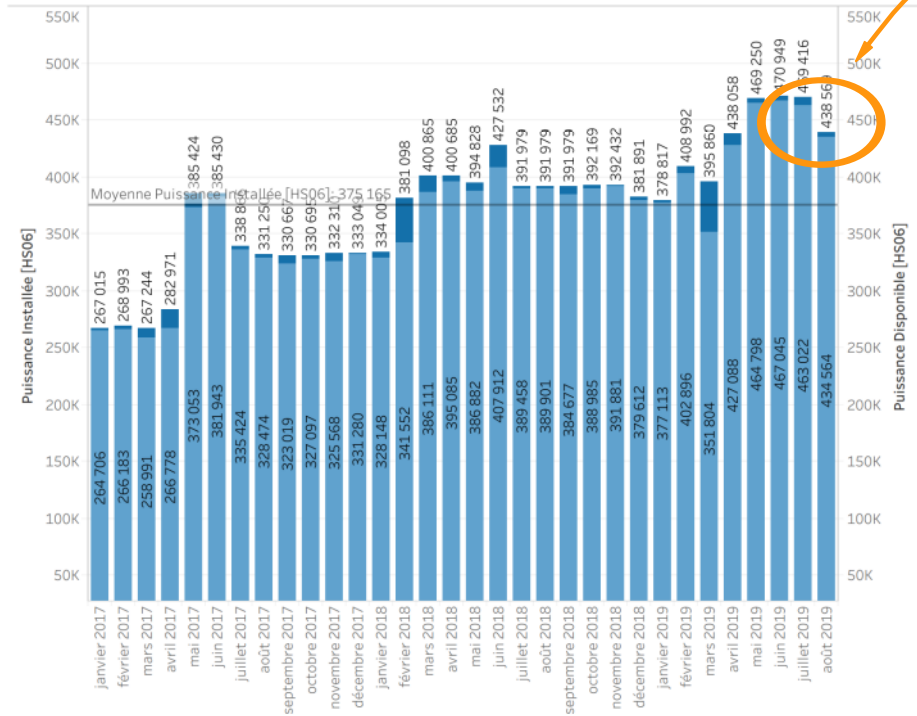


WLCG and EGI jobs (>80 % total production)

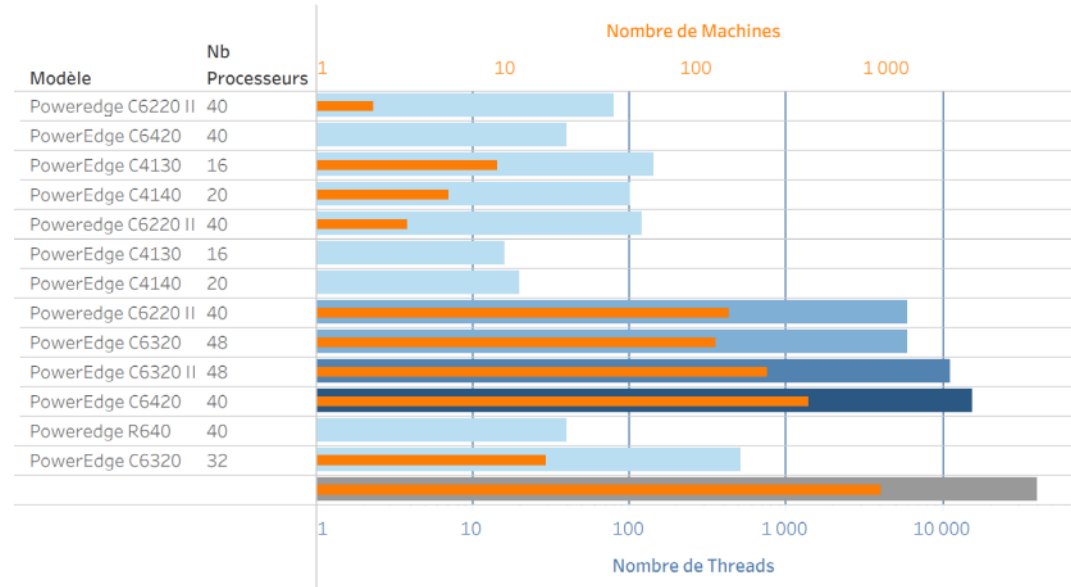
- ▶ Objectives
  - license savings
  - community sharing
- ▶ Project next milestones
  - production starting in october for WLCG and EGI resources
  - planning end of resources migration for Q1 2020

