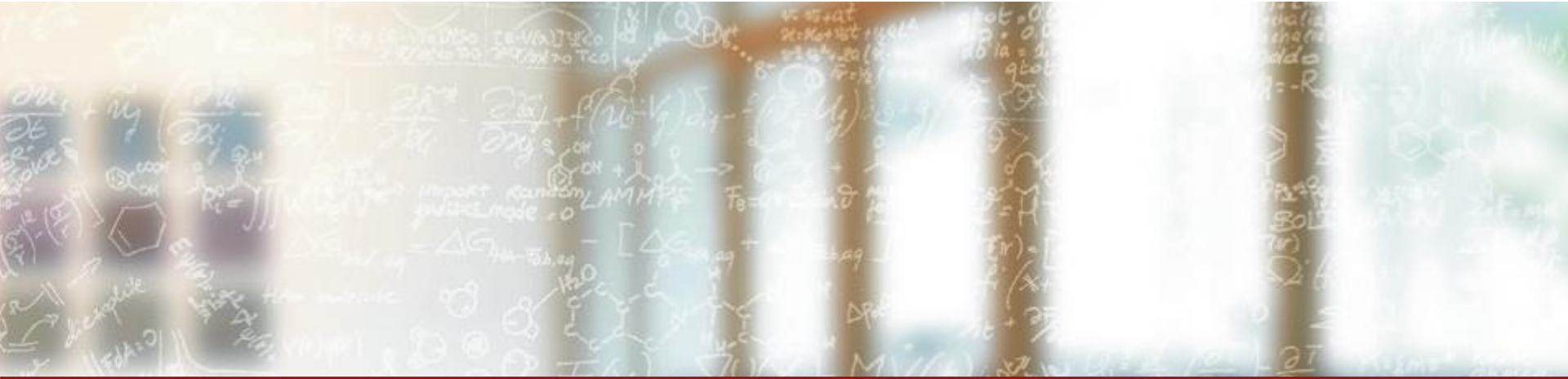




CSCS

Centro Svizzero di Calcolo Scientifico
Swiss National Supercomputing Centre

ETH zürich



CSCS-LCG2 Site report

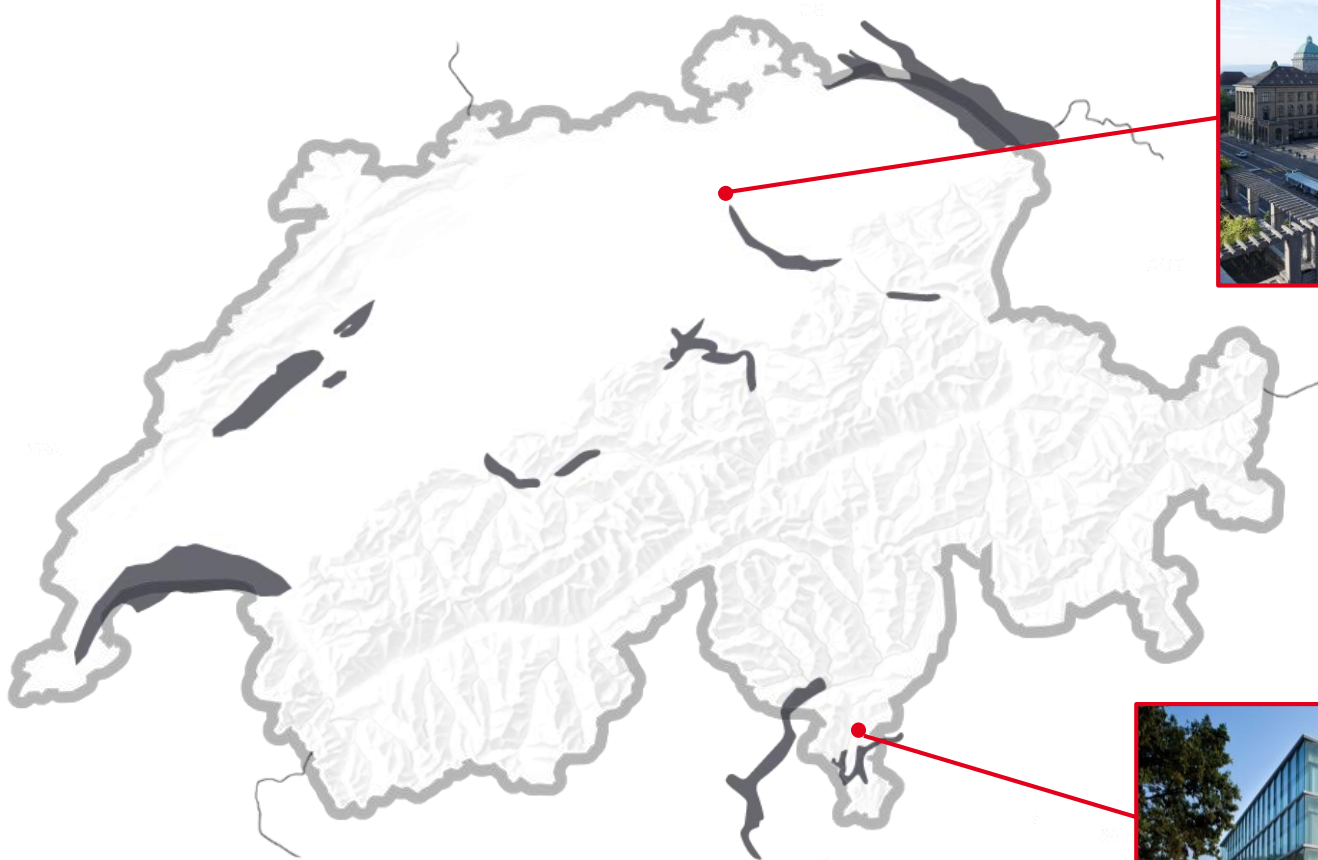
HEPiX Fall/Autumn 2017

KEK, Tsukuba, Japan

Dario Petrusic - System Engineer - CSCS

The **Swiss National Supercomputing Centre**, located in Lugano, is a unit of the **Swiss Federal Institute of Technology in Zurich (ETH Zurich)**

ETH Zurich



CSCS Lugano



The Swiss Supercomputing Centre

New centre, built in 2012

- 70 People (in Lugano), 18 Sysadmins

Main systems

“Piz Daint” - Cray XC40/Cray XC50 (+ KNL + TDS)

- Intel Xeon E5-2695 v4 and Nvidia Tesla P100
- 6'751 Compute Nodes (5'320 Hybrid, 1431 Multicore)
- Peak Performance: 25.326 Petaflops

