

THE CERN DATA CENTRE – Where data becomes knowledge
LE CENTRE DE CALCUL – Des données à la connaissance

CERN Data Centre

Physical Servers: 11,000

- Processing cores: 200,000
- Hypervisors Hosts: 7,000
- Virtual Machines: 50,000
- Virtualization Ratio: 7:1

Storage Arrays: 3,500

- Hard disk drives: 71,000
- Disk storage capacity: 230 petabytes

Tape storage

- Cartridges: 40,000
- Used capacity: 440 petabytes

Network Switches/Routers: 1,446

Cabinets: 1,200

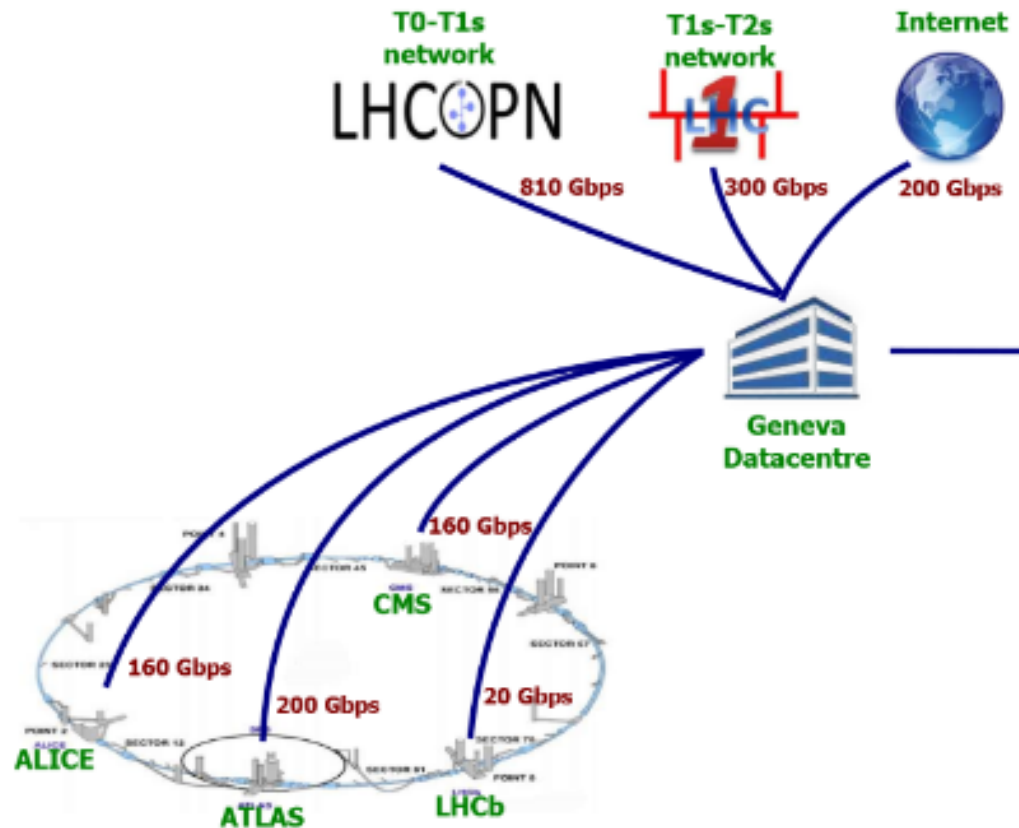
Power Distribution Units: 1,146

Procurement (server and storage arrays)

