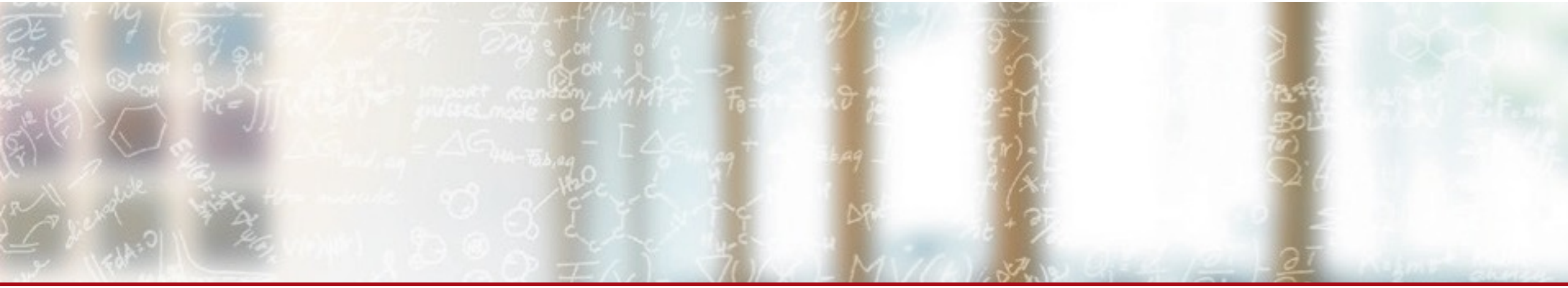
CSCS
Centro Svizzero di Calcolo Scientifico
Swiss National Supercomputing Centre

ETH zürich



Computing Platforms and Infrastructure Program Overview

Spring SKACH Consortium Meeting

Victor Holanda Rusu, CSCS and Darren Reed, UZH

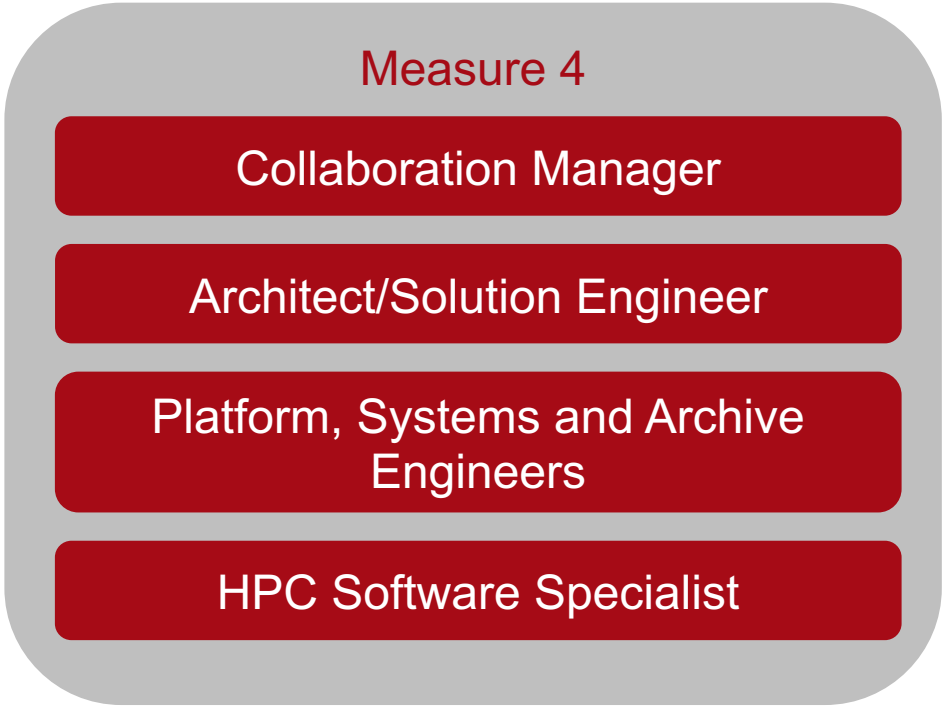
May 24th, 2022

Before we go into the program… Who are we?

