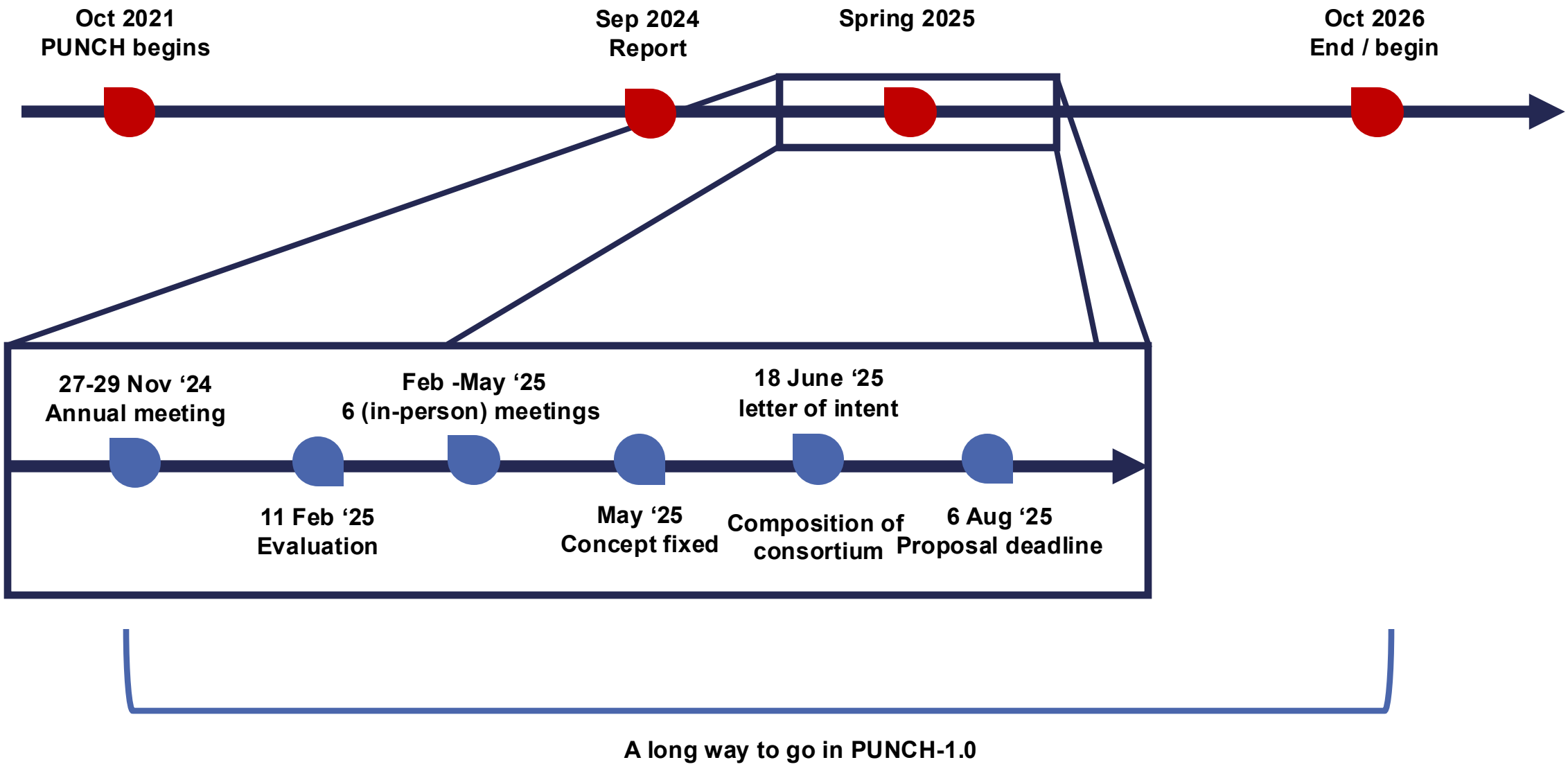
Particles, Universe, NuClei and Hadrons for the NFDI

12th PUNCH4NFDI General Meeting

7 July 2025

Agenda

2:00 PM → 2:05 PM	**Welcome**	5m
2:05 PM → 2:20 PM	**Highlight talk: TA3** **Speaker**: Nicolas Baron Perez	15m
2:20 PM → 2:30 PM	**NFDI: current developments and future perspectives** **Speaker**: Christiane Schneide (DESY)	10m
2:30 PM → 2:45 PM	**PUNCH2.0 overview** **Speaker**: Thomas Schörner (DESY)	15m
2:45 PM → 3:00 PM	**TA2** **Speakers**: Christoph Wissing (DESY), Matthias Hoeft (Thüringer Landessternwarte)	15m
3:00 PM → 3:15 PM	**TA3** **Speakers**: Joseph Mohr (LMU Munich), Thomas Kuhr (LMU Munich)	15m
3:15 PM → 3:30 PM	**TA4** **Speakers**: Achim Geiser (CMS (CMS Fachgruppe QCD)), Harry Enke (AIP)	15m
3:30 PM → 3:40 PM	**Bio break**	10m
3:40 PM → 3:55 PM	**Highlight talk TA5: Pulsar Signal Segmentation & Analysis** **Speaker**: Tanumoy Saha (HTW Berlin)	15m
3:55 PM → 4:10 PM	**TA5** **Speakers**: Andreas Redelbach (Frankfurt Institute for Advanced Studies), Michael Kramer (Max-Planck-Institut fuer Radioastronomie)	15m
4:10 PM → 4:25 PM	**TA6** **Speakers**: Dr Kilian Schwarz (IT (IT Scientific Computing)), Stefan Wagner (LSW, ZAH, U HD)	15m
4:25 PM → 4:40 PM	**TA7** **Speakers**: Dr Baida Achkar (Georg-August-Universitaet Goettingen - II. Physicalishes Institut), Prof. Frank Bertoldi (Universität Bonn)	15m
4:40 PM → 5:00 PM	**Discussion**	20m


Oct 2021
PUNCH begins
Sep 2024
Report
Spring 2025
Oct 2026
End / begin
27-29 Nov ‘24
Annual meeting
Feb -May ‘25
6 (in-person) meetings
18 June ‘25
letter of intent
11 Feb ‘25
Evaluation
May ‘25
Concept fixed
Composition of
consortium
6 Aug ‘25
Proposal deadline
A long way to go in PUNCH-1.0

June 2025

Jun 12 PUNCH-2.0 proposal editorial meeting - 6th meeting (hybrid, Goettingen)

April 2025

Apr 23 PUNCH-2.0 proposal prep - 5th meeting (hybrid, FIAS-Frankfurt)

Apr 14 PUNCH-2.0 proposal prep - 4th meeting (virtual)

