Particles, Universe, NuClei and Hadrons for the NFDI

PUNCH-2.0 Planning Meetings

PUNCH 4NFDI

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
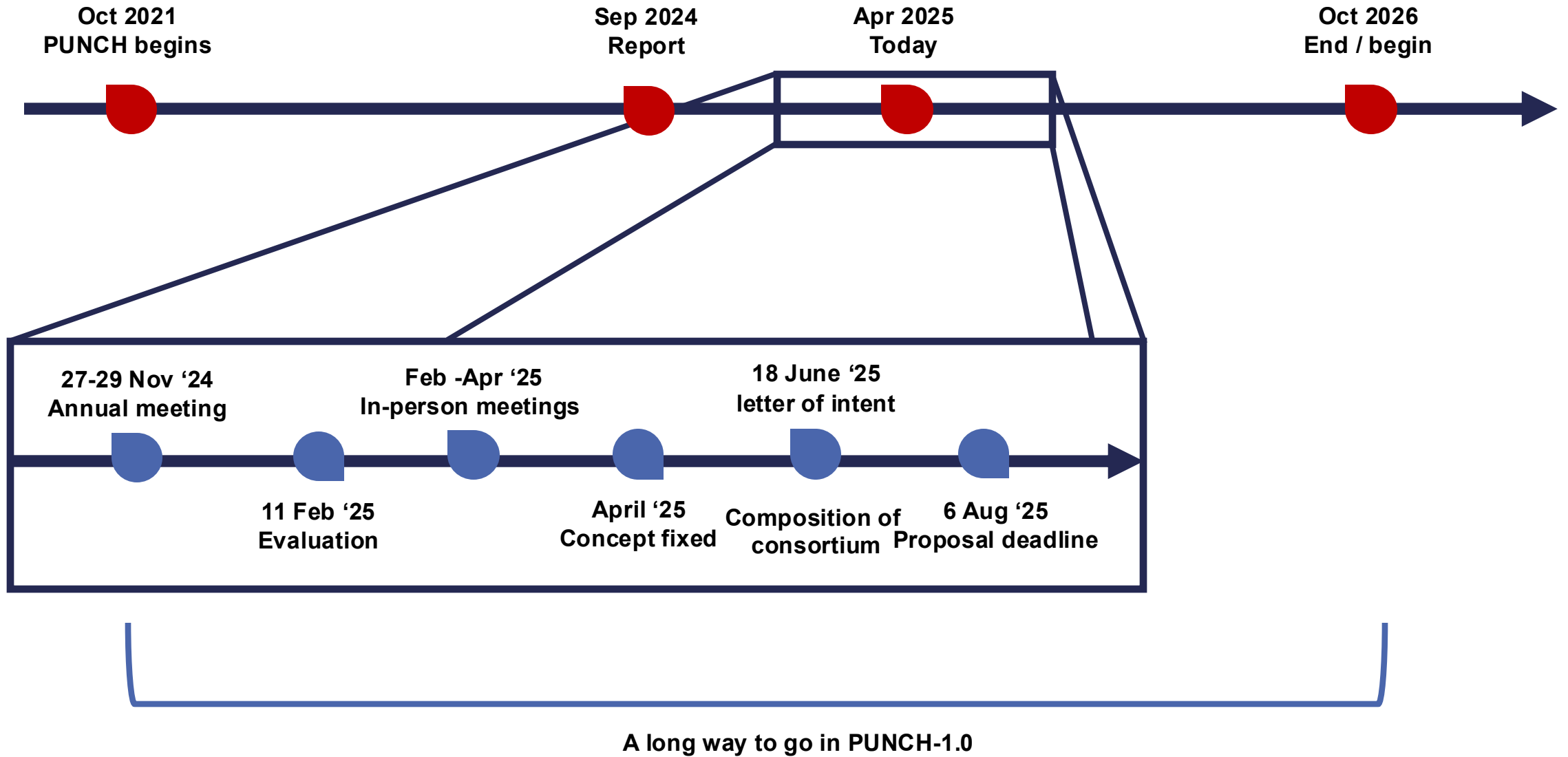
Today

10:00

Welcome, agenda, scope
Andreas Haungs et al.
Faculty Club (4th floor), FIAS
10:00 - 10:10

Introduction and overview
Thomas Schörner
Faculty Club (4th floor), FIAS
10:10 - 10:30

