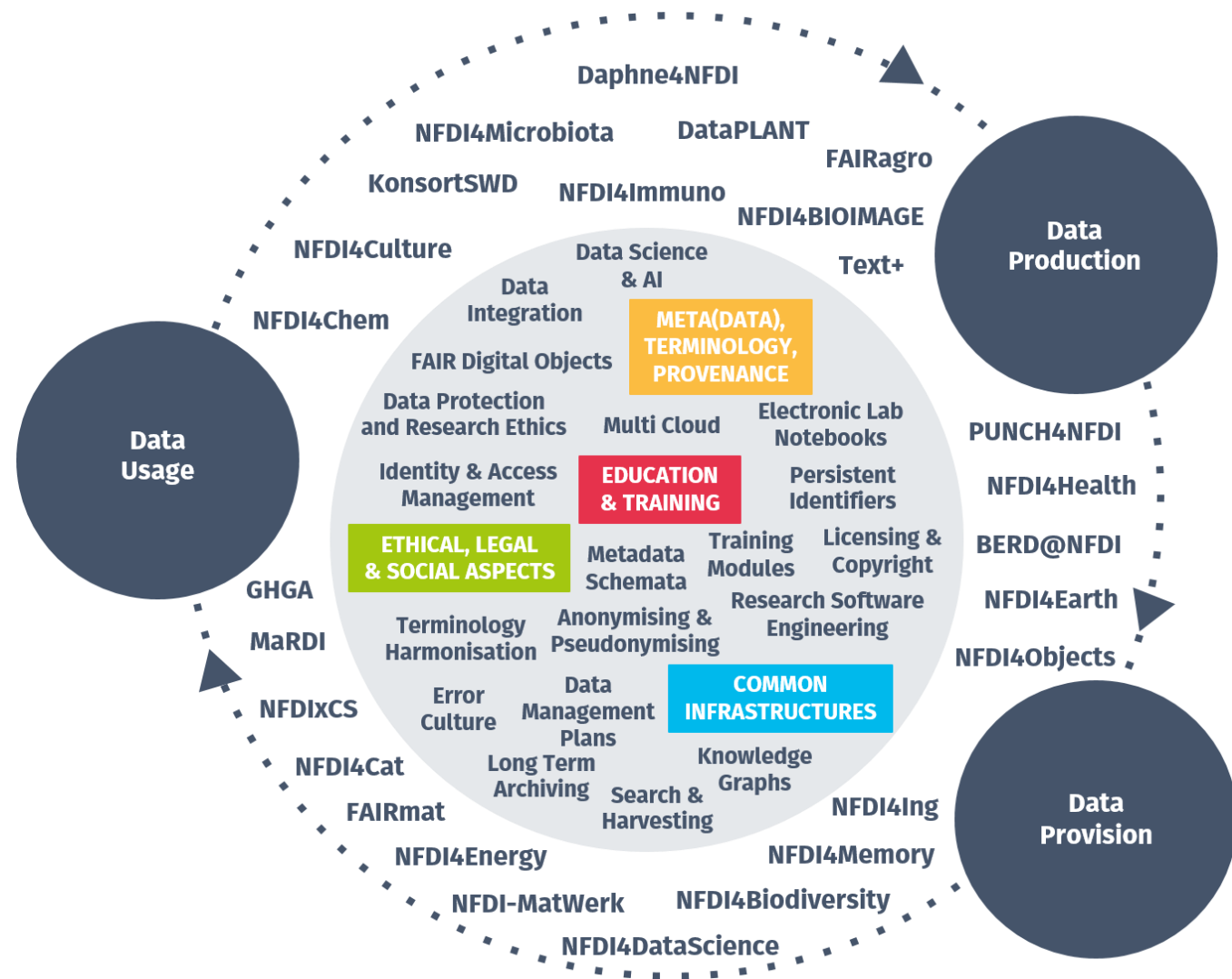base4nfdi

Basic Services for NFDI

ZKI Frühjahrstagung 2023
Kassel 28.02.2023

Regine Stein
Base4NFDI Co-Spokesperson
Niedersächsische Staats- und
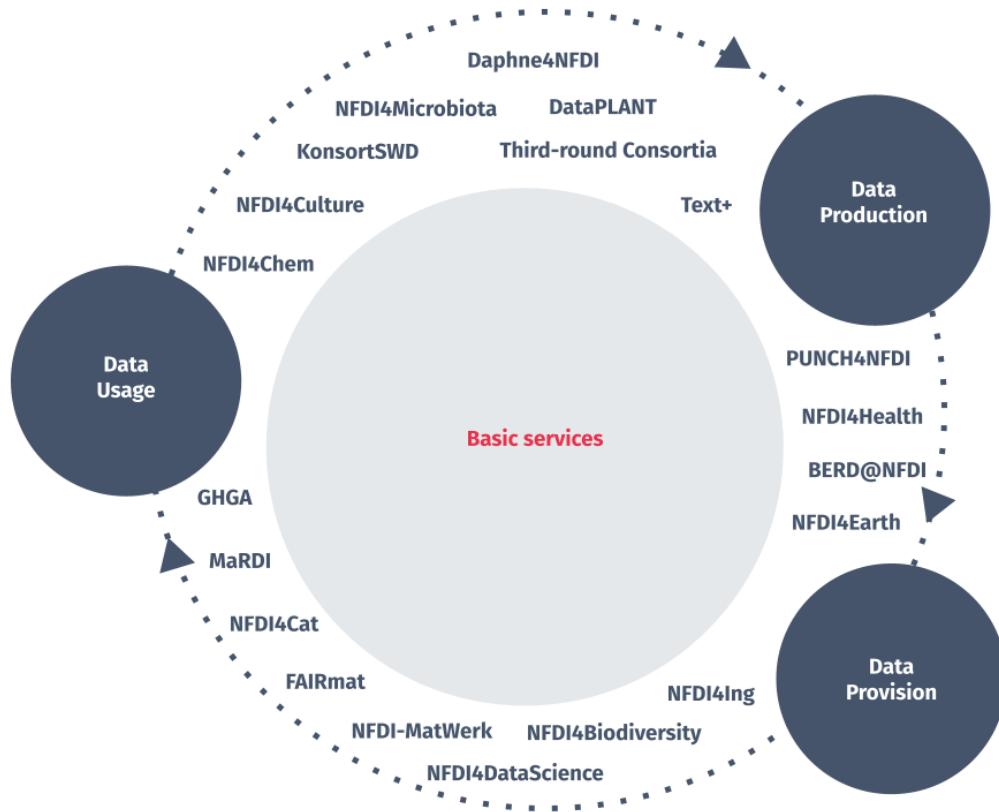Universitätsbibliothek Göttingen

