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NATIONAL RESEARCH DATA  
INFRASTRUCTURE FOR MATERIALS  
SCIENCE & ENGINEERING

Funded by

**DFG** Deutsche  
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German Research Foundation

Project number 460247524

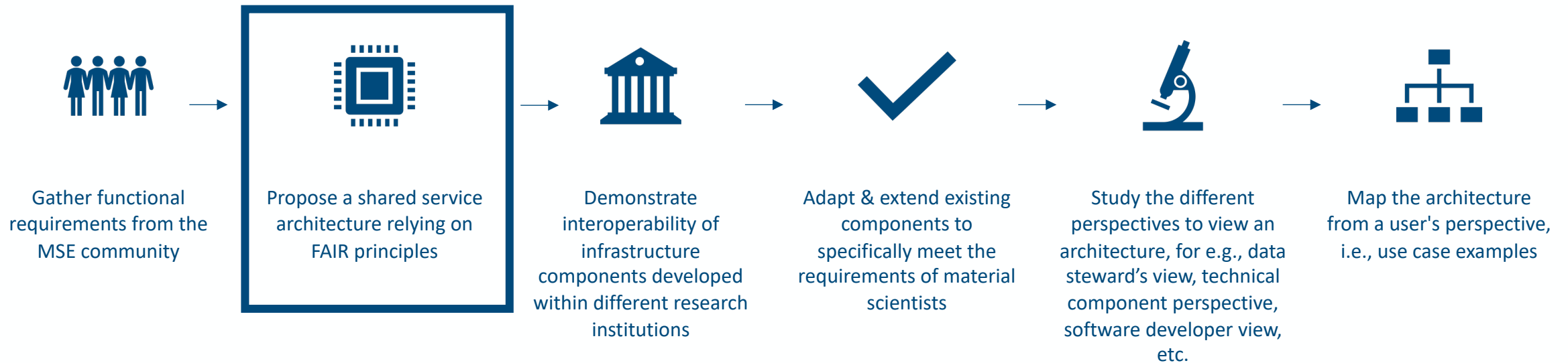
## Common Service Architecture for NFDI-MatWerk