Coffee break
Faculty Club (4th floor), FIAS
10:30 - 10:45

Speed dating use cases - components

11:00

Faculty Club (4th floor), FIAS
10:45 - 12:15

12:00

Use cases scrutiny
Faculty Club (4th floor), FIAS
12:15 - 12:45

Lunch

13:00

Faculty Club (4th floor), FIAS
12:45 - 13:30

Use cases scrutiny
Faculty Club (4th floor), FIAS
13:30 - 14:00

14:00

Coffee break
Faculty Club (4th floor), FIAS
14:00 - 14:20

Components scrutiny

15:00

Faculty Club (4th floor), FIAS
14:20 - 15:15

Wrap- up and next steps

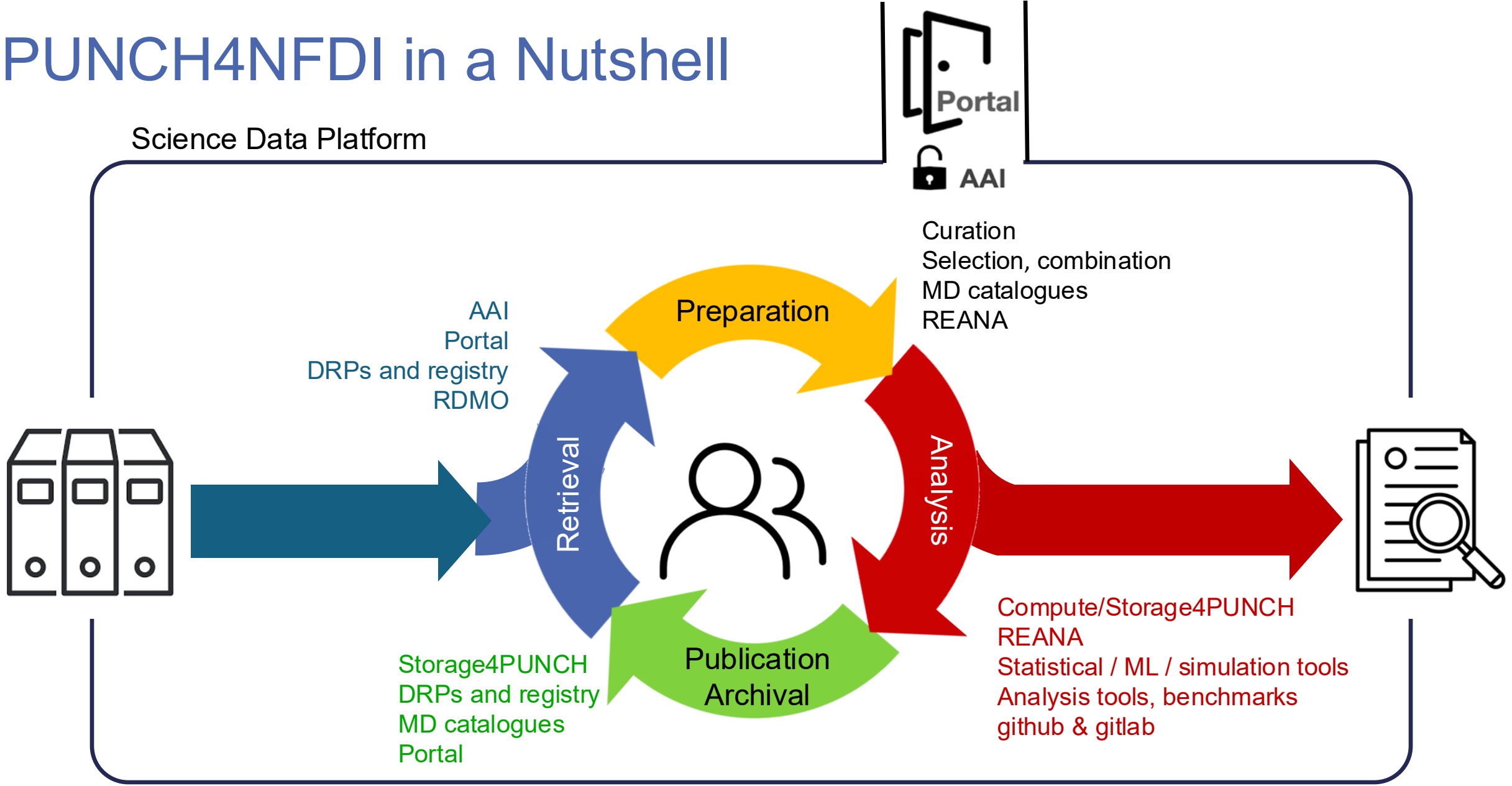*Faculty Club (4th floor), FIAS*
15:15 - 16:00

16:00

Next steps

- Digestion of matrix (see later) → extra EB on Friday
- Consolidation of future consortium composition: mid-May
    - Includes reaching out to participants
- Writing of LoI: by end of May – essentially done by EB, but requires binding declarations from institutions
- Forming writing teams for proposal: mid-May
- First draft of proposal by end of June
- Proposal: in-person editorial meeting on Thursday 12 June maybe in Kassel

A word on my own behalf:
- I am pretty much driving this process, with semi-clear mandate.
- I have a very clear picture of what I consider useful and potentially successful, structurally, and I will ask the EB and, finally, the CB for support (use case and component selection).
- This entails reducing the number of coapplicants wrt PUNCH-1.0 and making a number of people unhappy.
- I fully accept being blamed for that and am prepared to take full responsibility

Oct 2021
PUNCH begins

Sep 2024
Report

Apr 2025
Today

Oct 2026
End / begin

27-29 Nov '24
Annual meeting

Feb -Apr '25
In-person meetings

18 June '25
letter of intent

11 Feb '25
Evaluation

April '25
Concept fixed

Composition of
consortium

6 Aug '25
Proposal deadline

A long way to go in PUNCH-1.0

PUNCH4NFDI in a Nutshell

Science Data Platform

Portal

AAI

Preparation

Retrieval

Analysis

Publication
Archival

AAI
Portal
DRPs and registry
RDMO

Curation
Selection, combination
MD catalogues
REANA

Compute/Storage4PUNCH
REANA
Statistical / ML / simulation tools
Analysis tools, benchmarks
github & gitlab

