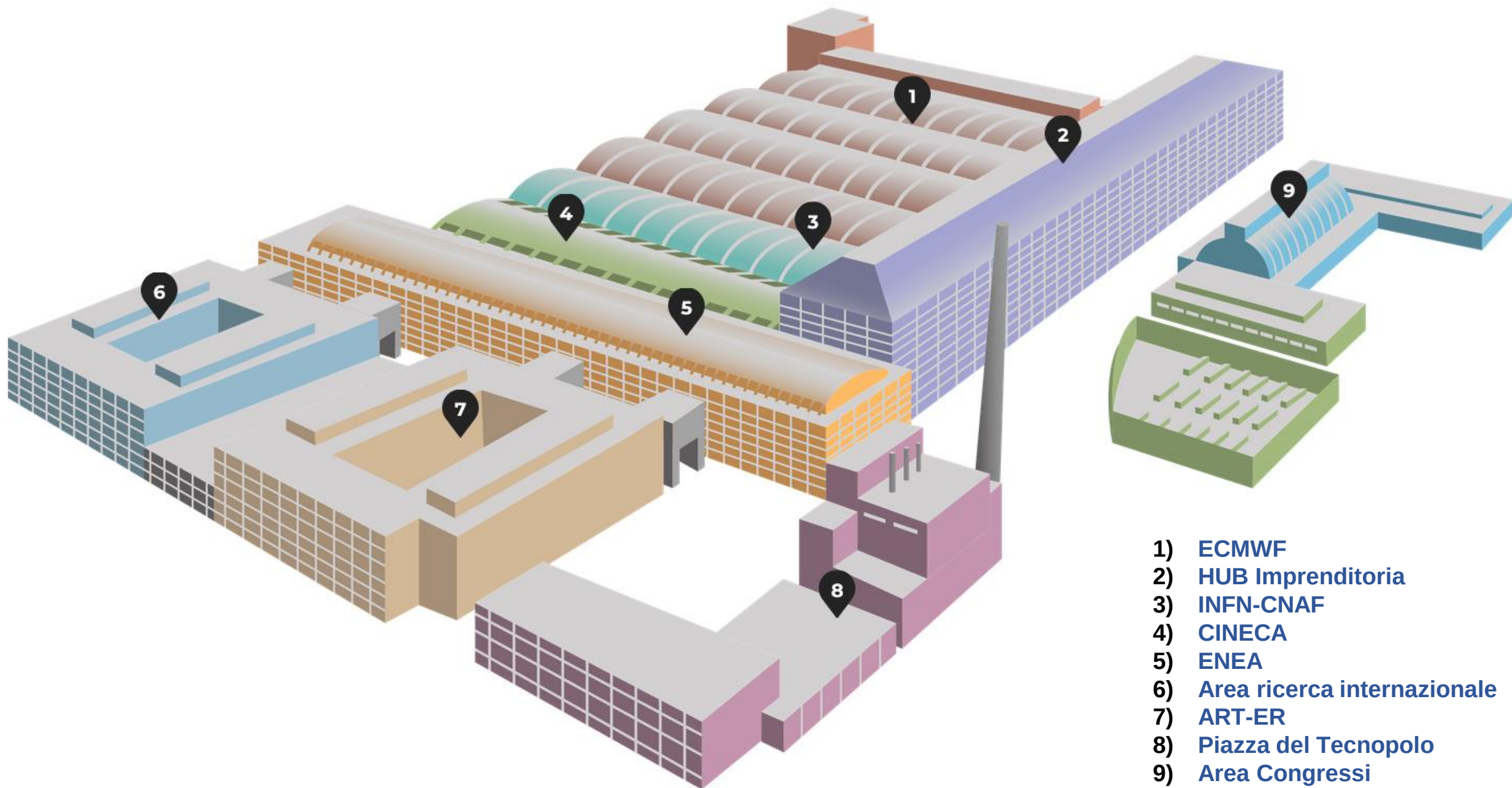




The new INFN Data Center at Bologna Tecnopolo





- 1) ECMWF
- 2) HUB Imprenditoria
- 3) INFN-CNAF
- 4) CINECA
- 5) ENEA
- 6) Area ricerca internazionale
- 7) ART-ER
- 8) Piazza del Tecnopolo
- 9) Area Congressi



