



Compute4PUNCH

PUNCH4NFDI - TA2 - WP2

Matthias Hoeft (Thüringer Landessternwarte, Tautenburg) and Manuel Giffels (KIT)

Alexander Drabent • Thomas Fieseler • Oliver Freyermuth • **Manuel Giffels** • Andreas Henkel • **Matthias Hoeft** • Jörn Künsemöller • Arnulf Quadt • Dominik Schwarz • Kilian Schwarz • Carsten Urbach • Peter Wienemann • Christoph Wissing • Sebastian Wozniewski • et al.

05.04.2022

Workshop on NFDI tools / services / synergies between physics-related consortia and others

PUNCH4NFDI : offer modern tools for data analysis

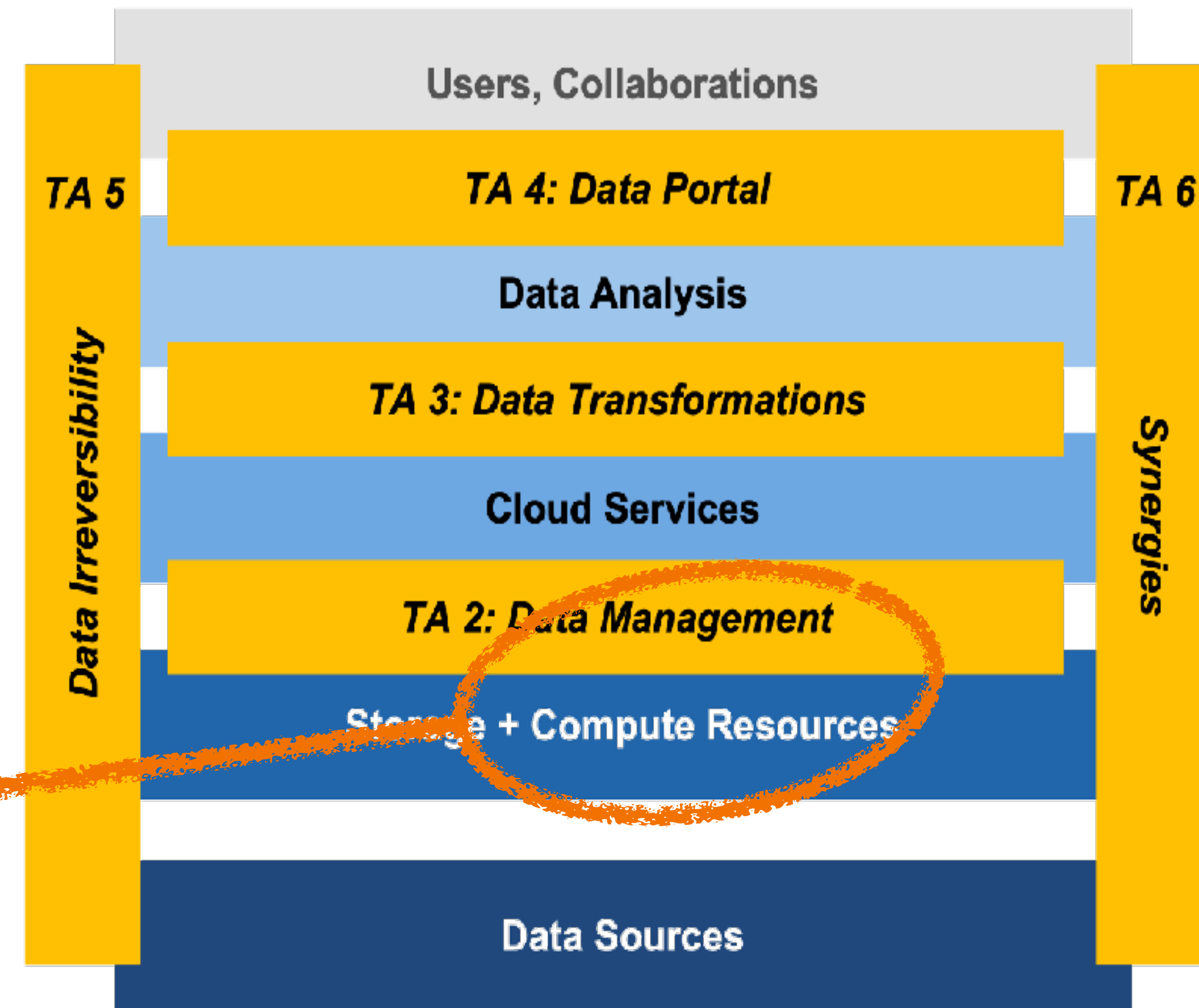
Overarching objective

set up **PUNCH science data platform**
(PUNCH-SDP)

- will be able to deal with large datasets (Exabyte)
- will offer modern tools to handle the data efficiently
- goal: bundle many (existing) ‘island’ solutions available in community

Compute4PUNCH

an essential component for the PUNCH-SDP



Layers of the PUNCH science data platform

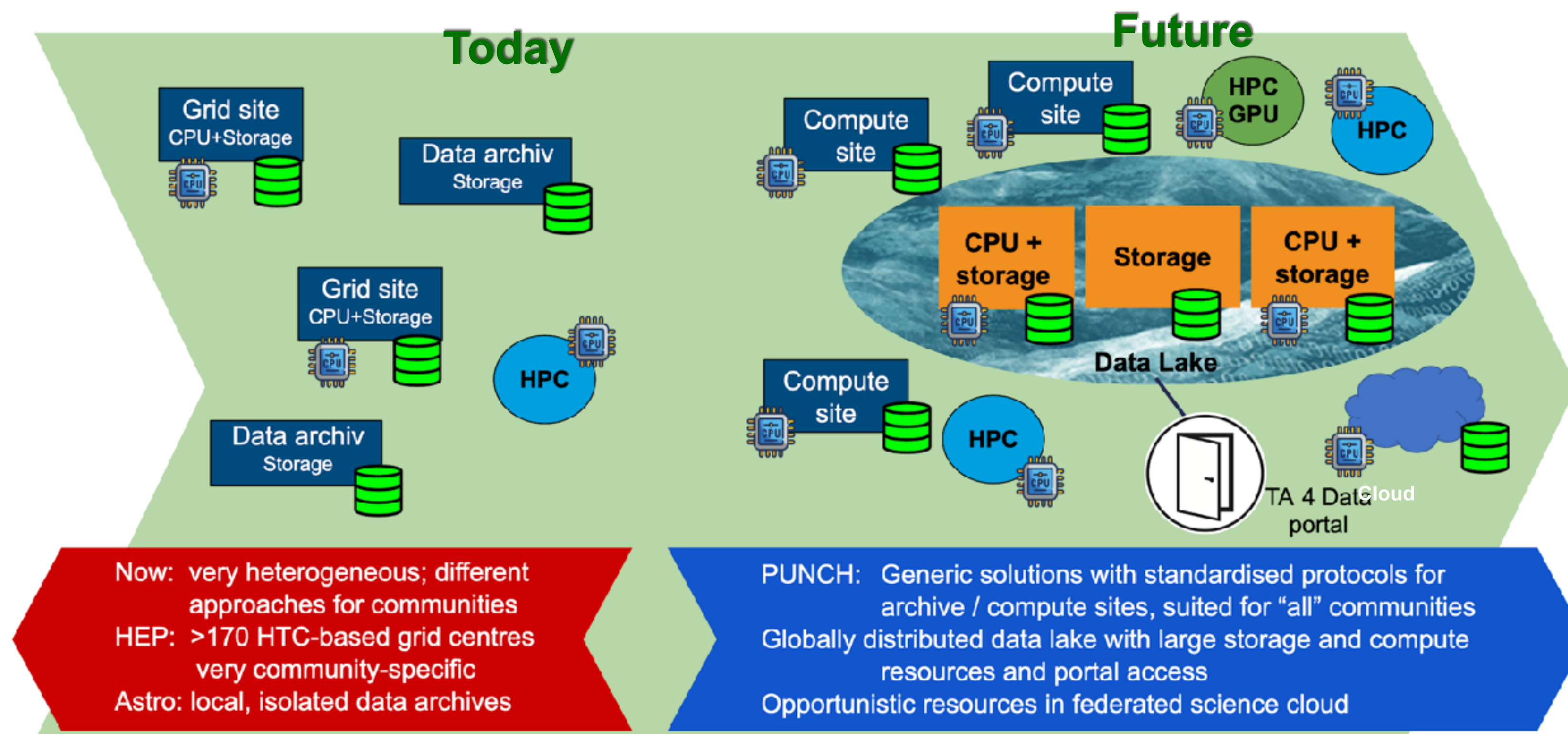
Compute4PUNCH : federate (existing) compute infrastructures