Technical & Infrastructure Components  
Built for the MSE Community

MSE Congress

Darmstadt, Germany

24.09-26.09.24

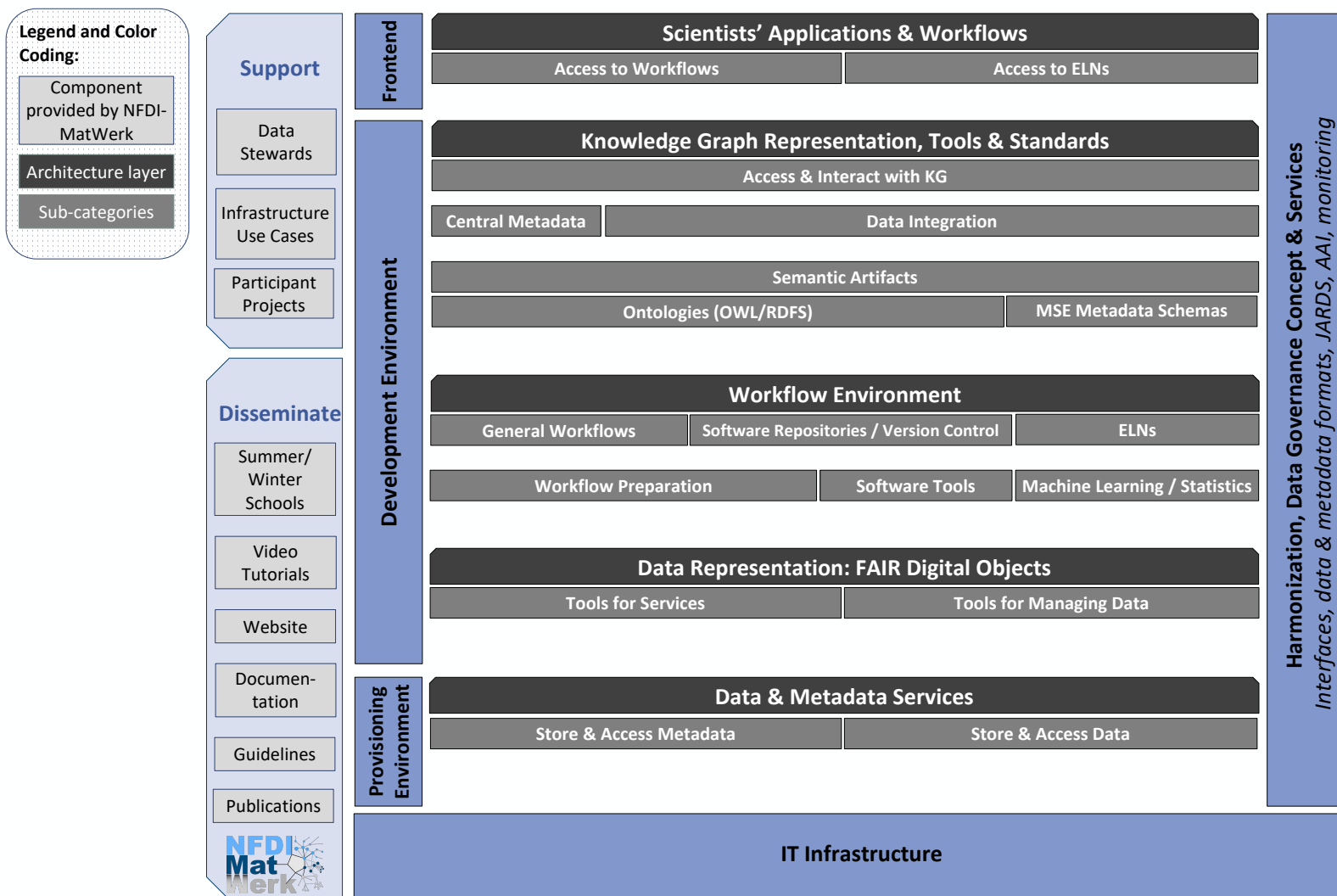


*Present a schematic overview of the NFDI-MatWerk architecture from a technical perspective*

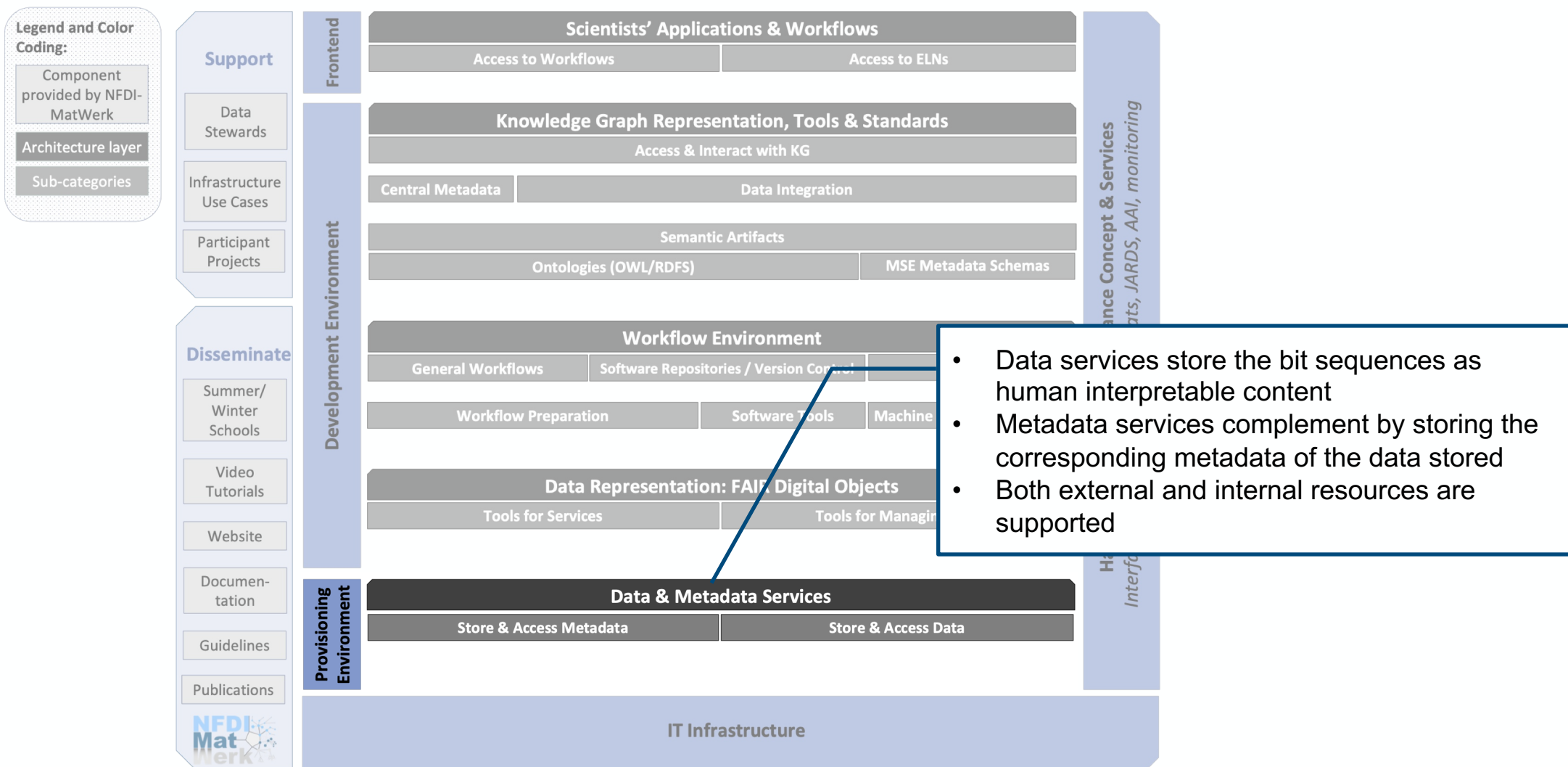
- FAIR Digital Objects:

- Unit of data, represented as a sequence of bits that binds all critical information about an entity in one place and creates a new kind of actionable, meaningful and technology-independent object
- Ability to connect different build systems to share data
- What is achieved by applying the FAIR DO concept?
  - Bridges between data repositories, disciplines, etc.
  - Applies all aspects of the FAIR principles
  - Technology agnostic

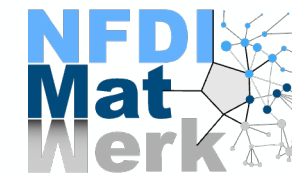
# NFDI-MatWerk Shared Service Architecture



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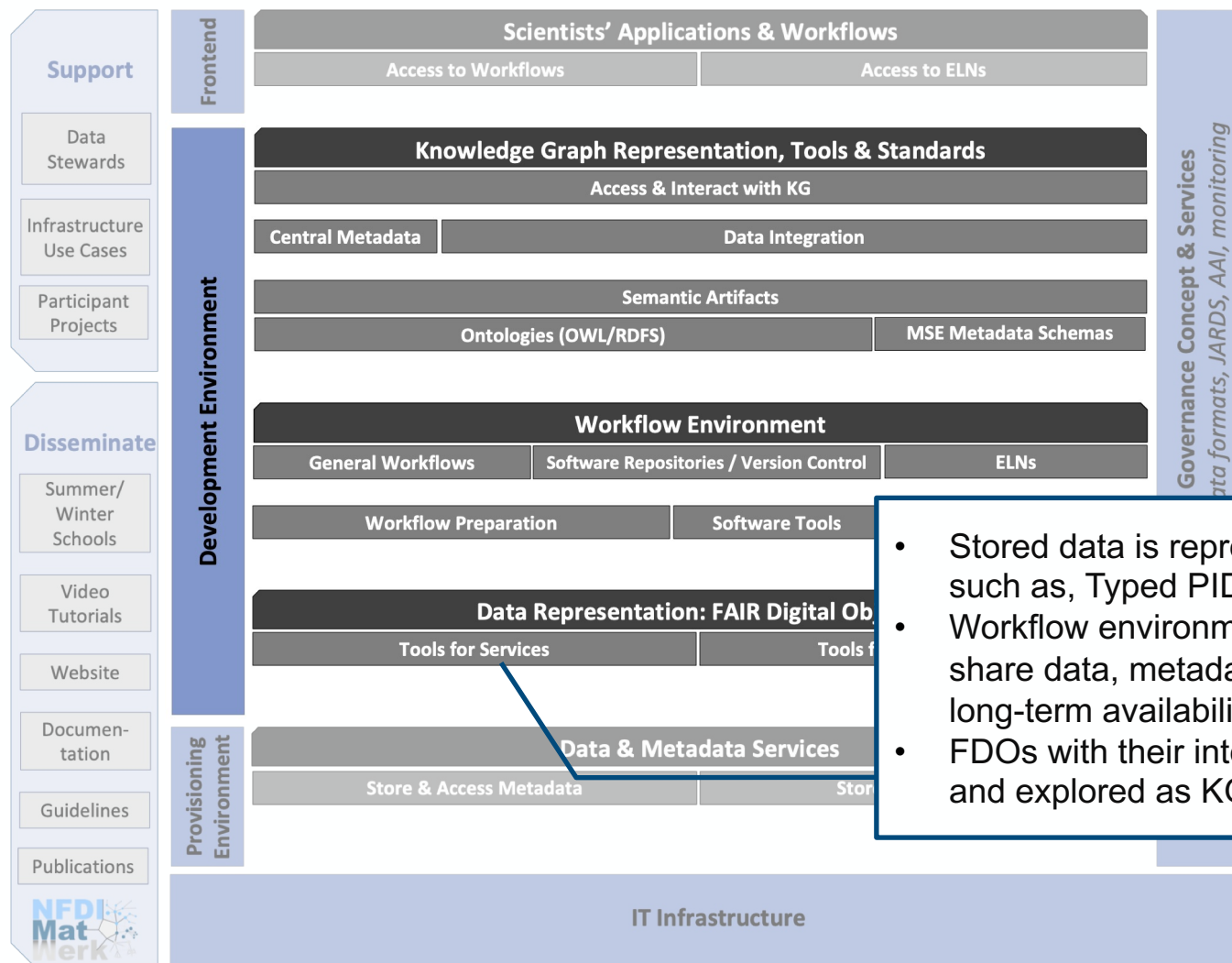