Fix lighting



09/02/2024

Consiglio di Centro GNA





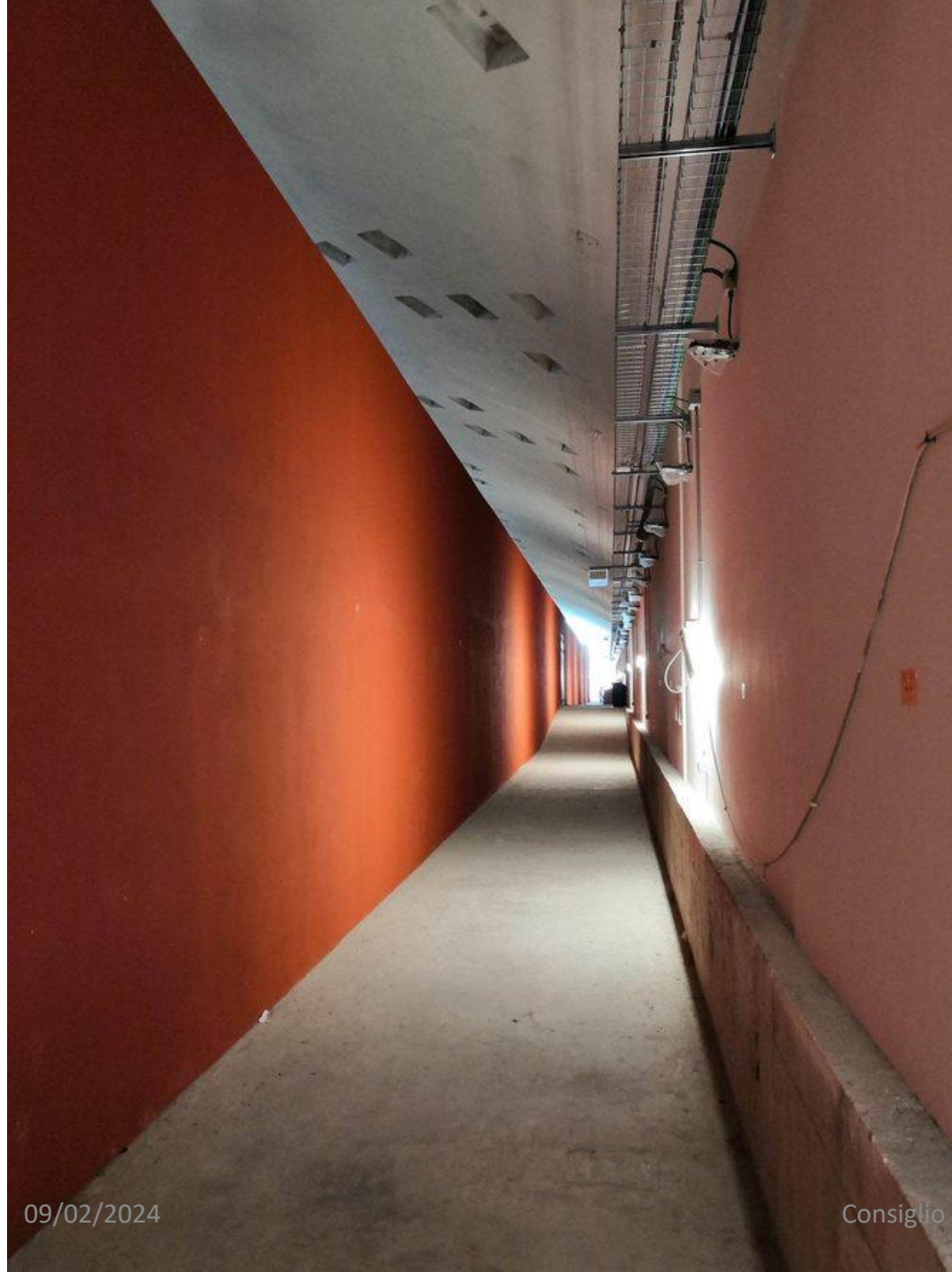


Da e per il tecnopolo – il nuovo mezzo
© Andrea Prosperini



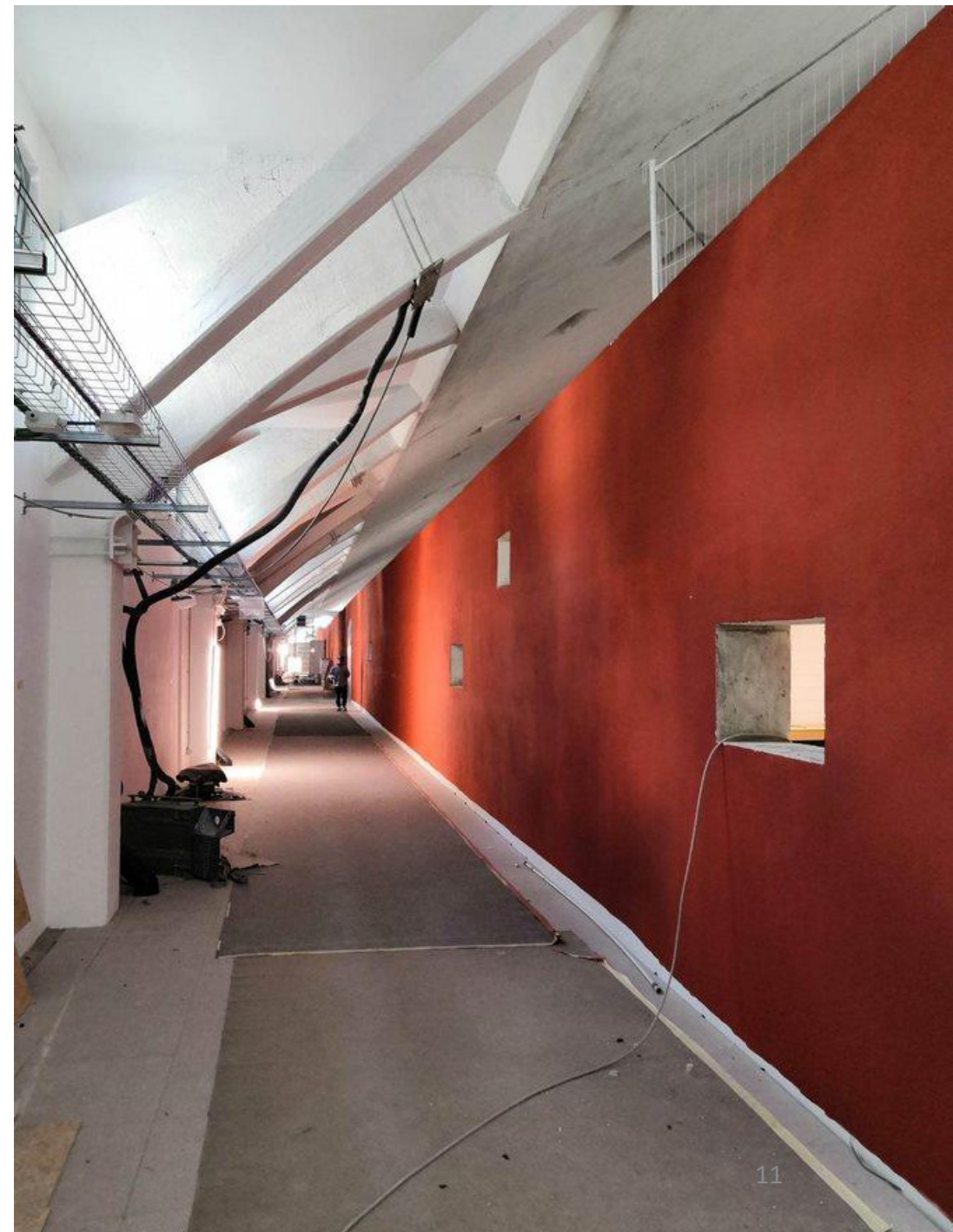






09/02/2024

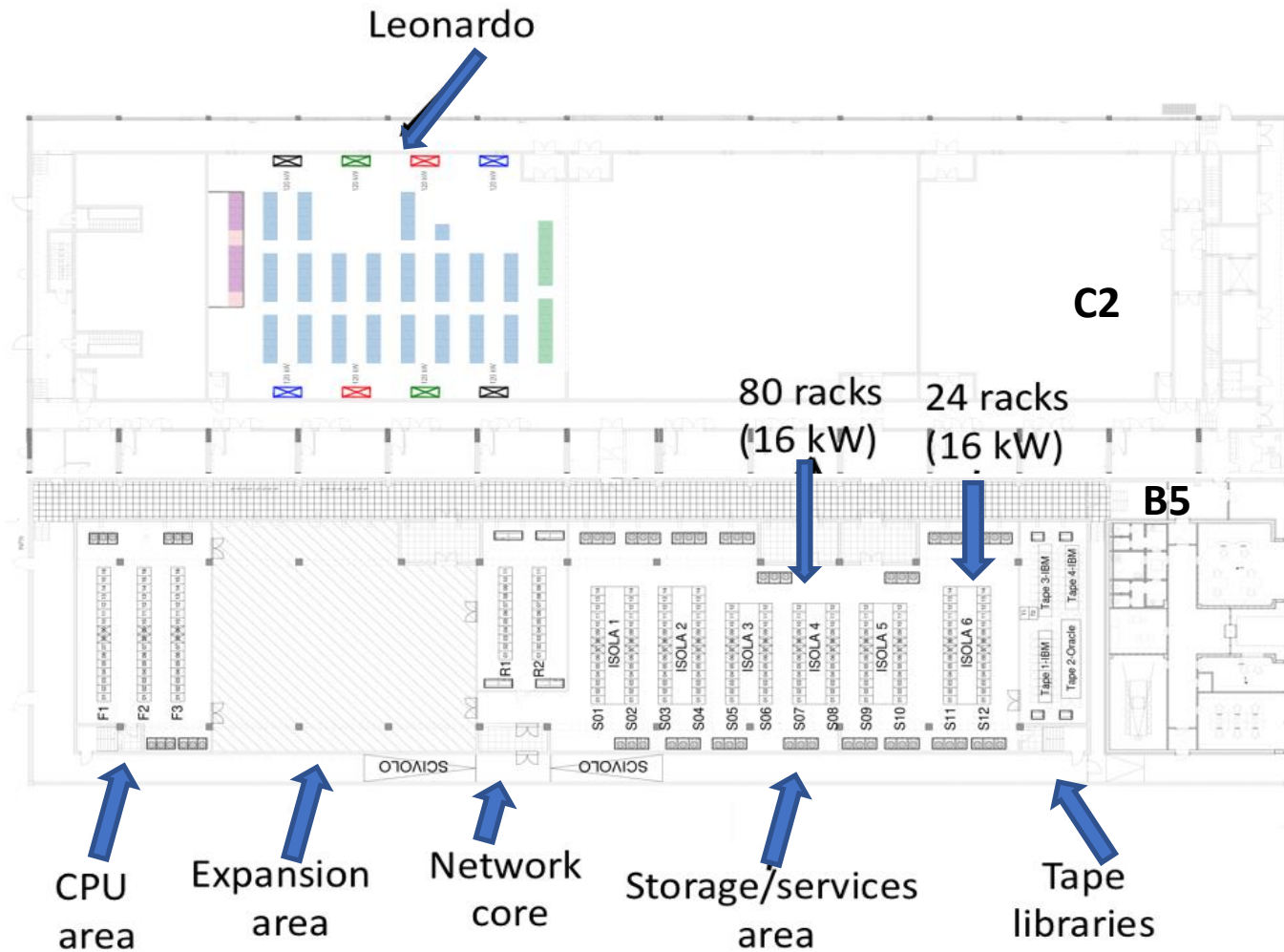
Consiglio di Cnro CNAF



11

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INFN
data hall



The cooling system and the PUE

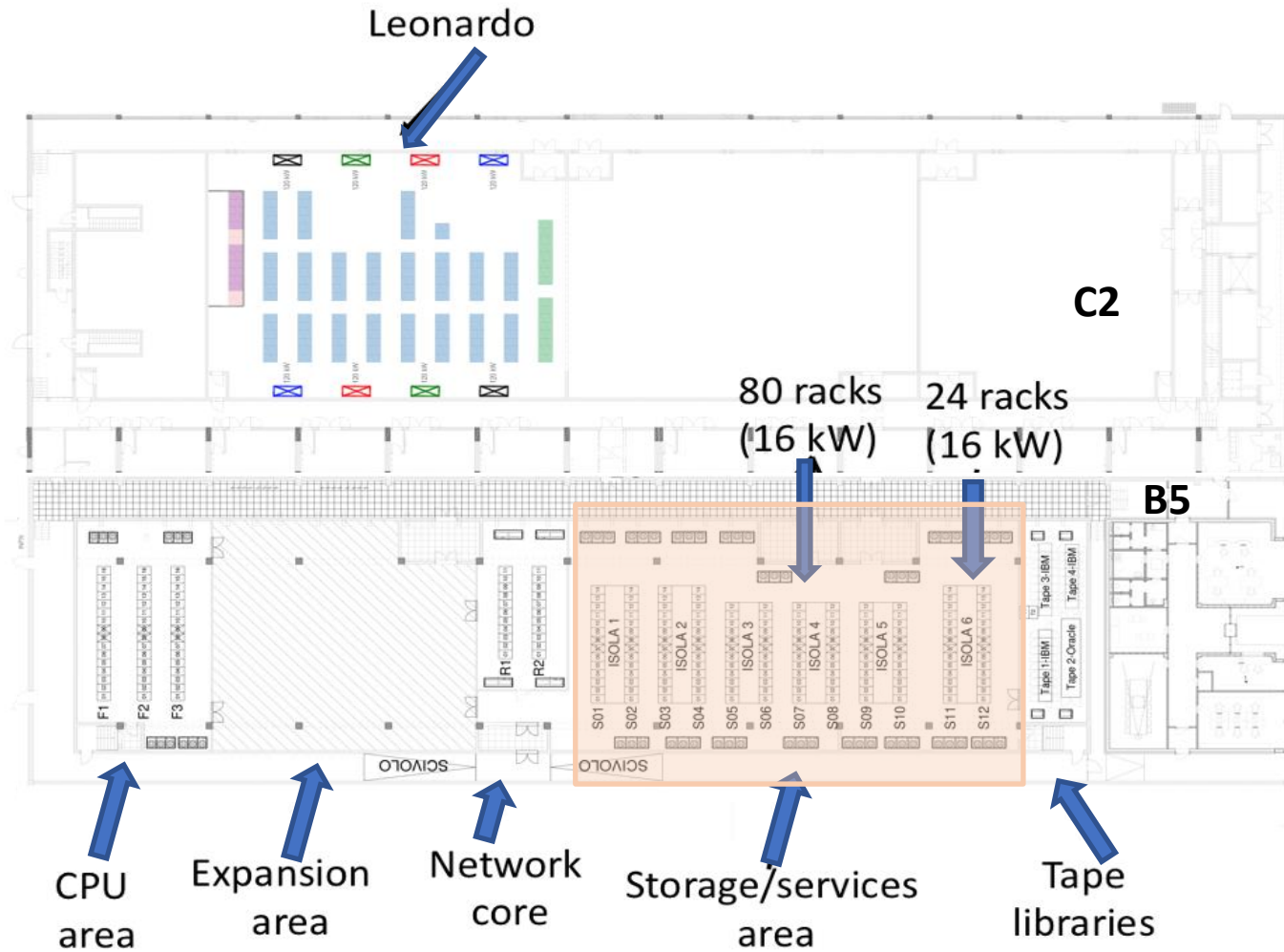
- 4 central refrigerator Units
 - 3+1 redundancy
 - Chilled water 19-26 °C for the low density air cooled racks
 - 2 MW Chillers
