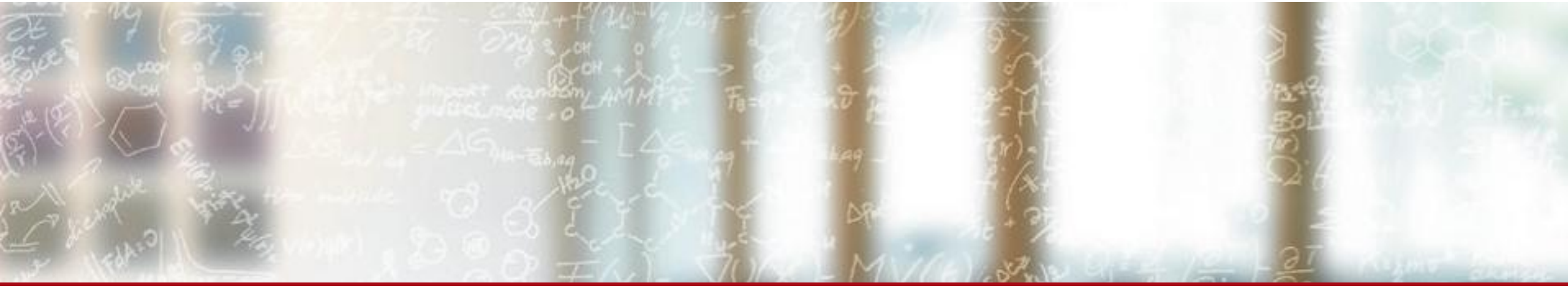
CSCS
Centro Svizzero di Calcolo Scientifico
Swiss National Supercomputing Centre