Storage4PUNCH
DRPs and registry
MD catalogues
Portal

Pillars

Tool-box

Federated Infrastructures

Data Management

SDP & DRP

Manage-ment

Federated Infrastructures

Data Management

SDP & DRP

NFDI & the world

Training

Service

Development

Connections

Support

Assembly

Components

Ground / foundation
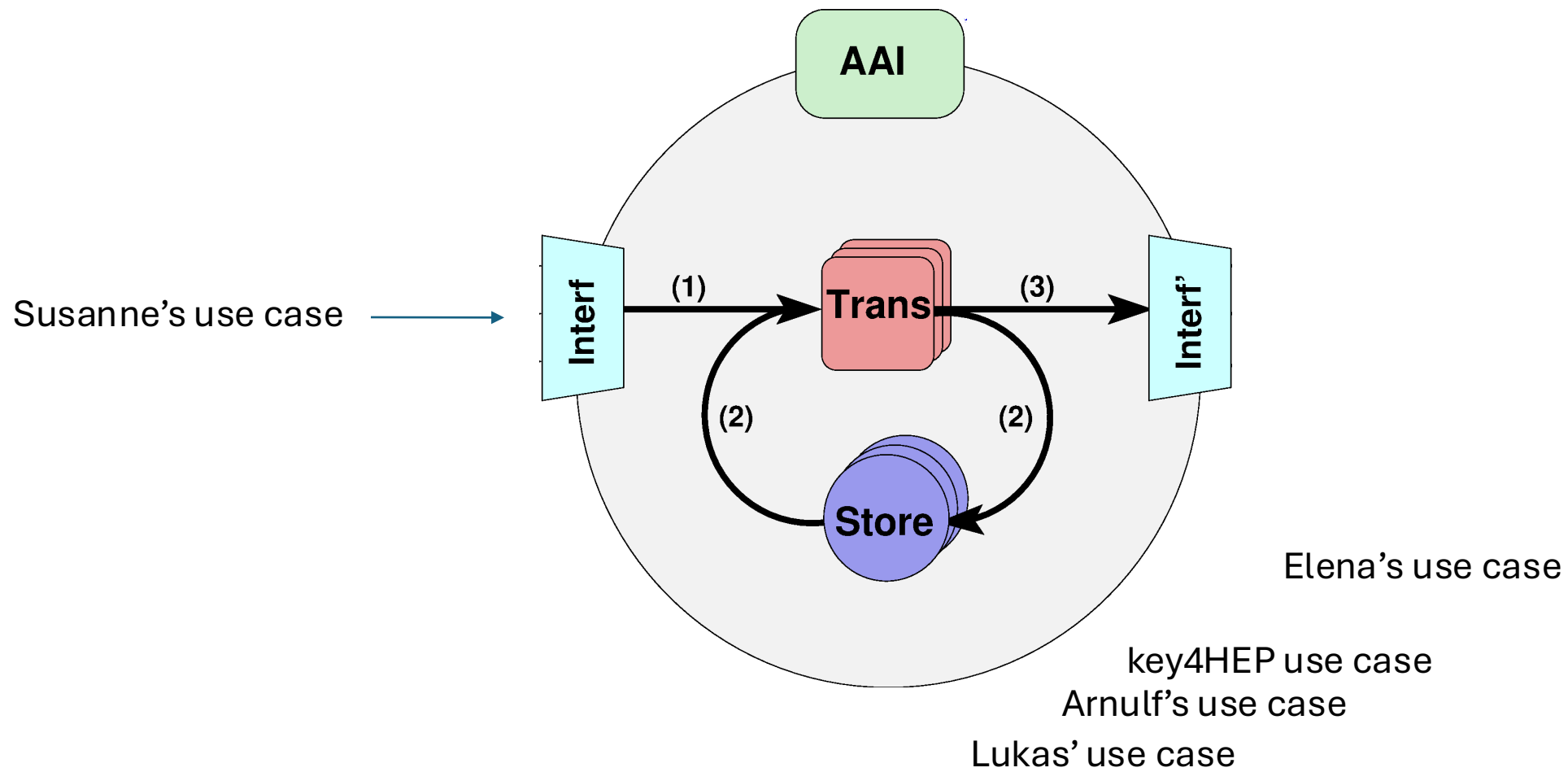
Susanne's use case

AAI

Interf

(1)

Trans

(3)

Interf'

(2)

(2)

Store

Elena's use case

key4HEP use case

Arnulf's use case

Lukas' use case
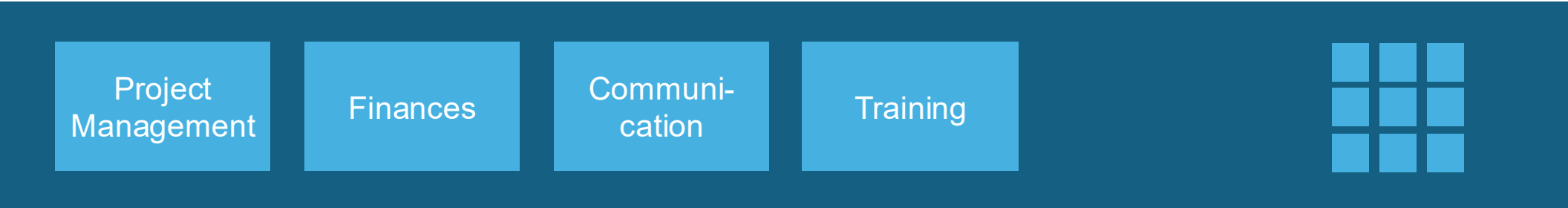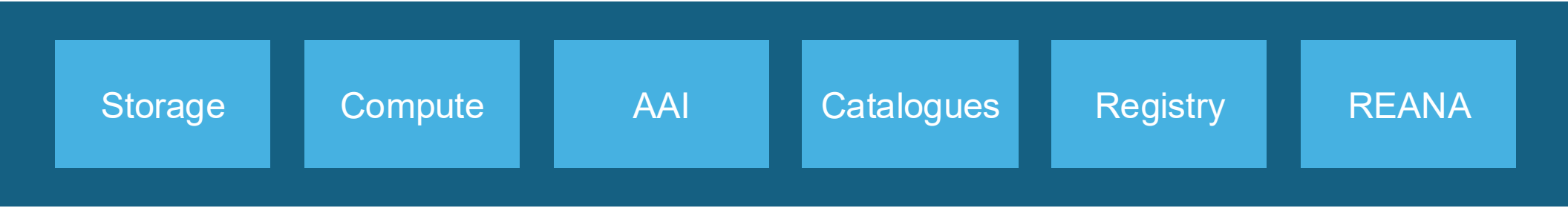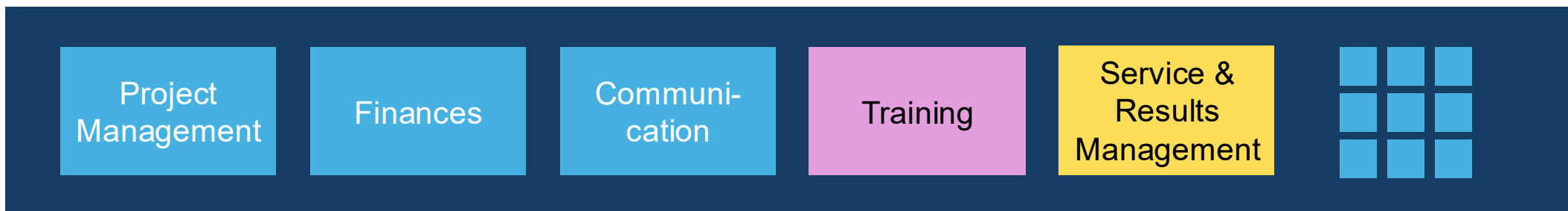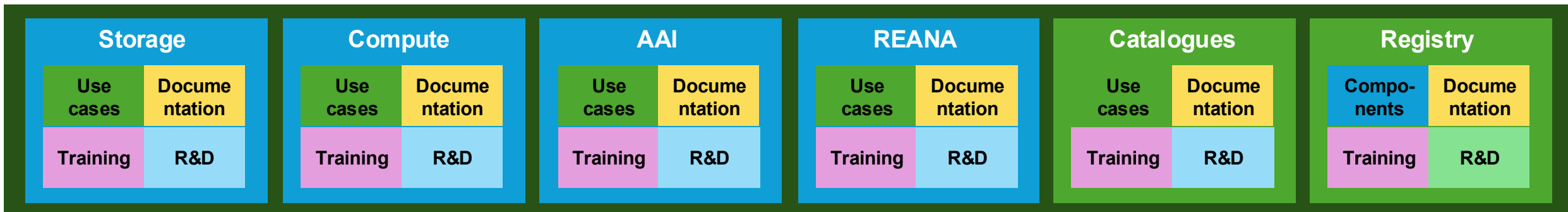
FTE and funding overview