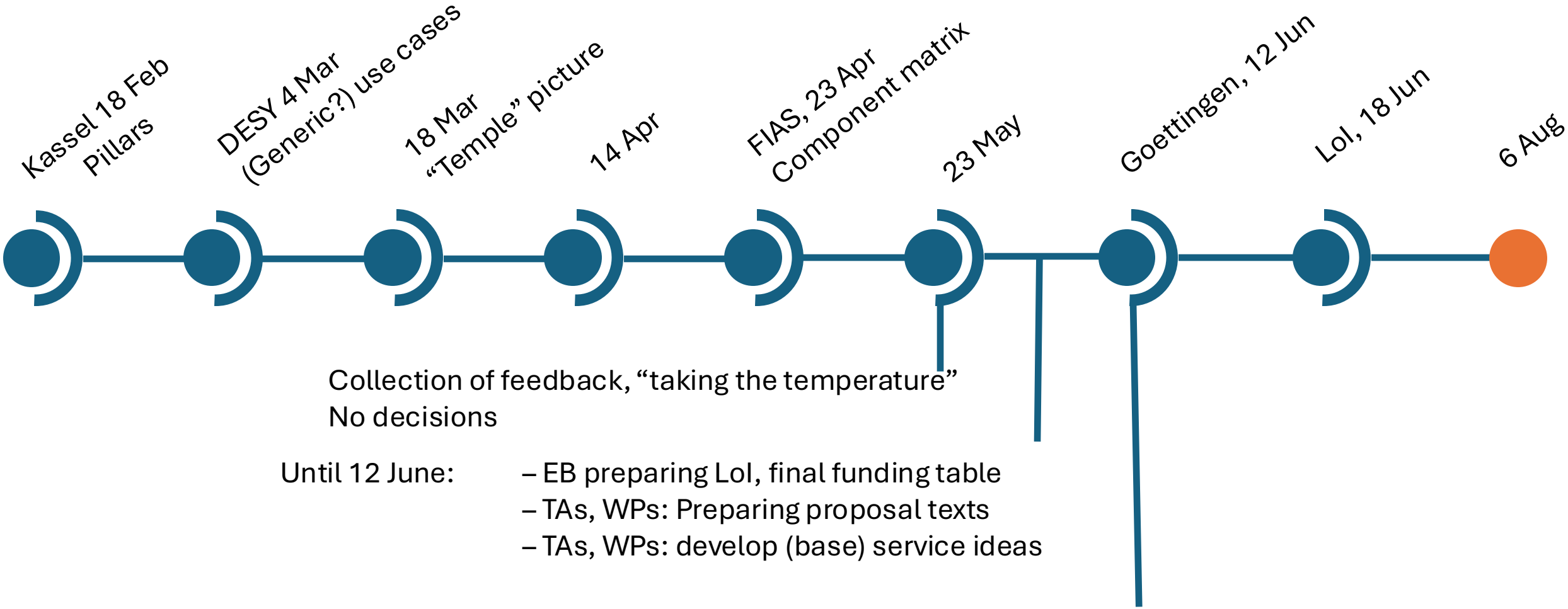
March 2025

Mar 18 PUNCH2.0 proposal prep - 3rd meeting

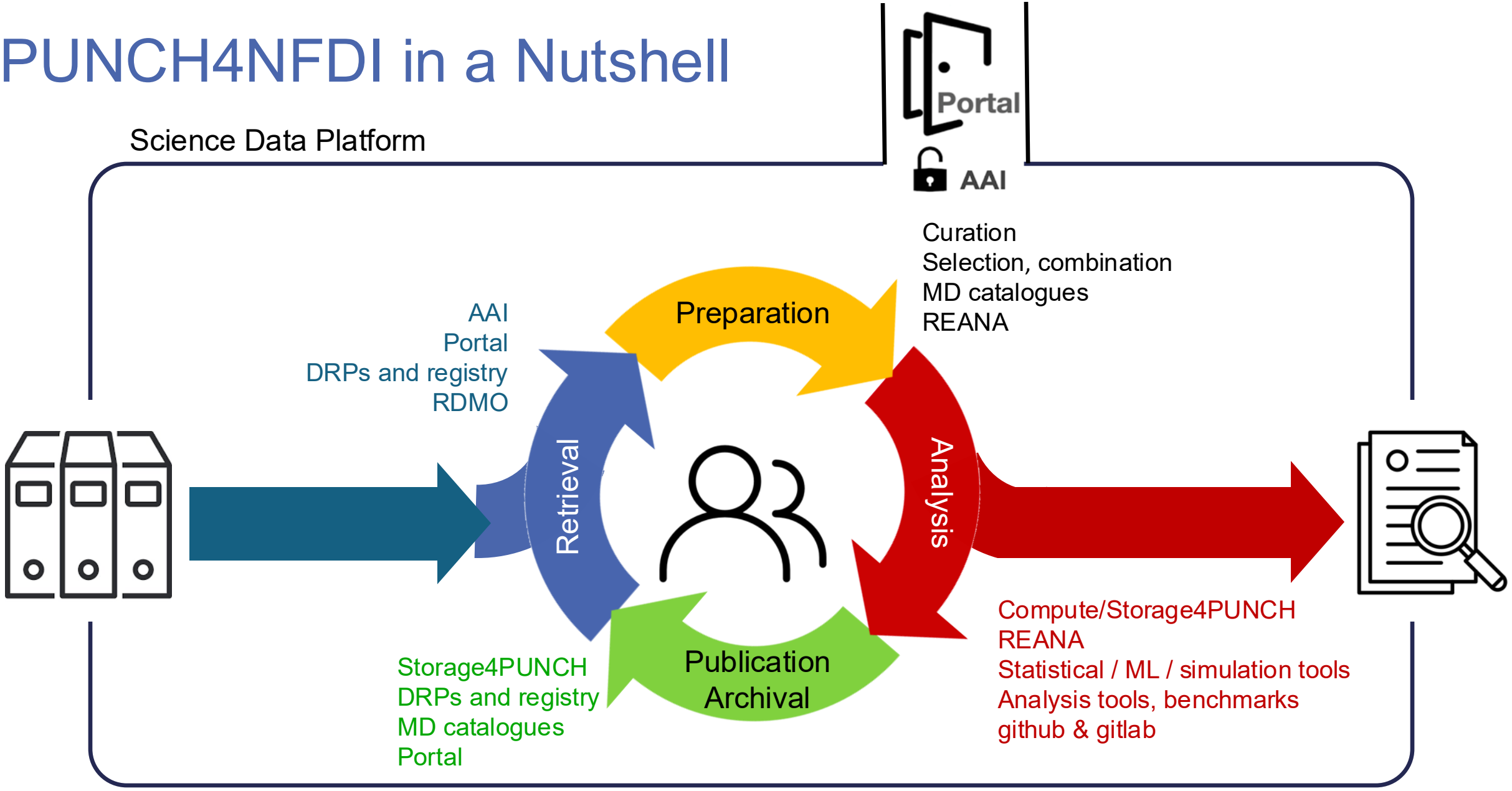
Mar 04 PUNCH2.0 proposal prep - 2nd meeting

February 2025

Feb 18 PUNCH-2.0 proposal prep


Kassel 18 Feb
Pillars
DESY 4 Mar
(Generic?) use cases
18 Mar
“Temple” picture
14 Apr
FIAS, 23 Apr
Component matrix
23 May
Goettingen, 12 Jun
LoI, 18 Jun
6 Aug
Collection of feedback, “taking the temperature”
No decisions
Until 12 June:
– EB preparing LoI, final funding table
– TAs, WPs: Preparing proposal texts
– TAs, WPs: develop (base) service ideas
12 June:
– CB OK for LoI, final touches to LoI
– Setting up proposal writing process