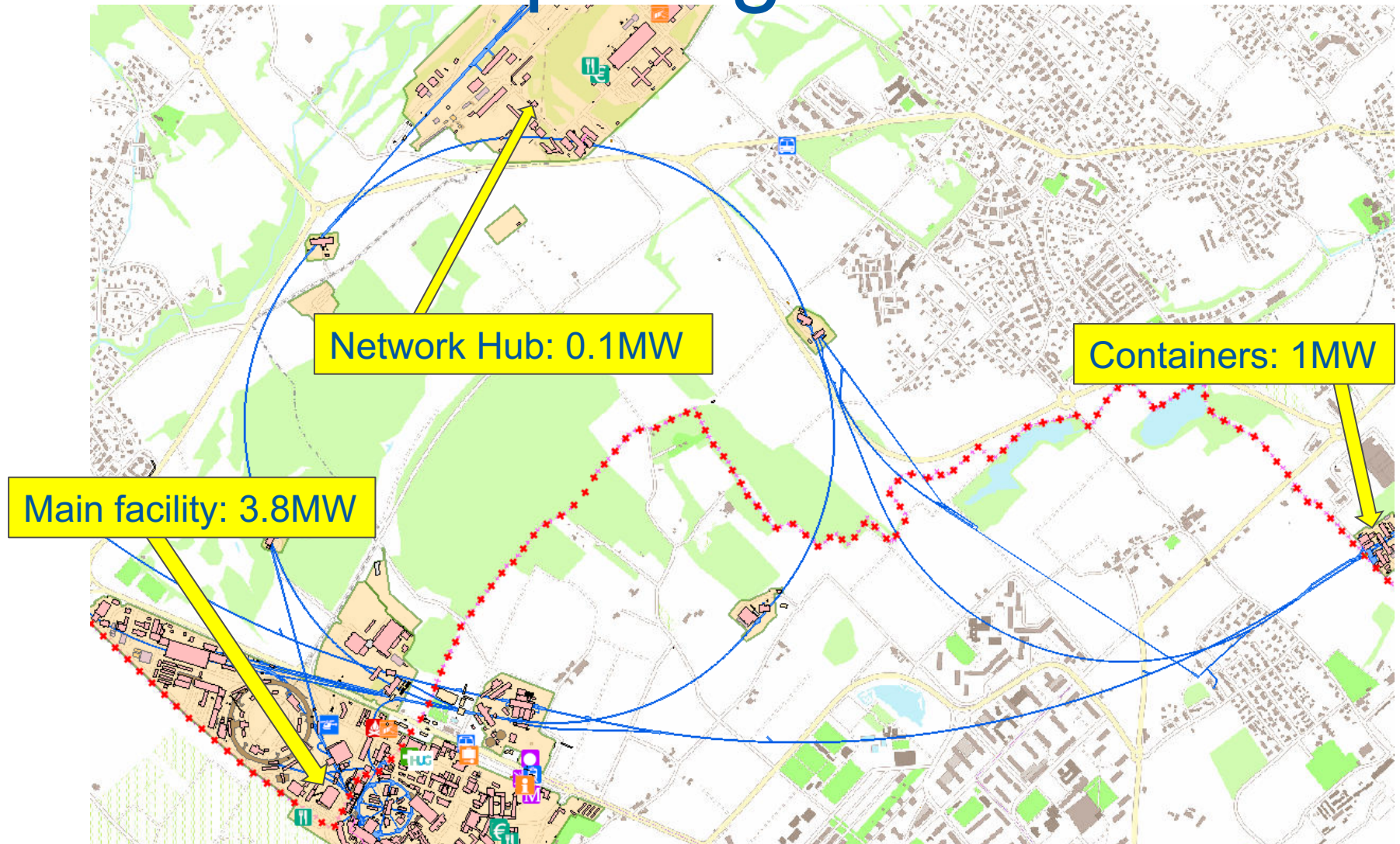
- 20% annual refresh
- Investment 2020: ~16 MCHF / year