FTE costs
- DFG: 88k for a postdoc
- Our suggestion: 90-10k depending on seniority, and including travel money – PUNCH: 95k
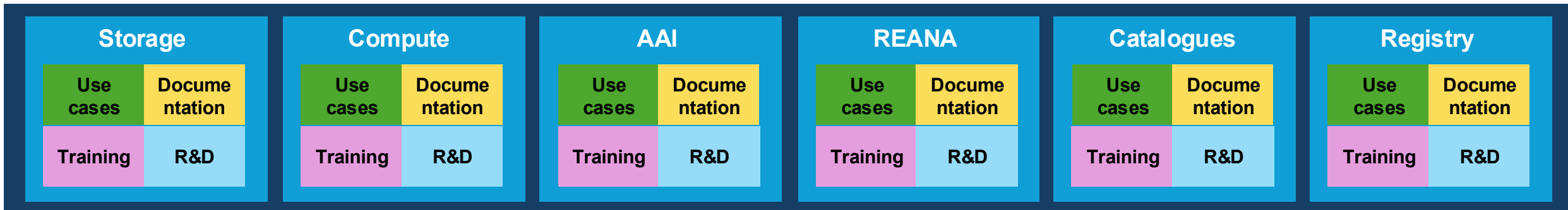
DFG funding
- To be included in proposal (no overheads): 3.9M/a / 88k = 36.8 FTE = 44.3 FTE
- Our planning (same reduction as in PUNCH-1.0): Assume 2.6M/a / 95k = 27 FTE

|	
Project Manage-ment	• DESY (?) • Overall management • Guidance of all other central personnel • 1 FTE
Finances	• DESY • 0.3 FTE
Communi-cation, PR, User interaction	• Where? • Distinction from results manager? • 1 FTE (?)
Training	• Where? • Relies on inputs from / connections to blue and green boxes • 1 FTE (distributed?)

- EB: Uncontroversial
- In sum 3-4 FTE

- Implementation of platform and portal
- PUNCH-wide search engines / AI
- Combine with RPR / registries, or as component?
- DRPs?
- Workflows?
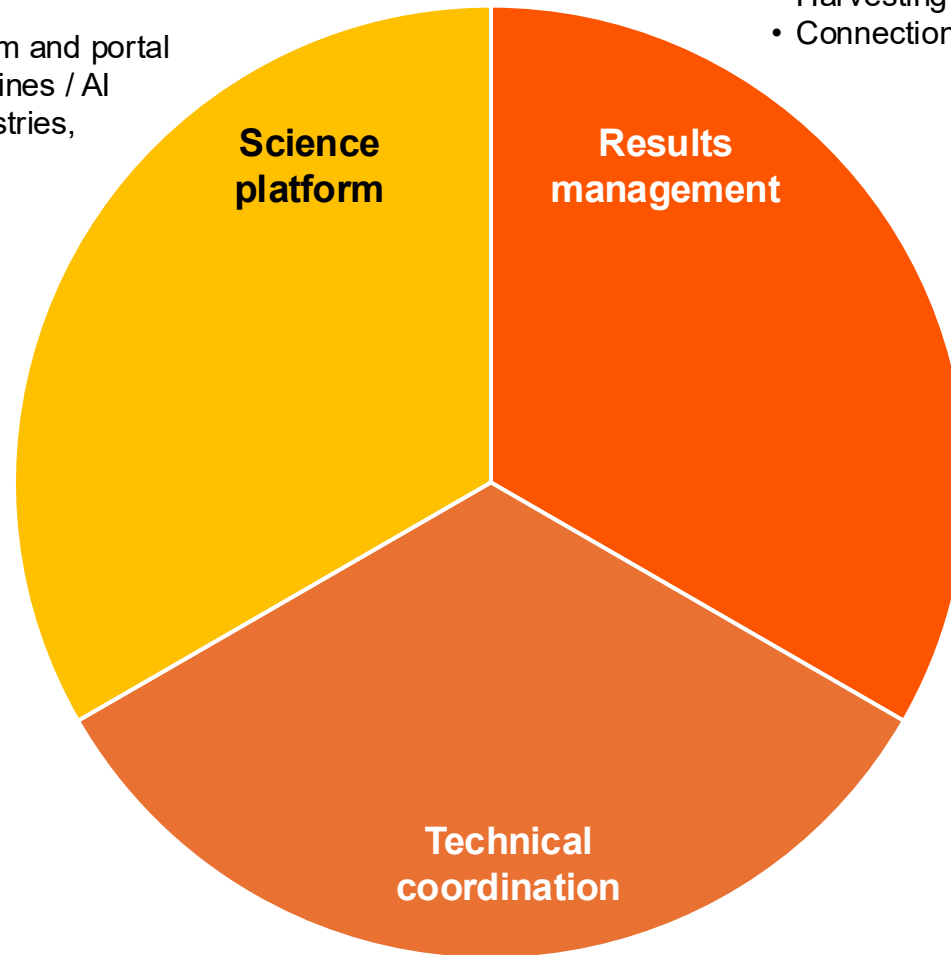
- Implementation of results page
- Harvesting of results in TAs, use cases, components
- Connection to B4N for base services

Science platform

Results management

Technical coordination

- 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?

- EB: Uncontroversial – but see next slides
- Collectively ~6 FTE with some tasks from components (see next slide)?

- HEP, HuK, Lattice, Astro
- 3 FTE (1 software developer)
- **DESY**, FZJ, UBi, UR, UBo, ...

- HEP, ...
- 4 FTE
- **UBo**, DESY, CERN, ...

- Astro,Lattice, ...
- 3 FTE
- **FZJ**, Bielefeld, UR, UKö, TuDD, ...

- Astro, Astro-particle, ...
- 2+2 FTE
- **AIP**, HITS, UHeid, TLS, DESY, ...
- Two use cases?

- All communities
- 2 FTE (1 domain scientist, 1 developer)
- **AIP**, ...
- DataScience, Daphne?

- HEP, Astro, HUK, ...
- N FTE
- TUM, LMU, UGoe, ...
- NHR connection?

- All communities
- N FTE
- DZA, TUDD, HUB, MPIfR, UKö, FIAS, UMai, ...