“Blue Brain 4” - IBM Blue Gene/Q

- 65'536 PowerPC A2 1.6 GHz cores
- Peak Performance: 839 TFlops

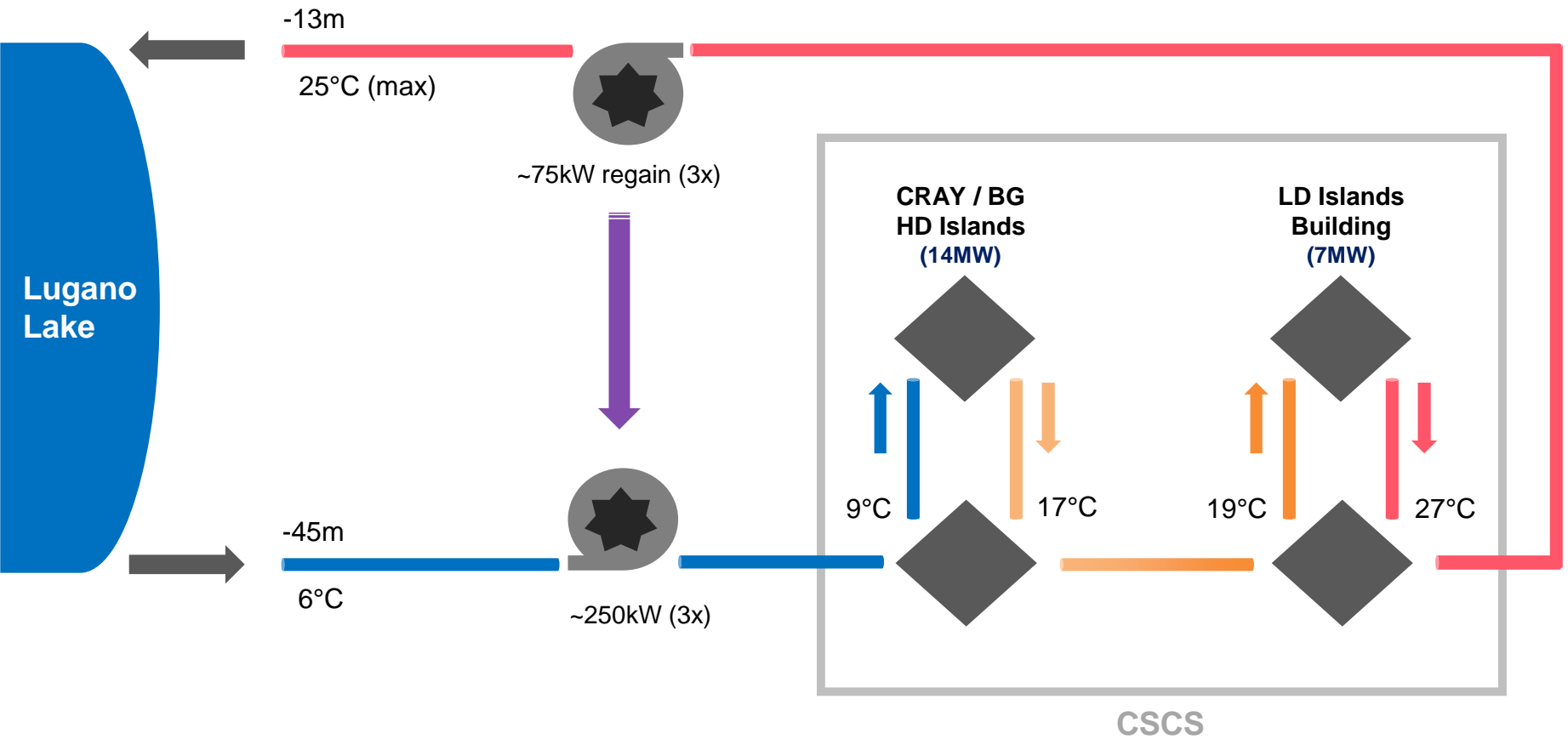
“Kesch & Escha” – 2x Cray CS-Storm

- 12 Hybrid compute nodes with 24x E5-2690v3 (288 cores) and 192 Tesla K80 GPUs
- 3TB RAM
- Used by **MeteoSwiss** for *numerical weather predictions*