# COMPUTING – computing platform

Puissance mensuelle des machines de la ferme de calcul en HS06 pour 2017, 2018, 2019 (Onglet : Puissance)

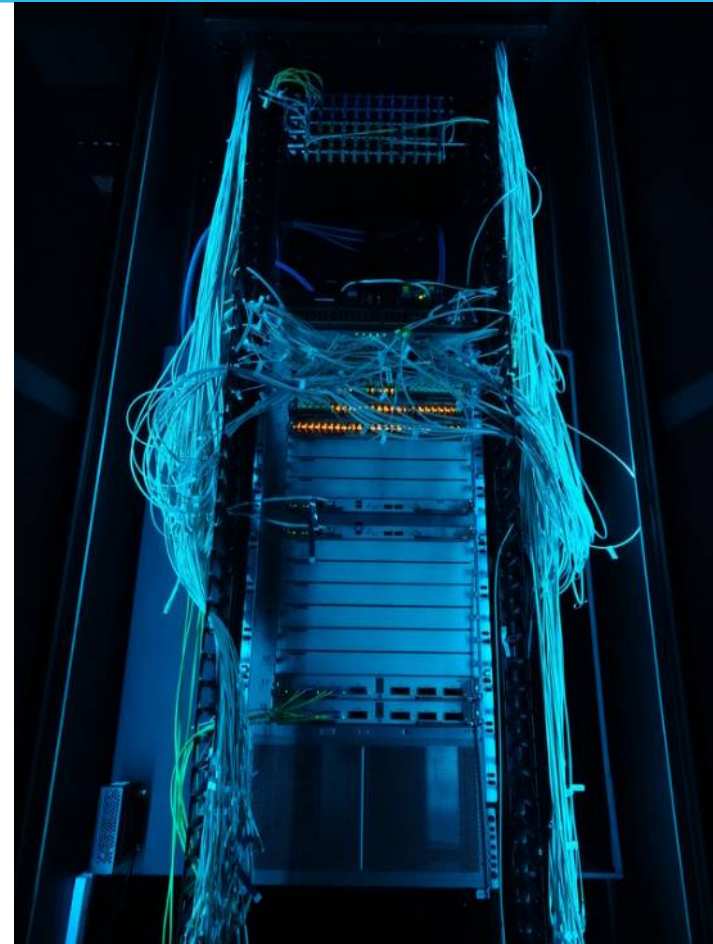


first HTCondor resources migration



▶ since Q2 18 workers provisionned with 10Gbps systematically

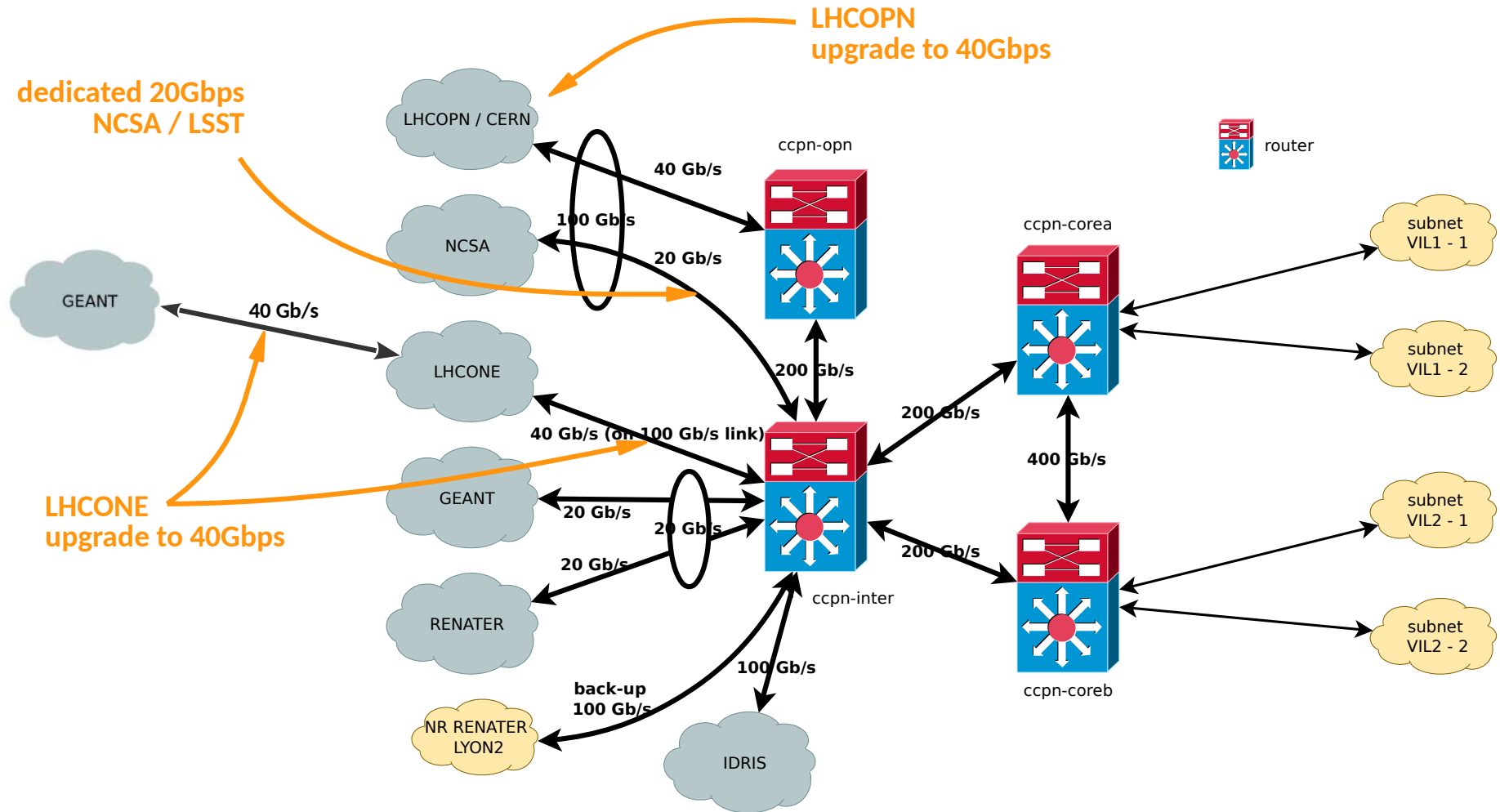
- ▶ Q4 18      Efficient IP in production (DNS management & zone delegation)  
  