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Data Production

Data Usage

Data Provision

Daphne4NFDI
NFDI4Microbiota   DataPLANT
KonsortSWD   NFDI4Immuno   FAIRagro
NFDI4Culture   NFDI4BIOIMAGE
Data Science   Text+
NFDI4Chem   Data   & AI
Integration   META(DATA),
TERMINOLOGY,
FAIR Digital Objects   PROVENANCE
Data Protection   Electronic Lab
and Research Ethics   Multi Cloud   Notebooks   PUNCH4NFDI
Identity & Access   EDUCATION   Persistent   NFDI4Health
Management   & TRAINING   Identifiers   BERD@NFDI
ETHICAL, LEGAL   Training   Licensing &
& SOCIAL ASPECTS   Metadata   Modules   Copyright   NFDI4Earth
GHGA   Schemata   Research Software
Terminology   Anonymising &   Engineering   NFDI4Objects
MaRDI   Harmonisation   Pseudonymising
Error   Data   COMMON
NFDIxCS   Culture   Management   INFRASTRUCTURES
Plans
NFDI4Cat   Knowledge
Long Term   Graphs
Archiving   Search &   NFDI4Ing   Data
FAIRmat   Harvesting   Provision
NFDI4Energy   NFDI4Memory
NFDI-MatWerk   NFDI4Biodiversity
NFDI4DataScience

Where we started

Our concept

Where we are

Where we started

Why NFDI needs Basic Services

- Consortia represent their **specific domains** and their infrastructural expertise including domain-specific basic-services
- Interoperability and cost-efficiency in NFDI however, requires **NFDI-wide basic services**
- *A **service** is a technical-organisational solution, which typically includes storage and computing services, software, processes and workflows, as well as the necessary personnel support for different service desks.*

Why NFDI needs Basic Services
Base4NFDI evolved bottom up and has proven its effectiveness

DFG call for basic service initiatives

NFDI Expert Committee statement on basic services

Leipzig-Berlin Declaration on NFDI Cross-Cutting Topics

9 NFDI Consortia started (first round) addressing RDM needs of their communities

4 NFDI Sections established to address cross-cutting topics

NFDI Consortia Statement on Basic Services

NFDI Consortia join into Base4NFDI

9/2019 — 6/2020 — 8/2020 — 10/2020 — 4/2021 — 9/2021 — 10/2021 — 1/2022 — 2/2022 — 2/2022

Berlin Declaration on NFDI Cross-Cutting Topics

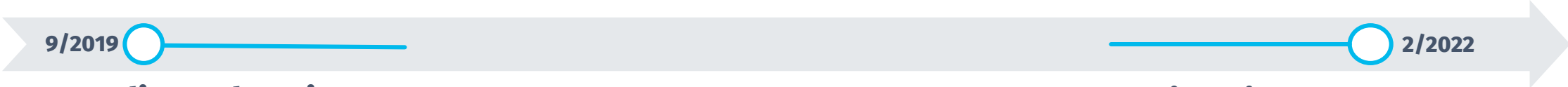NFDI cross-cutting topics workshop

NFDI cross-cutting topics workshop

10 NFDI Consortia started (second round) addressing RDM needs of their communities

NFDI Sections establish first WG on specific Topics

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Why NFDI needs Base4NFDI
Who we are

9/2019 — 2/2022

Berlin Declaration on NFDI Cross-Cutting Topics

NFDI Consortia build Base4NFDI to deliver NFDI-wide Basic Services

KonsortSWD   NFDI4Ing

NFDI4Chem   PUNCH4NFDI

GHGA   Daphne4NFDI   Text+

NFDI4Culture

NFDI4Cat   **First and Second-round Consortia**   BERD@NFDI

NFDI4Health   FAIRmat   MaRDI

NFDI4Earth

NFDI4Biodiversity   NFDI4DataScience

NFDI-MatWerk

DataPLANT   NFDI4Microbiota

NFDI4BIOIMAGE   NFDI4Patho   NFDI4Mobility

NFDIxCS   **Third-round Consortia Initiatives**

NFDI4Memory   NFDI4Objects

NFDI-Neuro

TheoReS   METHODS

NFDI4Energy   FAIRagro

NFDI4Immuno

DeBioData

19 Consortia + **13** Consortia Initiatives = **1** proposal

6

Why NFDI needs Base4NFDI
Who we are

1/1 German Research and Education Network (NREN)

