

# DMA ST1 blueprint

Some input for discussion

Kilian Schwarz, Yves Kemp  
DESY, November 10, 2023

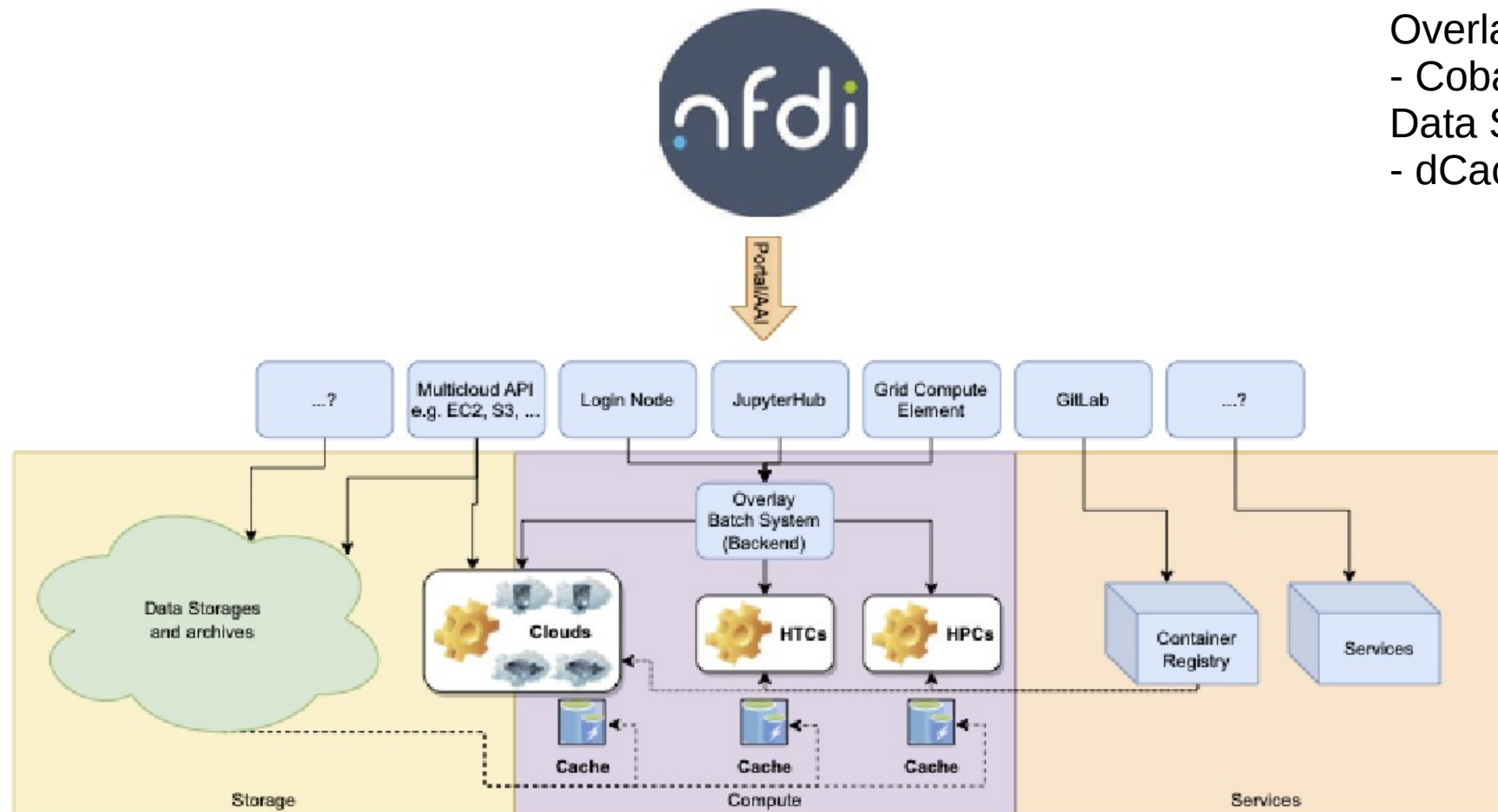
# A proposal for a federated infrastructure

Based on

- centre/community questionnaires
- community requirements
- existing infrastructures
- discussions during DMA ST1 workshop

# Infrastructure proposal

PUNCH4NFDI approach / NFDI Multicloud concept / HEP



Overlay Batch System:

- Cobald/Tardis

Data Storage Infrastructure:

- dCache/XRootD

# Infrastructure proposal

centre/community questionnaires

Monitoring: Grafana

Data Storage: join PUNCH data lake prototype ==> dCache/XrootD/Rucio

Data analysis: Jupyter Notebooks

Notebooks in Gitlab

MetaData: SciCat

# Infrastructure proposal

DMA ST1 workshop discussions

(Helmholtz) AAI \*\*\*\*\*

Token based authentication \*

federated login, authentication, file access

Algorithms

Analysis Facilities/Infrastructure \*\*\*

Jupyter Nbs

Near Realtime Analysis \*

Smart Data Classification

Online Computing

Multimodal analysis

Open Data Analysis

Research products/sustainable analysis

Distributed Clouds/Jupyter Hub \*

# Infrastructure proposal

DMA ST1 workshop discussions

Automation

Benchmarks

Container/VAE (registry/distribution) \*\*

CVMFS

Control Systems \*

Data Access

API \*\*

Data portal for user access: PUNCH SDP, VISA, ... \*

Data Taking and Storage

Data Transfers/Helmholtz FTS \*\*

Data policies, access restrictions, usage conditions \*\*

Data ownerships

# Infrastructure proposal

DMA ST1 workshop discussions

Data/Metadata Formats (exchangable/machine readable)

Standards (data/metadata) \*\*\*\*\*

Nexus, OpenPMD, FITS

Data reduction/selection/compression \*

Data Repositories/Publication/DOI/PIDs \*\*\*

Data Management \*\*\*\*\*

Rucio/Global XrootD Redirector

File Catalogues \*

Data Replication/Data locality Management

Data Archival/LTA \*

FAIR and Open Data \*\*\*\*\*

open data access, IVOA as example

# Infrastructure proposal

DMA ST1 workshop discussions

Federated Computing \*\*\*\*

HPC, automated/fast access to \*\*

Federated Storage \*\*

Name spaces

Global infrastructure, embedded into

Heterogeneous architectures (GPU, FPGA, ...) \*\*

Metadata Management \*

HELPMI \*\*

HELIPORT

Metadata Catalogues \*

SciCat (for global name space, access rights) \*

PANOSC federated search API (interconnected SciCats)



# Infrastructure proposal

DMA ST1 workshop discussions

ML \*

Data driven

Remote and secure access

Simulations \*

Software maintenance \*\*

ESCAPE OSSR \*\*

Research Software Directory

Physics Tools

Training

Workflows \*

REANA

# Roadmap

DMA ST1 workshop discussions

Join PUNCH4NFDI/FIDIUM Testbeds

Setup own DMA ST1 services

distributed among DMA institutes

Beta test stage

Scale up to production mode

# Thank you

## **Contact**

Deutsches Elektronen-  
Synchrotron DESY

Kilian Schwarz, Yves Kemp  
IT

[www.desy.de](http://www.desy.de)