Connectivity



Computing rooms



Main facility: 3.8MW



Containers: 1MW



6 modules

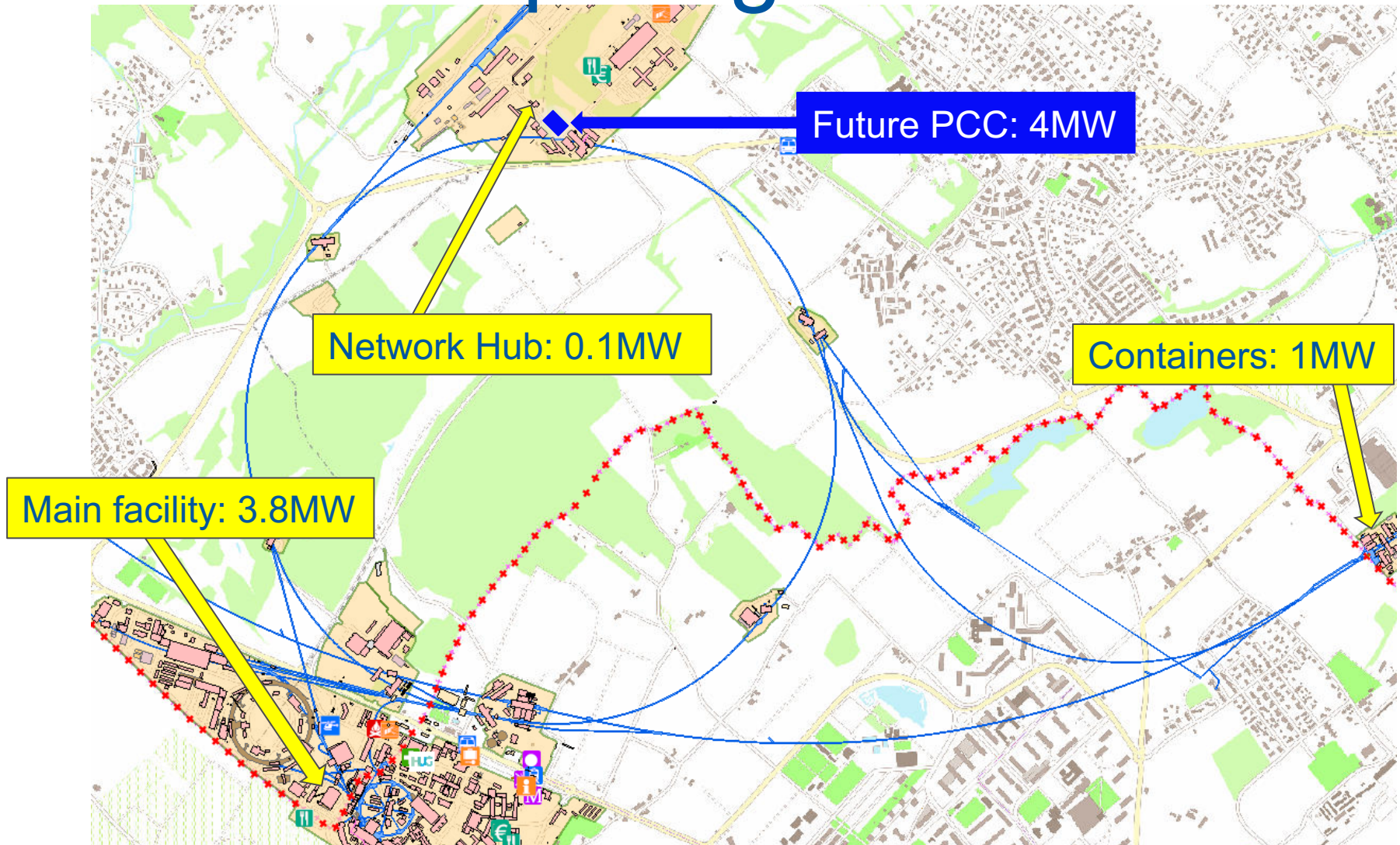
- 4 for LHCb
- 2 for CERN IT

0.5MW per module
24x 48U cabinets
PUE<1.1

Future: Prévessin computer centre

- ✓ Turnkey Data Centre
- ✓ Tender sent out Mar-2020
- ✓ Envelop opening Sept-2020
 - Contract adjudication approval Dec-2020
 - Contract start: Q1 2021
 - Commissioning: Q2 2023
 - Initial capacity: 4MW for IT
 - Allow staged upgrade to 12MW
 - $PUE \leq 1.1$

Computing rooms



Summary

- CERN IT operates three data centres
 - 3.8MW main facility
 - 0.1MW network Hub (redundancy)
 - 1MW computing modules on loan from LHCb
- 2021-3: Project for building a new 4MW DC
- Procurements (servers & storage)
 - ~20% annual refresh (~15MCHF)