PUNCH4NFDI in a Nutshell



Pillars

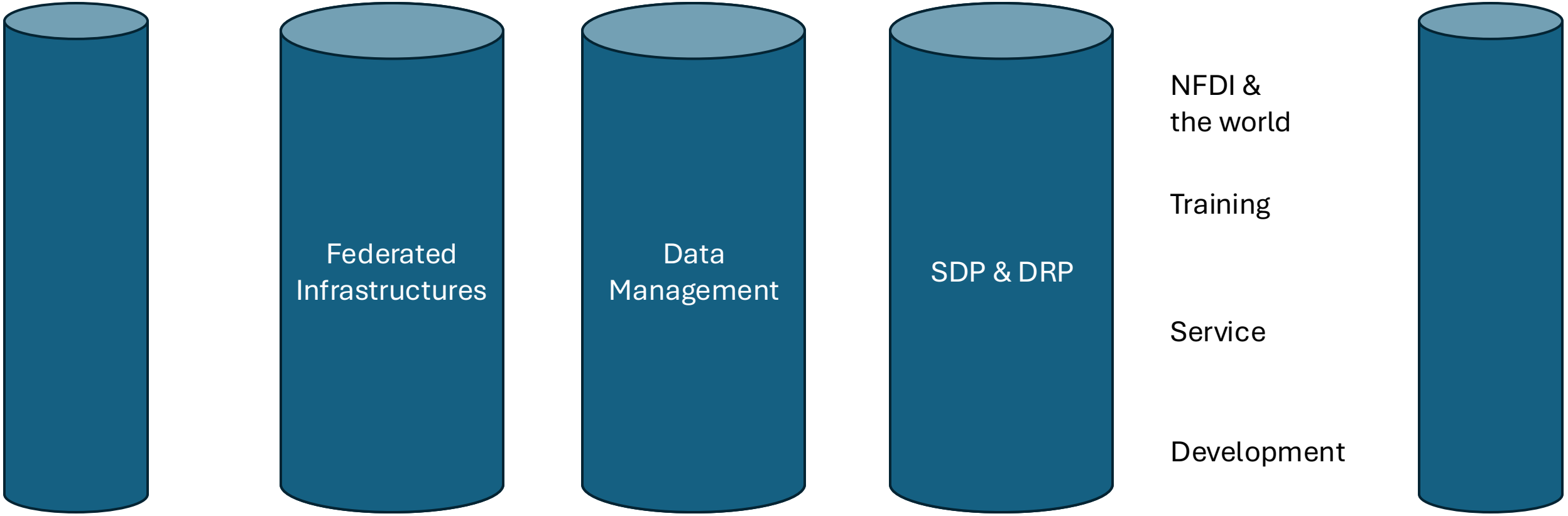
Tool-box

Federated Infrastructures

Data Management

SDP & DRP

Manage-ment

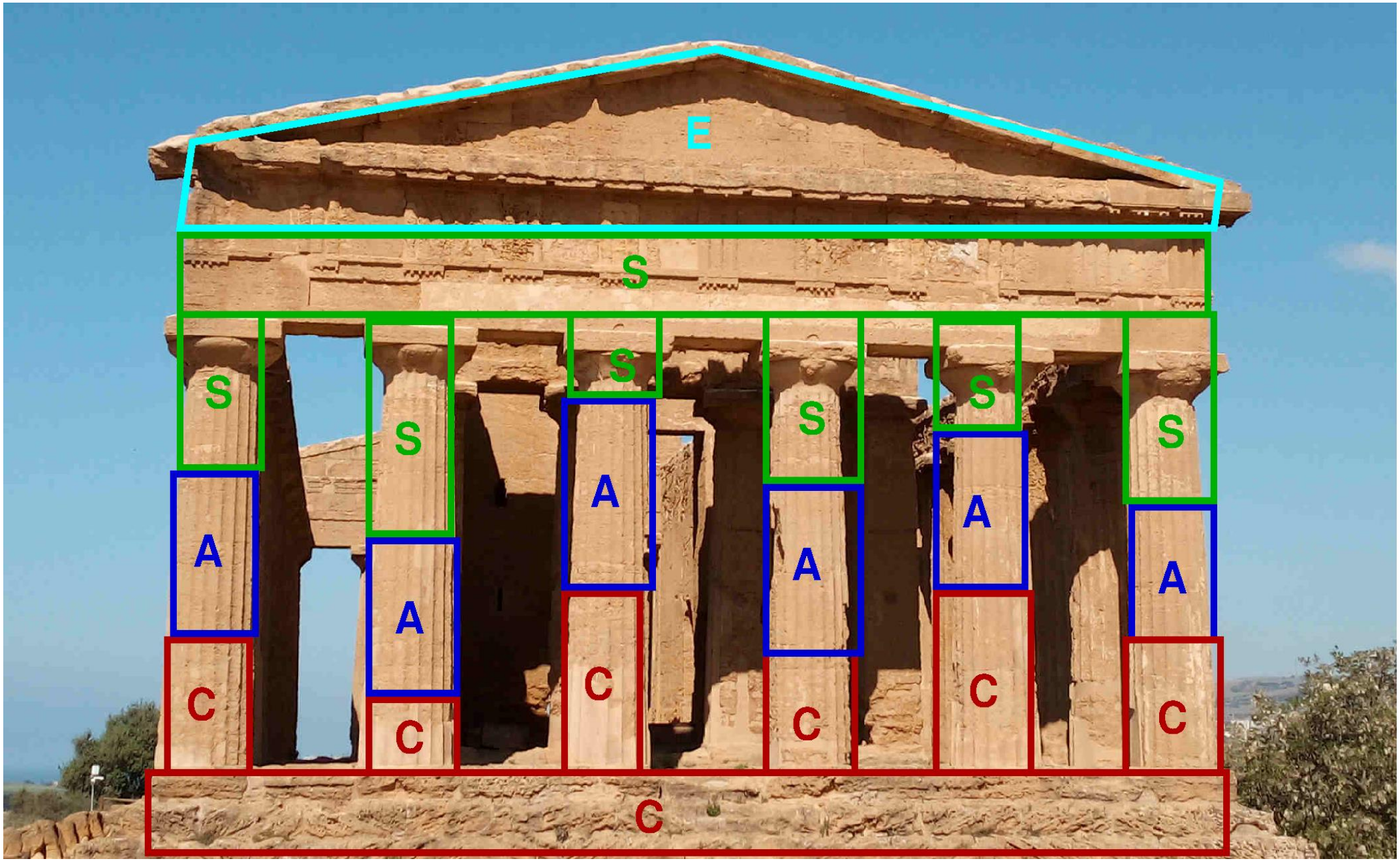


NFDI & the world

Training

Service

Development



Connections

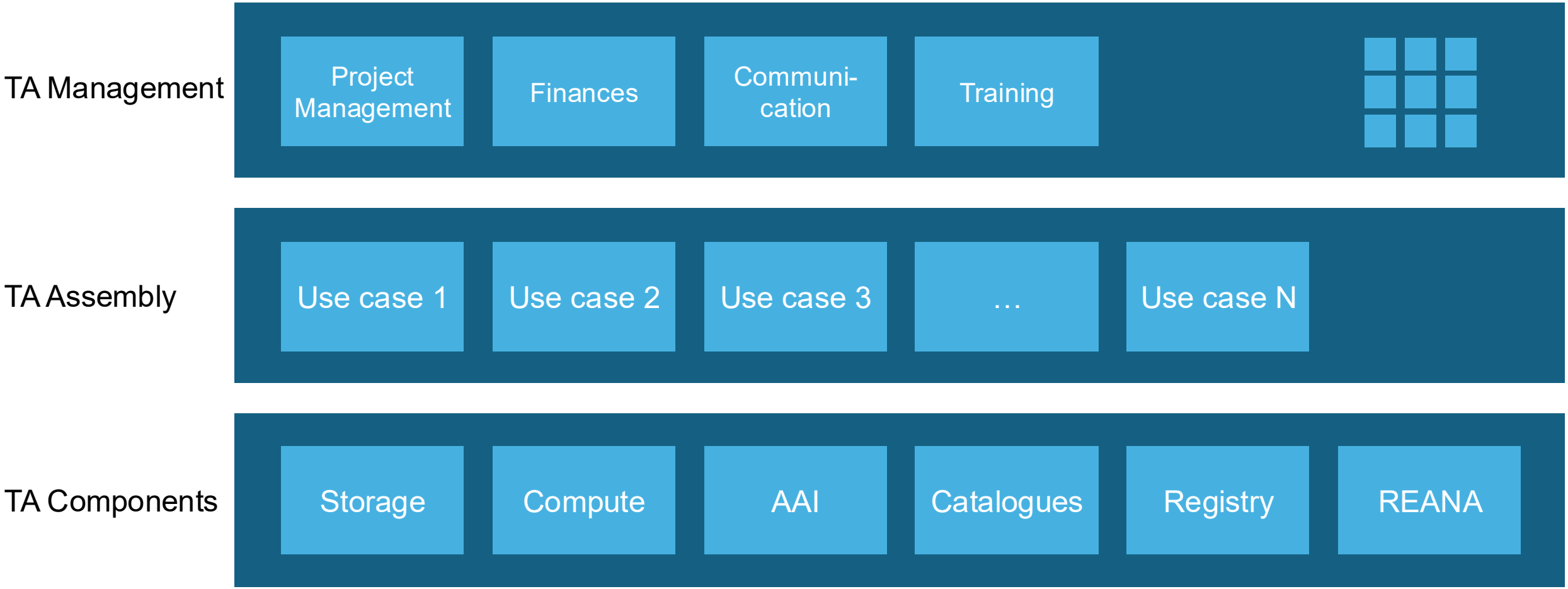
Support

Assembly

Components

Ground / foundation

Service Manager?



