# Parallel Working Sessions Day 2

Summary and Results

# Results

Working session 1 on Data Quality

► Aims for consortia

- clarification of whole data lifecycle

- comprehensive data quality management

- ideally development of formats and standards

- ideally data interoperability

► Challenges

- high data diversity and data origin differences (experimental data from sensors to historical text)

- development and acceptance of domain specific metadata

- user motivation to provide high quality data and metadata

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▶ **Data quality as enabler for FAIR principles**

- metadata are key to find and reuse data

- data quality is important for data integration

▶ **Solutions, suggestions, or best practice**

- consortia shall develop domain specific processes for data quality management

- consortia should establish common data formats and use international metadata standards

- prepare to adapt to dynamic changes of data quality strategies

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# Results

Working session on

Data Literacy and Training

► **Common aims**

- Create awareness for RDM and FAIR principles on all levels of education/ profession

- Foster cultural change towards data-driven research

- Support training on all levels (inclusion into curricula)

- Create guidelines and best practice to reach these aims

➤ **Missing aspects/ Challenges**

- No adequate funding scheme for suitable education in RDM

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► **Solutions, suggestions, or best practices**

- Discipline-specific concepts for training and education for each consortium, interconnecting with generic contents

- Start at bachelor level (mid-range high school education)

- Use NFDI strategically to strengthen development of data training programs at universities and infrastructure partners

  - E.g. summer schools, workshops, provision of curricular recommendations,

  - organising outreach to public society and politics

  - Link to corresponding European initiatives

  - **NFDI, as a startegic element, initiates dialogue between universities and scientific societies, infrastructure institutes**
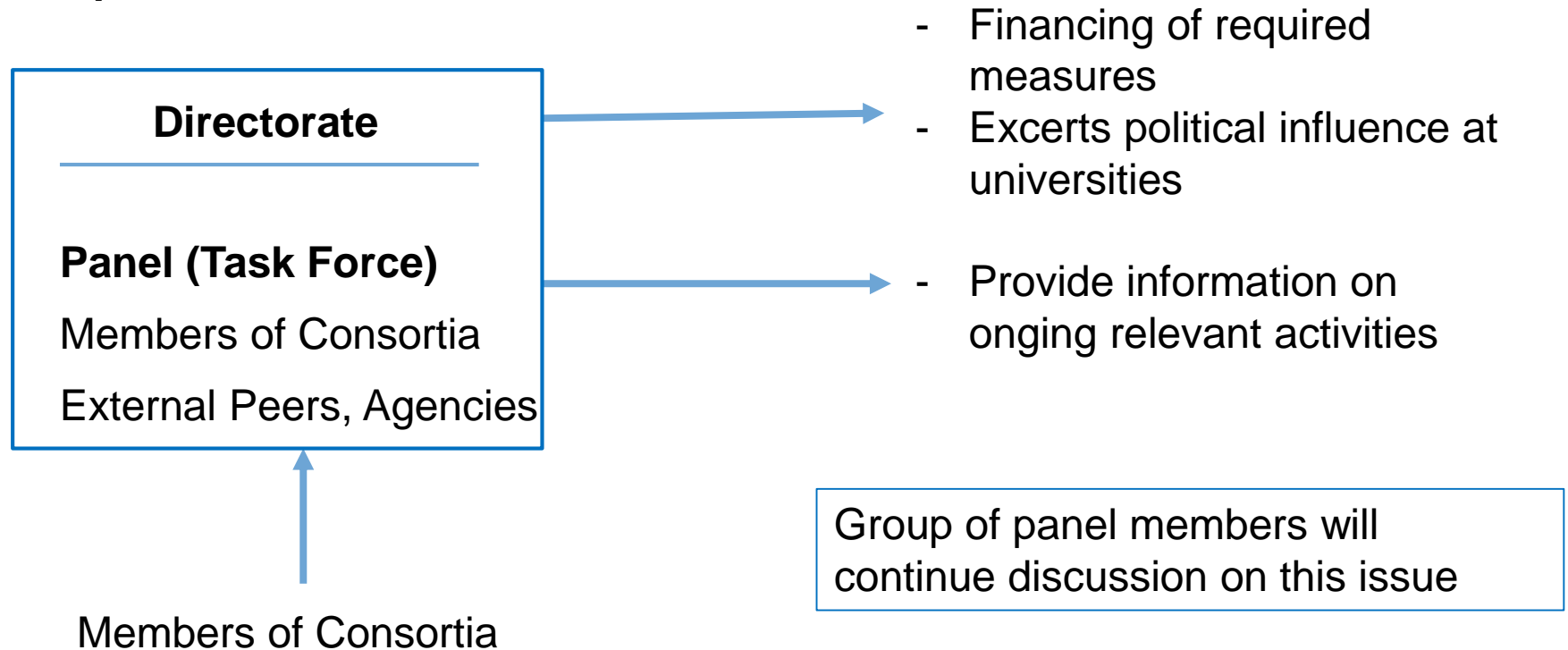
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► **Possible routes forward**