Data Mana-gement Life-cycle Model	key4HEP Use Case	Simulation Ingestion Use Case	Analysis of Large Data Sets	AI and LLMs	Pheno Interpretation	Future Obser-vations and Real Time
Hubert, Paul	Frank, Philip	Susanne	Elena, Gernot	Arman, Victoria	Lukas, Joe, Arnulf	Hermann

Storage and Catalogues	Compute	Workflows	AAI	Registries
NN	Manuel	Harry, Gernot	Kilian, Benoit	Harry

- All communities
- 5 FTE
- **KIT**, AIIP, DESY, UBo, UGoe, ...
- Connection NHR
- Connection with registry?

- All communities
- 5 FTE
- **DESY**, UBo, KIT, FZJ, UMai, AIP, GSI, DZA, ...

- All communities
- N FTE
- AIP, DESY, CERN, **...**

- All communities
- 2 FTE
- UBo, FZJ, DESY, KIT, HIFIS, ...

- All communities
- 5 FTE (for two registries)
- **AIP**, GSI, KIT, UBo, ...
- Combine with central platform pie?

- NOT uncontroversial – see next slide(s)
- Summed here: 33++ FTE plus several times N FTE, plus 9-10 on slides before → **about 12 too many**
- But: overlap between the various green and blue boxes?
- Funding profile? Timeline of use cases / components? Assumption: use cases for 2 years with 1 FTE!

- HEP, HuK, Lattice, Astro
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- **DESY**, FZJ, UBi, UR, UBo, ...

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- N FTE
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- All communities
- N FTE
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| **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

Integrate with SDP   Integrate with SDP

| **Storage and Catalogues**
 NN | **Compute**
 Manuel | **Workflows**
 Harry, Gernot | **AAI**
 Kilian, Benoit | **Software and containers**
 Harry |

- All communities
- 5 FTE
- **KIT**, AIIP, DESY, UBo, UGoe, ...
- Connection NHR
- Connection with registry?

- All communities
- 5 FTE
- **DESY**, UBo, KIT, FZJ, UMai, AIP, GSI, DZA, ...

- All communities
- N FTE
- AIP, DESY, CERN, **...**

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- Combine with central platform pie?

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- HEP, ...
- 4 FTE
- **UBo**, DESY, CERN, ...

- Astro, Lattice, ...
- 3 FTE
- **FZJ**, Bielefeld, UR, UKö, TuDD, ...

- Astro, Astro-particle, ...
- 2+2 FTE
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Data Management Lifecycle 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

- All communities
- 5 FTE
- **KIT**, AIIP, DESY, UBo, UGoe, ...
- Connection NHR
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- All communities
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- All communities
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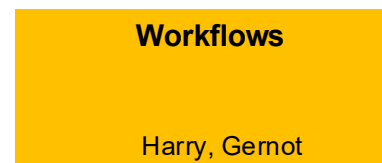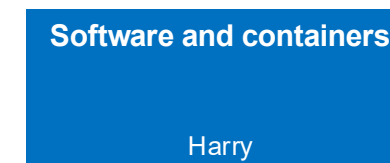| Data Mana-gement Life-cycle Model	key4HEP Use Case	Simulation Ingestion Use Case	Analysis of Large Data Sets	AI and LLMs	Pheno Interpretation	Future Obser-vations and Real Time
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Integrate with SDP

Federated resources (provision, management)?   Integrate with SDP   Integrate with SDP

Storage and Catalogues	Compute	Workflows	AAI	Software and containers
NN	Manuel	Harry, Gernot	Kilian, Benoit	Harry

	INSTRUCTIONS	
Storage, catalogues, DRP registry	- UC needs from the component: which work? - Distinction must have (A) - nice to have (B)? - UC needs from the component: FTEs? - Component contribution: institutions? - Component contribution: timeframe - ready by when? - Connection to NFDI and base services?	
Compute		
Workflows		
AAI		- Component needs / wishes not covered in UC implementation? - Category A (must have) and category B (nice to have) FTE needs? - Timeline - ready when? --> FTE profile? - Why to be done - even if not required by any UC? - Institutions? - Base services than can be derived?
Software, container (registry)		
	- UC needs in FTE NOT in components work? - UC ready when? ASSUMPTION 2-3 YEARS! - UC institutions NOT involved in components work? - Base services to be derived?	- Role for technical coordination?
		- Role of Platform in pie chart?
	- Role of Platform in pie chart? - Coordination needs with other components?	

https://docs.google.com/spreadsheets/d/1sZibXvulfTspJtIS3-6_3Z6ZqREjhMPbMqudPjbvk3c/edit?usp=sharing

4 FTE

Project Management

Finances

Communication, PR, User interaction

Training

6 FTE

Science platform

Results management

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

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6 FTE

Future Observations and Real Time — Hermann

Integrate with SDP

Federated resources (provision, management)?