# NFDI-MatWerk Shared Service Architecture



**Legend and Color Coding:**

- Component provided by NFDI-MatWerk
- Architecture layer
- Sub-categories



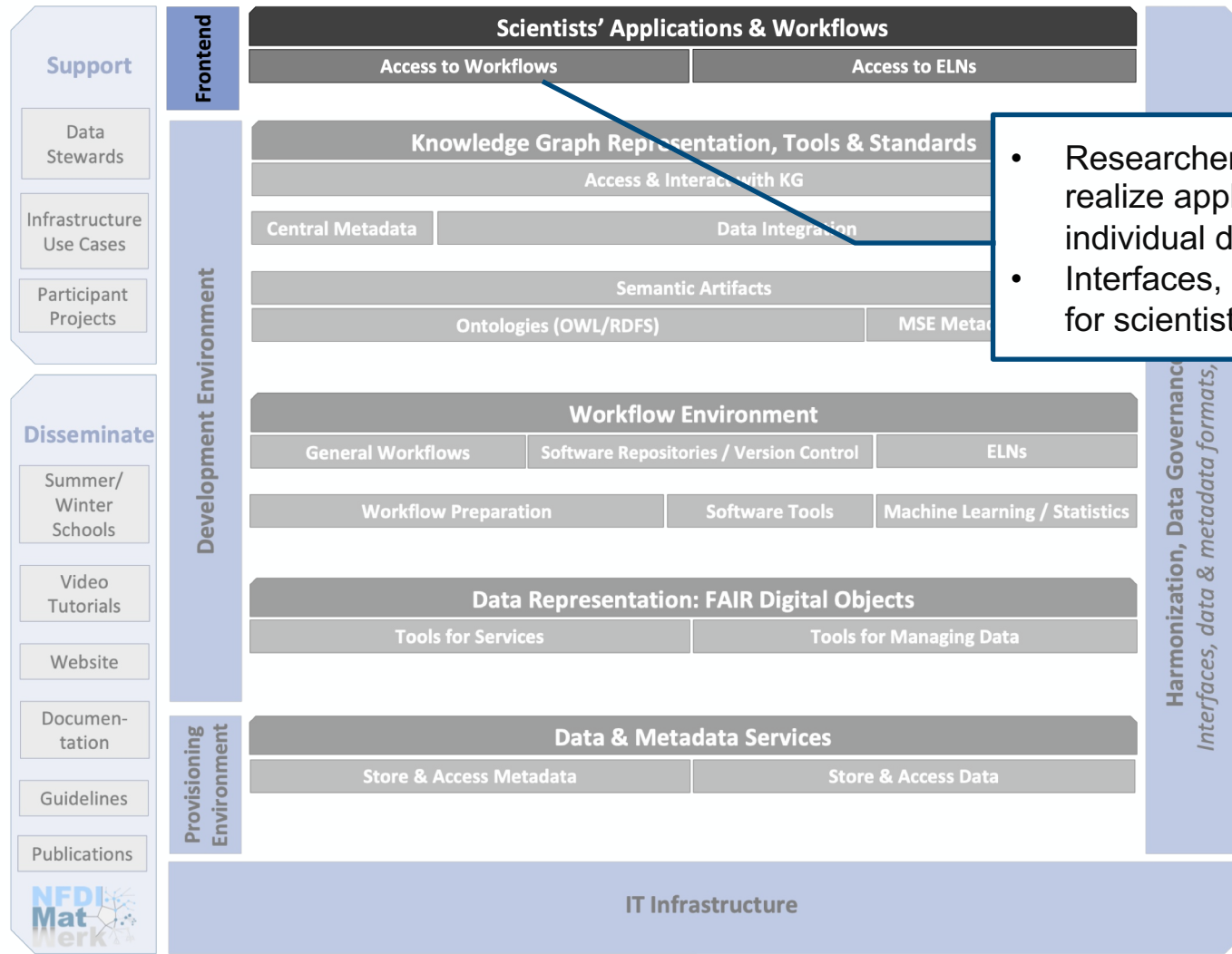
- Stored data is represented as FDO, using services such as, Typed PID Maker and FDO-scope
- Workflow environment supports software solutions to share data, metadata and workflows, ensuring their long-term availability
- FDOs with their interconnections can be represented and explored as KG

