6000 on-prem @DESY

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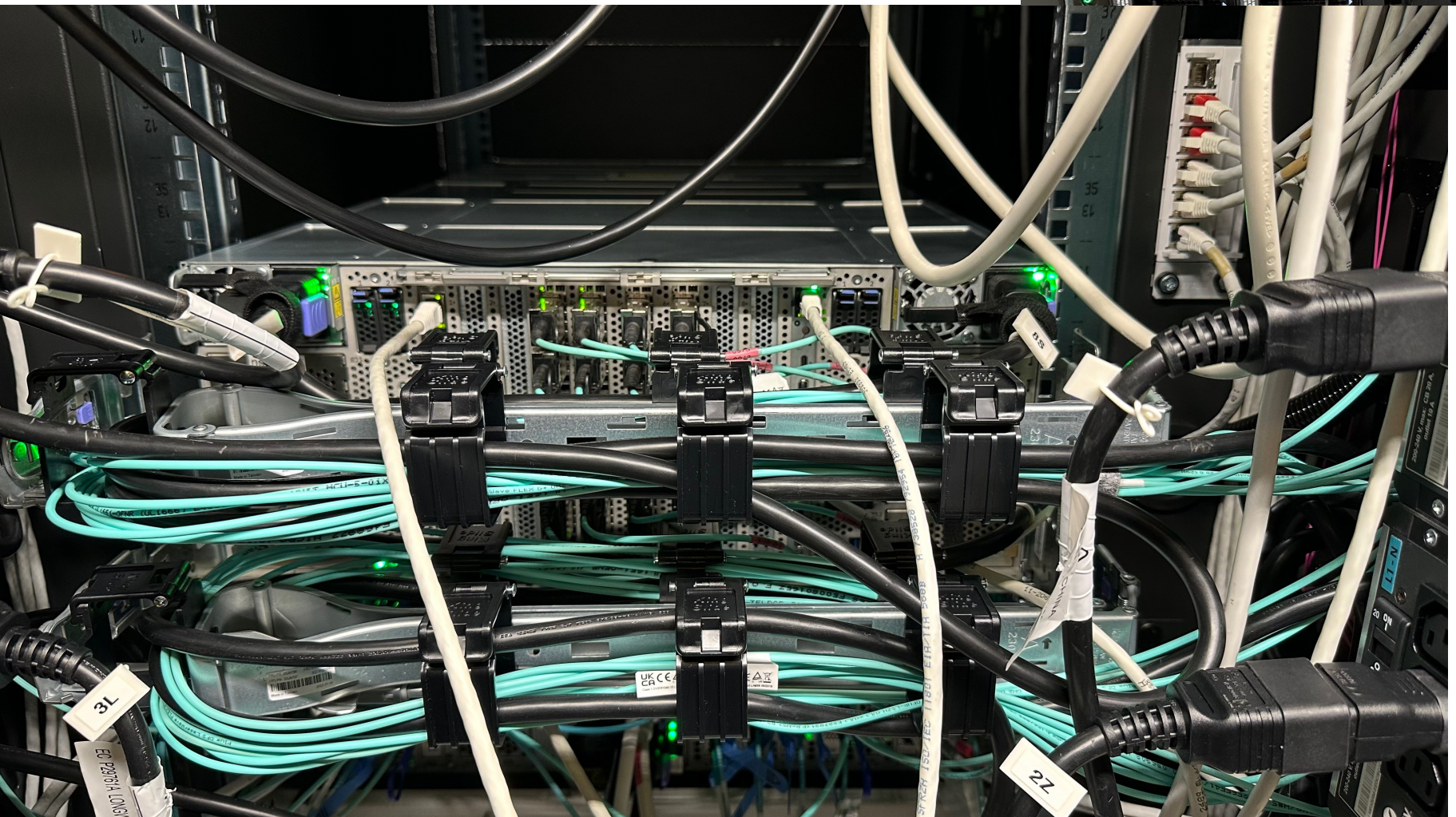
HELMHOLTZ RESEARCH FOR GRAND CHALLENGES