                upgrade LHCOPN link to 100Gbps (40Gbps limit, full in 2021)  
  
                new 100Gbps link to IDRIS HPC Center
- ▶ S1 19      upgrade LHCONE link to 40Gbps (100Gbps in 2021)  
  
                dedicate NCSA Illinois link (LSST) : 20Gbps
- ▶ 2020      additionnal backup NREN 100Gbps link



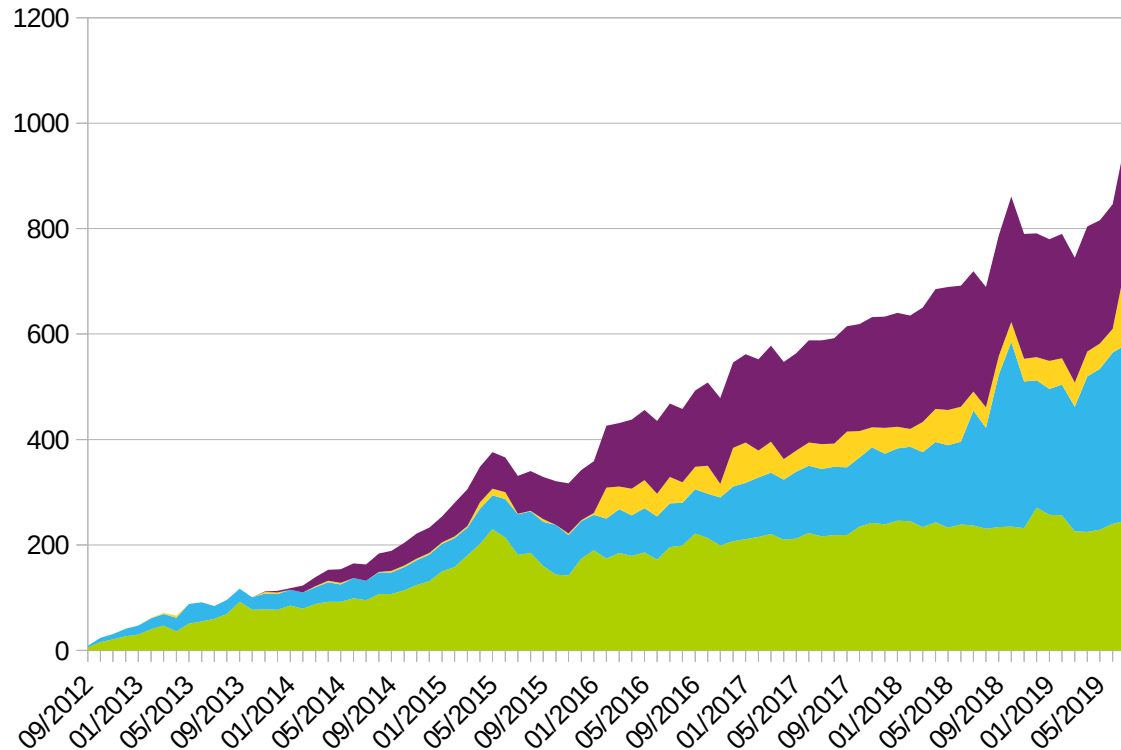
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# NETWORKING – main changes