Aims of Compute4PUNCH

- **integrate** heterogenous **compute resources** (provided by PUNCH consortium) into a common, federated compute infrastructure
- provide **uniform access**
- help to increase **efficient utilisation** of resources

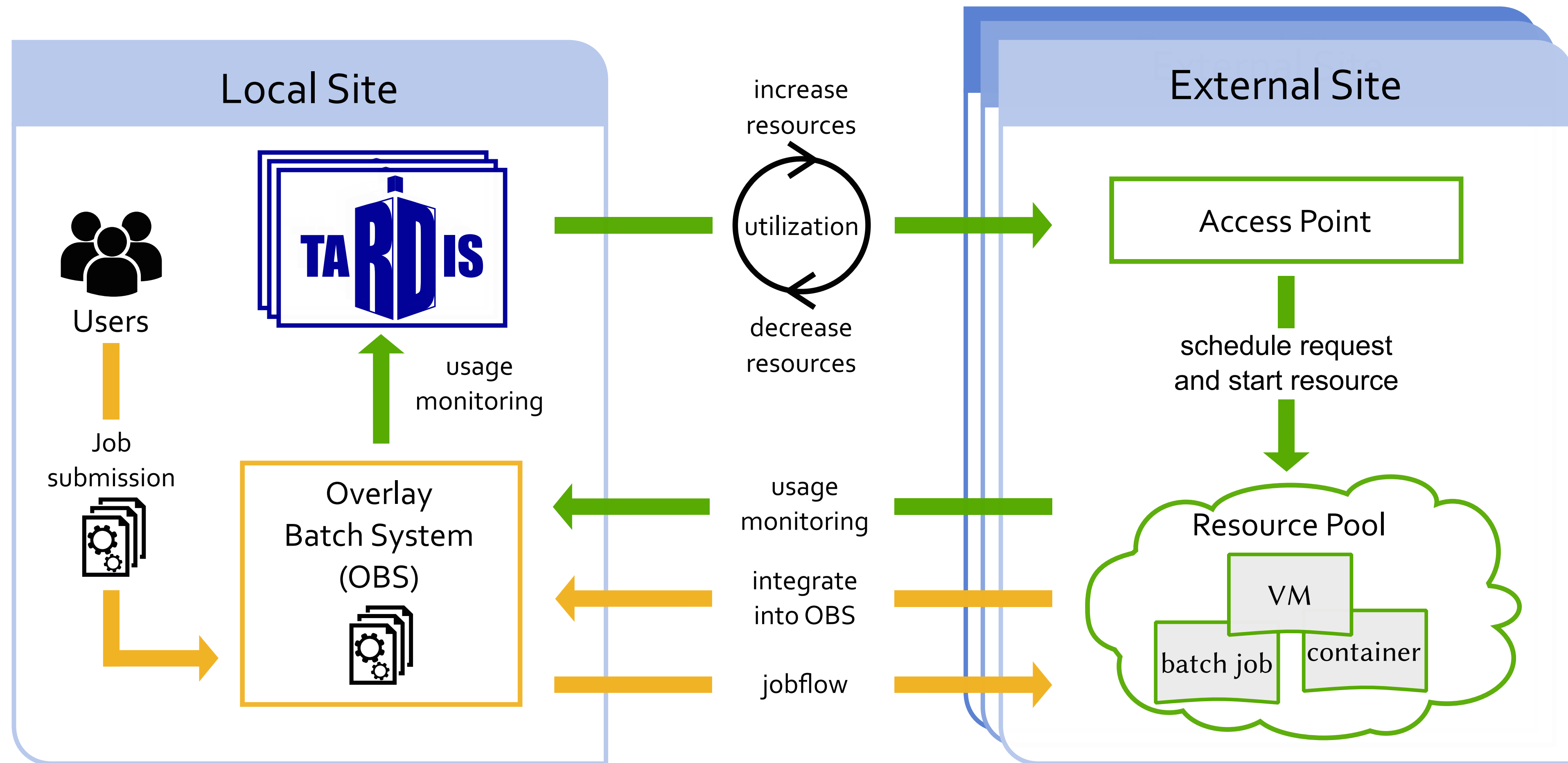
Work program

test, combine and develop **tools to set up** such a federated compute infrastructure