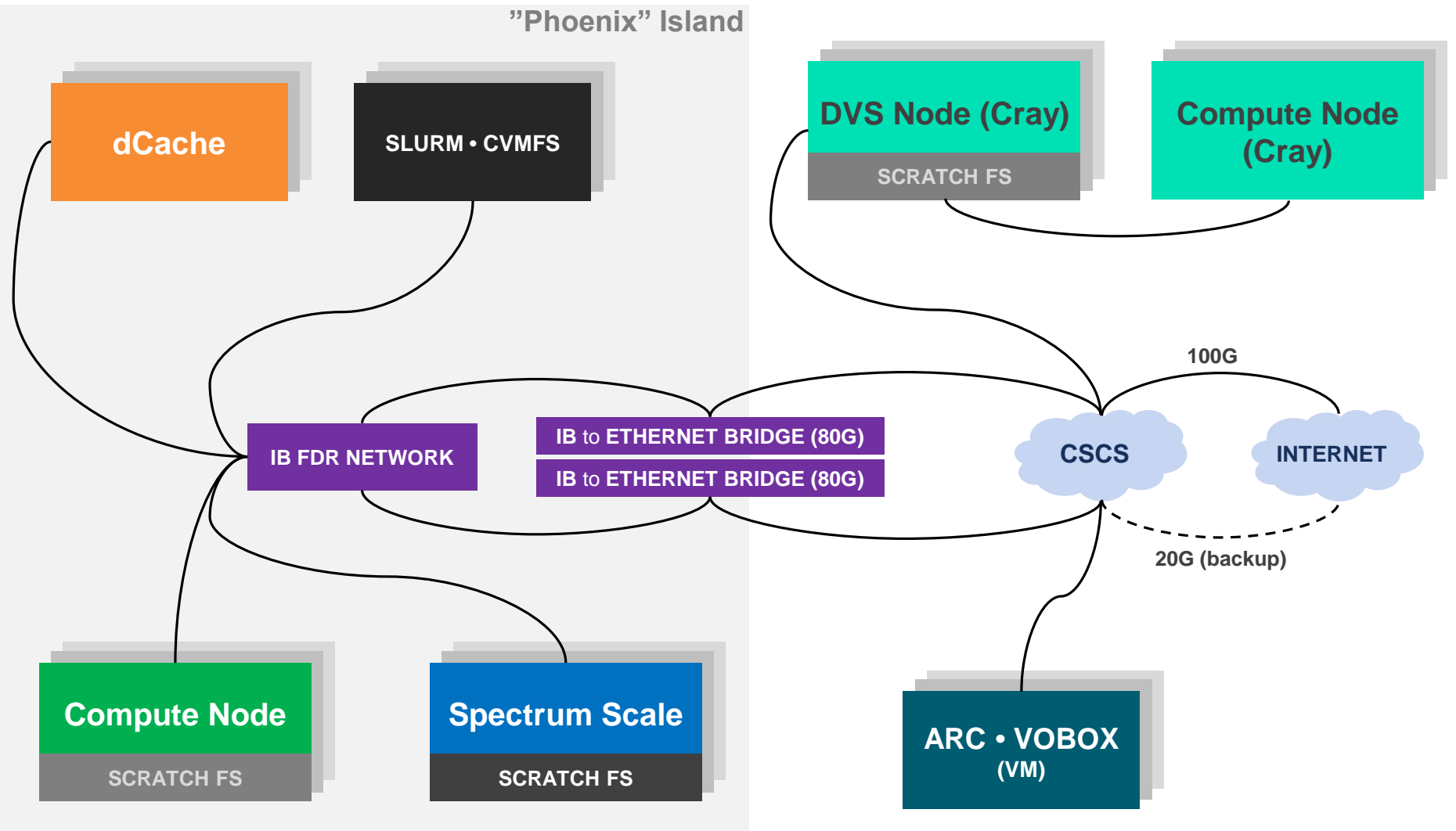
”Phoenix” – LCG Cluster

- 150 Nodes (SandyBridge to Broadwell) for a total of ~ 6000 cores

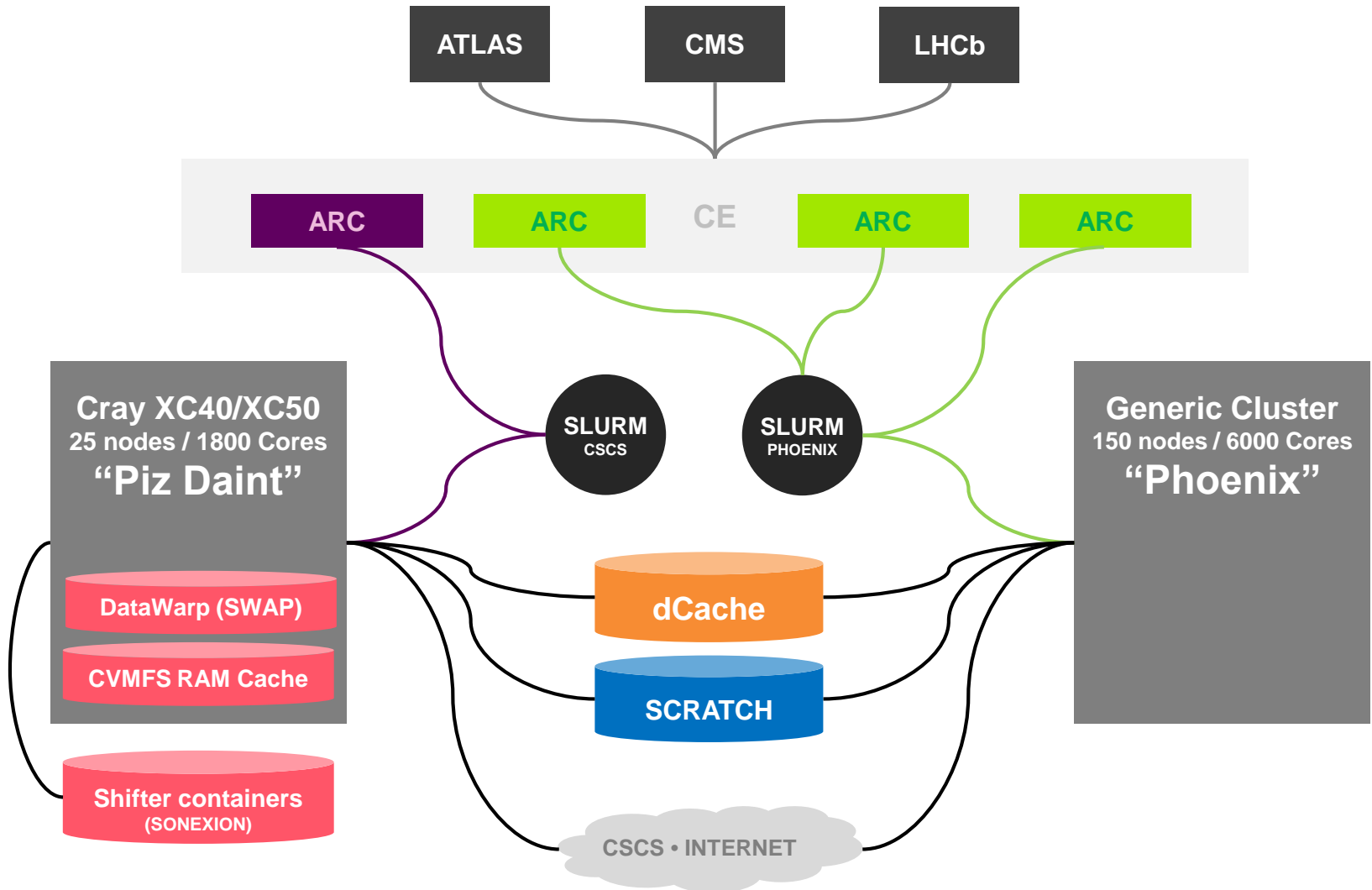
CSCS Facility – Water cooling system



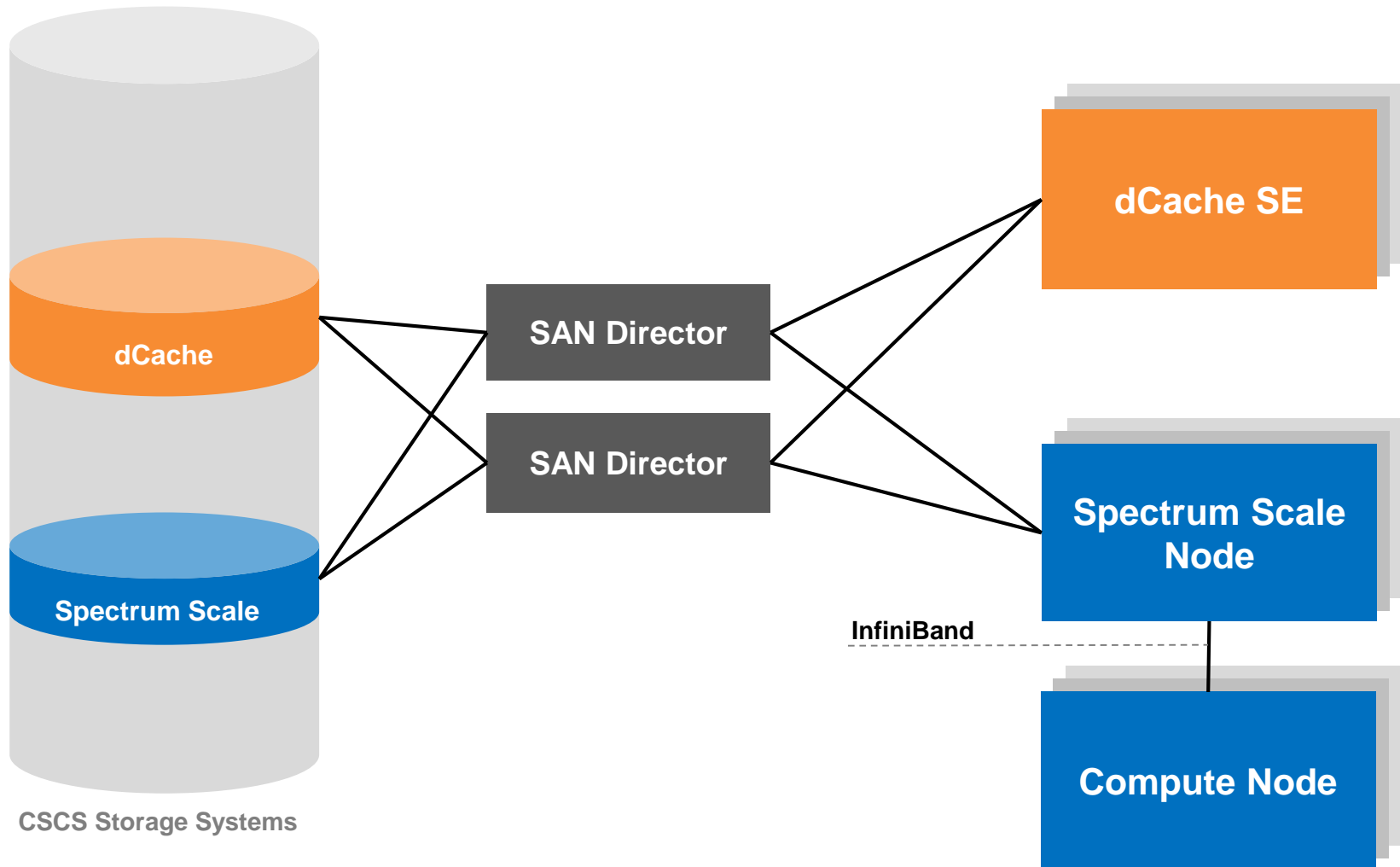
Architecture



WLCG Job Workflow – “Classic” & “LHC_{ON}CRAY”



Flexible Storage Model



Storage Systems

CSCS File systems

IBM Spectrum Scale: 3 Clusters, 26 nodes, 5 file systems

- **11.6PB** of usable space

Lustre: Piz Daint dedicated scratch file systems

- **Sonexion 3000** - 22 nodes (20 OSS + 2 MDS) - **10PB – 112GB/s** (peak)
- **Sonexion 1600** - 50 nodes (48 OSS + 2 MDS) - **3PB – 138GB/s** (peak)

IBM TS4500: 8 frames and 20x Jaguar Tape Drives
~**30PB** of archive space (3000x 10TB tapes)

WLCG File systems

IBM Spectrum Scale: 1 Clusters, 8 nodes

- **642TB** of usable space, **300M** of allocable inodes
- Real world performance: ~**4GB/s+** and **100M+ IOPS** (sustained)

dCache: 2 head nodes, 13 Storage element nodes

- **4.12PB** of usable space

Photo Gallery – CSCS Offices and Machine Room



Photo Gallery – Piz Daint (first version)