 - Total/partial free cooling is possible
 - Warm water 37-47 °C for DLC racks
 - 2,25 MW Chillers
 - To be doubled in the second phase
- **High Density CPU Area**
 - 4 CRAH - 200 kW each (3+1)
 - **Network Area**
 - 4 CRAH - 75 kW each (3+1)
 - **STORAGE Area**
 - 16 CRAH - 200 kW each (12+4)
 - Cold corridor aisles
 - **TAPE Area**
 - 4 CRAH - 25 kW each (3+1)

$$\text{PUE}_{\text{DLC}} \approx 1.08$$

$$\text{PUE}_{\text{Tot}} \approx 1.2 - 1.3$$

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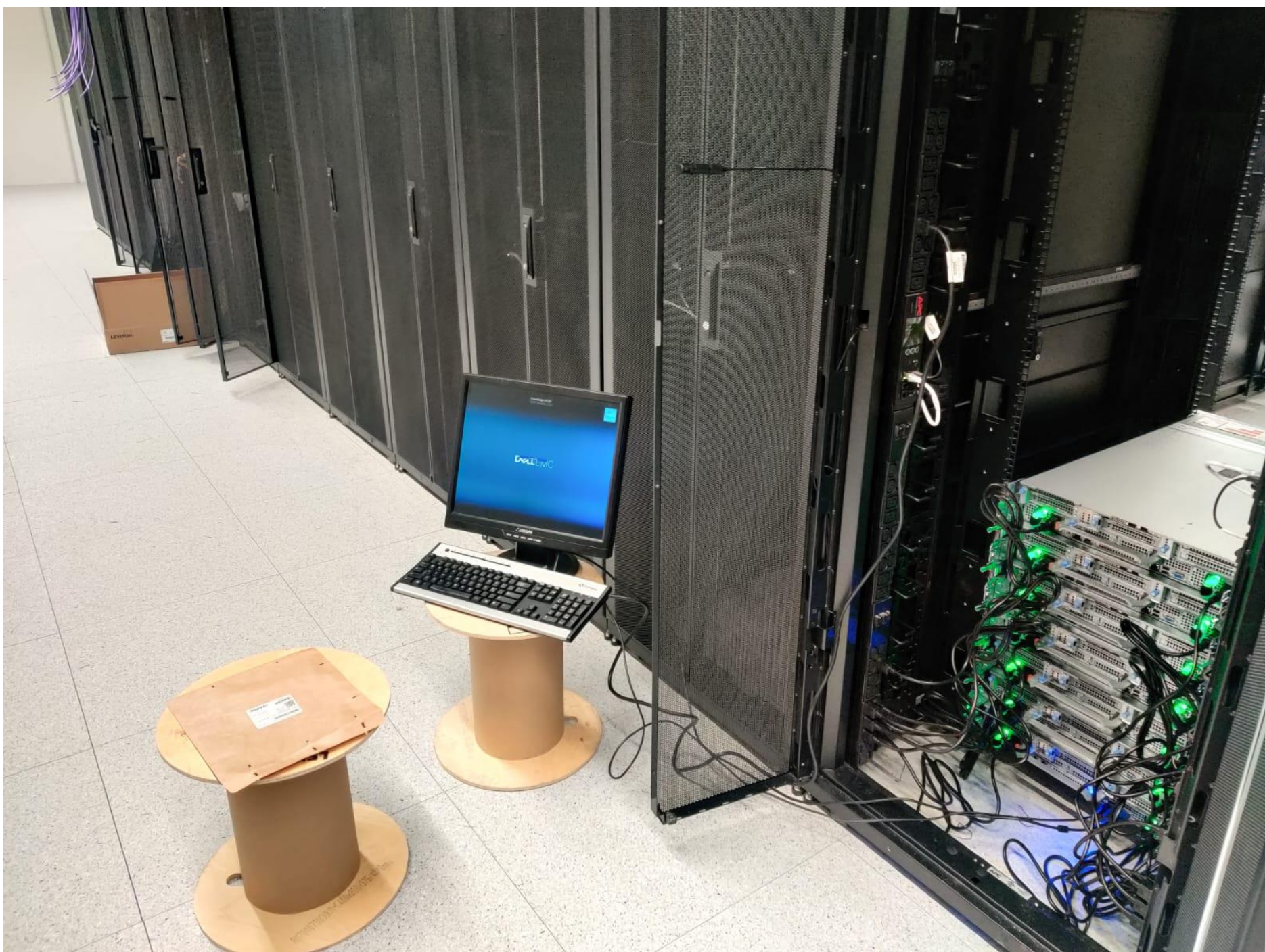