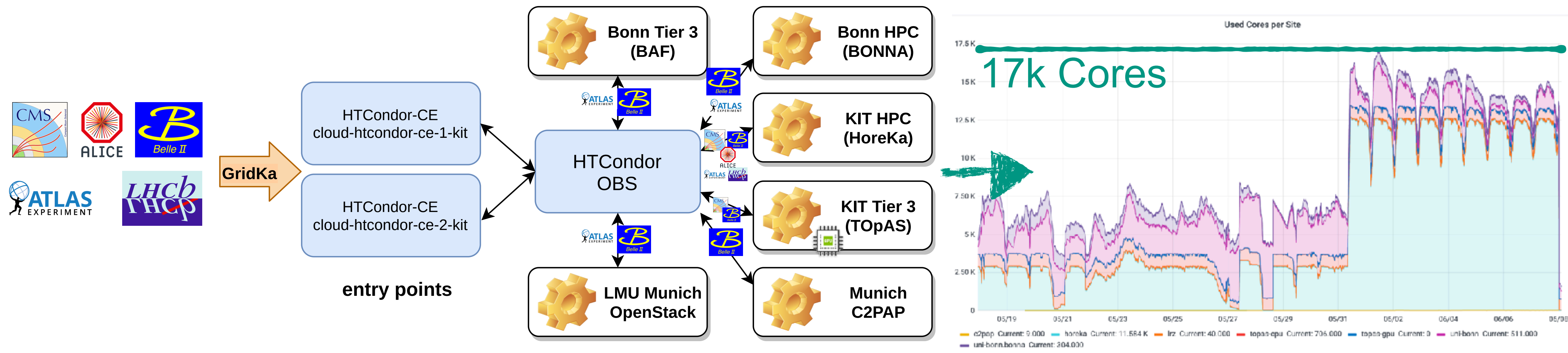


Technology : *start from available solution*

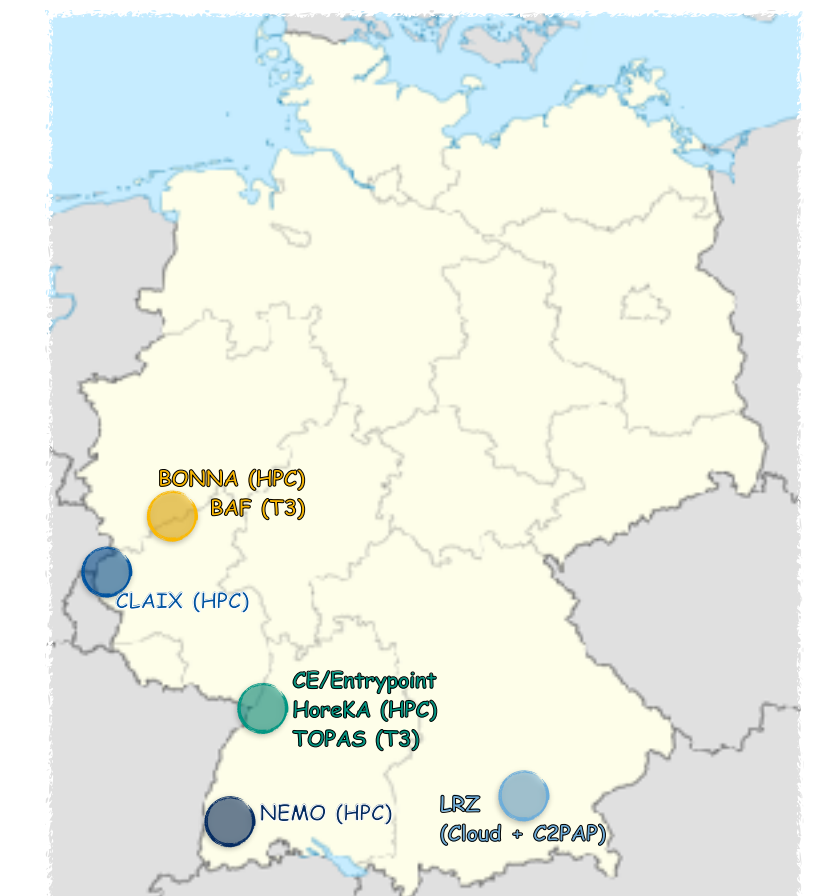
HEP as developed solutions to federate compute resources