projects : 57  
users : 630  
images : 581  
networks : 70  
hosts : 160  
memory : 28TB  
HT cores : 6248  
storage : 1.1PB  
(318 axes)



~900 VMs  
vs 1500 φ  
→ **37%**

■ CC IT  
■ computing  
■ hosting  
■ CC private cloud

Running instances

- ▶ migrating the main instance backends from Spectrum Scale to CEPH
- ▶ currently running Openstack Rocky
- ▶ integrated IFB (French Institute of Bioinformatics)

## ▶ Cloud

- deploying a Kubernetes platform for web hosting needs (~350 web sites)
- VMware has been phased out on Q4 2018



## ▶ IAM overhaul

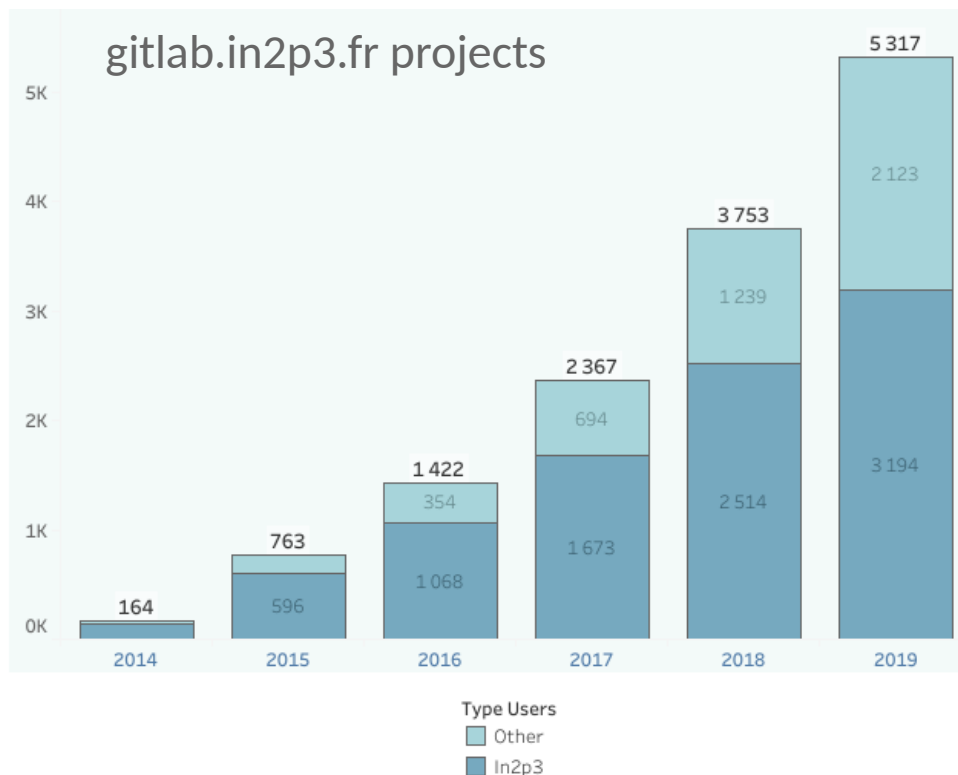
- decommissioning NIS & standalone KRB5/CAS, replacing with RedHat IDM/Keycloak
- identity federation
- modern directories (users management, authorization...)
- more functionalities & technologies (OIDC, APIs, RBAC...)



- ▶ service catalog
  - ongoing project since 2017
  - provide a clean services portfolio
  - formalise IT services (ITIL principles), link to CMDBs
  - provide information to monitoring, ticketing, configuration management, deployment...
  