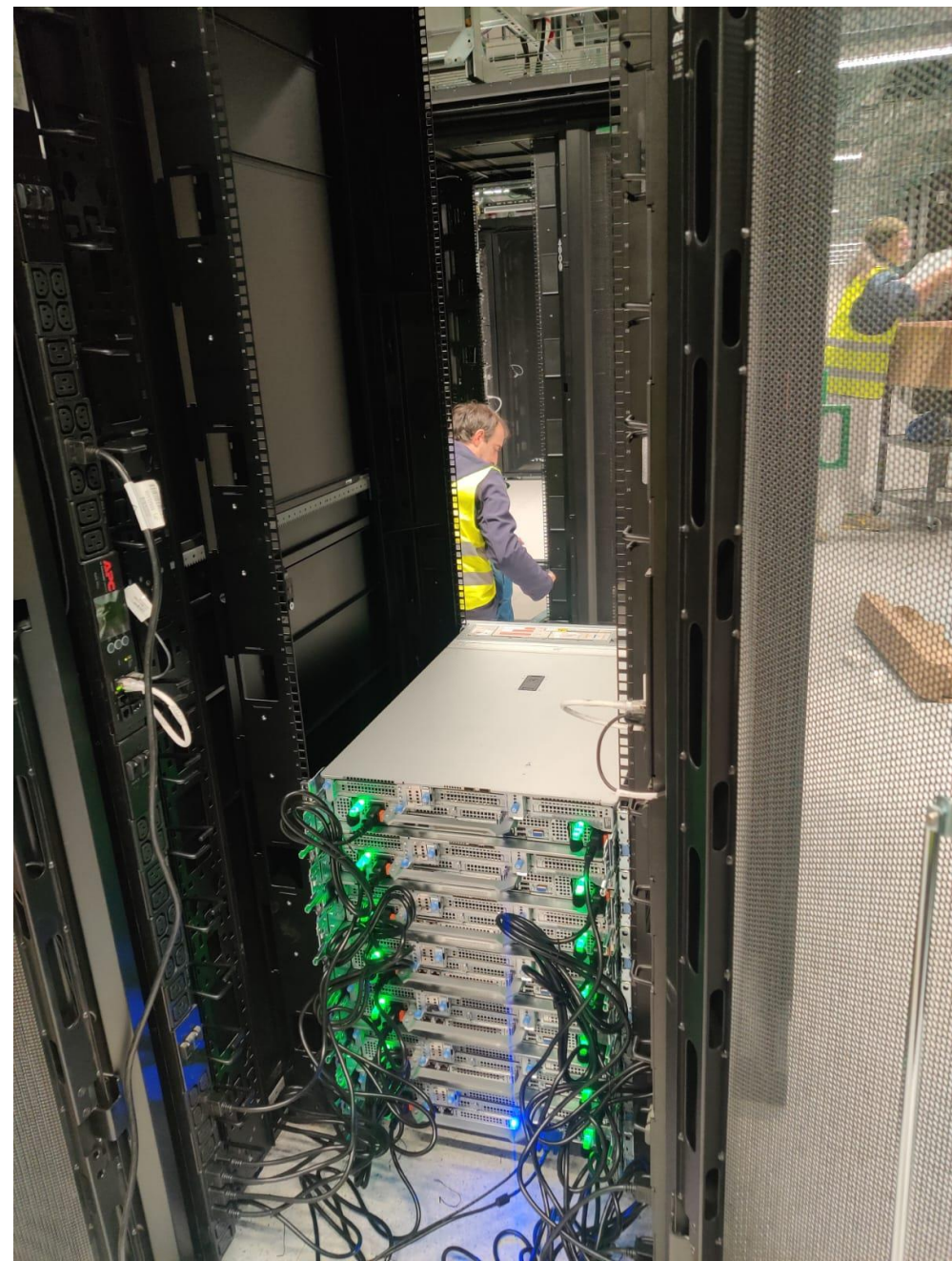
Storage 23/11



09/02/2024



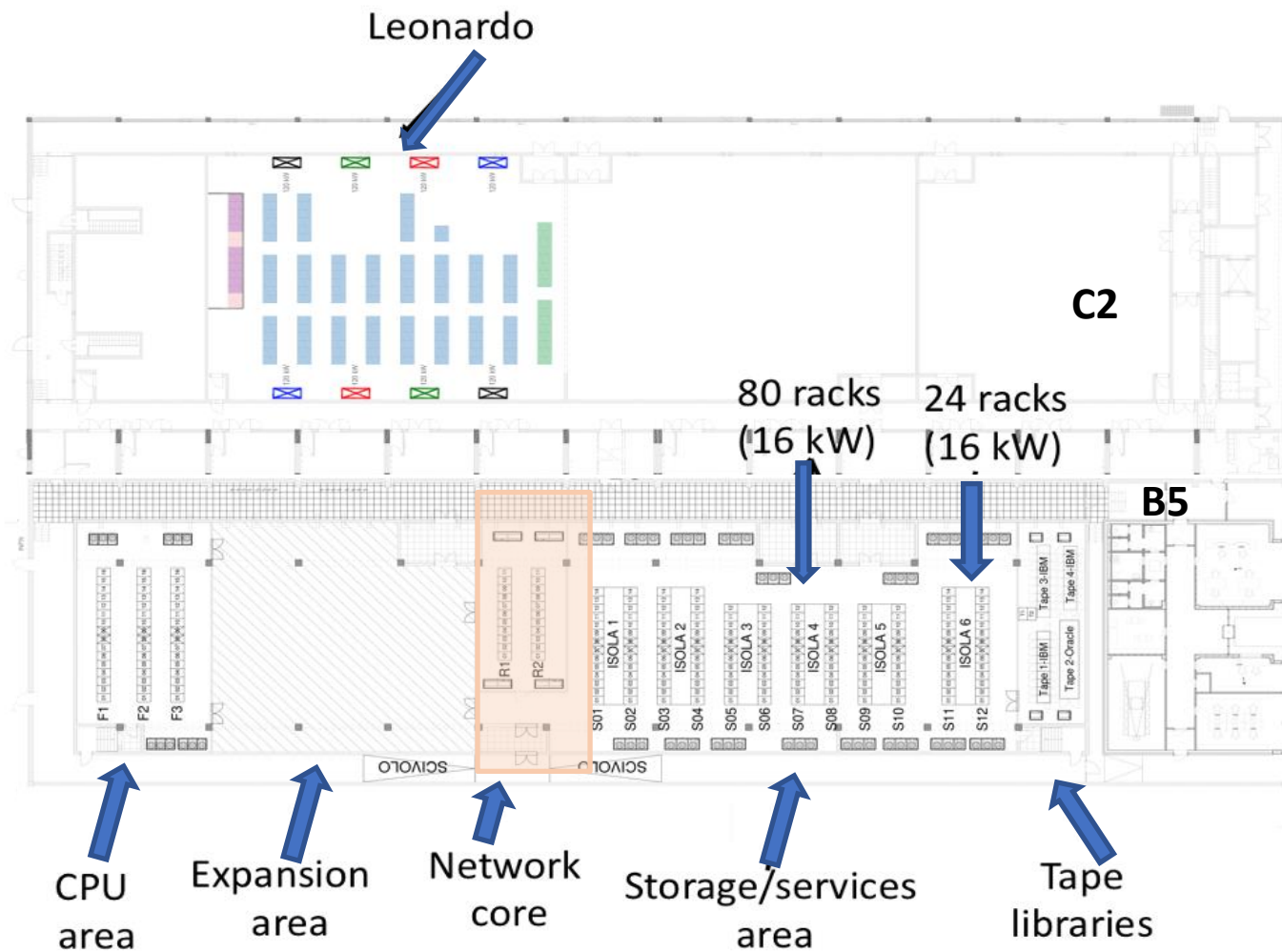