Integrate with SDP

Integrate with SDP

Storage and Catalogues — Christoph

Compute — Manuel

Workflows — Harry, Gernot

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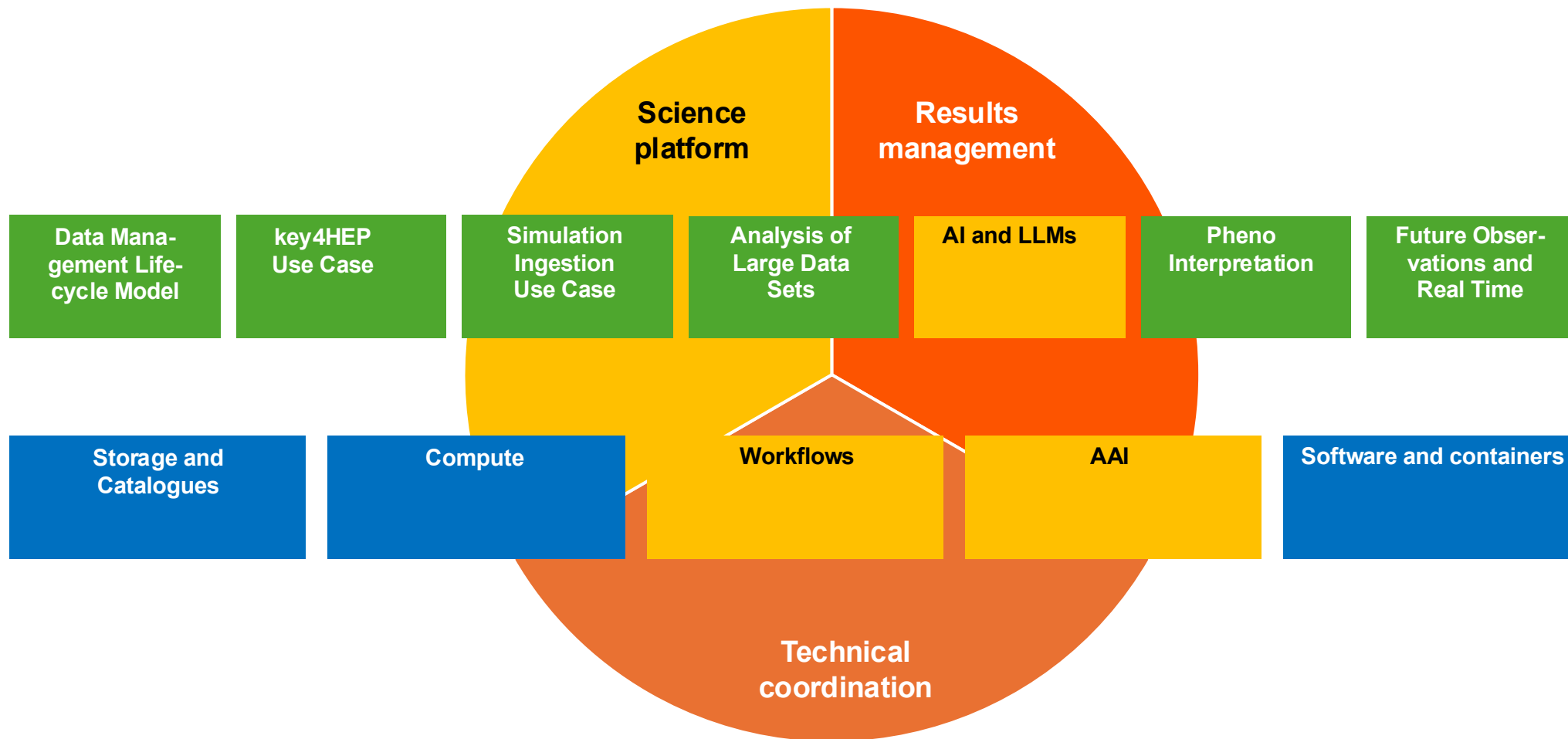**11 FTE**

Technical coordination

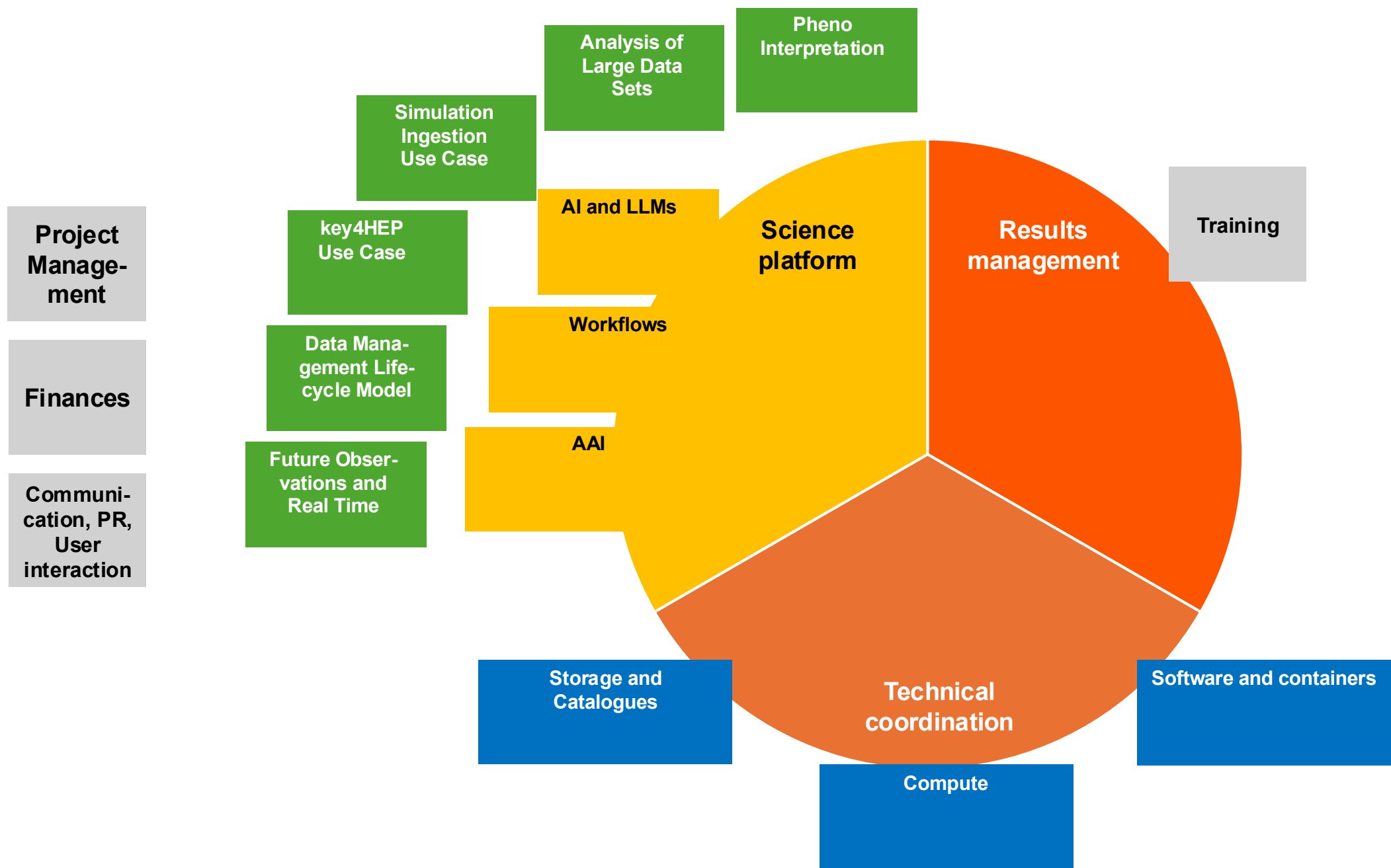- Sum 27 FTE – might be realistic. Optimistic scenario: 35 FTE?
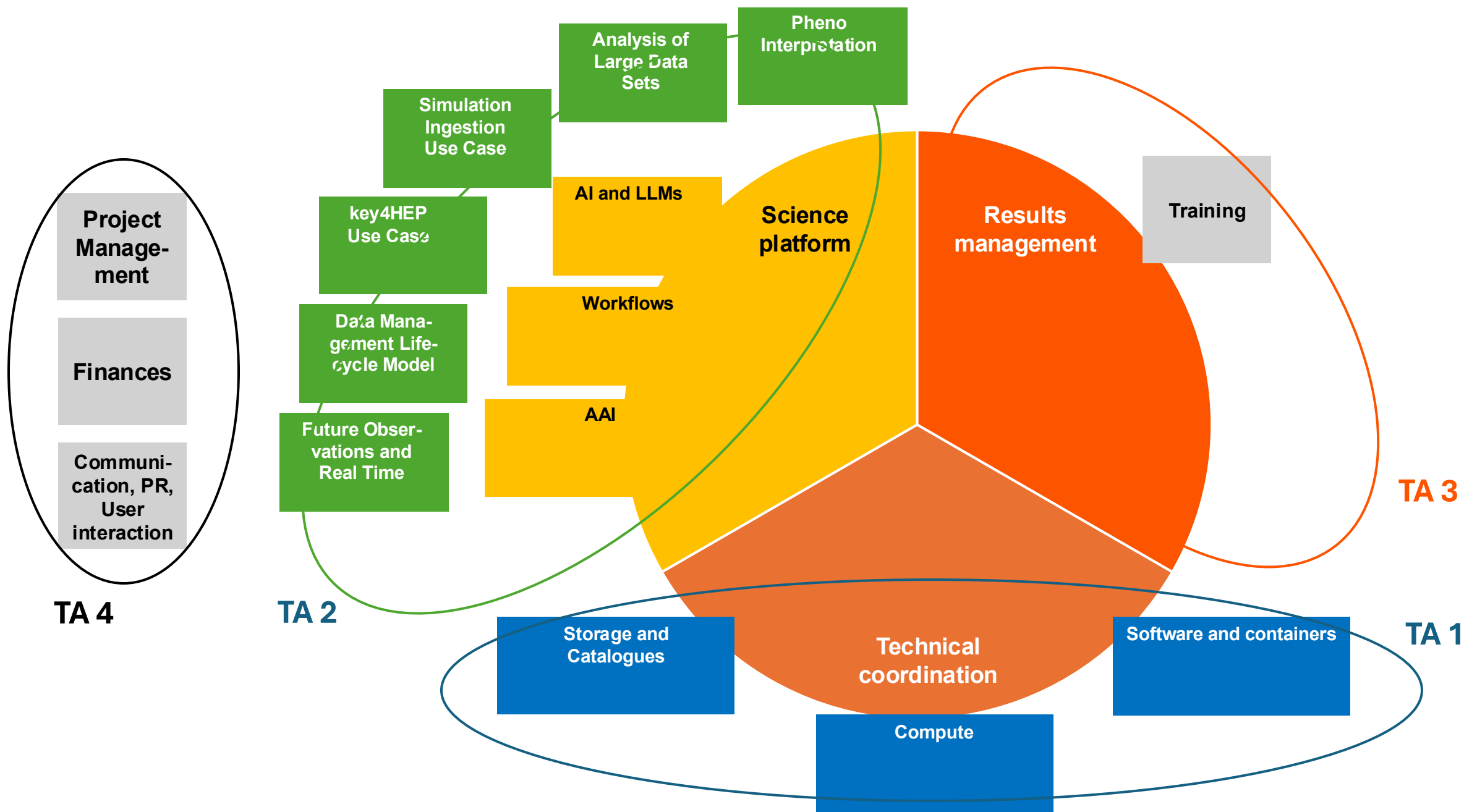- Question of flexfunds?