Computing Platforms and Infrastructure

Based on Measure 4

- Computing Platform and Infrastructure
  - Chair: Victor Holanda Rusu, CSCS
  - Co-Chair: Darren Reed, UZH



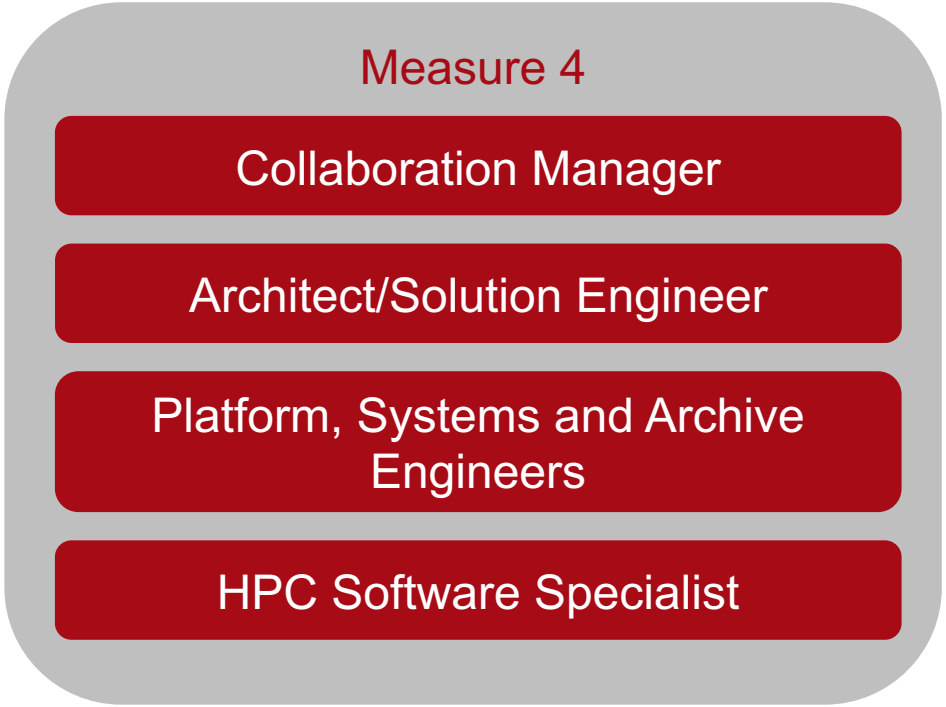
We aim to

- Enable SKA first science use cases using the existing CSCS HPC Platform
- Develop and provide a virtual cluster for the first prototype
- Understand how to leverage international scale-up resources for the next phase of the project
- Contribute to the development of the scientific software used

CSCS and SKA

Before the dawn of time

- CSCS started to contribute to SKA before the SERI project approval (Data Challenge 2, Swiss SKA days 2021, SKAO WRG5 meetings, etc.)
- At D0, we had already a team in place working in their fields



Pablo Fernandez and Victor Holanda Rusu

Miguel Gila and Mark Klein

Performed by multiple engineers at CSCS

Sebastian Keller and Simon Frasch

What have we done so far?

SKA Data Challenges

The work behind the scenes

- CSCS participated on the SDC2
  - Helped prepare the SRC part of the challenge
  - Granted compute node hours, in-kind contribution
  - 7 teams participated using CSCS resources
- CSCS will be part of the SDC3
- Helped “refine” the SRC involvement and application process from SDC2 to SDC3
- Timeline: October 2022
- Duration: six months

Software contributions

- Regarding topics
  - GPU programming
  - CI/CD (Development pipelines)
  - FirecREST (REST API)
  - Sarus (container runtime)
  - ReFrame (regression testing framework)
  - Technical Reviews (HPC resource allocation)