3/3 Gauss Centers for Supercomputing

9/23 ERICs represented by members

7/9 National High Performance Computing Centers (NHR) affiliated

18+ members involved in EOSC projects

12/13 German Gauß-Allianz (HPC Tier 1-3)

6/6 German AI Competence Centers

12/19 German EOSC Association members

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Why NFDI needs Base4NFDI
Basic Services across consortia

- Scientific domains are organised in the NFDI consortia

- Leading infrastructure providers are already part of these consortia

- NFDI Consortia in unique position to determine fit-for-purpose services for RDM support

- NFDI aims to integrate RDM across disciplines, data-types, infrastructure landscapes, … data cultures

- Common, interoperable basic services are core to deliver on promise of integration and long-term operational models

- Joined linkage into EOSC and further international infrastructures

Our concept
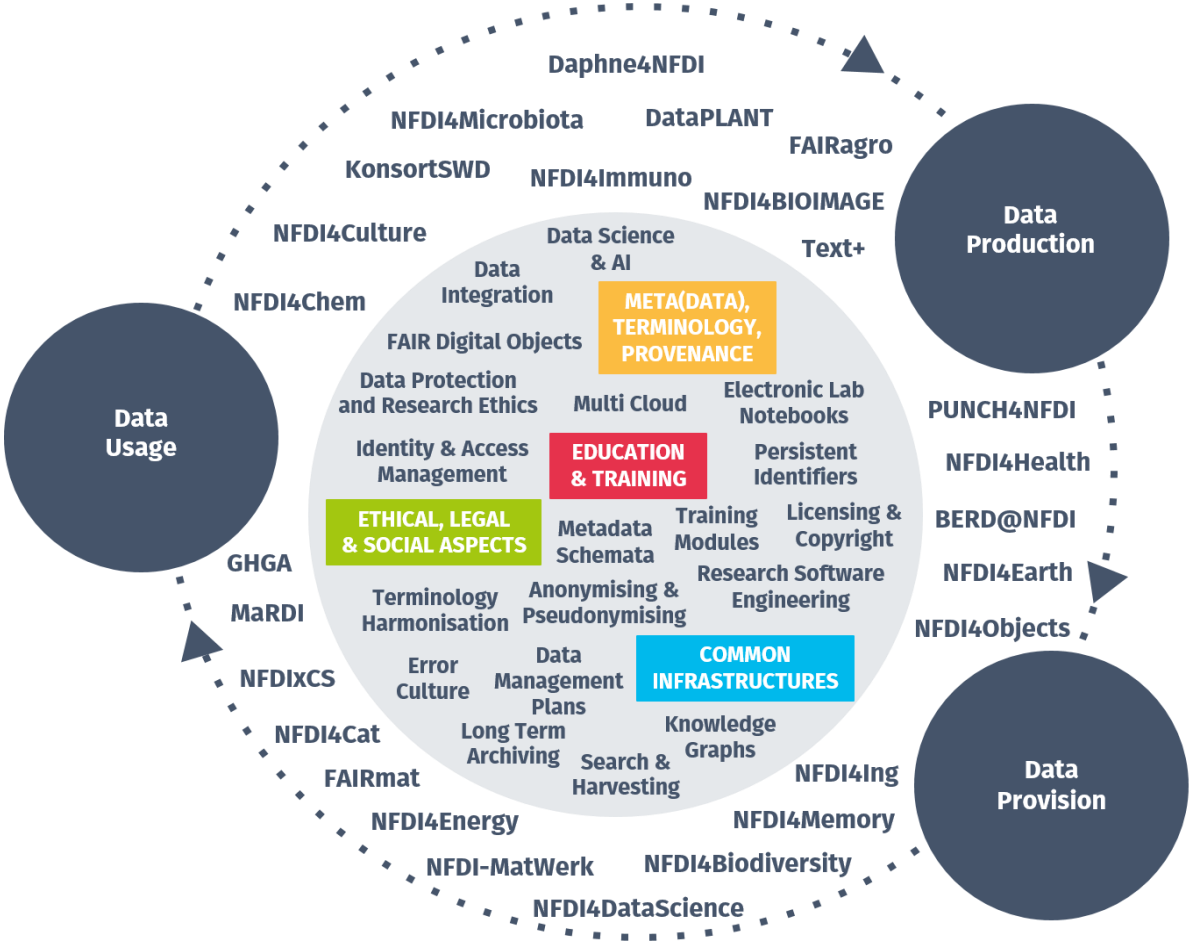
What Base4NFDI will do
Key Deliverables