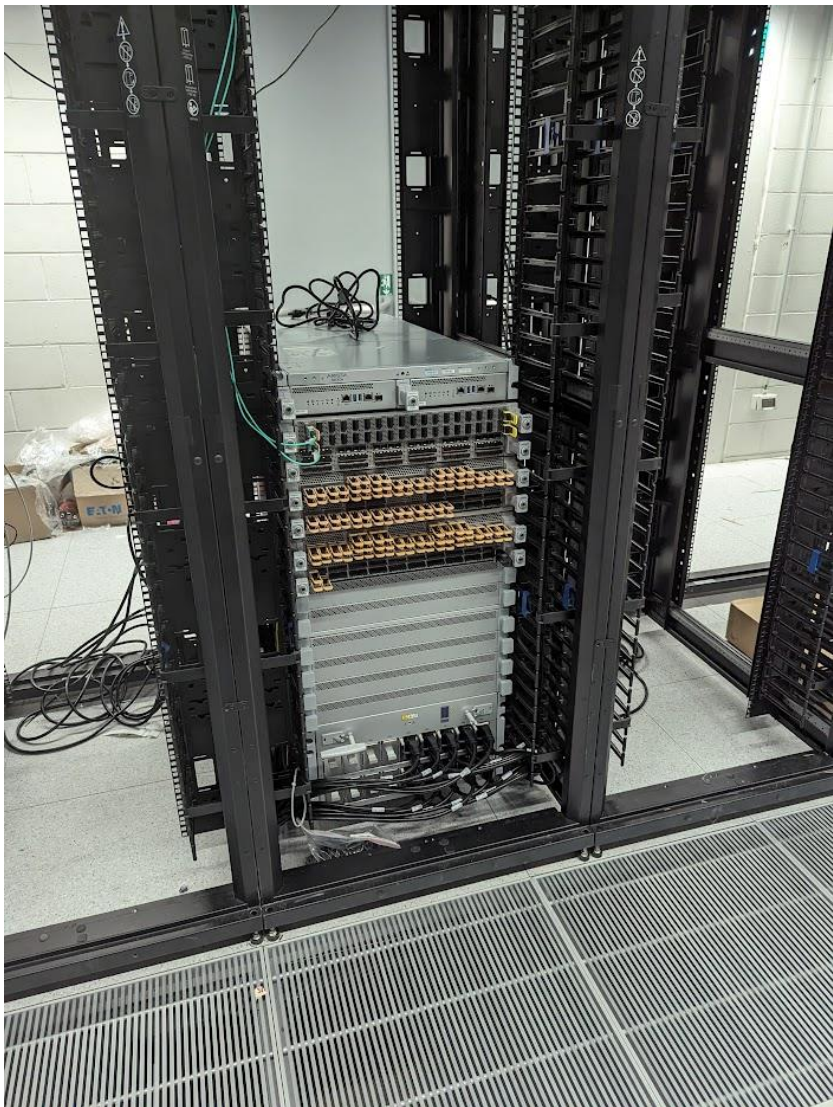
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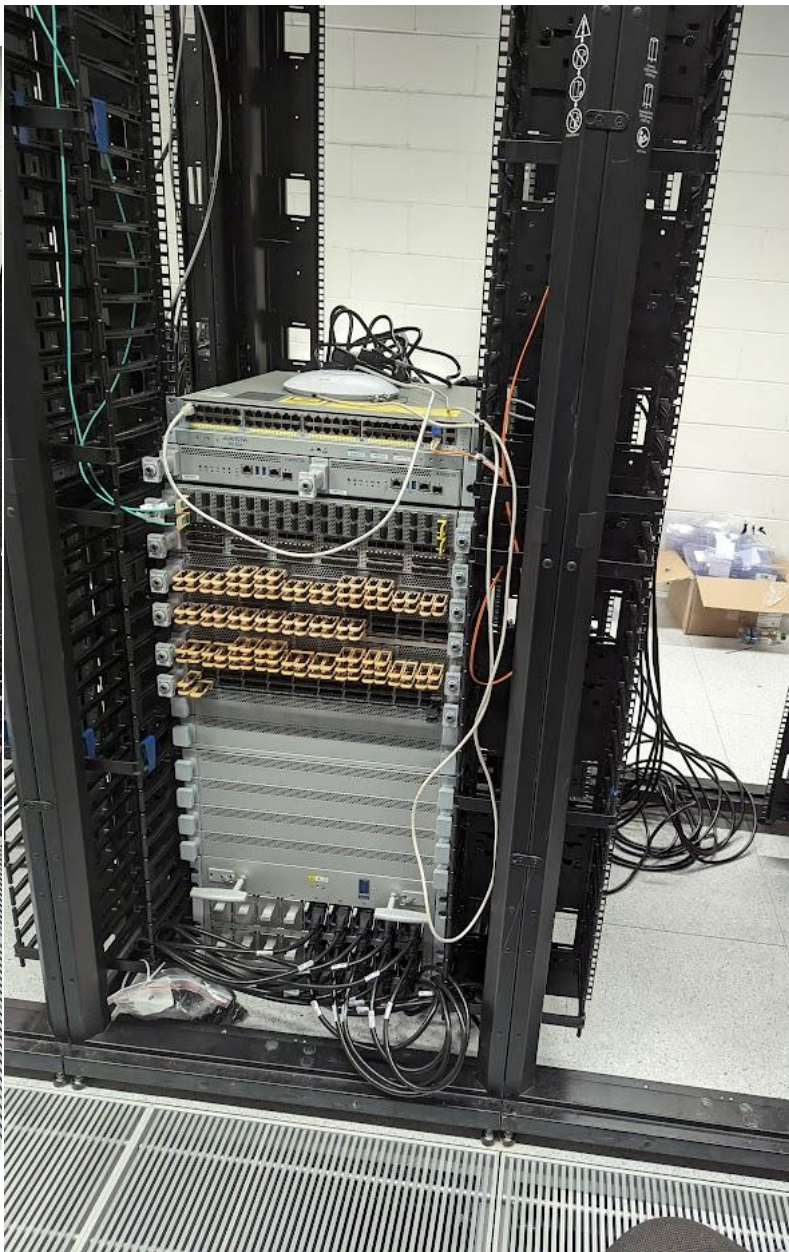