TA Management

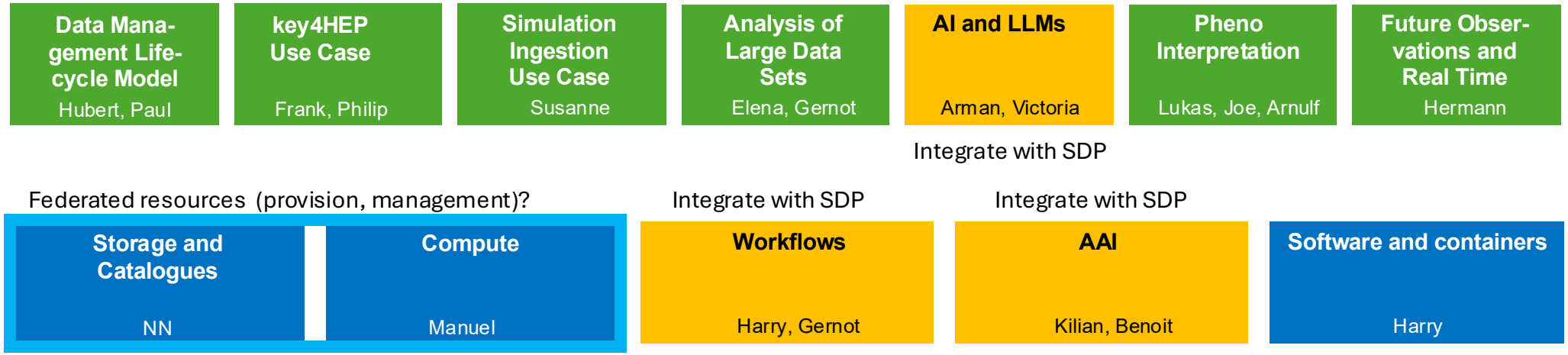
Project Management | Finances | Communi-cation | Training | Service & Results Management

TA Assembly

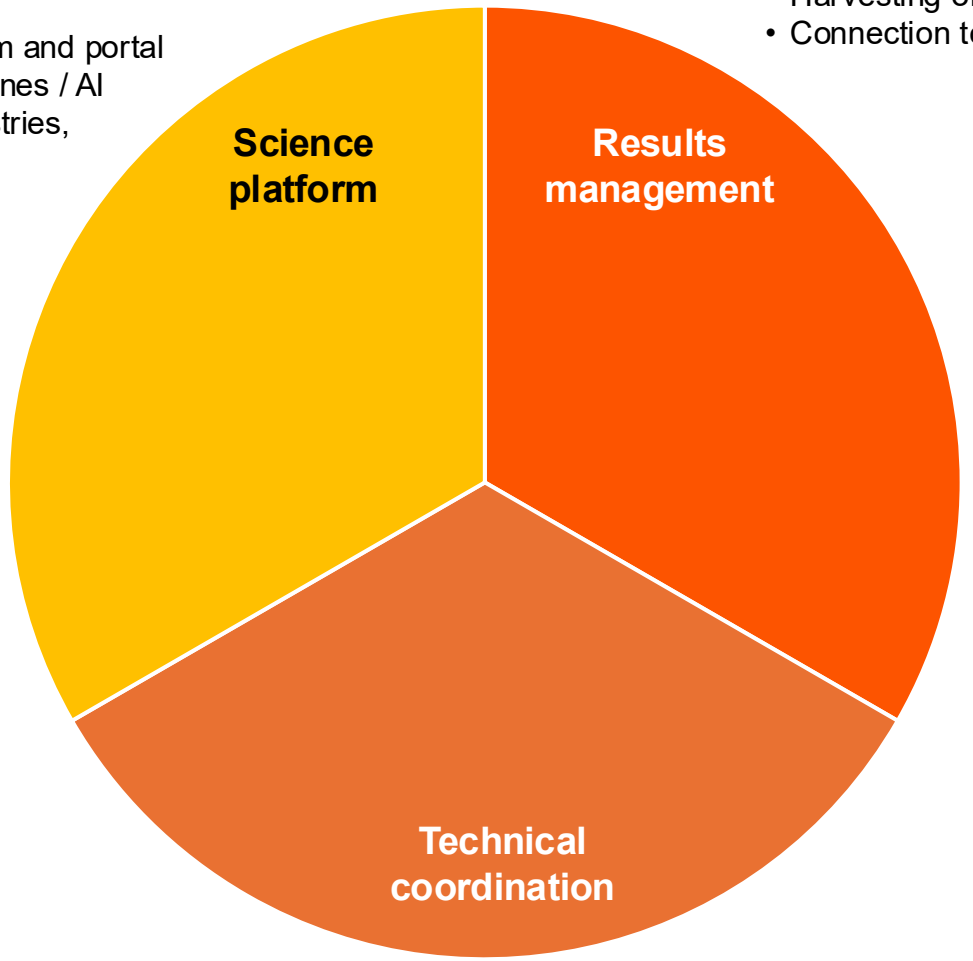
Storage	Compute	AAI	REANA	Catalogues	Registry
Use cases / Documentation	Use cases / Documentation	Use cases / Documentation	Use cases / Documentation	Use cases / Documentation	Compo-nents / Documentation
Training / R&D	Training / R&D	Training / R&D	Training / R&D	Training / R&D	Training / R&D

TA Components

Storage	Compute	AAI	REANA	Catalogues	Registry
Use cases / Documentation	Use cases / Documentation	Use cases / Documentation	Use cases / Documentation	Use cases / Documentation	Use cases / Documentation
Training / R&D	Training / R&D	Training / R&D	Training / R&D	Training / R&D	Training / R&D


Data Management Life-cycle Model
Hubert, Paul
key4HEP Use Case
Frank, Philip
Simulation Ingestion Use Case
Susanne
Analysis of Large Data Sets
Elena, Gernot
AI and LLMs
Arman, Victoria
Pheno Interpretation
Lukas, Joe, Arnulf
Future Observations and Real Time
Hermann
Integrate with SDP
Federated resources (provision, management)?
Integrate with SDP
Integrate with SDP
Storage and Catalogues
NN
Compute
Manuel
Workflows
Harry, Gernot
AAI
Kilian, Benoit
Software and containers
Harry

- Implementation of platform and portal
- PUNCH-wide search engines / AI
- Combine with RPR / registries, or as component?
- DRPs?
- Workflows?



- Implementation of results page
- Harvesting of results in TAs, use cases, components
- Connection to B4N for base services