- **Framework** for user-driven and quality-assured basic service development

- **Agile process** to establish a NFDI-wide basic service portfolio

- **Establish basic services**

- **Building** on **existing solutions** and **complementing EOSC**

Base4NFDI Framework

Process 1 → Process 2 → Process 3

NFDI Service Portfolio
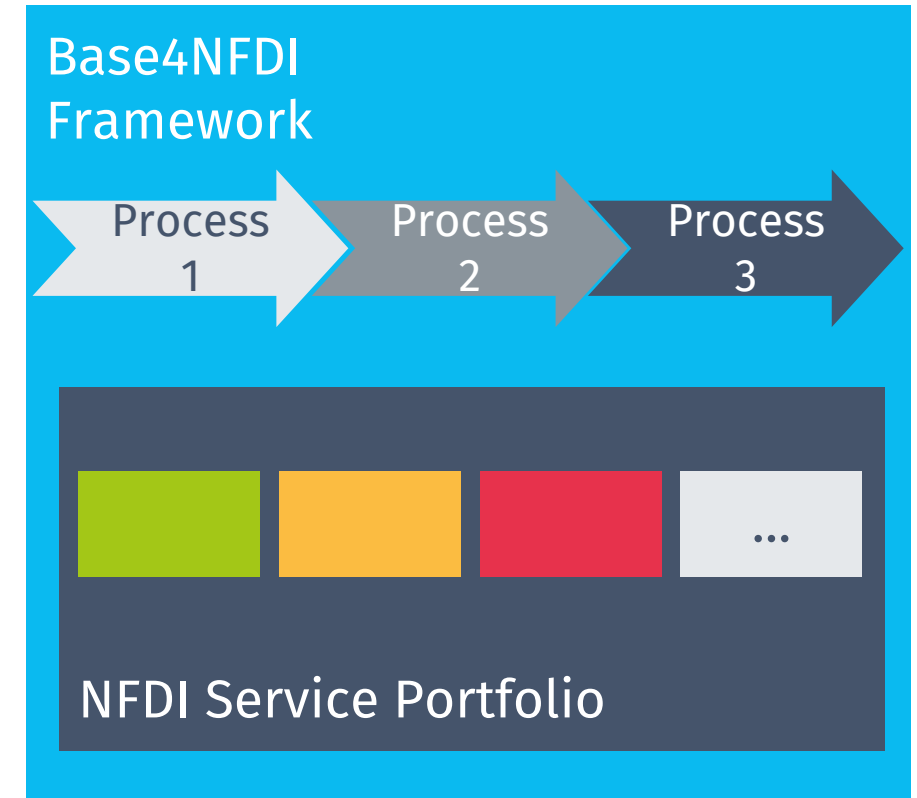
What Base4NFDI will do
## Identifying researchers' needs

- Sections of the NFDI Association are the places to identify cross-cutting needs of consortia

- Combine infrastructural & technological expertise and domain knowledge

- Provide expertise, blueprints, and resources for development processes

- Act as incubators for continuously identifying potential basic services

What Base4NFDI will do
One Example: IAM - Identity and Access Management
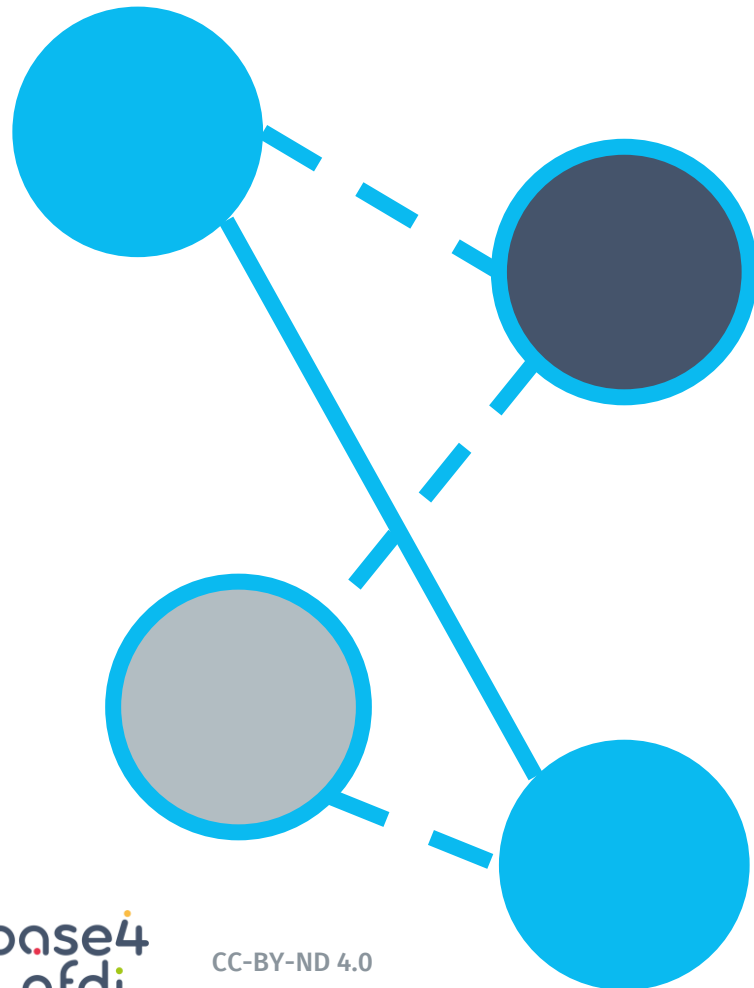
- Some consortia/communities **without any** solution for identity and access management

- Other communities with **established** but **different** systems (DFN-AAI, DARIAH-AAI, Life-Sciences-AAI)

- NFDI-wide solutions need to **integrate** and **complement** with **EOSC** solutions

- Federation and long-term operation as an organisational and technological challenge

What Base4NFDI will do
## Translate needs & topics in basic services

Base4NFDI provides the framework for

- defining potential basic services

- user-driven requirements analysis

- stepwise development for integrating and ramping-up basic service candidates

- setting up NFDI-wide basic service portfolio

- monitoring and evaluation

- transparent allocation of flexible funding

- consensus building

How Base4NFDI will decide
## Tightly embedded in the NFDI Association

- **Service Stewards** and
  Section Liaison Officers support
  coherence/consolidation
  and service uptake