09/02/2024

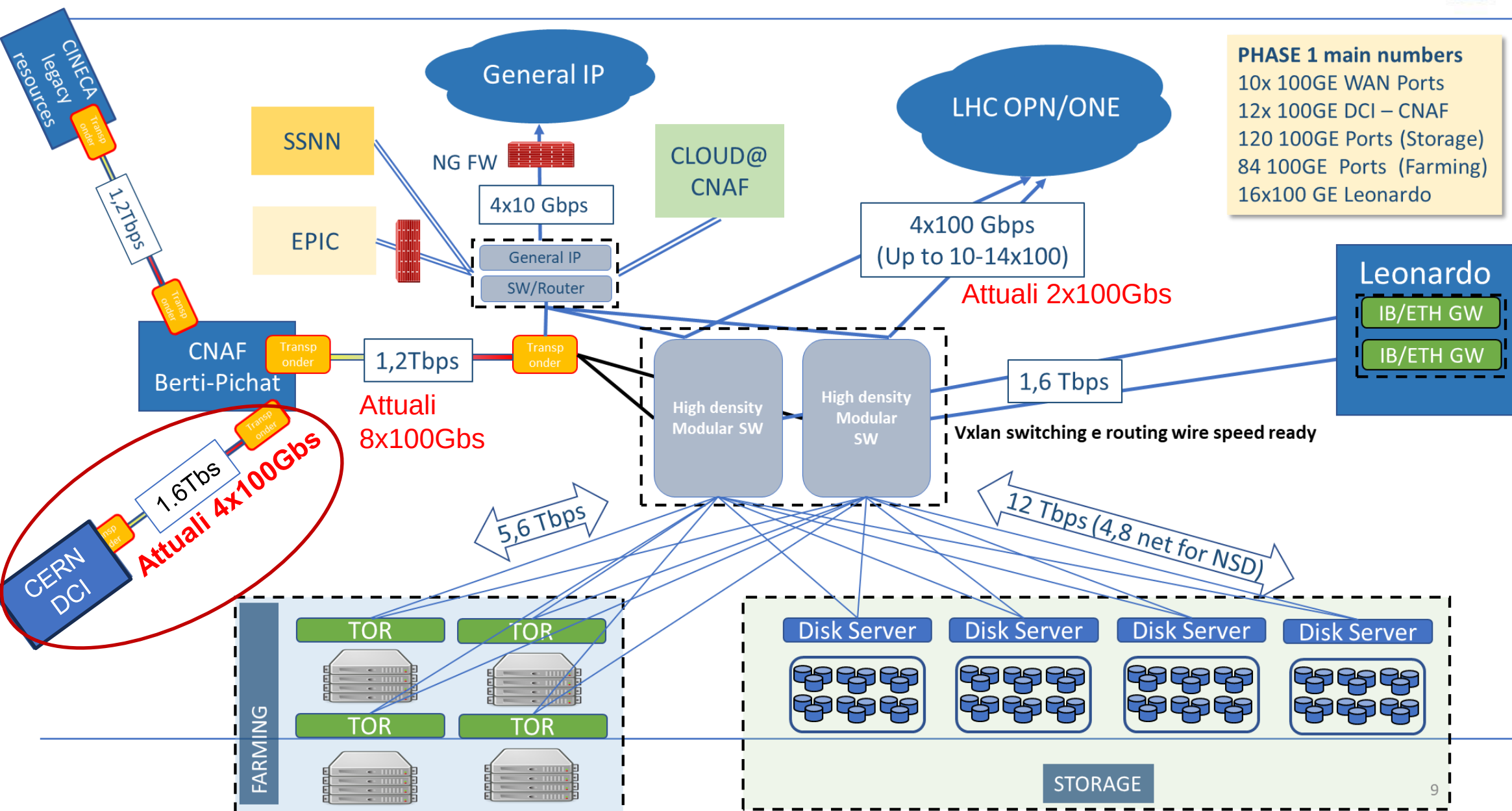


Consiglio di Cntrto CNAF



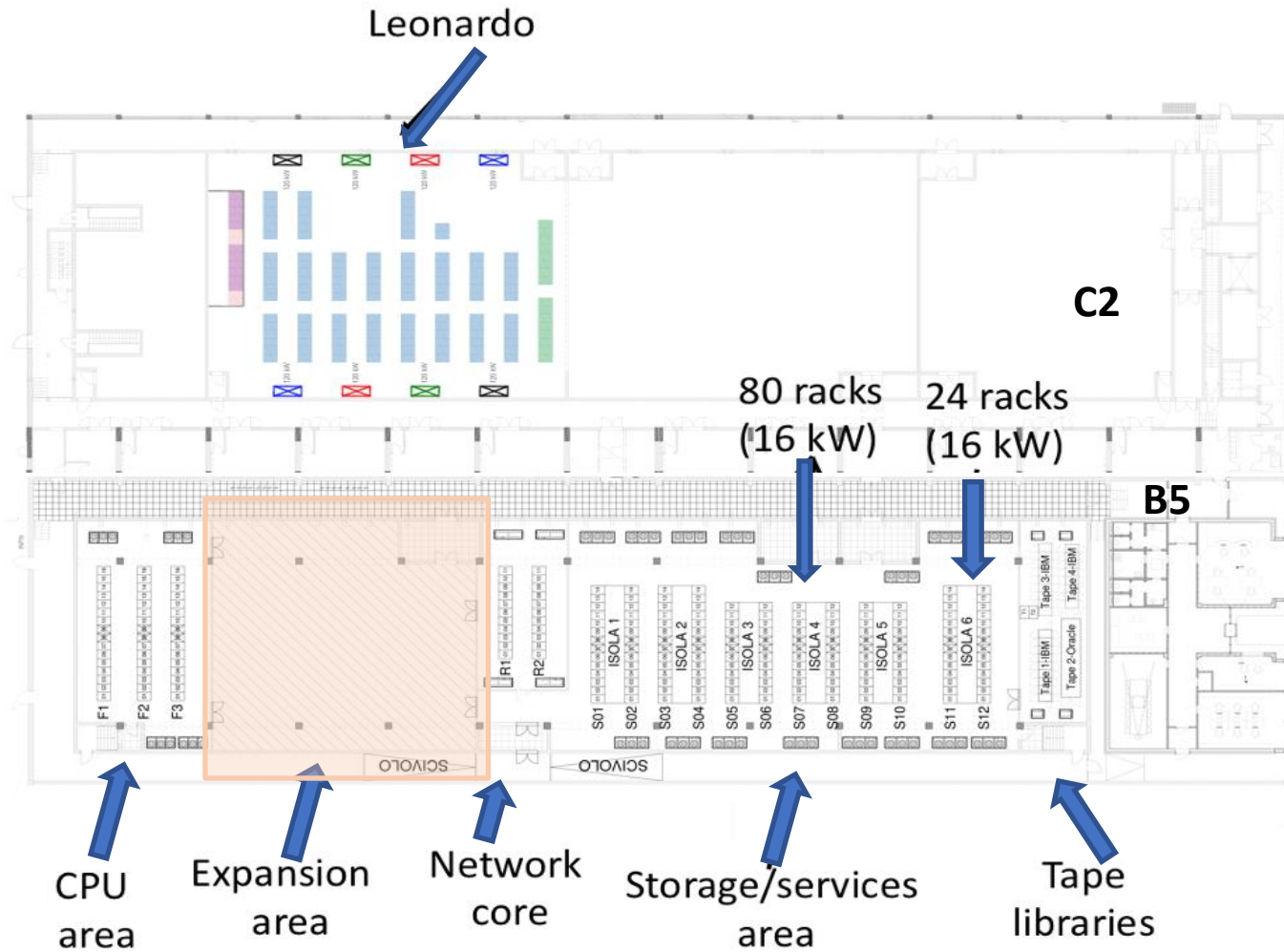
25

Networking Infrastructure



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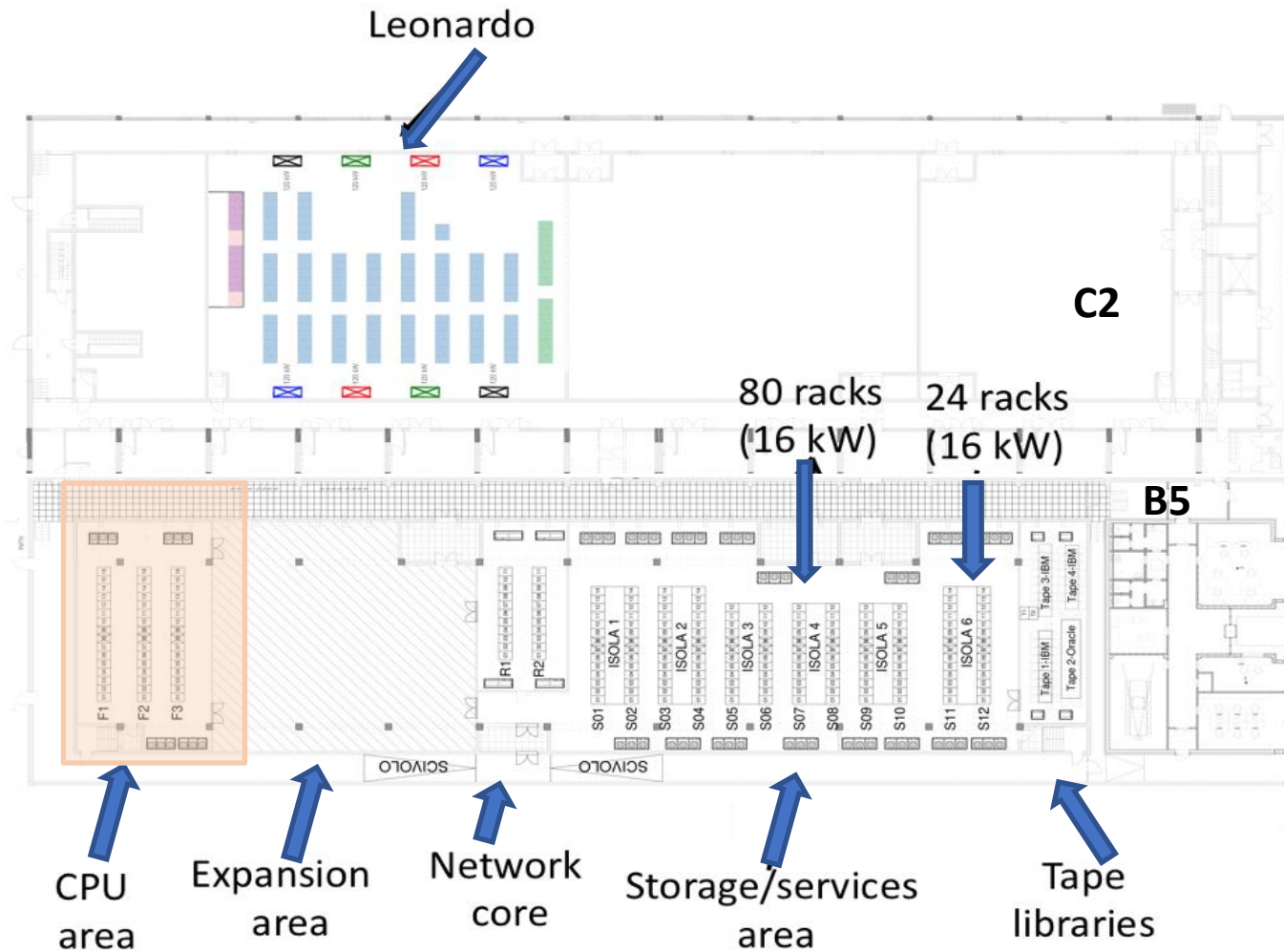