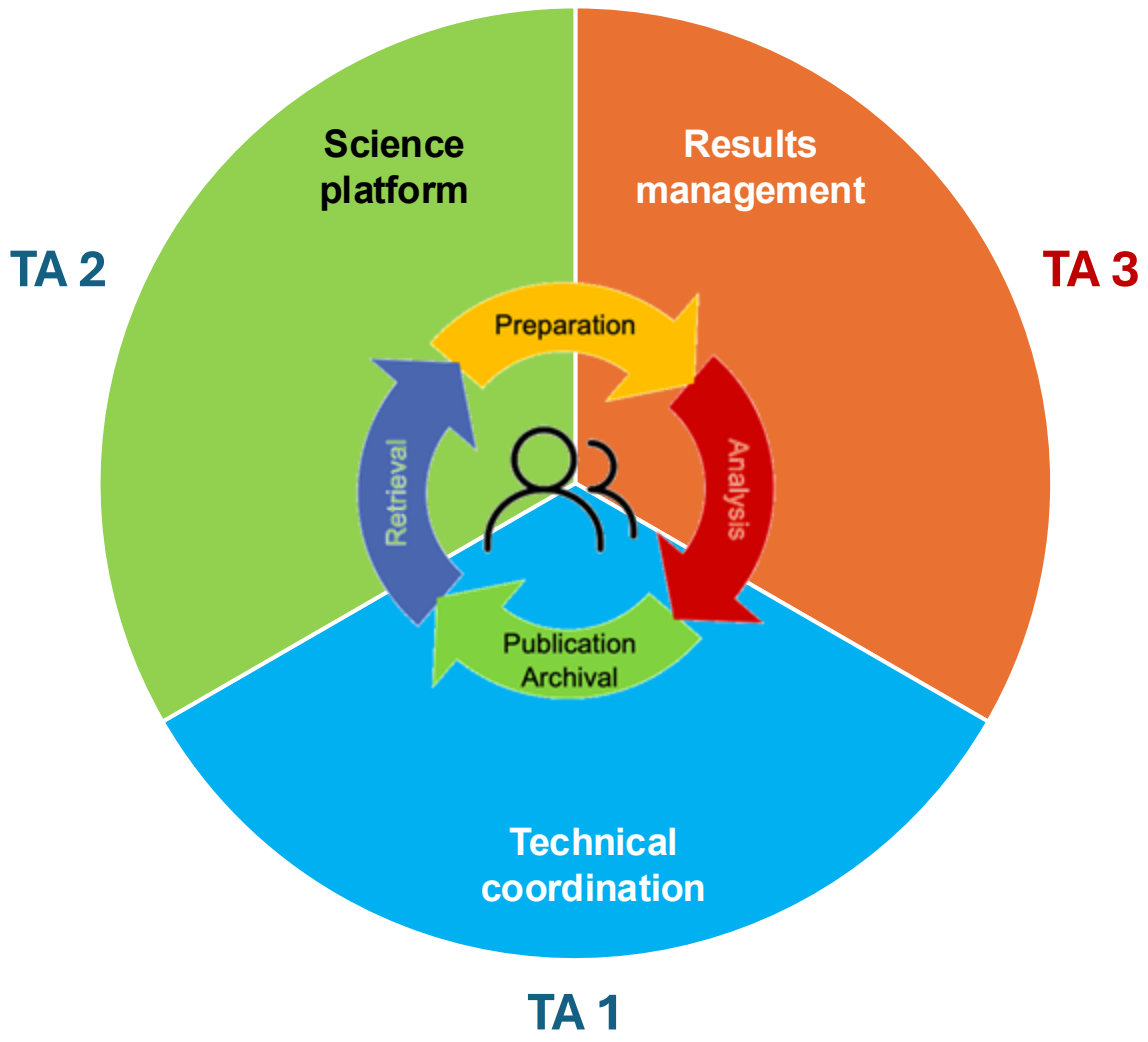
- Technical knowledge of components and services
- Resources for implementation of changes to existing components and services
- Resources for contributing to the interfacing of components and services for use cases
- Integrated with use case personnel? Component personnel?