- NFDI Consortia and NFDI Sections
  are complemented by a
  Technical Expert Committee (TEC)

  - TEC assures infrastructural
    expertise and commitment
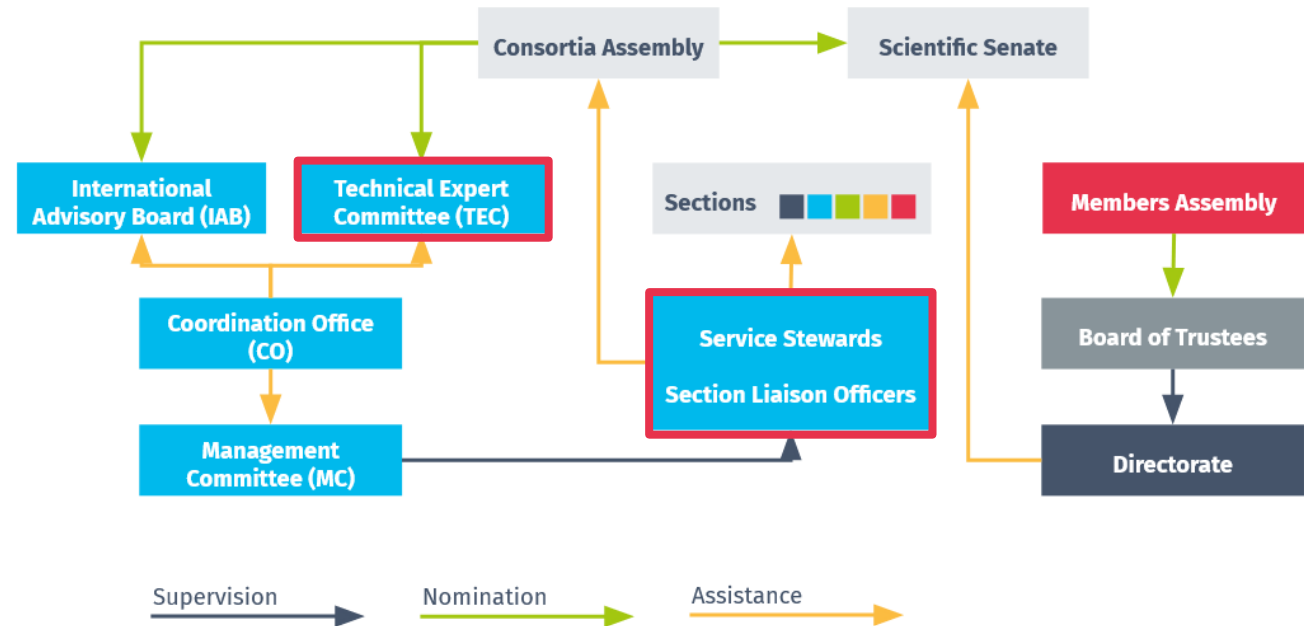
How Base4NFDI will decide
Tightly embedded in the NFDI Association

- Each development step is subject to evaluation and joint agreement on next steps

- Proposals are initiated and coordinated by NFDI Sections

- Proposals are evaluated by Technical Expert Committee (TEC), Consortia Assembly and Scientific Senate
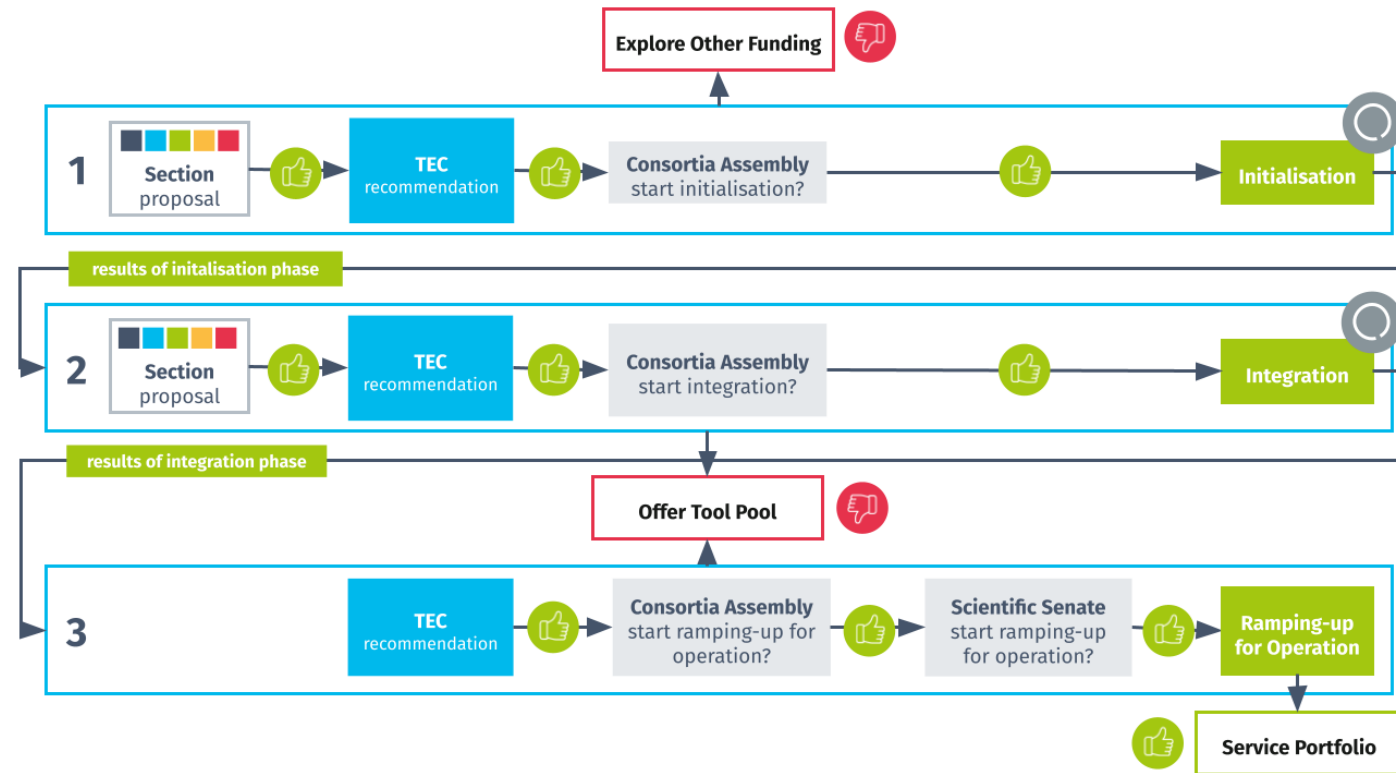
Where we are