- Address data literacy in proposals for NFDI consortia

- Implementation into university curricula
  - Renew and revise curricula
  - Implementation into established curricula

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**Operational scheme**

| Directorate |
|---|
| **Panel (Task Force)** |
| Members of Consortia |
| External Peers, Agencies |

Members of Consortia

- Financing of required measures
- Excerts political influence at universities

- Provide information on onging relevant activities

Group of panel members will continue discussion on this issue

● Task Force Duties: Coordination and management of measures to improve education and training on RDM related issues on all levels

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# Results

Working session on

Software & Online Applications, Software Curation

▶ Challenges

- Information exchange and networking between consortia

- Managing re-use of software, interoperability, portfolio

- Monitoring and deploying standards and best practices with respect to scientific communities

- Career pathways (research software engineering as subject?)

▶ Missing aspects

- Software topic is not systematically integrated in NFDI

- Unclear funding options: every consortium on its own or cross-cutting consortium

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## Working session on Software
### Most important insights

► Next steps and possible routes forward

- Common understanding of software topics inside and between consortia (definition paper, questionnaire)

- Information on software in public addendum to proposals

- Benefit of open/public proposals?

- Special interest groups with members from all consortia as a dynamic way to discuss cross-cutting topics

- Cross-cutting topics have to be based on researcher's needs (bottom-up)

- International collaboration with e.g. software heritage institute

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# Results

Working sessions on Interoperability and Open Standards

▶ Challenges

- Heterogeneity, N x N problem (sytems and representations)

- Privacy, security

- Scalability in size and time

▶ Goals within a consortium

- (Open) standardization. Enforcement?

- Build community-driven software architectures

- Implement versioning, certification

- Ensure accessability, dependability

  maintanability and evolvability of software

- Data attribution, credits, provenance

▶ Goals for whole NFDI

- Agreement on metadata structures

- Reference software framework

- Test and monitor in application domains

- Key Performance Indicators

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► Actions within each consortium

- Coordinated data and software curation

- Work with knowledge graphs / ontologies / workflows

- Taxonomy of Standards

- Interconsortial and international interfaces

- Use cases !

► NFDI coordinated actions

- Working group on „Interoperability and Standards" / Architectures

- Connect to RDA, standardization bodies

- Unique data traceability, authorship, Persistent Identifiers (Registry, e.g. Wikidata)

- Implementation of a single sign-on scheme

- Legal, economical, ethical aspects

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# Results

Working session 5 on „Governance"

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► Synergies, common aims, interfaces

- Common framework of governance objectives

- As little governance as possible, as much as necessary

- Best possible interfaces for exchange between consortia and NFDI boards

► Solutions, suggestions, or best practices

- Cross-consortial layer for governance development

- DFG may moderate that exchange process

- Flexible use of funding

- First cohort should not dictate structures for the future

- Allow experiments for communication and sharing best practices across consortia

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► Missing aspects [e.g., related to communities, methods, infrastructures]

- Governance in consortia for diverse communities

- Various open questions (e.g. legal form of the NFDI as such)

- Clear guidelines for the call (e.g. interoperability)

► Challenges and possible routes forward

- Different size of consortia, various experience background and resources

- Prevent development of silos

- Development and practice of governance depends on disciplinary "culture"

- Flexible evolving governance models

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# Results

Working session 7 on Use of Existing Infrastructures

# Working session 7 on Use of Existing Infrastructures
## Most important insights

► Synergies, common aims, interfaces

- Acknowledgement that consertia explicitly reflect on existing infrastructures

- Broad concept of infrastructure (from technology to people, from software to training)

- Development of generic services (wherever it makes sense)


► Solutions, suggestions, or best practices for the problem of adjustments of generic services

- Letters of intent

- Map of services

- Consideration during review process

- Decision by directorate vs. Bottom-up solutions

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► Missing aspects [e.g., related to communities, methods, infrastructures]

- Sustainability (with respect to services and / or finances)

- Costs of services?

- Interplay with NHR

► Challenges and possible routes forward

- Trade-off between NFDI-wide standardisation and discipline specific user-orientation

- Certain heterogeneity will remain, also because of international structures

- Management of legal aspects (data protection, intellectual property etc)

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► Synergies, common aims, interfaces

- Data from healthy and non healthy humans

- Sensible data/ data protection

- Data workflows / data processes

- Very good structures in place

► Solutions, suggestions, or best practices

- Finding the best fitting type of consortia within the broad field of medical field by combining different Consortia

- Common data types along the life sciences (e.g. genomics, imaging)

- Used cases

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► Missing aspects [e.g., related to communities, methods, infrastructures]

- „personal identifier"

- Imaging data are very important for medical questions

- Diagnostics

► Challenges and possible routes forward

- Very heterogenous in data types, environment, disciplines, many users

- Matrix of sorting (horizontal: topics; vertical: methods/data type)

- Data protection regulation

- Further discussions will be helpful

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