- Aligned with developments at SKACH
  - SPH-EXA2 project
    - Aims to be the first SPH code to simulate 10^{12} particles on hybrid Tier-0 computing architectures
    - PIs: Florina Ciorba, Lucio Meyer, and Ruben Cabezon
    - Presentation by Sebastian Keller later today
  - Next-Generation Radio Interferometry project
    - Aims to optimize the image synthesis algorithms of Bluebuild to reach real-time imaging requirements of SKA
    - PIs: Jean-Paul Kneib, Emma Tolley, Paul Hurley, Sepand Kashani, Matthieu Simeoni, and Gilles Fourestey
  - Karabo team about potential contribution from CSCS to the Digital Twin Pipeline

SKAO collaboration

The International collaboration

- Working with WRG5 – Compute Working Group
- Olive Team – (temporary) SCRUM master
  - Aims to enable the SKA workflow on Prem and on the cloud
- Purple Team – Stakeholder
  - Aims to create a common SKA AAI solution
- Coral Team – Observer
  - Aims to develop/produce benchmarks and test suites for the deployment of entities in protoSRCs

Provide HPC infrastructure

HPC resource requests at CSCS

- Helped define the resource request process
- Submit resource requests using Google Form
- Any issues or question with the process, just Slack me
- System issue or question, please open a support ticket