- ▶ decision support system
  - « Tableau » in production for two years
  - 120 graphs integrated since

## ▶ Gitlab

- last two years : ~50 upgrades, +125 % projects & users
- 31k build in 2019

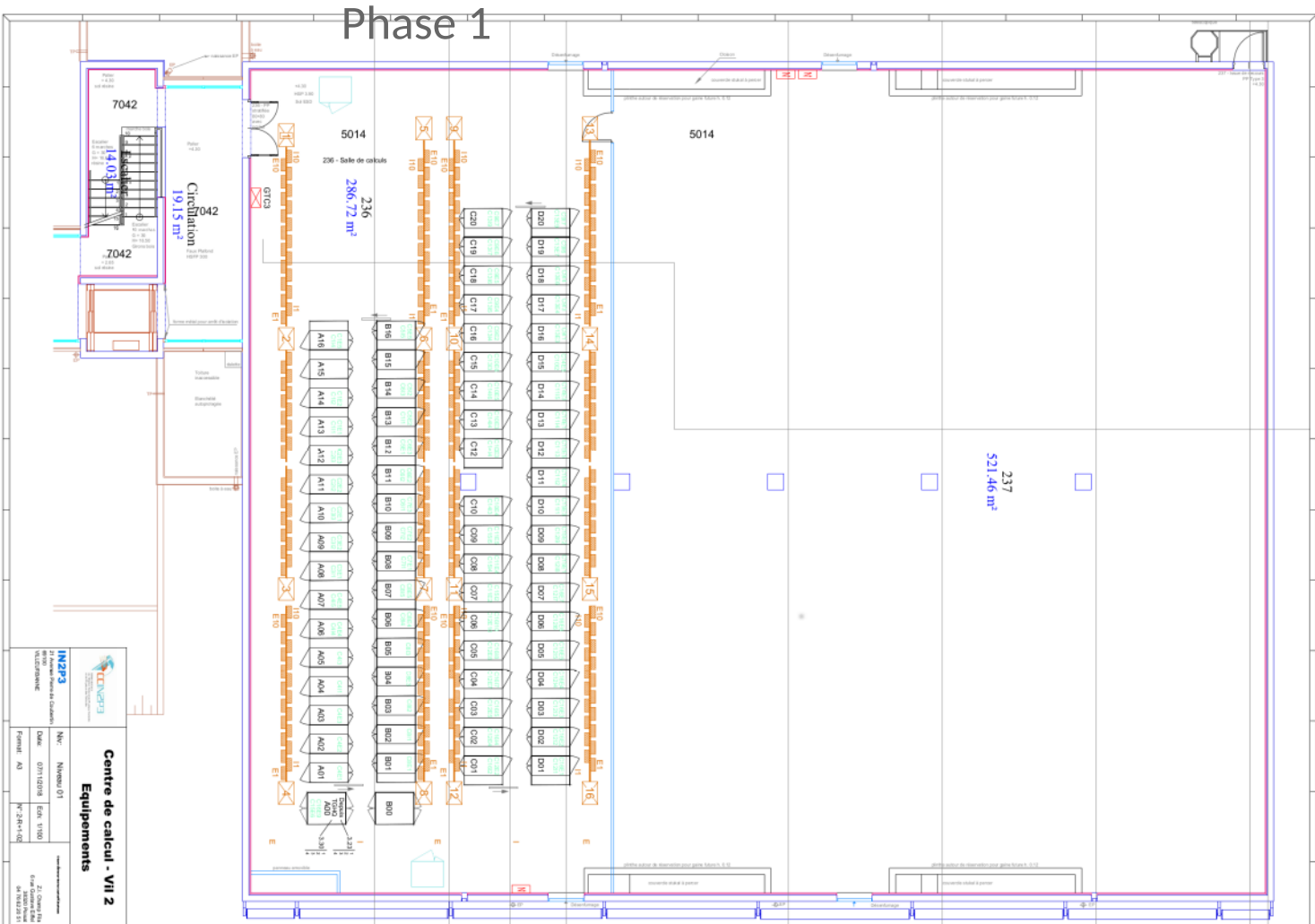




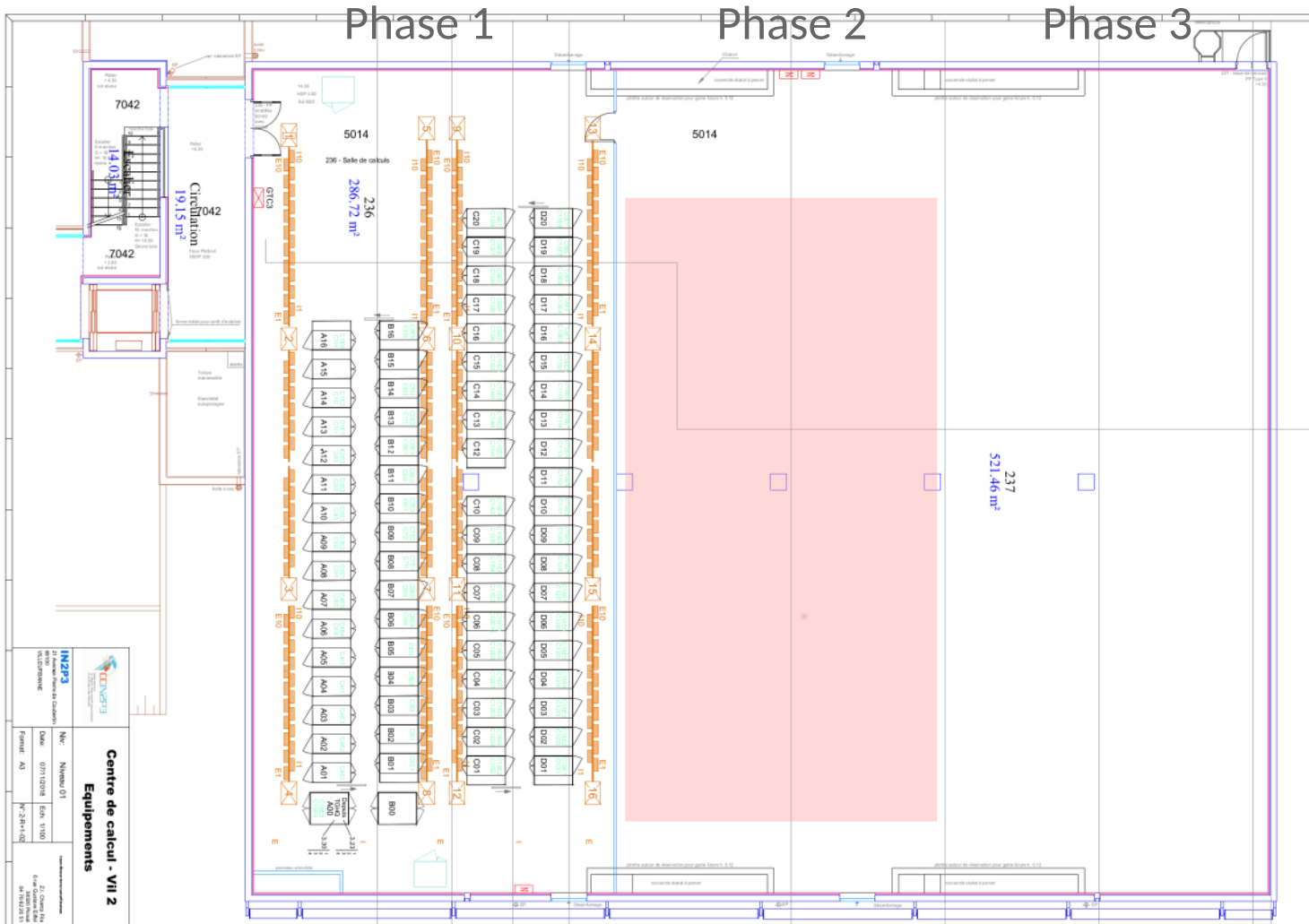
# FACILITIES – Asbestos is in the air !

- ▶ at start : floor rehab with slabs replacement
- ▶ ended up with burdensome regulation :
  - 2 years preparation
  - x6 budget (>100k€)
  - 15 days with heavy constraints on room access (air containment etc...)
- ▶ 1800 slabs replaced