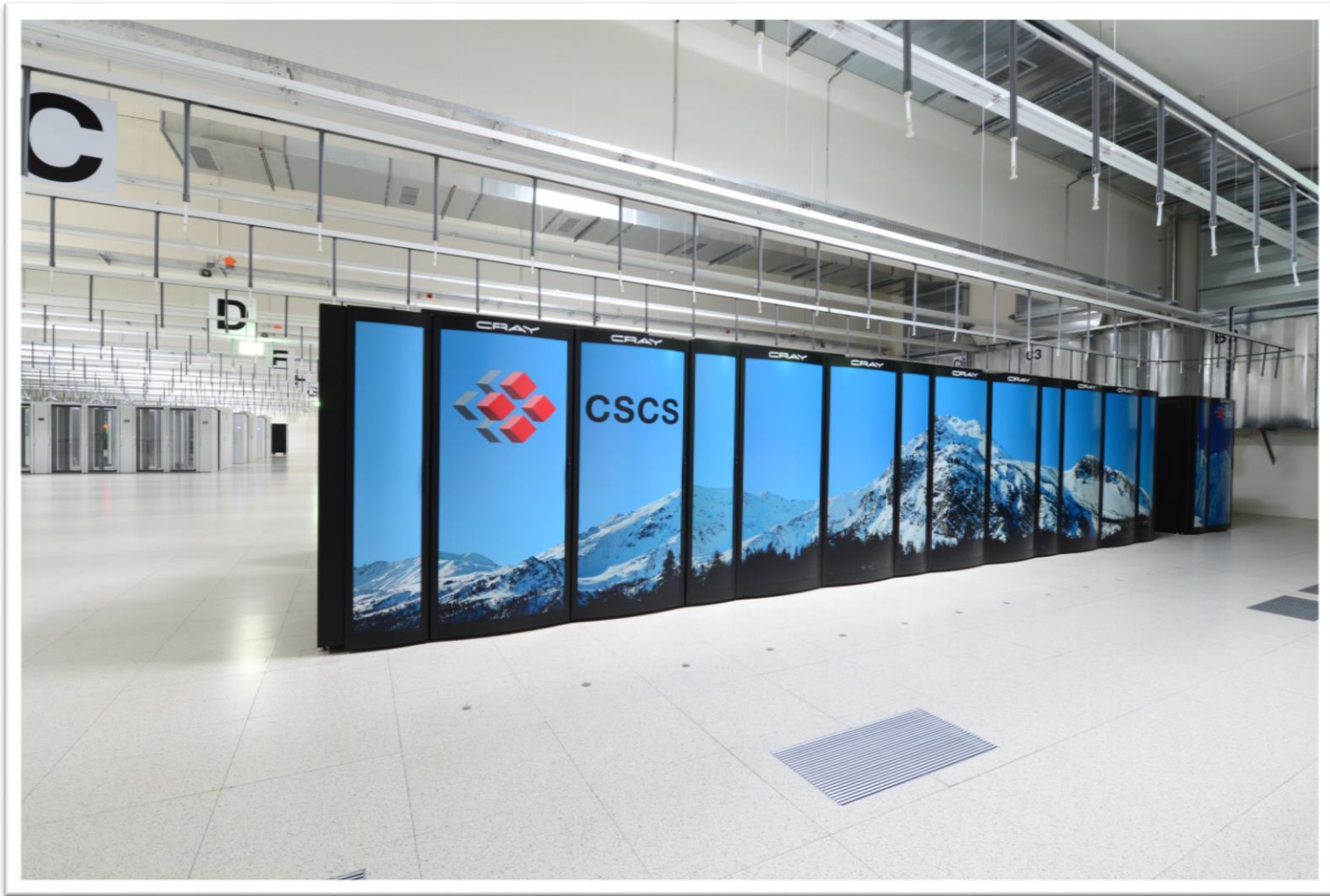


Photo Gallery – Piz Daint (after last upgrade)