# NFDI-MatWerk Shared Service Architecture



**Legend and Color Coding:**

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- Researchers can build on the workflows to realize applications relevant for their individual discipline
- Interfaces, such as ELNs can be developed for scientists to interact with

Harmonization, Data Governance  
Interfaces, data & metadata formats,

**Support**

- Data Stewards
- Infrastructure Use Cases
- Participant Projects

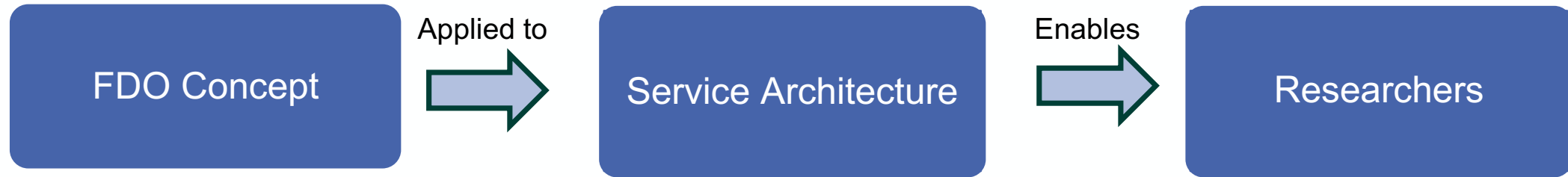
**Disseminate**

- Summer/ Winter Schools
- Video Tutorials
- Website
- Documentation
- Guidelines
- Publications

- For more information, please visit our website
- NFDI-MatWerk Solutions:
  - Data Lifecycle
  - Architecture
  - Tools Collection

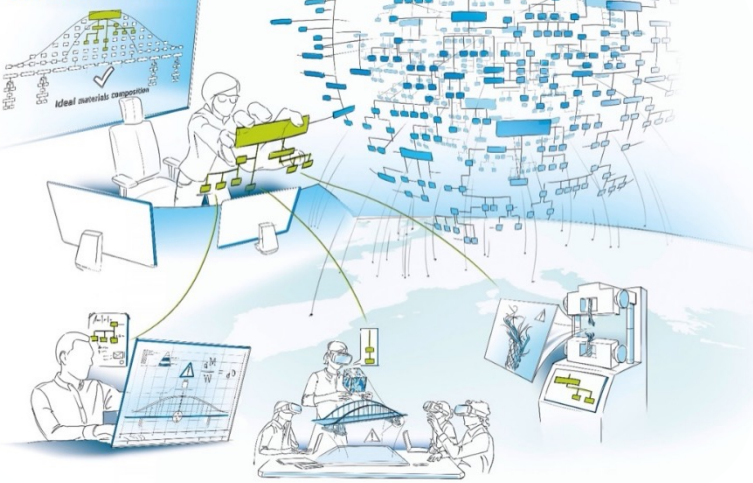






- Efficiently manage their data
- Adhere to a standard for handling their research data
- To adapt the proposed architecture for other NFDI communities
- Combine data from different resources through interoperability
- Use existing services without worrying about the technical details of the backend processes





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# Thank you for your attention!

Thanks to all collaborators!

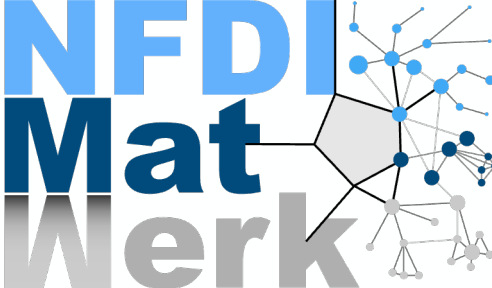
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# NFDI-MatWerk Shared Service Architecture