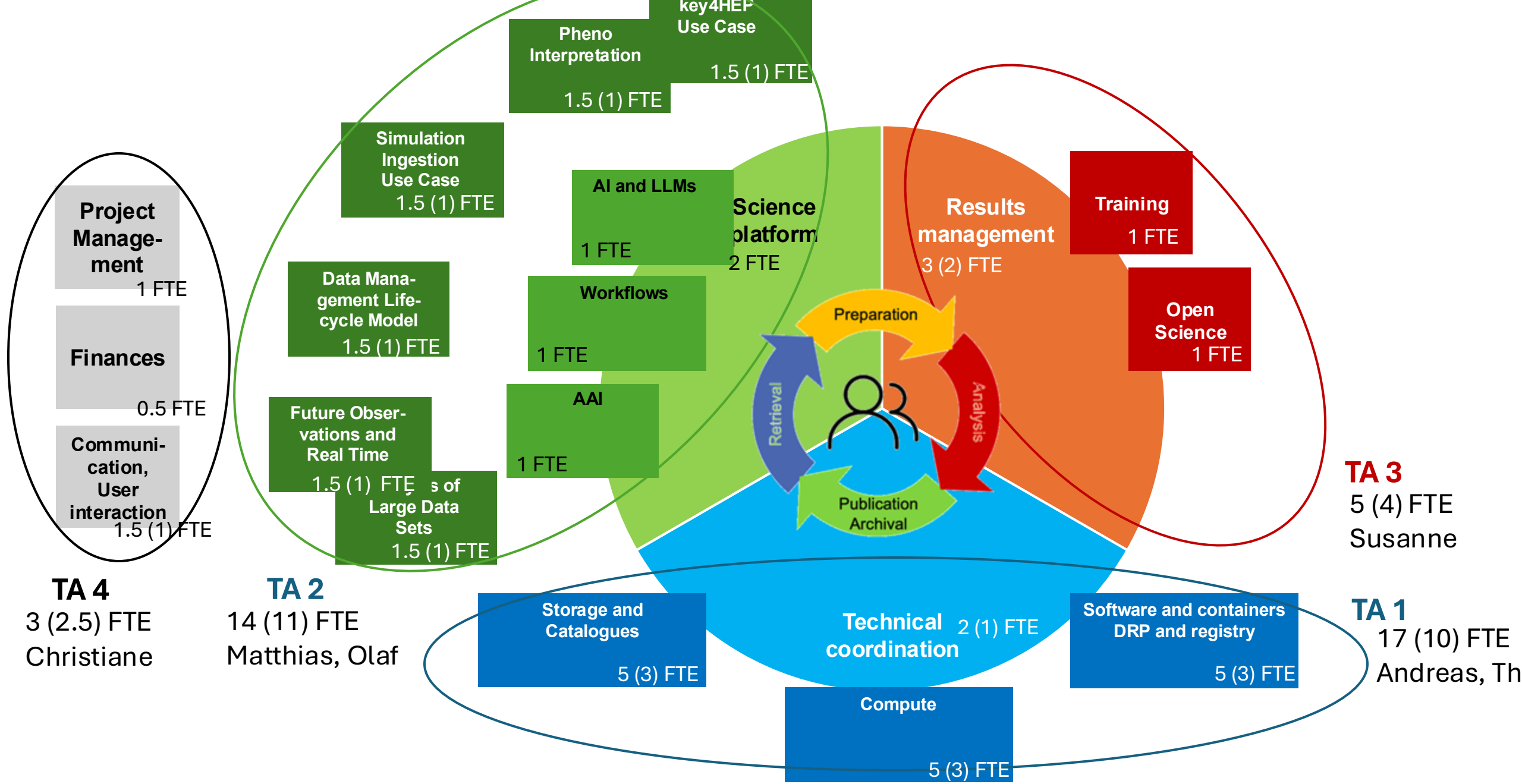
TA 4

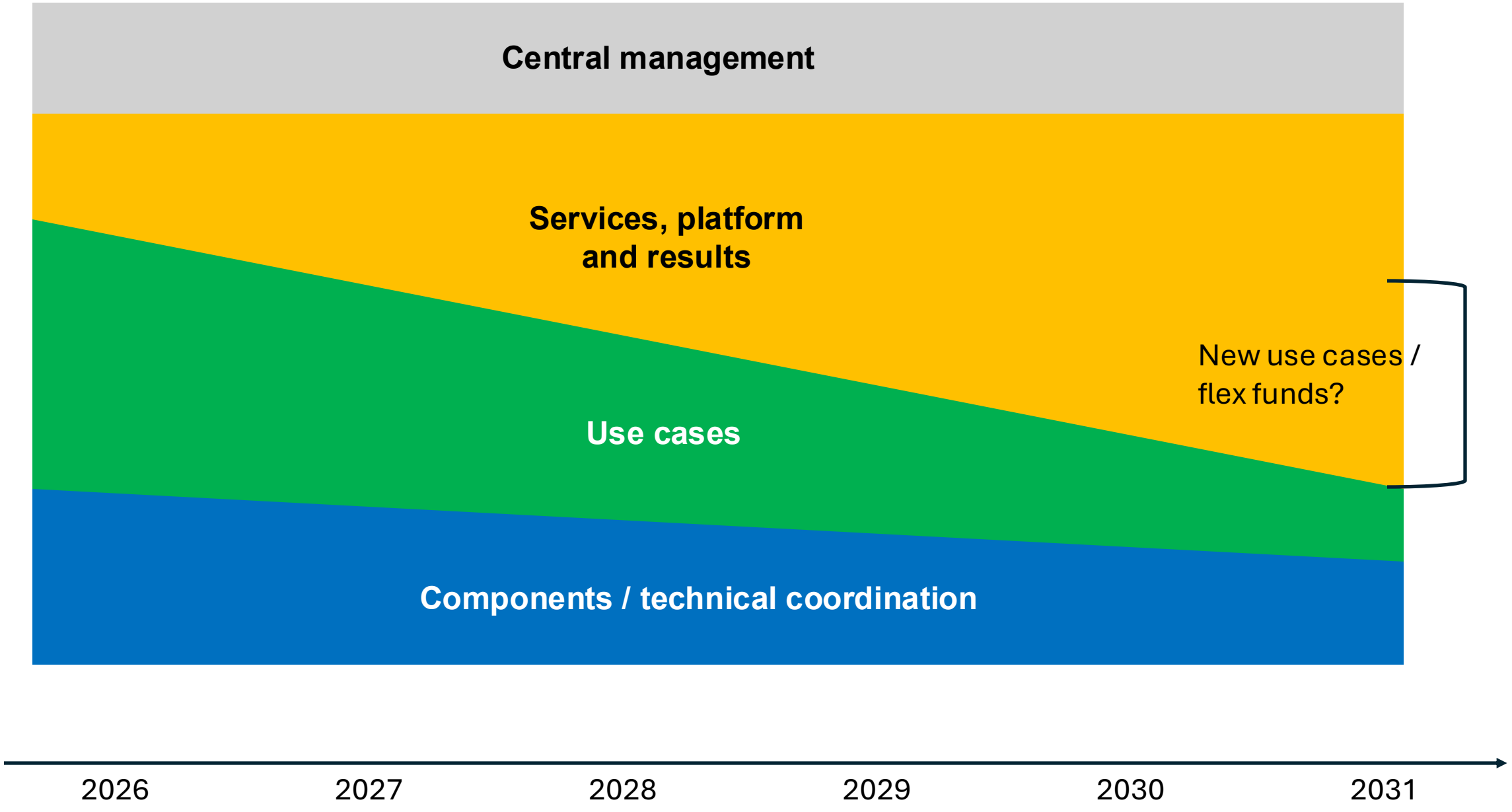
Project Manage-ment

Finances

Communi-cation, PR, User interaction




key4HEP Use Case
1.5 (1) FTE
Pheno Interpretation
1.5 (1) FTE
Simulation Ingestion Use Case
1.5 (1) FTE
AI and LLMs
1 FTE
Science platform
2 FTE
Results management
3 (2) FTE
Training
1 FTE
Open Science
1 FTE
Data Mana-gement Life-cycle Model
1.5 (1) FTE
Workflows
1 FTE
AAI
1 FTE
Future Obser-vations and Real Time
1.5 (1) FTE
s of Large Data Sets
1.5 (1) FTE
Project Manage-ment
1 FTE
Finances
0.5 FTE
Communi-cation, User interaction
1.5 (1) FTE
Preparation
Retrieval
Analysis
Publication Archival
Storage and Catalogues
5 (3) FTE
Technical coordination
2 (1) FTE
Software and containers DRP and registry
5 (3) FTE
Compute
5 (3) FTE
TA 4
3 (2.5) FTE
Christiane
TA 2
14 (11) FTE
Matthias, Olaf
TA 3
5 (4) FTE
Susanne
TA 1
17 (10) FTE
Andreas, Th
39 (27.5) FTE

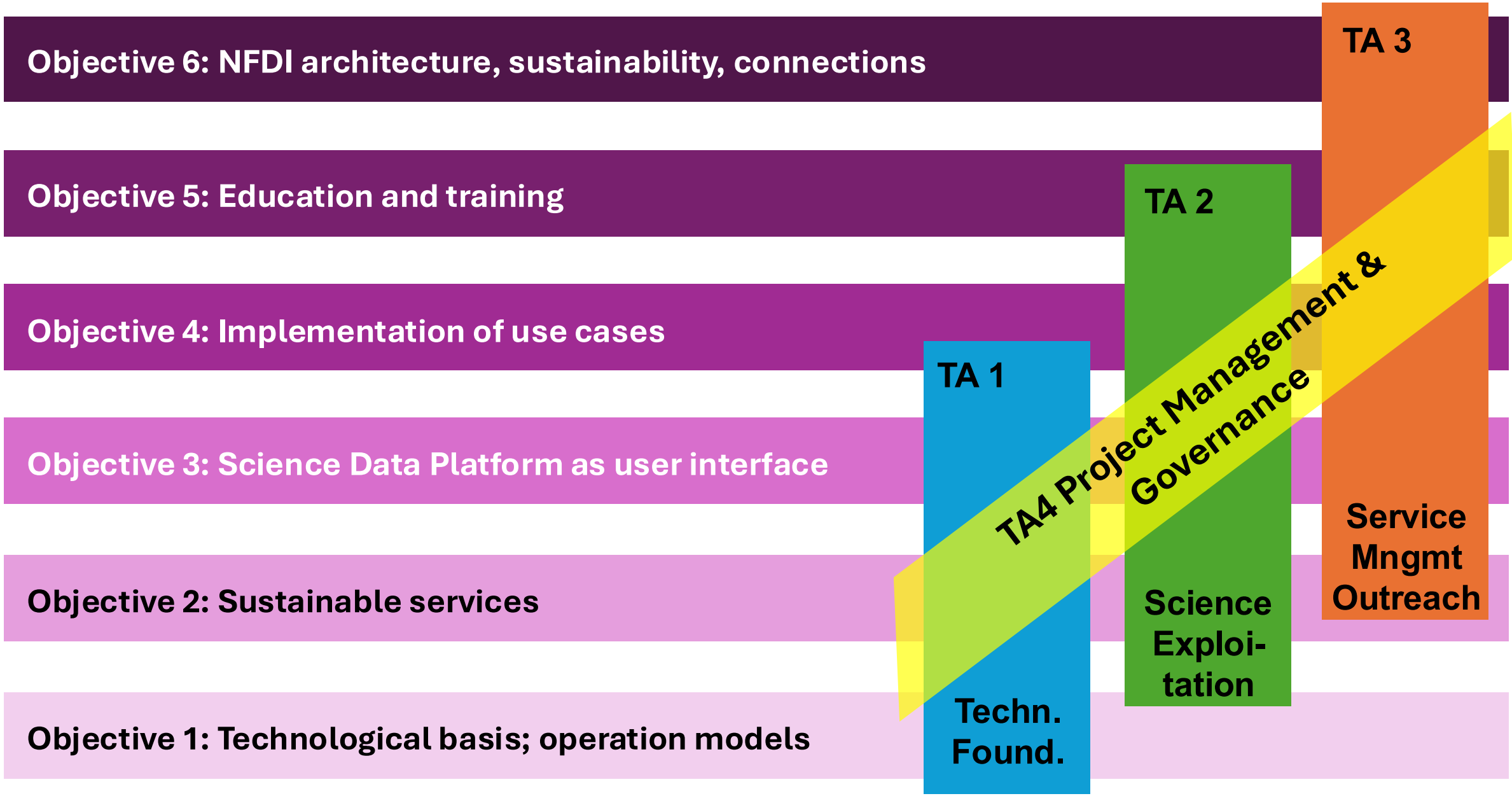

Central management
Services, platform and results
Use cases
Components / technical coordination
New use cases / flex funds?
2026
2027
2028
2029
2030
2031

Letter of Intent and Concept

PUNCH4NFDI 2.0 Letter of Intent

Funding proposal for a second funding period within the NFDI

Contents


Objective 6: NFDI architecture, sustainability, connections
Objective 5: Education and training
Objective 4: Implementation of use cases
Objective 3: Science Data Platform as user interface
Objective 2: Sustainable services
Objective 1: Technological basis; operation models
TA 1
Techn. Found.
TA 2
Science Exploi-tation
TA 3
Service Mngmt Outreach
TA4 Project Management & Governance