ETH zürich



SKA & CSCS

Swiss SKA Days, 7th September, 2021

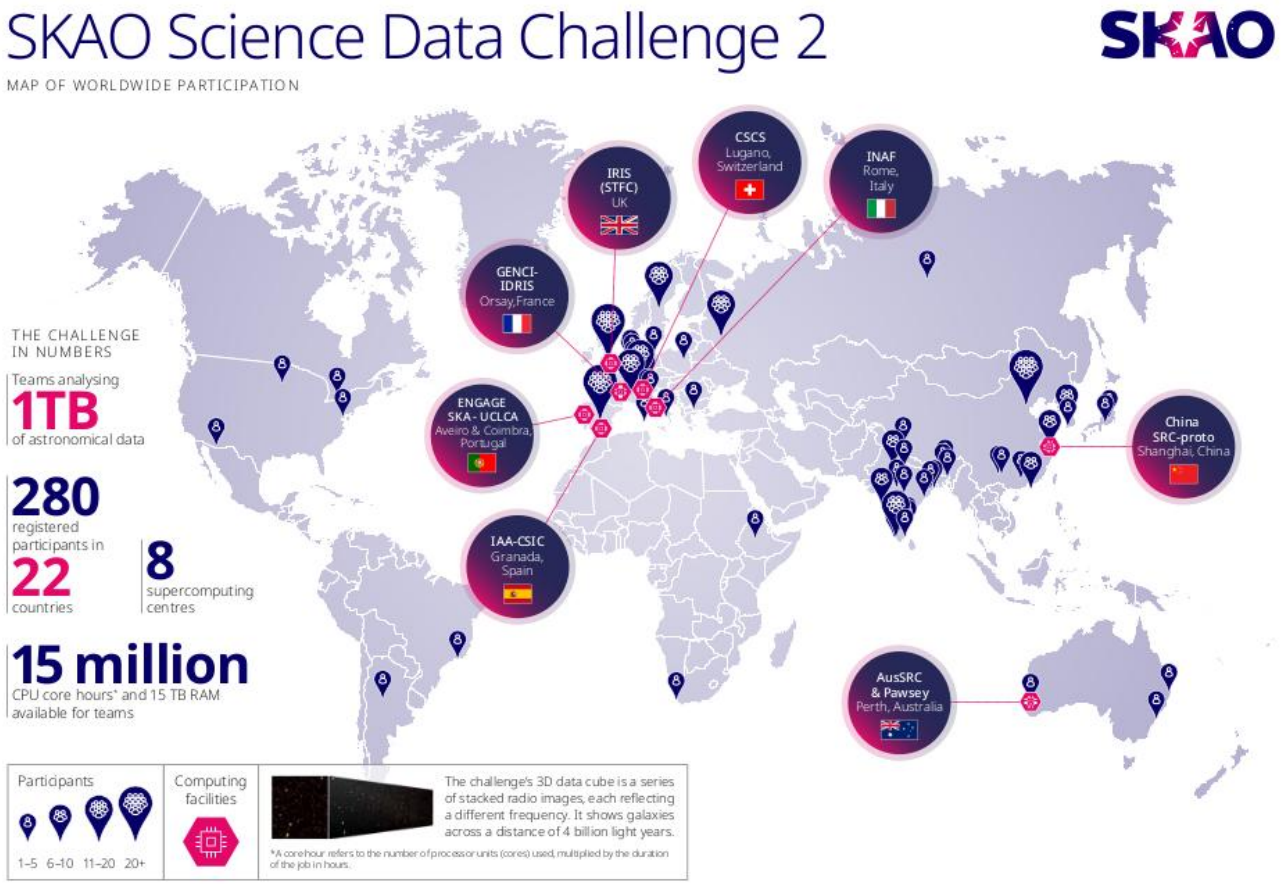
Pablo Fernandez

Summary

- CSCS is already collaborating with SKA for some time
- We have a working relationship with CHIPP for the WLCG federation that can be taken as an example for SKA and CTA
- Our new Alps infrastructure is well prepared for the needs of SKA

SDC2 data challenge

- CSCS has participated in the SKA data challenge
  - Started in January 2021
- Offered up to 10 projects
  - 7 were accepted
  - 5 completed the process
  - 4 made the leader board
    - 2nd, 6th, 7th and 11th
- A total of 180’000 node-hours and 25 TB were distributed
  - Most with GPUs



PASC program

Platform for Advanced Scientific Computing

Develop and modernize libraries and software tools to enable scientific applications to run at scale on different hardware architectures

- Overarching goal is to position Swiss computational sciences in the emerging exascale-era. See https://pasch-ch.org
- Impact through committing to long-term collaboration between domain scientists, computational scientists, software developers and computing centres.
- Close collaboration between software engineers at CSCS and 15 projects funded through a competitive process
- Two PASC projects related to SKA were funded from 2021 to 2024:
  - To improve scalability of SKA imaging codes
    - https://www.pasc-ch.org/projects/2021-2024/next-generation-radio-interferometry/
  - To develop simulation code for cosmology and astrophysics
    - https://www.pasc-ch.org/projects/2021-2024/sph-exa2/

MENU

USER PORTAL

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World's Most Powerful AI-Capable Supercomputer?

CSCS, Hewlett Packard Enterprise and NVIDIA Announce World's Most...

12.04.2021

"Alps" system to advance research across climate, physics, life sciences with 7x more powerful AI capabilities than...

MORE

MORE SCIENCE

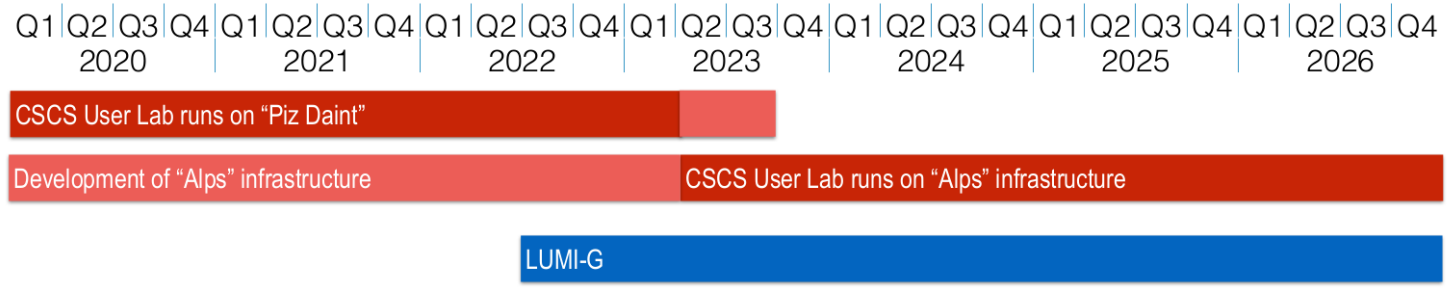
Alps Infrastructure

- Hardware/Infrastructure layer
  - Compute nodes
  - Storage media
  - Network

- Software/Platform layers on top
  - Services (e.g. Slurm, file transfer)
  - User accounts
  - Middleware…