INFN
data hall





CINECA
data hall

INFN
data hall

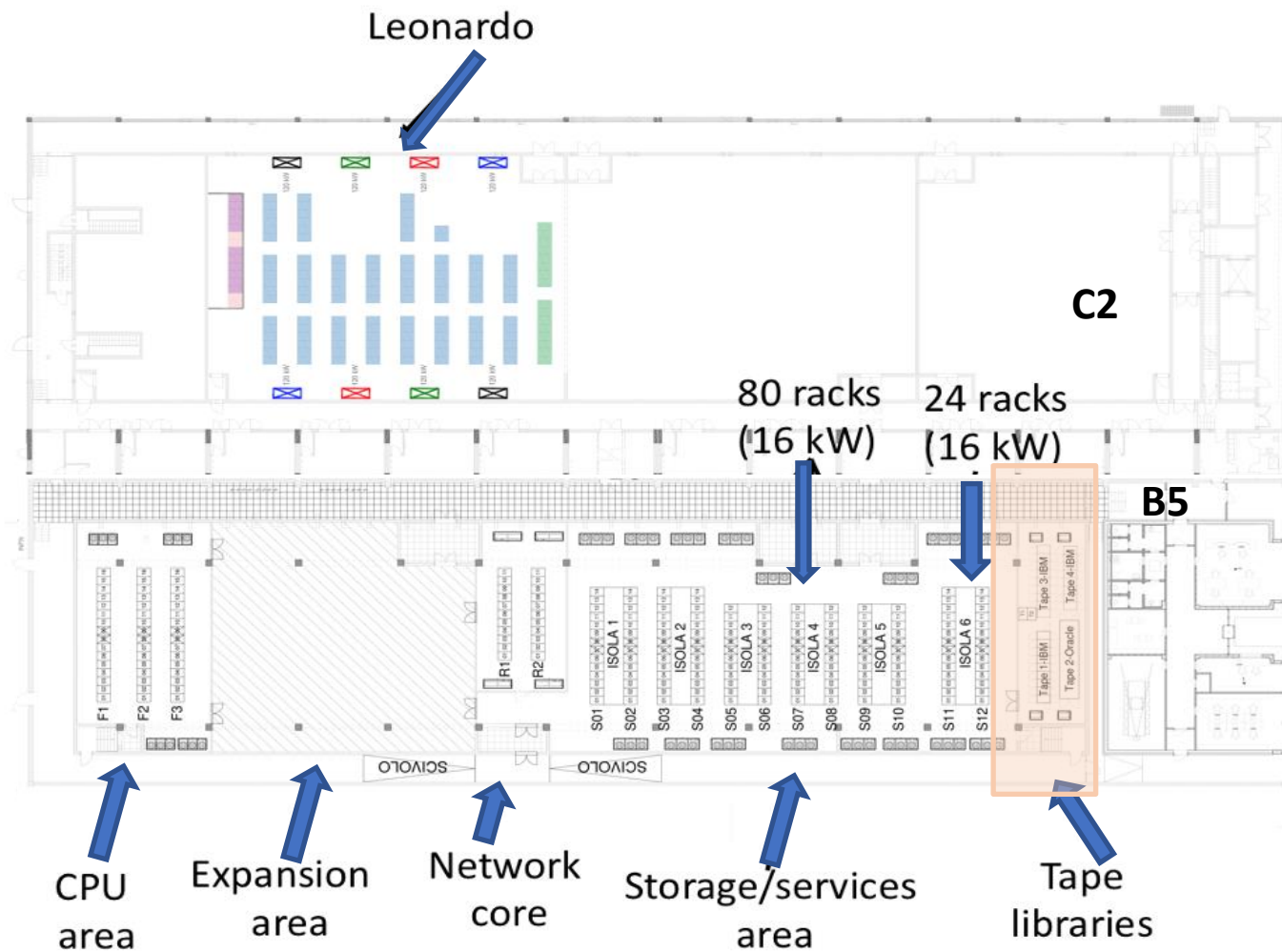




Alta densità 07/02/24

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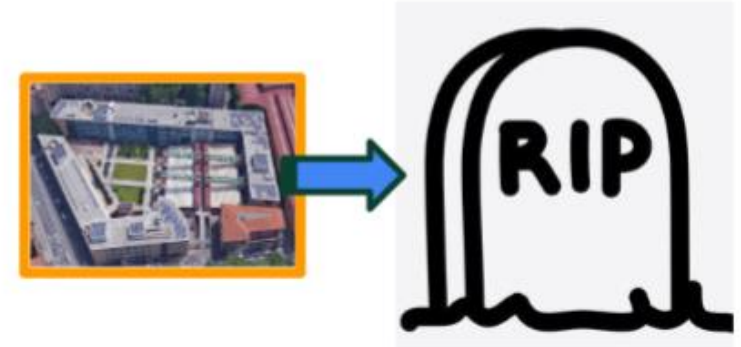