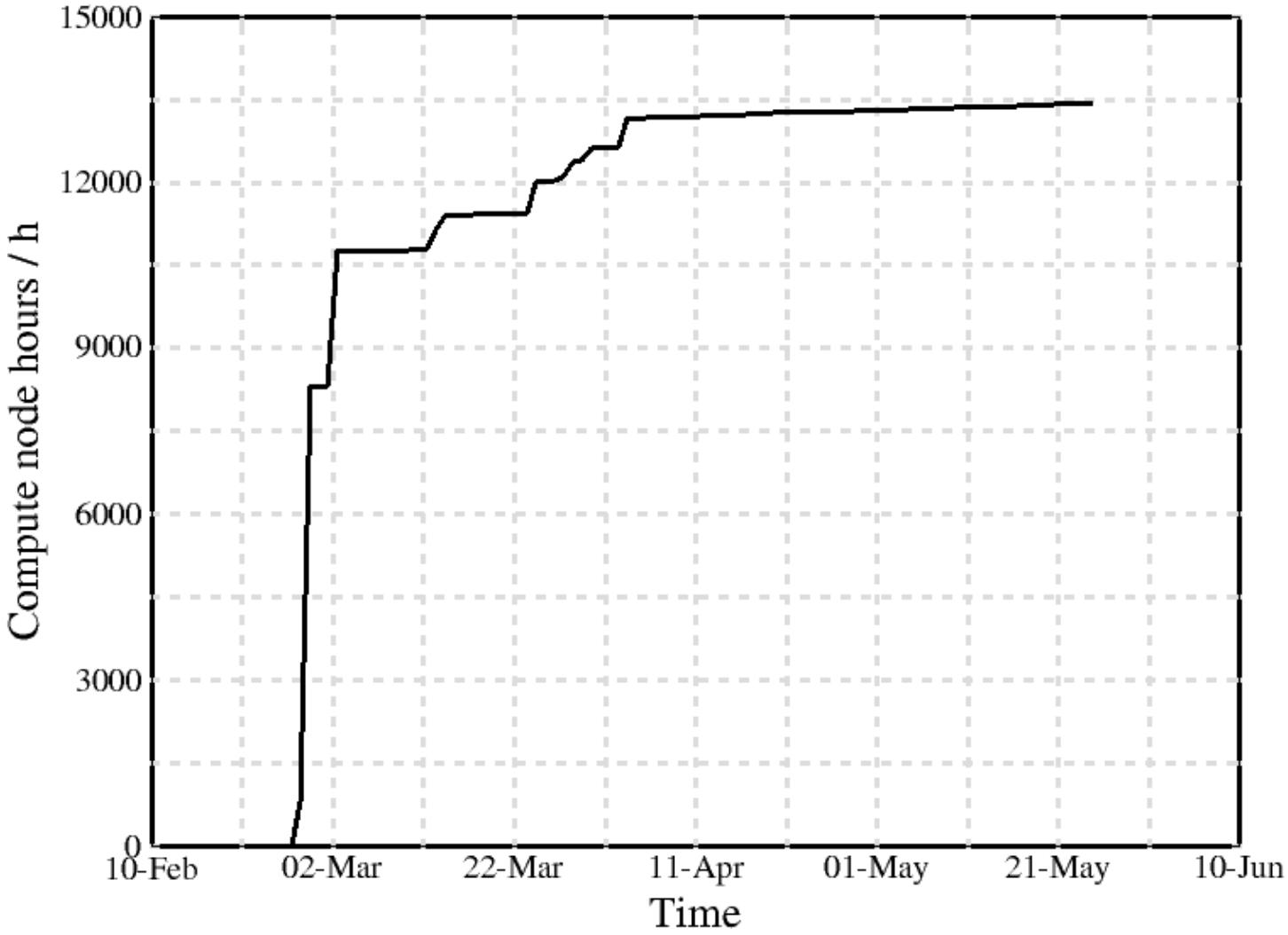
Provide HPC infrastructure

HPC resource requests at CSCS

- Small projects (< 5’000 node hours, 1 TB of storage, < one year)
  - Approval for this submission should take an average of 1-2 weeks
  - Requires board member approval – may take a while for the board member to reply
- Large projects (> 5’000 node hours, >= 1 TB of storage, = one natural quarter)
  - must be submitted two months prior to the quarter
  - January - March (Submitted by 1 October)
    April - June (Submitted by 1 February)
    July - September (Submitted by 1 May)
    October - December (Submitted by 1 August)
- Long projects (> 5’000 node hours, >= 1 TB of storage, == one natural year)
  - must be submitted two months prior to the starting month

SKACH

Node hours utilization

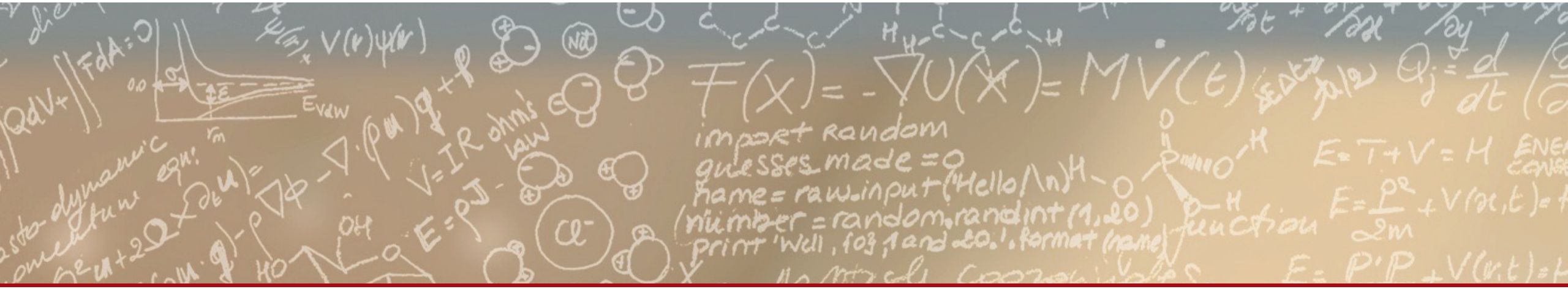


What are we doing next?

Swiss SRC coordination

The Swiss SRCs

- Swiss SRCSC representative is Emma Trolley
- Comprised by two teams
  - Compute Platforms and Infrastructure
  - SKA Regional Centres (EPFL, UniGe, FHNW)
- Planning to have a dedicated by-weekly meeting to sync up activities
- Most likely it will be organized by the Compute Platforms and Infrastructure team
- If you want to join, get in touch



Thank you for your attention.

Questions?