  SDC2 challenge ran on the HPC Platform on Piz Daint

- Scientific codes go on top



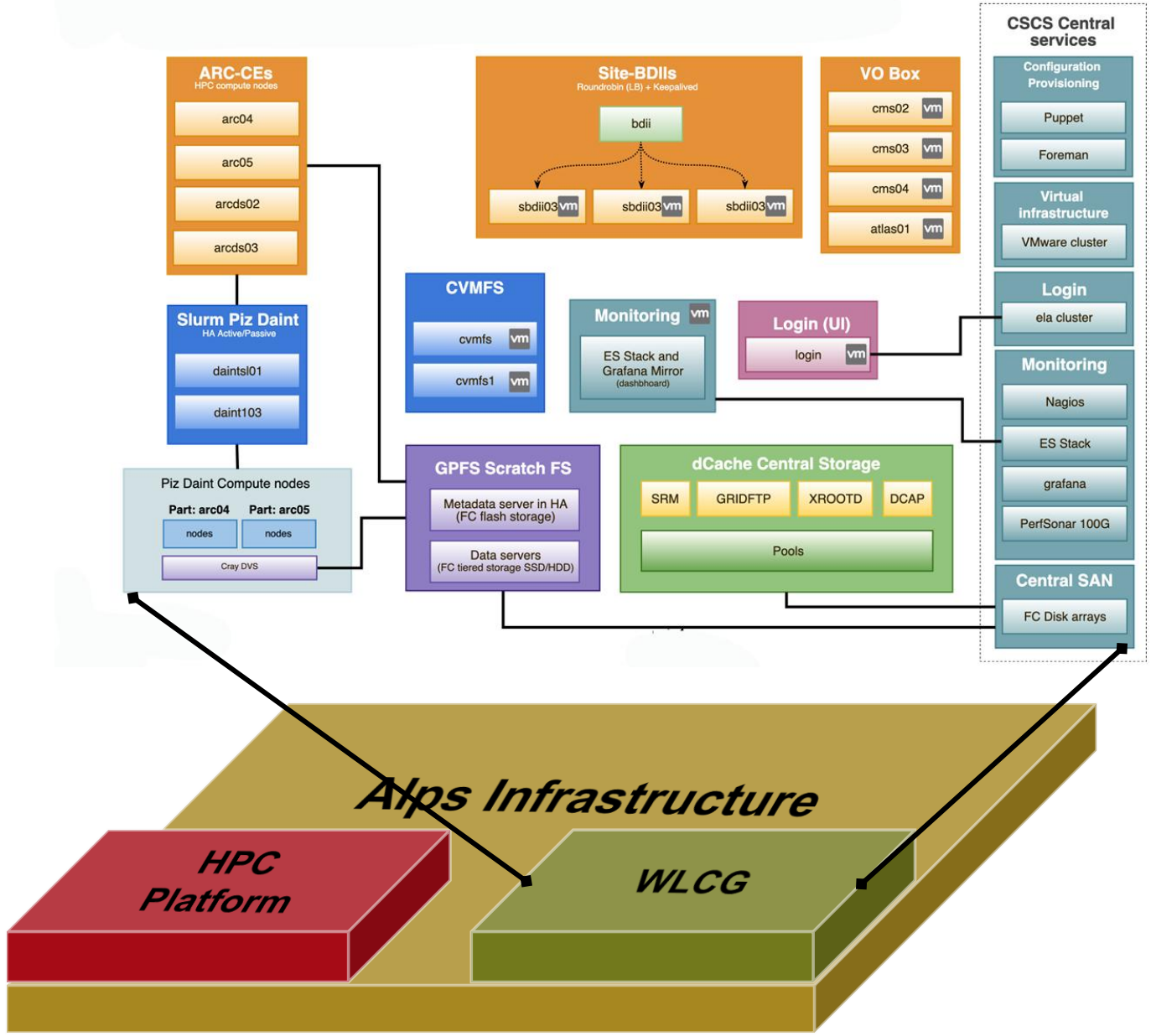
- AMD Rome CPU @ Alps & LUMI
  - NVIDIA A100 GPU @ Alps
  - AMD Mi200 GPU @ LUMI & Alps
    - NVIDIA Grace CPU & A100next GPU @ Alps
    - AMD successor to Mi200 @ Alps
  - Powerful storage system with network attached SSD & HDD @ Alps

Alps is designed to be extensible with other types of nodes (e.g. Intel CPU & GPU, Fujitsu A64FX, etc.)