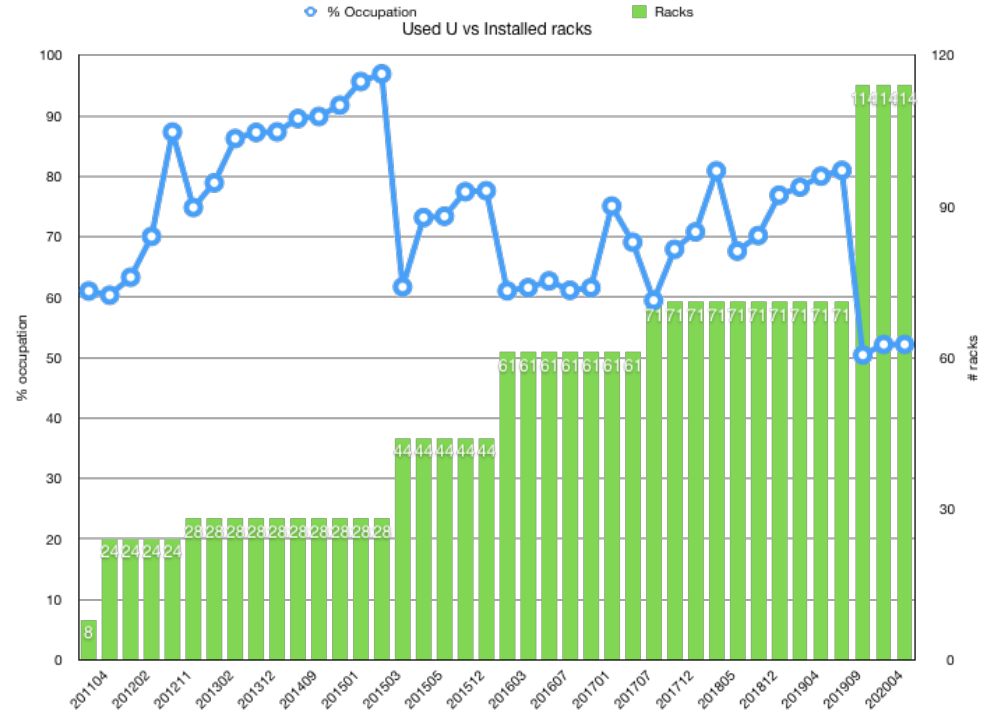








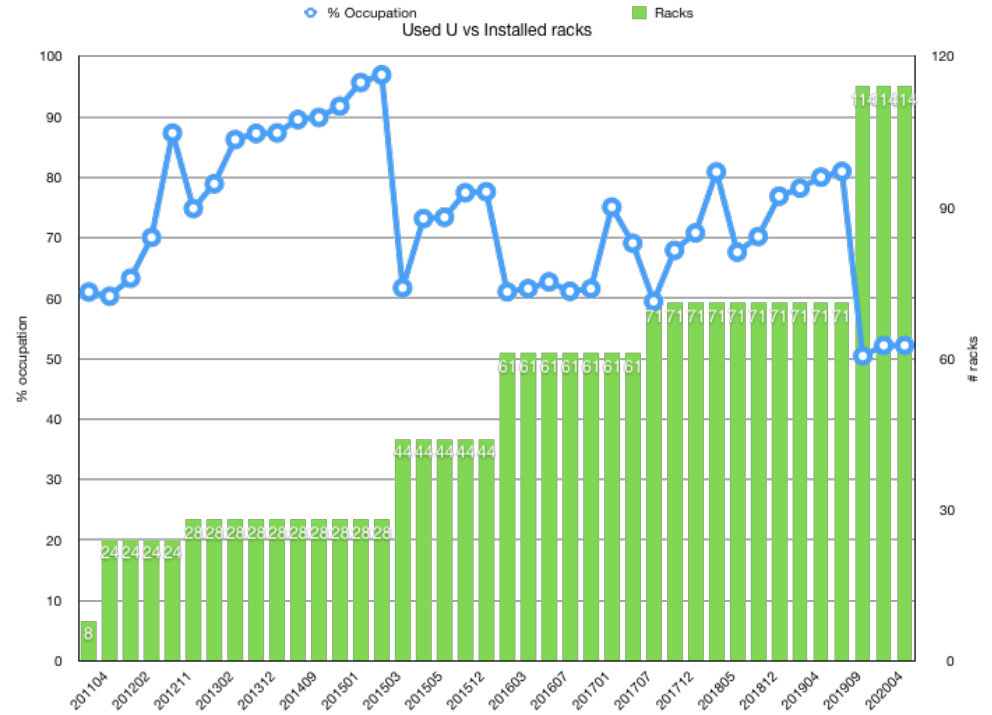
# FACILITIES – VIL2 extension 2nd phase



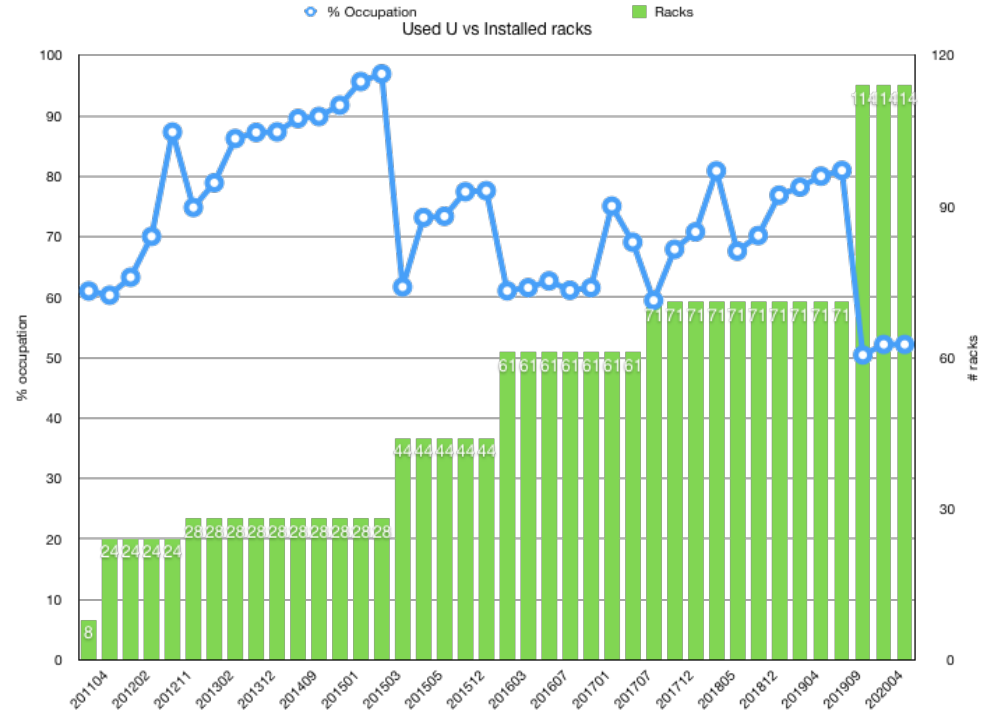
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moveable