DESY

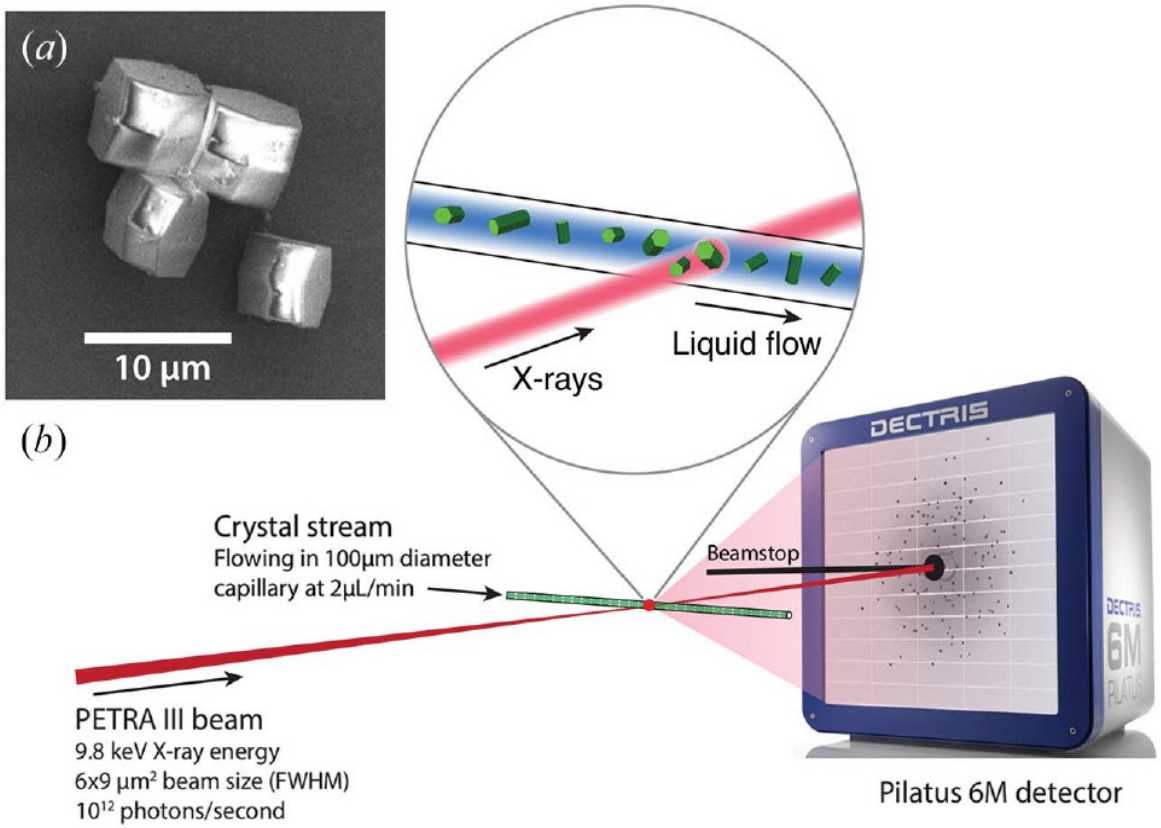
short version ;-)