Opportunistic Resources & WLCG : *in practice*

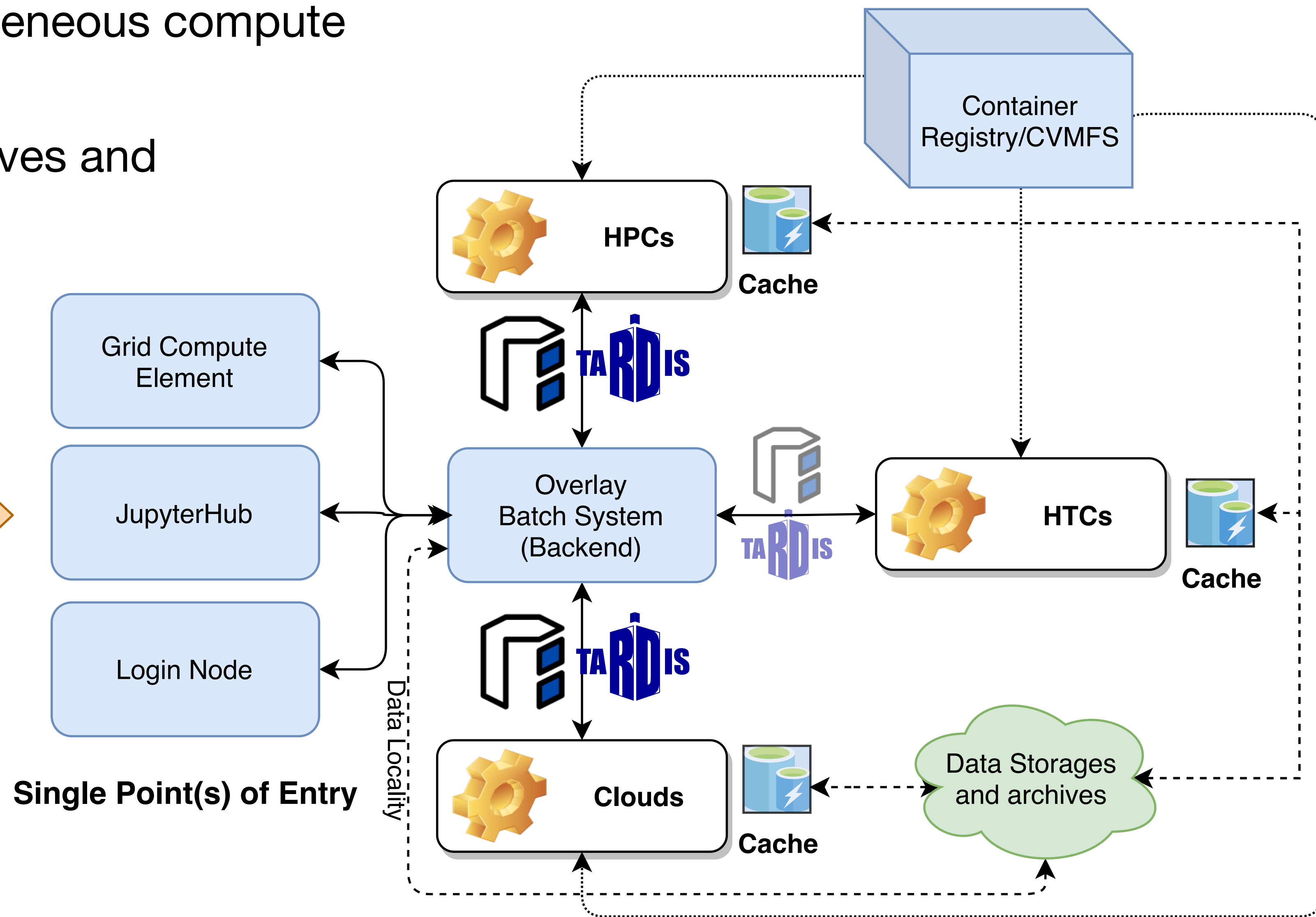
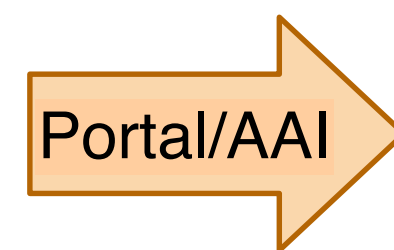


- Dynamic, transparent and on-demand integration using COBaID/TARDIS resource manager developed at KIT
- Single point(s) of entry to opportunistic resources (HPCs, local clusters and Clouds) using traditional Grid Compute Elements
- HTCondor overlay batch system to federate a variety of compute resources



A blueprint for Compute4PUNCH

- Establish a federated heterogeneous compute infrastructure for PUNCH
- Integrate data storages, archives and opportunistic caches
- Introduce data-locality aware scheduling



A Compute4PUNCH demonstrator (work in progress)

MOGON II/Himster II (JGU Mainz)

- Shared access to HPC clusters
- Dynamically managed by COBaLD/TARDIS
- To be integrated into Compute4PUNCH

High Throughput Cluster (TOPAS@KIT)