Objective 6: NFDI architecture, sustainability, connections

Objective 5: Education and training

Objective 4: Implementation of use cases

Objective 3: Science Data Platform as user interface

Objective 2: Sustainable services

Objective 1: Technological basis; operation models

TA 1

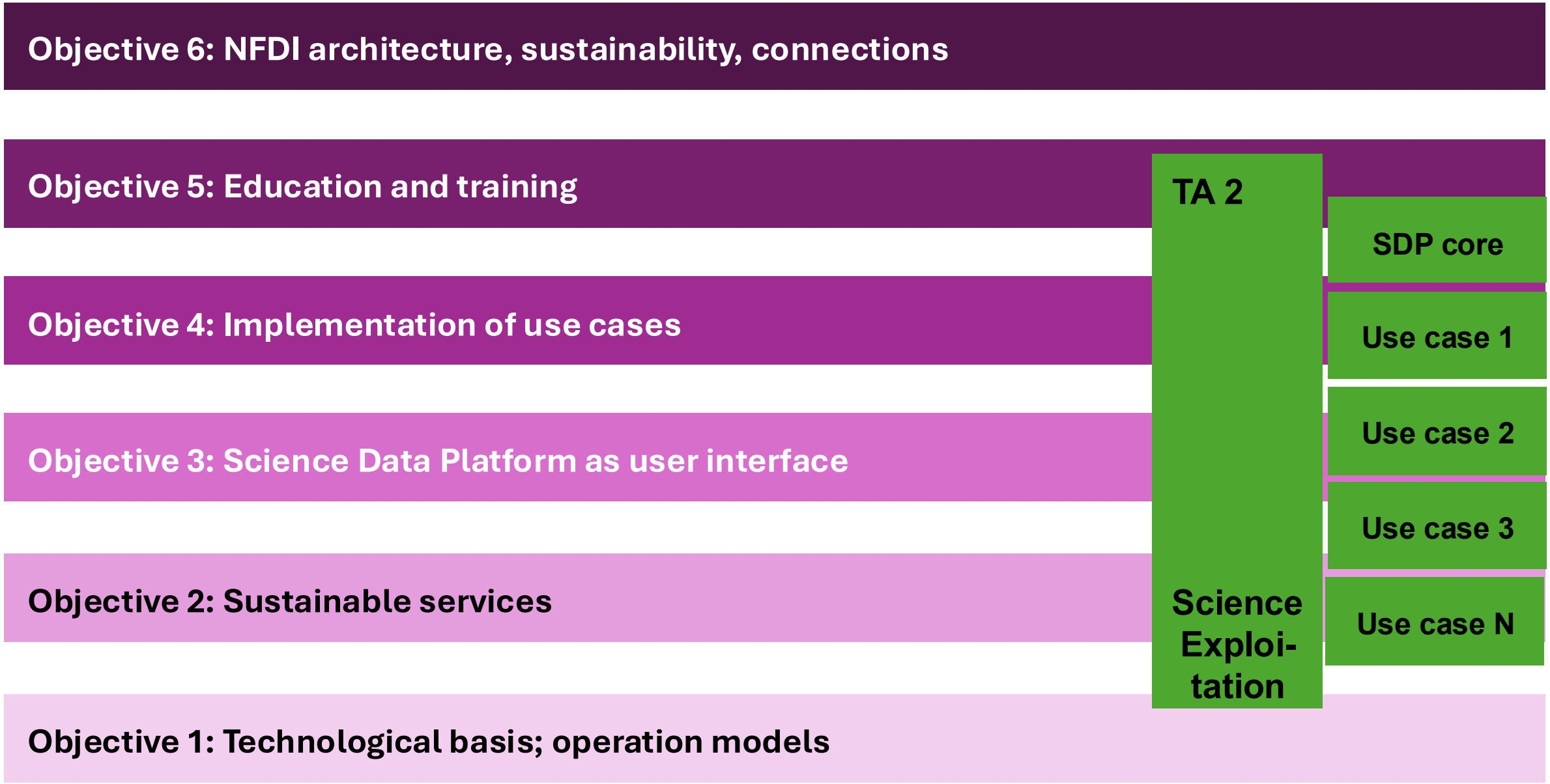
Techn. Found.

1.1 Technical Coordination

1.2 Storage and catalogues

1.3 Computing

1.4 Software, containers, DPRs, registry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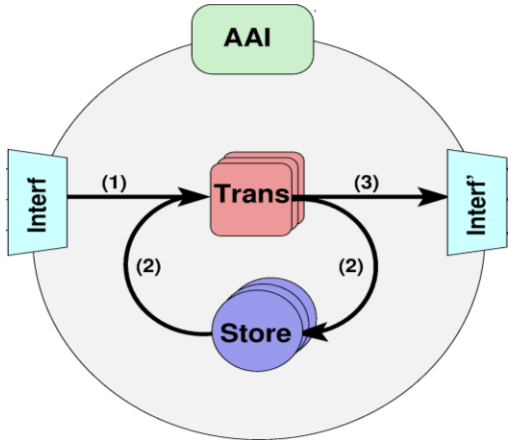
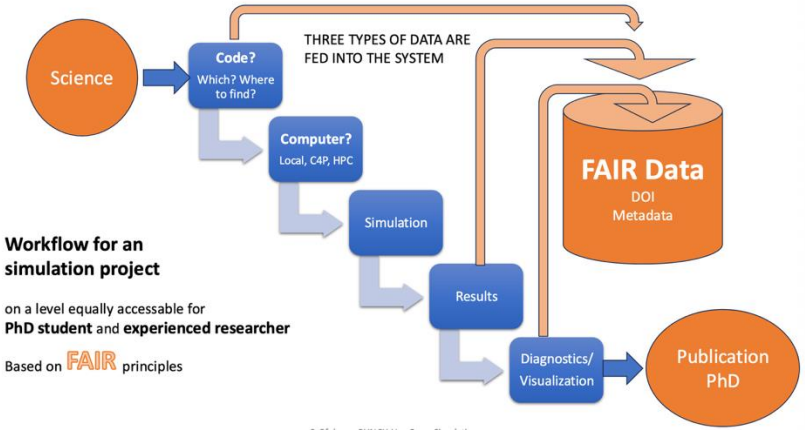
Objective 1: Technological basis; operation models
TA 2
Science Exploi-tation
SDP core
Use case 1
Use case 2
Use case 3
Use case N



2.2 Data Management Lifecycle (rolling out ILDG to others)

2.3 Simulation Use Case



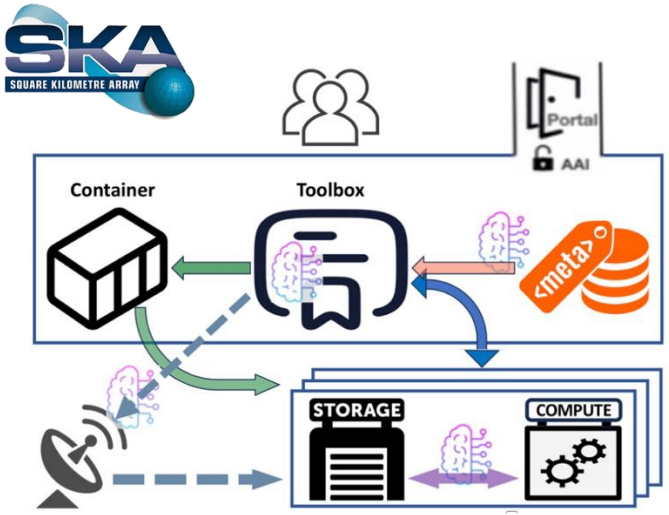
2.4 Phenomenology Use Case

5.2.4 Work package 2.4: Phenomenology Usecases (3–4 pages; Lukas, Thomas K, Sebastian N, Arnulf, Joe, Volker)

Lead institution: XYZ

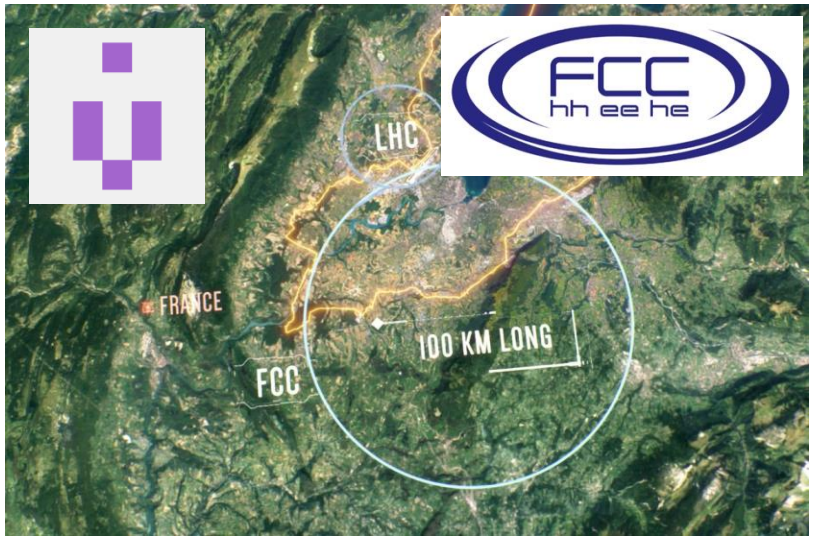
Participating co-applicants (participants): Bonn, Goettingen, LMU, MPA, TUM

A big potential for added scientific value on the SDP will come from the ability to analyse and combine large and diverse datasets and respective simulations from different sources in astrophysics/cosmology as well as particle physics, in particular from the LHC as provided as open data. Due to the large data volumes involved, it is desirable to get access to HPC resources, e.g., NHR, LRZ and FZJ compute clusters.