Project Management

Finances

Communication, PR, User interaction
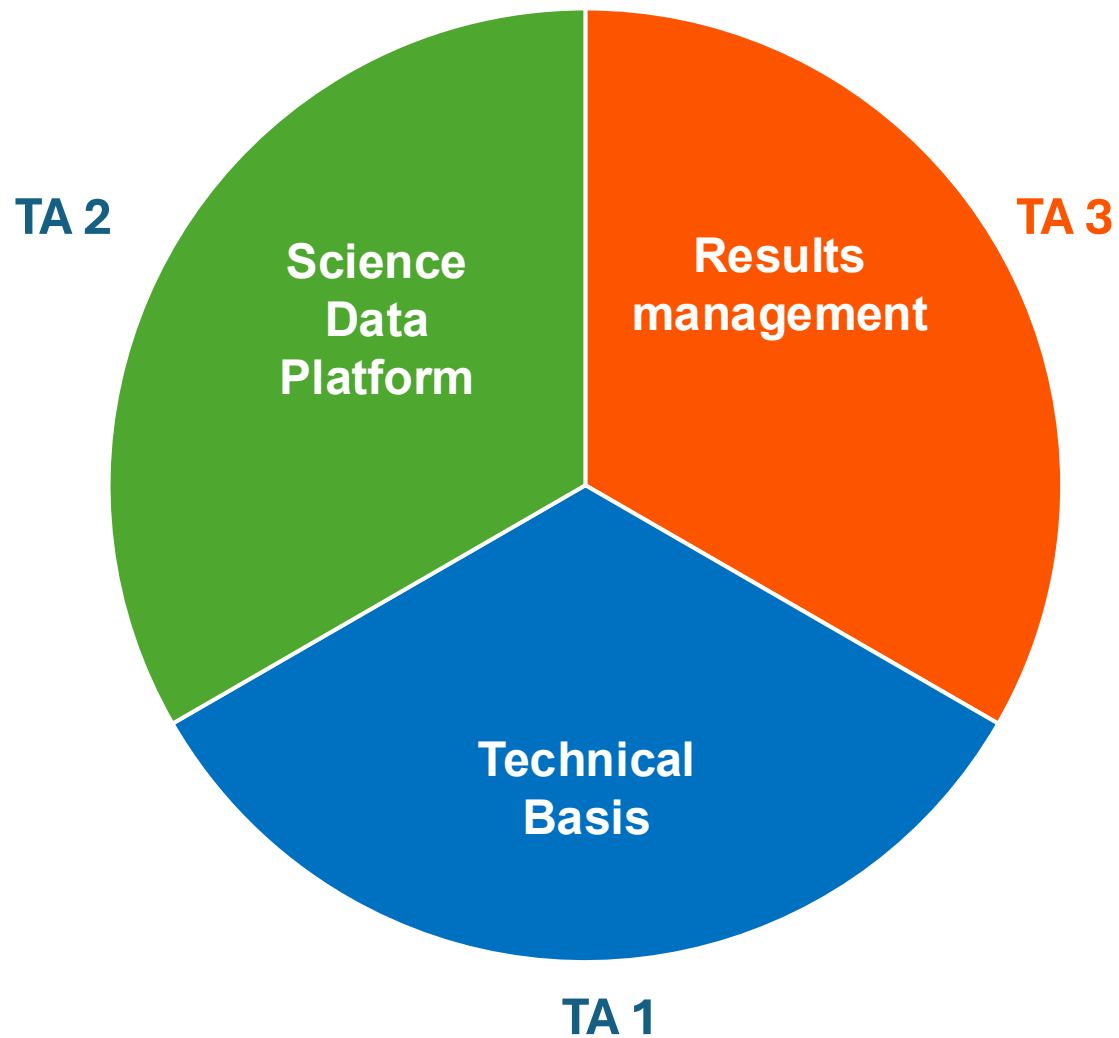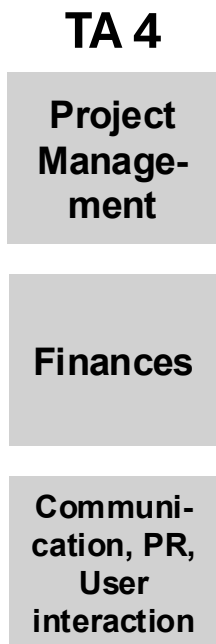
Training