NFDI Sections as Starting Points

Four sections established by the Scientific Senate of the NFDI Association, one in the process:

- Common Infrastructures (*section-infra*)

- Ethical, Legal and Social Aspects (*section-ELSA*)

- (Meta)data, Terminologies, Provenance (*section-metadata*)

- Training & Education (*section-edutrain*)

- In the process: Industry Engagement

Working Groups in Section Common Infrastructures

10 Working groups

- DI: Data Integration https://doi.org/10.5281/zenodo.6519590

- DMP: Data Management Planning https://doi.org/10.5281/zenodo.6499327

- DSAI: Data Science and Artificial Intelligence https://doi.org/10.5281/zenodo.6498197

- ELN: Electronic Lab Notebooks https://doi.org/10.5281/zenodo.6499067

- IAM: Identity and Access Management https://doi.org/10.5281/zenodo.6421866

- LTA: Long-term Archival https://doi.org/10.5281/zenodo.6451456

- MC: Multi-Cloud https://doi.org/10.5281/zenodo.6510971

- PID: Persistent Identifiers https://doi.org/10.5281/zenodo.6507760

- RSE: Research Software Engineering https://doi.org/10.5281/zenodo.6483449

- IDS: Infrastructure and Data Security

Working Groups in Section Metadata, Terminologies, Provenance

5 Working groups

- Cookbooks, Guidance and Best Practice https://doi.org/10.5281/zenodo.6758256
- Terminology Services https://doi.org/10.5281/zenodo.6759325
- Ontology Harmonization and Mapping https://doi.org/10.5281/zenodo.6726518
- Search and Harvesting https://doi.org/10.5281/zenodo.6770762
- Knowledge Graphs https://doi.org/10.5281/zenodo.7228955%20%20

Base4NFDI
Where we are

- **2023 February 15th:** Deadline for the first round of Base Service proposals

- **2023 March 1st:** Official Start of Base4NFDI Project

- **2023 May 15th:** Deadline for the second round of Base Service proposals
- **2023 August 15th:** Deadline for the third round of Base Service proposals

Base4NFDI
How Base4NFDI will decide

Decision-Steps

Sections consolidate proposals

Technical Expert Cmte. issues recommendation

Consortia Assembly decides on funding

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Criteria for Initialization-Phase

Approval by 25% of consortia
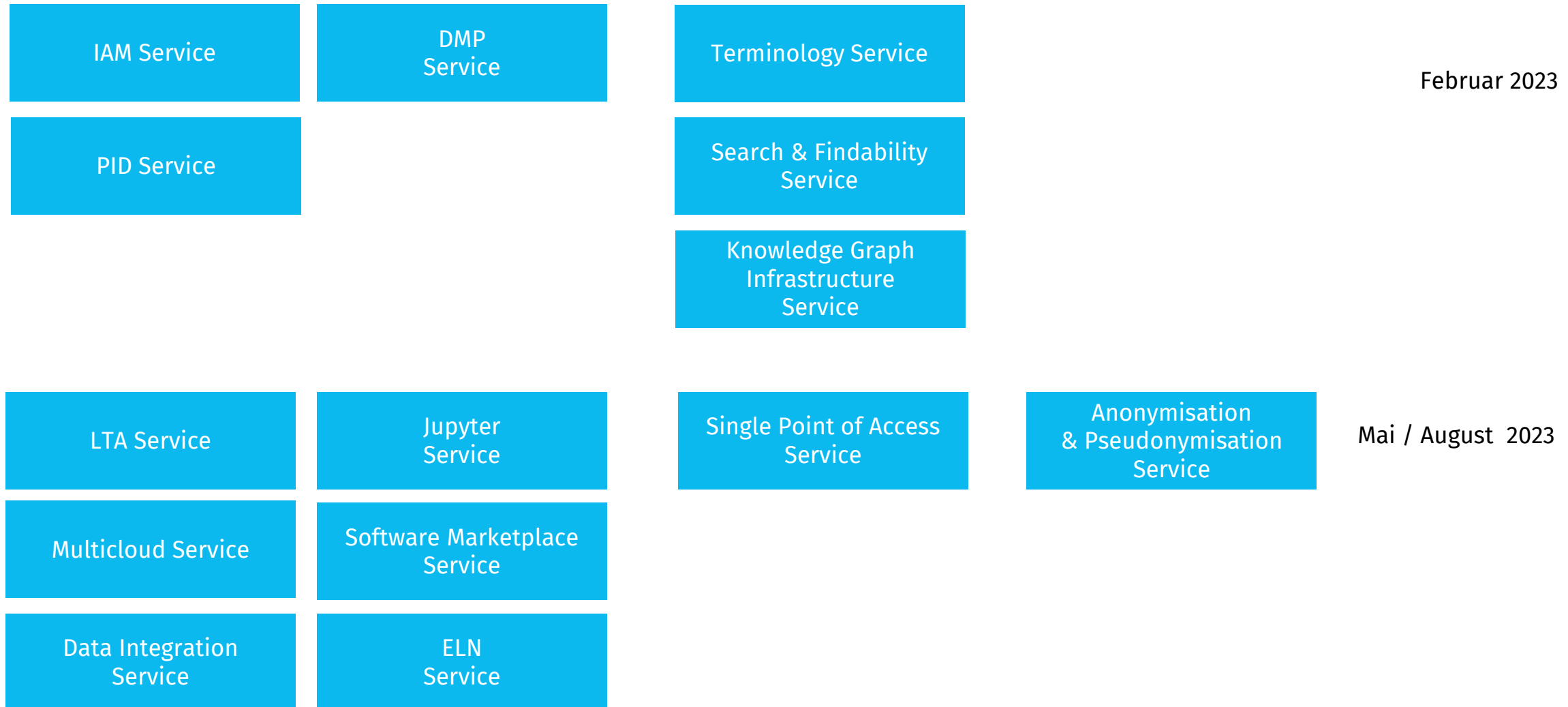
Technology Readiness Level 3-4