CNAF Tape Libraries and Drives

- **1 x Oracle SL8500**

- **1 tape library with 16 tape drives T10000D** (8.5TB/cartridge)
- 80PB installed, 64PB USED
- Repack on the other libraries needed
 - After completion of repack this library will be dismissed



- **2 x IBM TS4500**

- **1 tape library with 19 tape drives TS1160** (20TB/cartridge)
 - 102 PB Installed, 50PB USED
 - cannot be further extended due to physical constraints in the current room
 - This library will be moved to the new data center
- **1 tape library with 18 tape drives TS1170** (50TB/cartridge) acquired and will be installed at new data center Q1 2024



Tender completed and approved by the GE on 13/11/2023 – the contract is still missing



Metropolitan Tape Area Network

- 2 libraries at CNAF
- 1 new library at the Tecnopole
- About **7 km** of fiber to connect the 2 datacenters
 - yellow + red paths
- 2 fiber pairs dedicated to extend the fiberchannel TAN
 - Brocade optics for 10km distance

BROCADE
A Broadcom Company

Product Brief

Brocade® 32Gb/s LWL
(10 km) SFP+

Optimized, Certified Optical Transceivers for
Extending Service Provider and Data Center
Networks

Overview

Today's enterprise data centers are undergoing an infrastructure transformation, requiring higher speeds, greater scalability, and higher levels of performance and reliability to better meet the demands of business. As speed and performance needs increase, optical transceivers—once considered a generic component of Fibre Channel switching technologies—have become an integral part of overall system design.

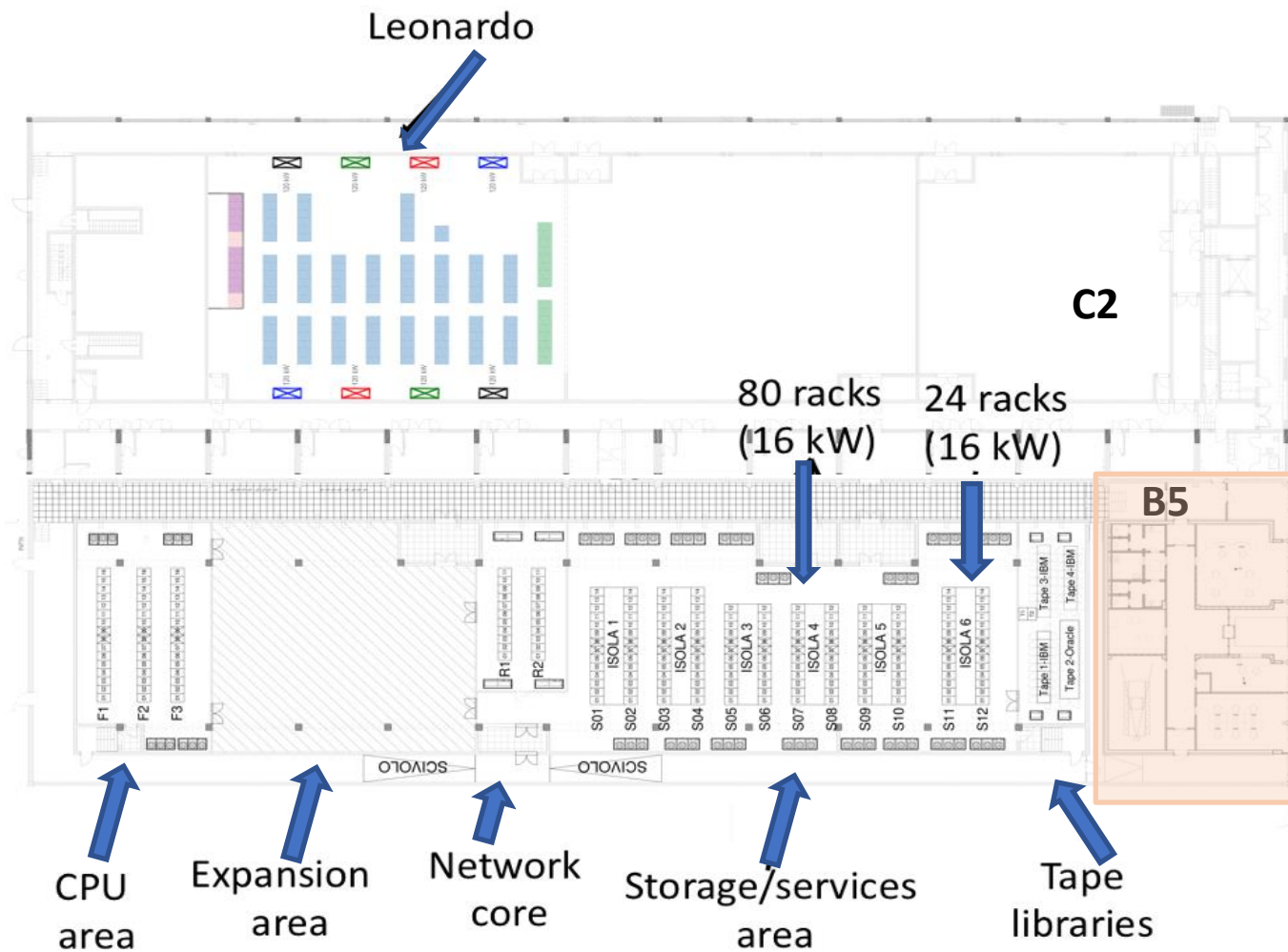
The Brocade® 32Gb/s Long Wavelength (LWL) 10 km SFP+, part of the

Highlights

- Provides high system reliability through rigorous qualification and certification processes.
- Leverages unique design parameters to provide the highest performance with industry-leading Reliability.

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Next Steps

- data consegna cantiere B5



10/15 giorni??
Antincendio manuale attivo da oggi

- data fine cablaggio
 - In corso certifiche da parte della ditta in corso (7 giorni per terminare)
 - Data ufficiale scade oggi
 - Per il collegamento della zona HD servirà un ulteriore intervento (mancano delle fibre)
- configurazione core switch e collegamento via DCI verso il CNAF
 - Fatto sul PoC con apparati più piccoli, appena link disponibile replichiamo sugli apparati definitivi
 - Configurazione definitiva circa un mese
- Collegamento con Leonardo



Noi siamo pronti da Aprile 2023
Mancano ottiche SKYWAY promesse da cineca

- Inizio trasloco sistemi generici
 - Da 01/03 siamo pronti con la ditta che si è aggiudicata l'appalto
 - Dipende da configurazione e stabilità rete
- stato dei test con Leonardo
 - Dipende dal punto precedente
- Stato installazione/configurazione PoC AQ 23/24
 - Materiale arrivato – sperabilmente AS approvato in GE il 15/02
 - Avvio anticipato

- contratto libreria



Problemi in fase di analisi requisiti



- gara storage 2022