Science platform

Results management

Technical coordination

Data Management Life-cycle Model

key4HEP Use Case

Simulation Ingestion Use Case

Analysis of Large Data Sets

AI and LLMs

Pheno Interpretation

Future Observations and Real Time

Storage and Catalogues

Compute

Workflows

AAI

Software and containers

Central management

Services, platform and results

Use cases

Components / technical coordination

Also operation and support either in yellow or blue – trade-off
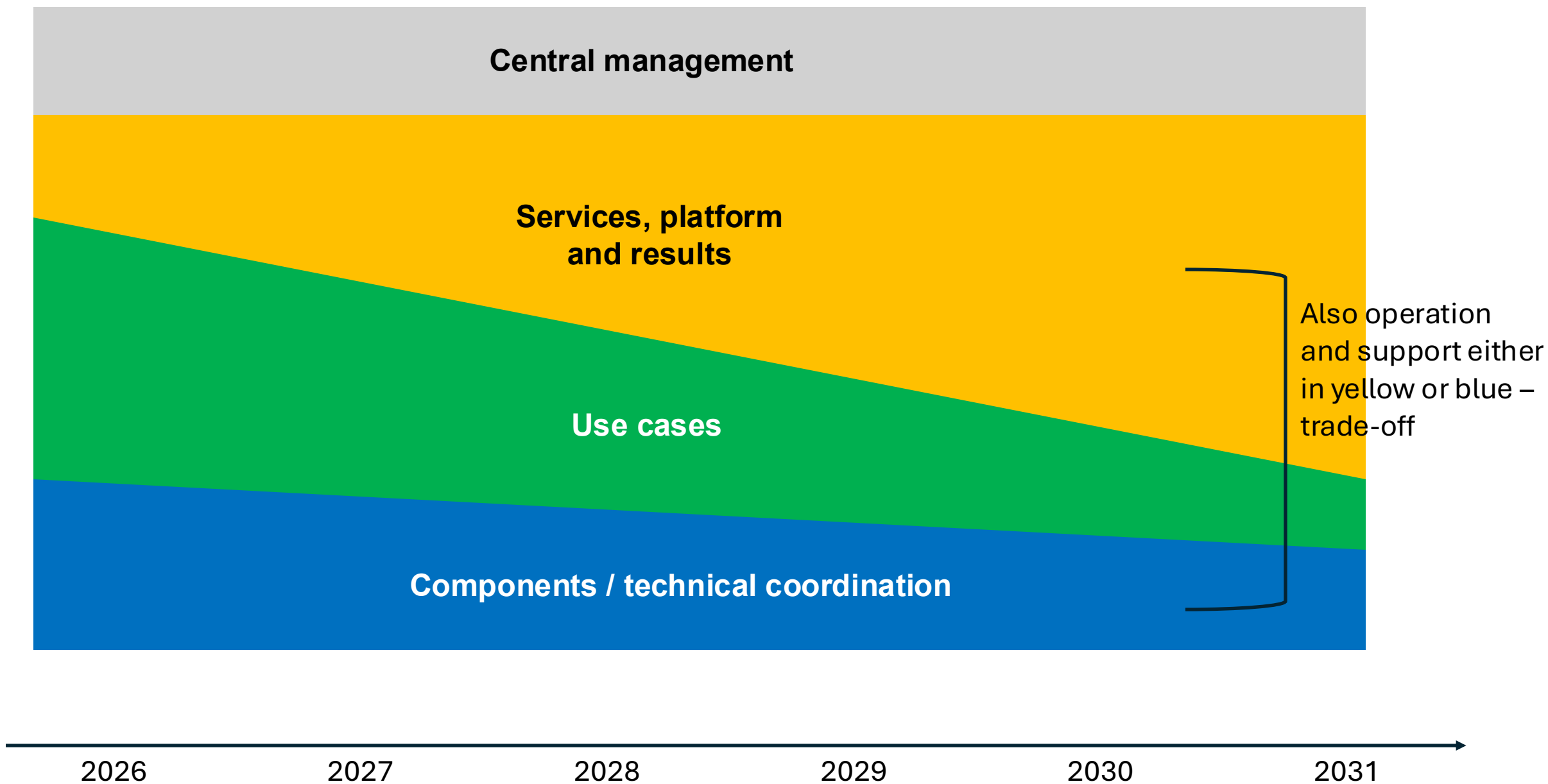
2026　2027　2028　2029　2030　2031

Next steps

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- Consolidation of future consortium composition: mid-May
  - Includes reaching out to participants
- Writing of LoI: by end of May
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Homework

- Give meaningful names to all boxes
- Filling in matrix at least for UC and component summaries – incl A-B and FTEs
- Descriptive text snippets for all boxes
- List of deliverables and their times per box