SWOT Analysis

Concept for implementation

see *base4nfdi.de* for details and other phases

Icons by flaticon.com

Base4NFDI

Landscape of Basic Service Proposals (Status January 2023)

| IAM Service | DMP Service | Terminology Service | Februar 2023 |

PID Service

Search & Findability Service

Knowledge Graph Infrastructure Service

| LTA Service | Jupyter Service | Single Point of Access Service | Anonymisation & Pseudonymisation Service | Mai / August 2023 |

Multicloud Service

Software Marketplace Service

Data Integration Service

ELN Service

Section Infra   Section Infra   Section Meta   Section Elsa

Base4NFDI
Dates for 2023

2023

01	02	03	04	05	06	07	08	09	10	11	12

Timeline markers:
- Row 1: 15 (green, 02), blue (03), 31 (red, 04), gray bar (05–07, Begin Funding)
- Row 2: 15 (green, 05), blue (06), 07 (red, 07), gray bar (08–10, Begin Funding)
- Row 3: 15 (green, 08), blue (09), 06 (red, 10), gray bar (11, Begin Funding)

Legend:
- Green — Submit Proposals
- Blue — Recommendation TEC
- Red — Decision Consortia Assembly
- Gray — Begin Funding
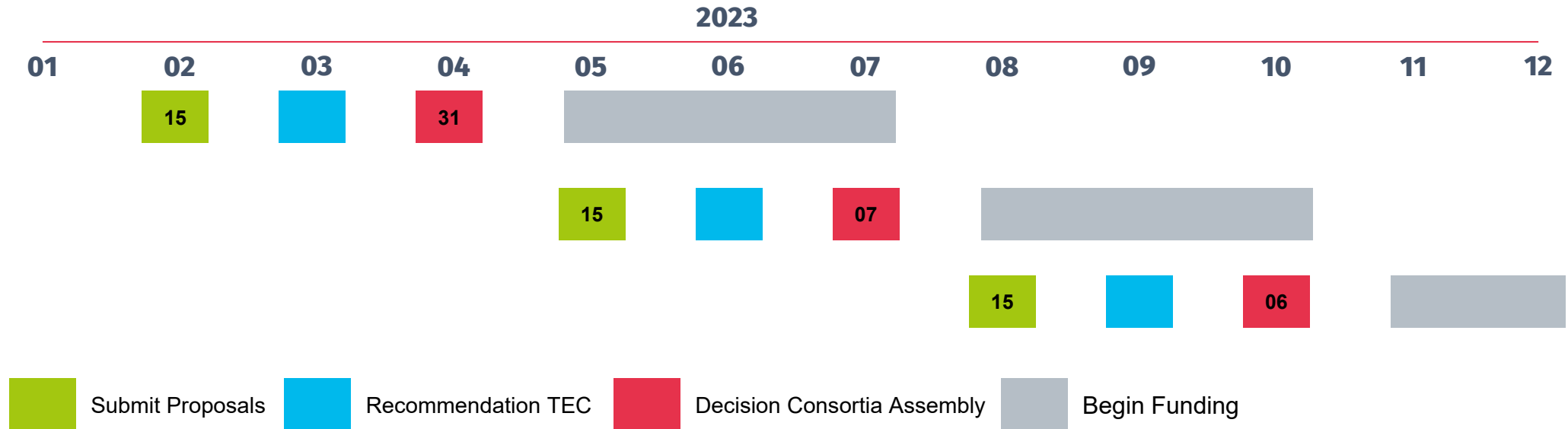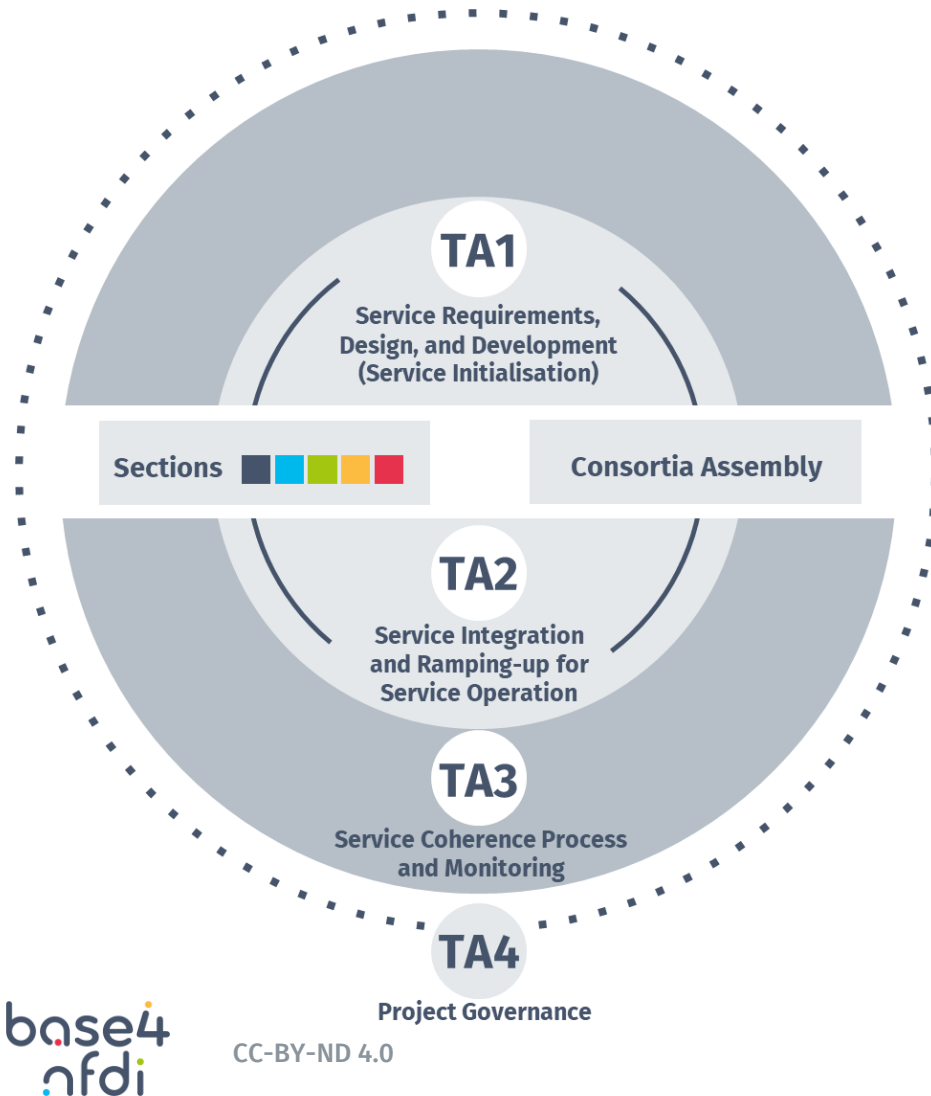
- Three Base4NFDI Calls in 2023 (no need to rush!!)
- All potential services first submit **proposals** for the initialization phase
- The **Technical Expert Committee** completed in January 2023
- Binding decisions on funding to be made by the **consortia assembly**

Feedback welcome !
Questions ?

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What Base4NFDI will do
Work Program

- TA1: Service Requirements, Design and Development (Service Initialisation)

- TA2: Service Integration and Ramping-up for Service Operation

  - maintaining basic service portfolio

- TA3: Service Coherence Process and Monitoring

  - providing a framework

  - monitoring and evaluation

- TA4: Project Governance

  - transparent allocation of flexible funding

Base4NFDI
Who can apply, how, and for how much?

WHO