2.5 Future Observations Use Case

2.6 Future Colliders Use Case



2.7 Visualisation Use Case

#1: Distributions in Databases

1) **What it is about**
Advanced statistics integration in data selection, in particular first-class distributions in relational databases

2) **Covered communities (target)**
Astronomy, Astroparticle

3) **Involved components**
TAP/ADQL (and other VO standards)
Postgres as reference implementation

4) **Rough resource estimate**
1 FTE software development
0.5 FTE concept development
0.5 FTE roll-out and IVOA liaison

5) **Involved/interested partners**
AIP, HITS, U Heidelberg, Tautenburg

#2: Large data processing

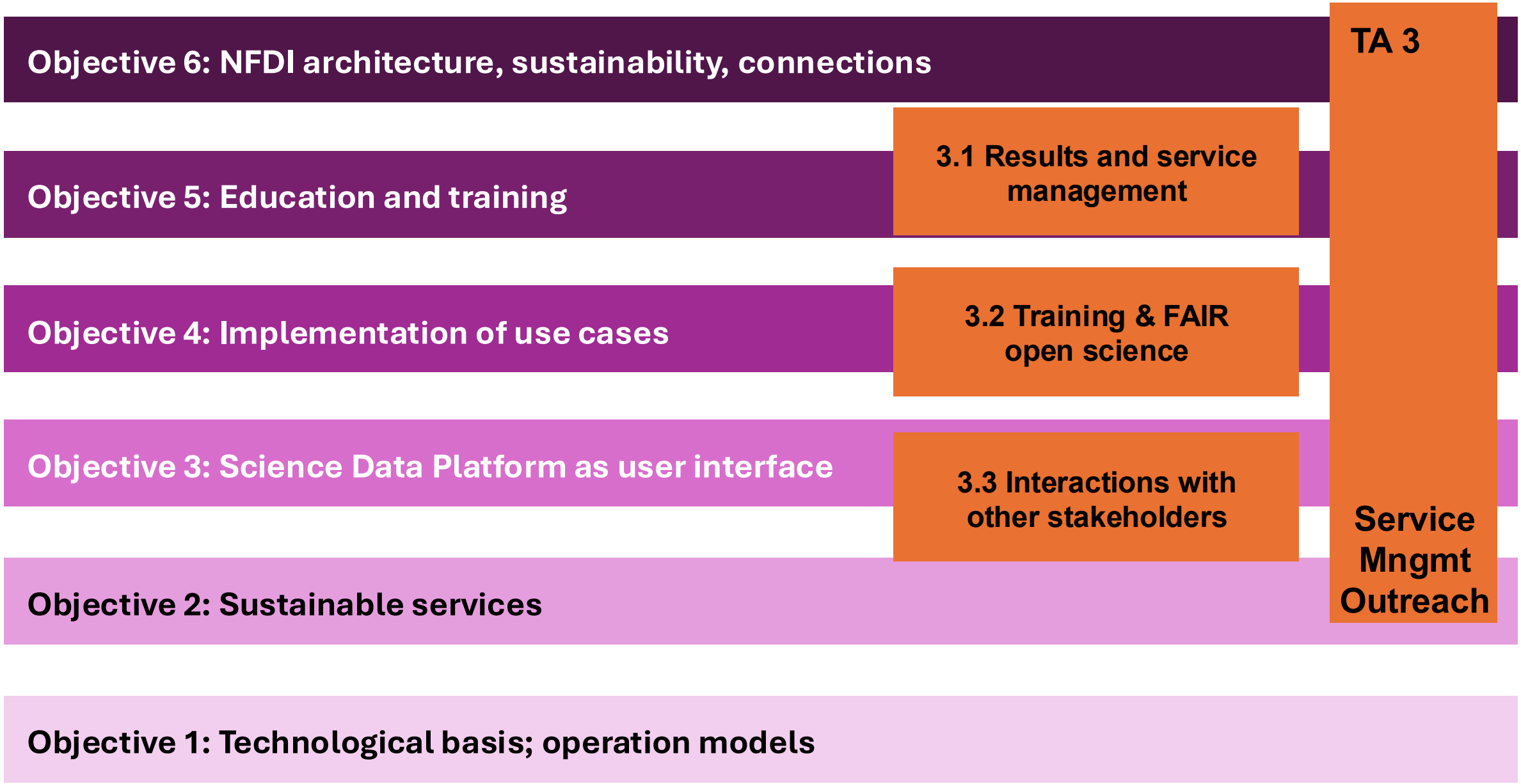
1) **What it is about**
(Re)processing of large data sets from (radio astronomical) observations, smooth connection of the available tools

2) **Covered communities (target)**
Start with radio astronomy, astronomy in general, and simulations, but will be useful for all

3) **Involved components**
Remote archives, C4P, S4P, Git, user management (AAI) and possibly fine-grained access management necessary, REANA, DRP, WF sharing

4) **Rough resource estimate**
1FTE setting up AAI management prototype, 1FTE developing management system for job request (analyse requirements), 1 FTE optimized data cache allocation

5) **Involved/interested partners**
AIP, DESY, Tautenburg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Objective 2: Sustainable services
Objective 1: Technological basis; operation models
3.1 Results and service management
3.2 Training & FAIR open science
3.3 Interactions with other stakeholders
TA 3
Service Mngmt Outreach

Sum of FTE	Colum																			
Row Labels	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Grand Total
1.1																					
1.2																					
1.3																					
1.4																					
2.1																					
2.2																					
2.3																					
2.4																					
2.5																					
2.6																					
2.7																					
3.1																					
3.2																					
3.3																					
4.1																					
5.1																					
Grand Total																					

Sum of FTE	Column Labels																				
Row Labels	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Grand Total
01 DESY																					
011 Management																					
02 AIP																					
03 Bielefeld																					
04 Bonn																					
05 DZA																					
051 MPIfR via DZA																					
06 FIAS																					
07 FZJ																					
071 HZDR via FZJ																					
08 Goettingen																					
09 GSI																					
10 KIT																					
101 FAU via KIT																					
102 Freiburg via KIT																					
11 LMU																					
12 TLS																					
13 TUM																					
14 FlexFunds																					
Grand Total																					

Contents

KPIs for PUNCH – DFG Data Sheet

The DFG is collecting key performance indicators from all consortia. At the heart: Your contributions to PUNCH:

- Services
- Data sets
- Publications
- Events / presentations
- …

Please insert your information in your institute-specific links NOW :

- For "Output-Events-Data" for your institution:
- For "Services" for your institution:

…. Or your work will be lost for the NFDI.

Summary and Conclusions

- [Some way to go in PUNCH-1.0, and hopefully we can still get a few things done.]

- PUNCH-2.0 Letter of Intent submitted and concept fixed
  - Even managed to agree on budget

- Some changes to consortium composition – a few new co-applicants / participants, and a few old ones left

- Proposal writing in full swing – deadline 6 August
  - Still some way to go – your contributions much appreciated.