little longer version

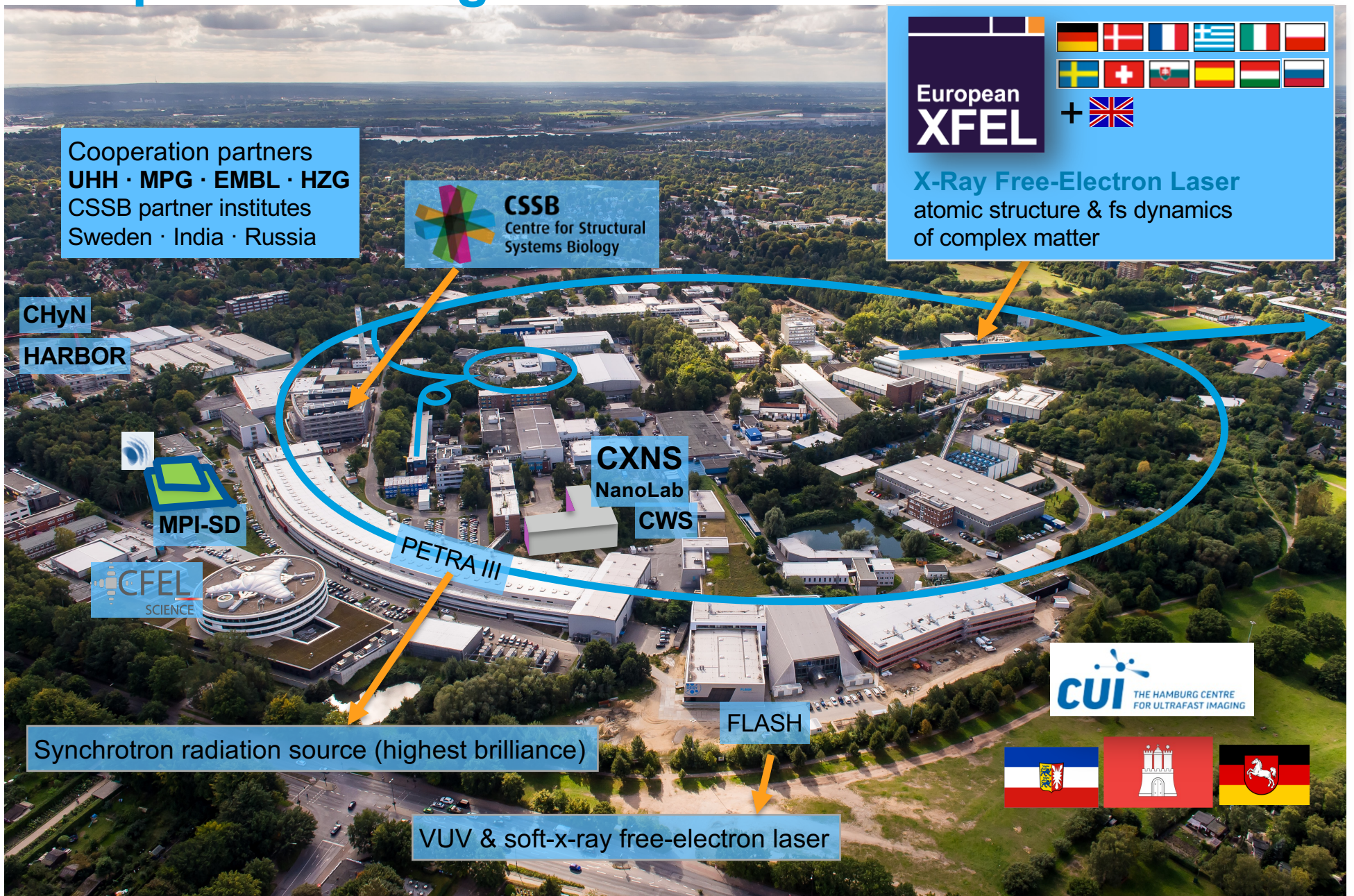
- motivation
  - replace 5+ years old GS4S – works very smooth, but SAS based SSD devices
  - need twice capacity and twice bandwidth – at least

- 30 experiment stations (hutches) potentially working in parallel
- receiving detector output
  - bulk data
  - bursty (1-30 min) up to 2GB/sec
  - never block IO – otherwise we get killed