- A lead institution and further participating institutions
- All institutions need to be (or have a route to become) members of a DFG-funded **consortium**

HOW

- A **template** for applications is available through *base4nfdi.de*

€

- Funds will be allocated based on "**building blocks**" per phase
- Using these building blocks proposals need to **specify** how many or which share of a building block they request

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Base4NFDI
Financial building blocks: prototypical calculation (based on DFG cost rates)

Initialization

- Duration: 1 year
- 2 postdoctoral researchers, 1 doctoral researcher
- **€226.500** per year

Integration

- Duration: 2 years
- 3 postdoctoral researchers, 3 doctoral researchers
- **€447.300** per year

Ramping-up

- Duration: 2 years
- 4 postdoctoral researchers
- **€309.600** per year

Criteria for the Selection of Basic Service Candidates

Initialization	Integration	Ramping-up for Operation
1. Approval of 25% of consortia. 2. Compliance with TRL 3-4. 3. SWOT analysis, particular attention to existing solutions. 4. Concept for implementation with technologies that have open licences. The software of the service itself has to be licensed under an open source software licence.	1. Approval of 50% of consortia. 2. Compliance with TRL 5-6. 3. Calculation of financial support for reaching operational phase, incl. detailed work plan indicating when service can be provided 4. Demonstration of interoperability with NFDI services 5. Demonstration of ability to integrate with other national and international infrastructures, in particular EOSC	1. Approval of 75% ("potentially all") consortia. 2. Compliance with TRL 7-8. 3. Provision of sufficient evidence TRL 9 will be reached at the end of funding. 4. Provision of sufficient evidence that the operational phase is sustainably supported by commitments from participating or further institutions.

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