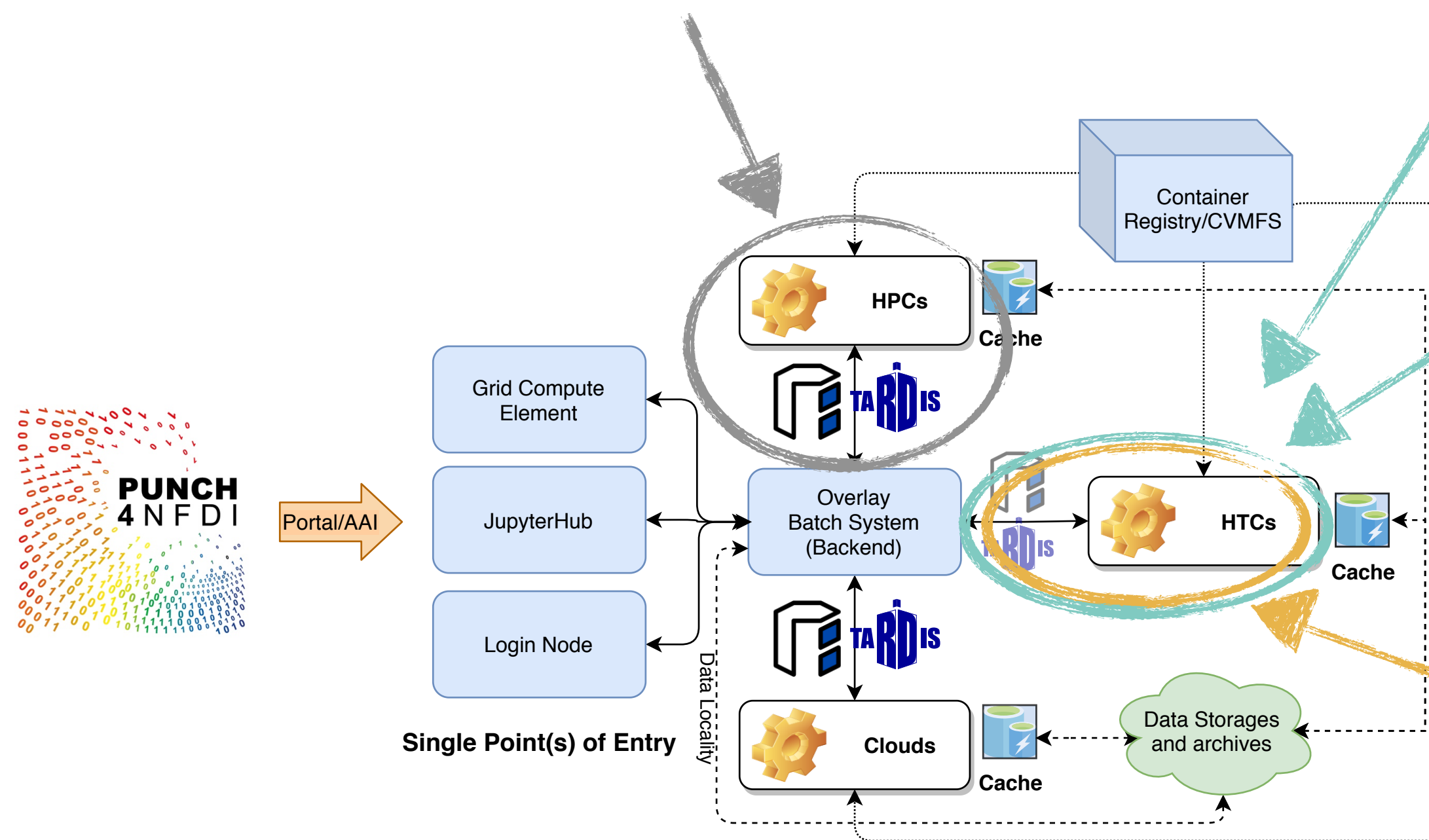
- Dynamically managed by COBaLD/TARDIS
- Fully integrated into Compute4PUNCH

GridKa Cluster (KIT)

- Dynamically managed by COBaLD/TARDIS
- To be integrated into Compute4PUNCH

Bonn Analysis Facility BAF (Bonn)

- Dynamically managed by COBaLD/TARDIS
- To be integrated into Compute4PUNCH



05.04.2022

Summary

- PUNCH4NFDI aims to set up a science data platform, **PUNCH-SDP**
- **Compute4PUNCH** will offer **tools** to build **federated compute infrastructure** for the PUNCH-SDP
- **Technology** (start point):
 - federation via COBaID/TARDIS
 - overlay batch system
 - points of entry via JupyterHub, login node
 - data via Storage4PUNCH
- **Established** technology in HEP
 - significant testing and extension for more diverse use cases
- Compute4PUNCH **demonstrator** under construction