F. Stellato, et al., IUCrJ **1**, 204 (2014).

DESY Campus Hamburg

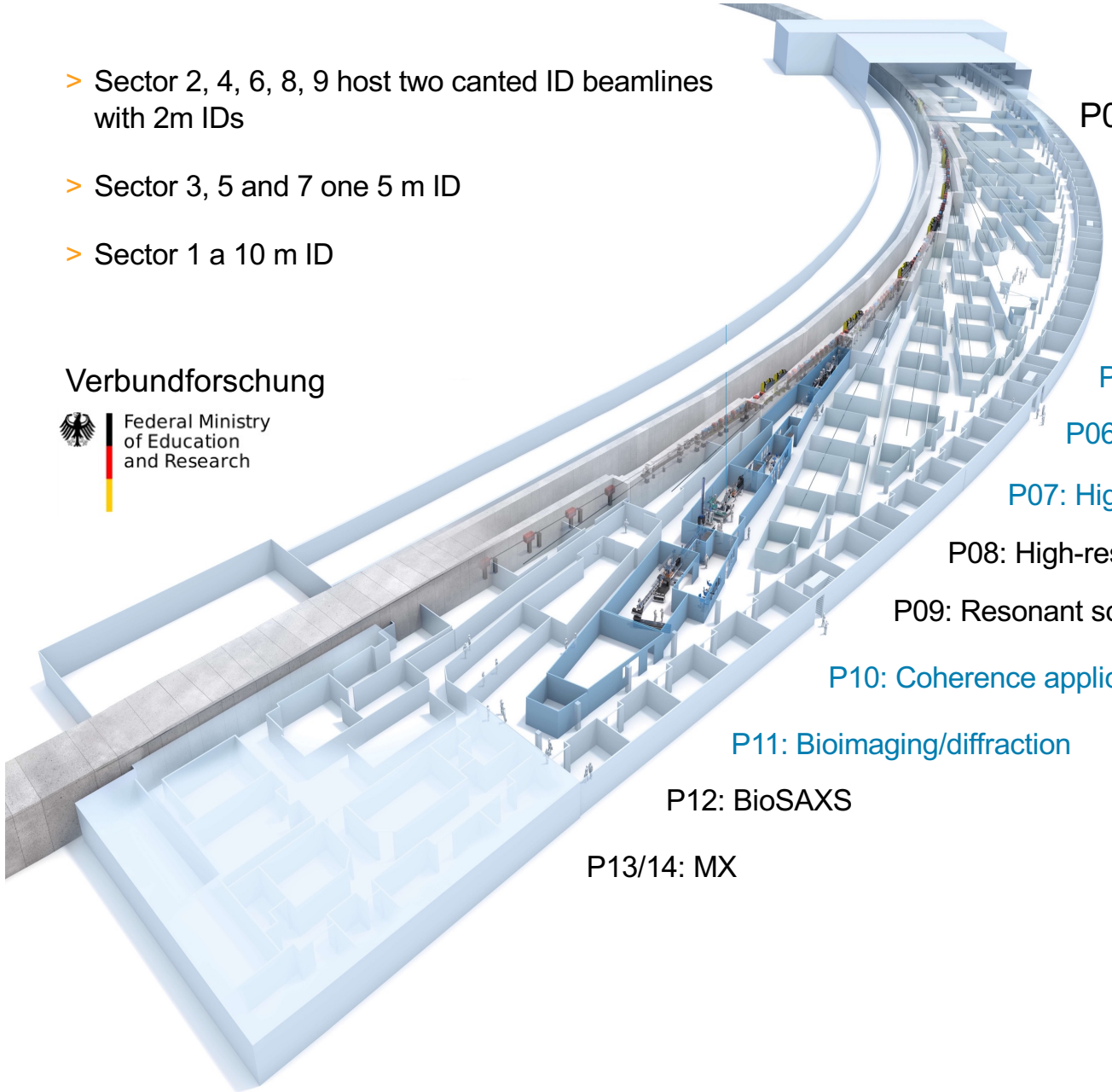


Max von Laue Hall: 9 Sectors – 14 Beamlines

- Sector 2, 4, 6, 8, 9 host two canted ID beamlines with 2m IDs
- Sector 3, 5 and 7 one 5 m ID
- Sector 1 a 10 m ID

Verbundforschung

Federal Ministry of Education and Research



P01: Dynamics beamline, IXS, NRS

P02: Powder diffraction
extreme conditions

P03: Micro-, nano-SAXS, WAXS

P04: Variable polarization XUV

P05: Micro-, nano-tomography

P06: Hard x-ray micro-, nanoprobe

P07: High energy materials science

P08: High-resolution diffraction

P09: Resonant scattering/diffraction

P10: Coherence applications

P11: Bioimaging/diffraction

P12: BioSAXS

P13/14: MX

Experimental techniques
with high data rates

6k on-prem

- arrived one week ahead of Christmas week – little too early ;-)
- 16 HDR Ports and matching client side required – not that easy in production environment
- minor hiccups
  - on/off switching, twisted metal sheet and shaky DIMM – that's why 'early shipments' are for
  - replacements works unexpectedly fast and smooth
- current state
  - for seamless network integration with redundancy etc. a few more ethernet ports would be nice
  - writes are within 'expectation corridor' - ~150+ GB/s – little more seems possible
  - read still with large variations - ~300GB/s seen once – often less than 150
    - we still have a local InfiniBand problem (HDR -> HDR100 / flow-control)
  - yet another EMS ;-)
    - still not really understood fromour simple customer perspective – isn't it 'just a SW' question ?
    - new EMS node just received last week – currently only for 6k – we hope for full generation coverage

- overall – **impressive machine** with huge potential