We continue to operate a testbed system with all sorts of architectures

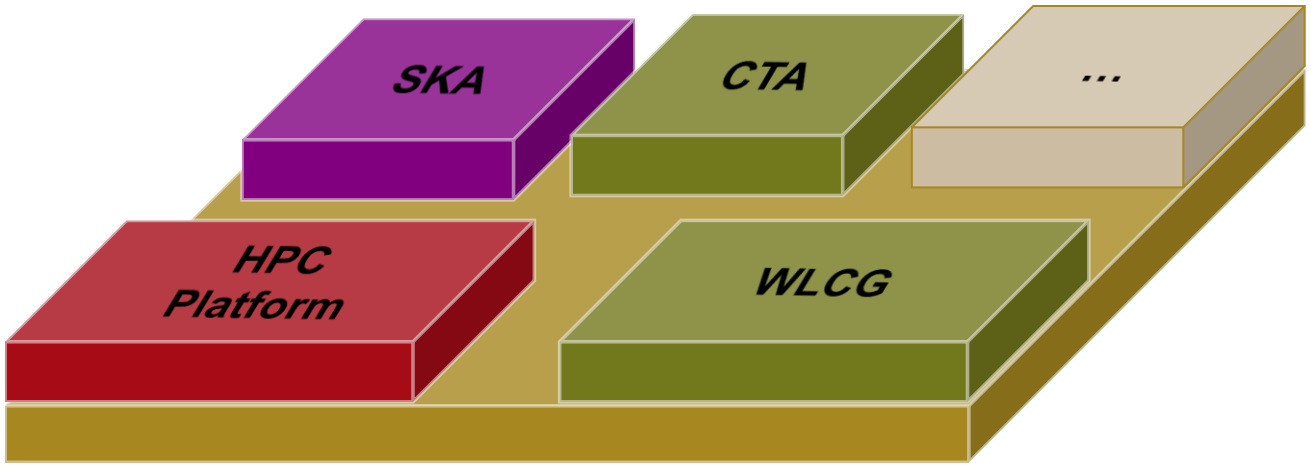
WLCG Grid Middleware layer

- Lots of services to “seamlessly” connect to the WLCG federation
- Collaboration between 4 organizations in order to make things work



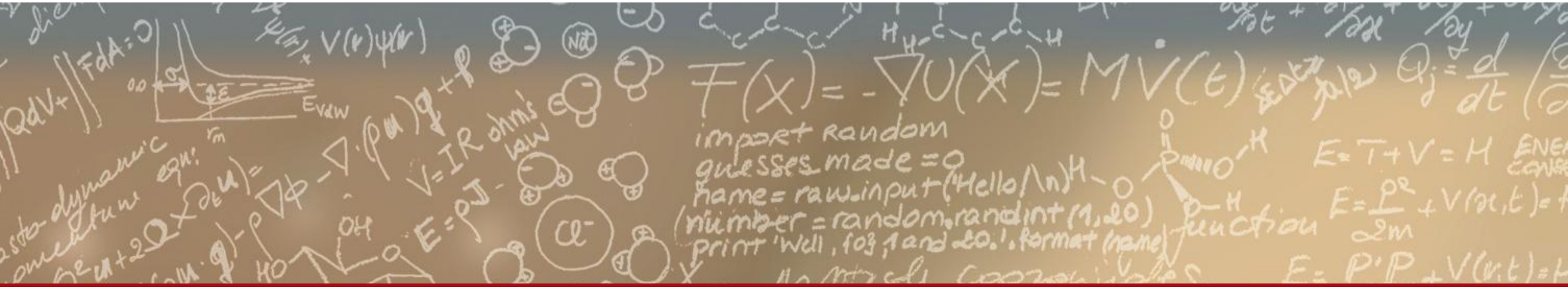
Taking platforms further in Alps

- Very flexible infrastructure that allows for plenty of customization
  - CTA will look very similar to WLCG
- Customization comes at a cost
  - Similar platforms are easier to maintain



Still early to understand how SKA platform looks like…

Like WLCG and CTA? Or more IaaS like OpenStack?



Thank you for your attention.