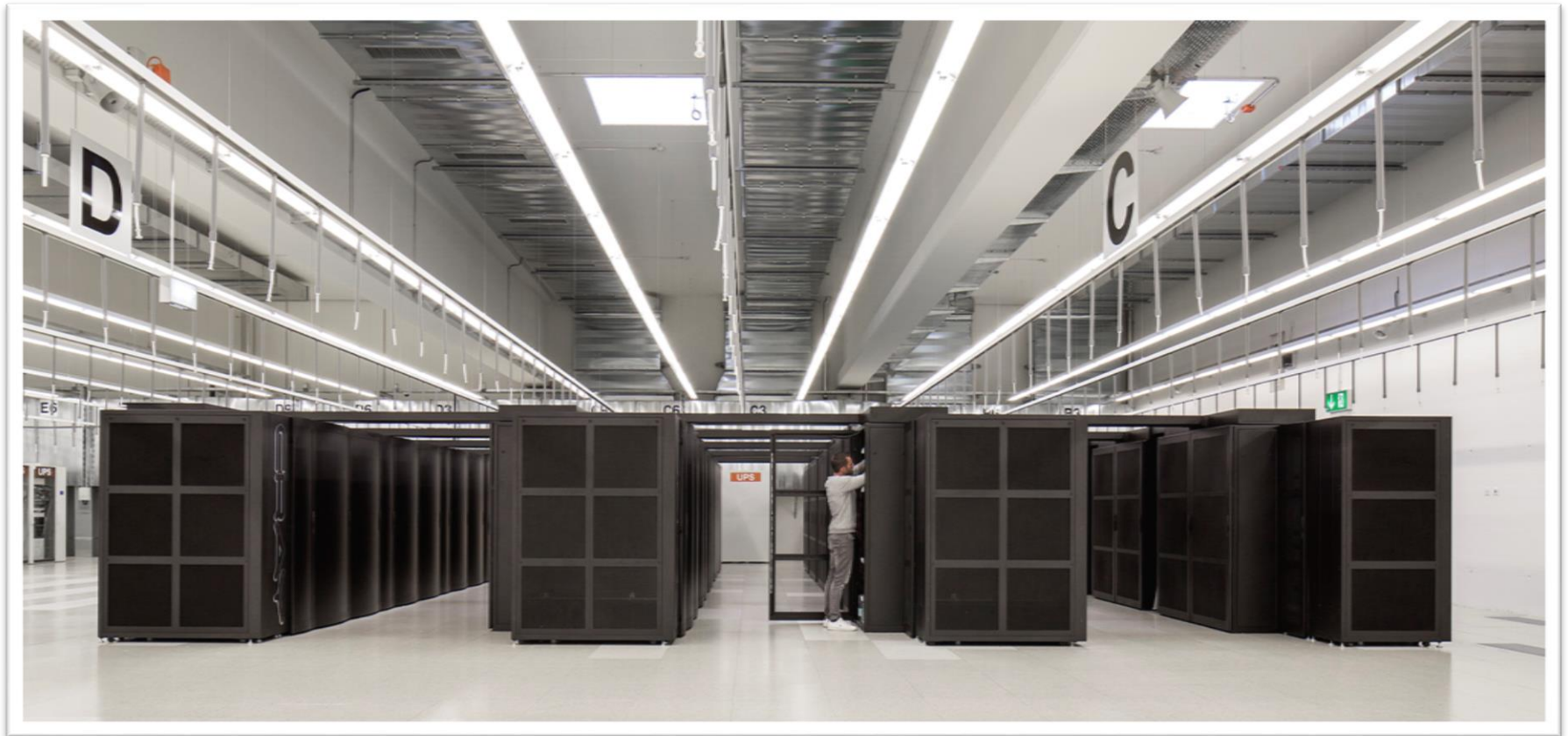


Photo Gallery – Phoenix Island