bulkhead

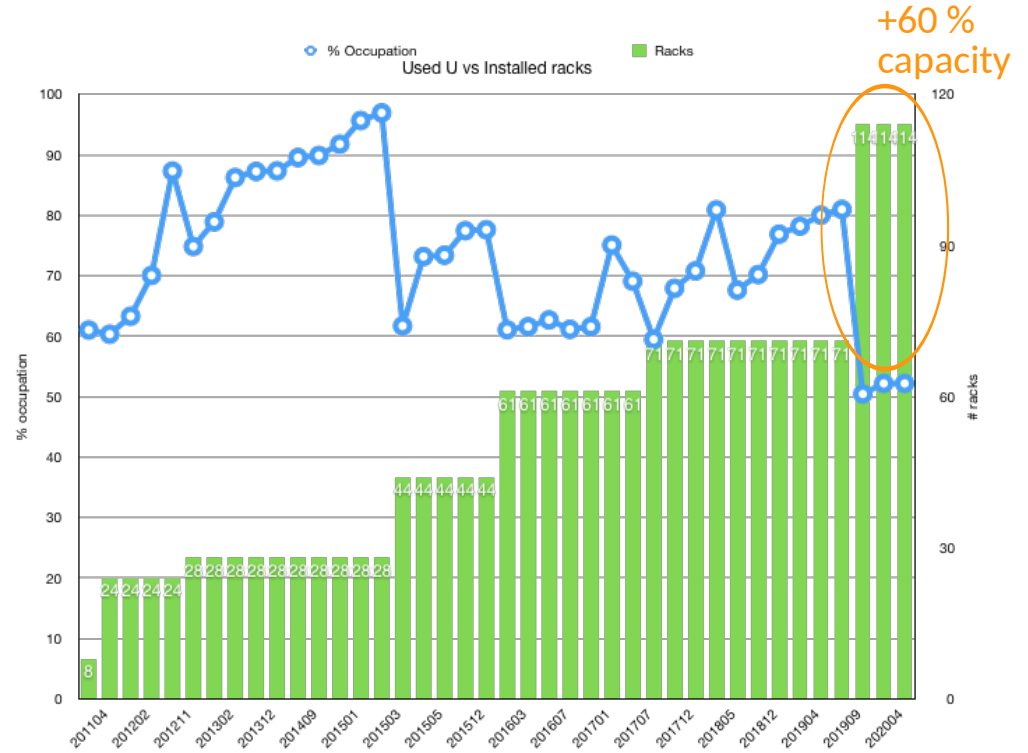


# FACILITIES – VIL2 extension 2nd phase



moveable bulkhead

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moveable bulkhead

