Staff of ISCO’s present GO FAIR SO FAR

Moderator: Barend Mons (NL)
Co-chaired by: Klaus Tochtermann (DE), Patrick Garda (F)

GFISCO country meeting
October 26, 2018
This staff panel aims to answer the following questions:

- What is FAIR?
- What is GOFAIR?
- How does it relate to EOSC?
- What does it mean to ‘join’?
  - What can we do for you
  - What can you bring to GO FAIR
What is FAIR?
FAIR to IFDS

Lorentz Center

IFDS

<table>
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<tr>
<th>Birth</th>
<th>Infancy</th>
<th>Adolescence</th>
<th>Maturity</th>
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<td>2014</td>
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What is FAIR?

“The FAIR Guiding Principles for scientific data management and stewardship, Scientific Data (2016), https://www.nature.com/articles/sdata201618

“Data and services that are Findable, Accessible, Interoperable, Re-usable both for machines and for people.”
Common Patterns in Revolutionary Infrastructures and Data
Peter Wittenburg, Max Planck Computing and Data Facility, George Strawn, US National Academy of Sciences, February 2018
• Minimal standards
• Voluntary participation
• Critical mass
Lessons from the Internet for People:
1. Minimal standards only
2. Rough consensus/Running code
3. Don’t tell anyone else what to do
4. Critical mass of lead-players

Now, for the Internet for Machines
2005

2015

EOSC

FAIR

2018

10/26

2020

EOSC (boards + secretariat)

GOFAR
FAIR PRINCIPLES

Findable:
F1. (meta)data are assigned a globally unique and persistent identifier;
F2. data are described with rich metadata;
F3. metadata clearly and explicitly include the identifier of the data it describes;
F4. (meta)data are registered or indexed in a searchable resource;

Accessible:
A1. (meta)data are retrievable by their identifier using a standardized communications protocol;
   A1.1 the protocol is open, free, and universally implementable;
   A1.2 the protocol allows for an authentication and authorization procedure, where necessary;
A2. metadata are accessible, even when the data are no longer available;

Interoperable:
I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
I2. (meta)data use vocabularies that follow FAIR principles;
I3. (meta)data include qualified references to other (meta)data;

Reusable:
R1. (meta)data are richly described with a plurality of accurate and relevant attributes;
   R1.1. (meta)data are released with a clear and accessible data usage license;
   R1.2. (meta)data are associated with detailed provenance;
   R1.3. (meta)data meet domain-relevant community standards;

https://www.nature.com/articles/sdata201618
FAIR PRINCIPLES - METADATA

Findable:

F1. metadata are assigned a globally unique and persistent identifier;
F2. data are described with rich metadata;
F3. metadata clearly and explicitly include the identifier of the data it describes;
F4. metadata are registered or indexed in a searchable resource;

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https://www.nature.com/articles/sdata201618
FAIR PRINCIPLES – SUPPORT INFRASTRUCTURE

Findable:

F1. (meta)data are assigned a globally unique and persistent identifier;
F2. data are described with rich metadata;
F3. metadata clearly and explicitly include the identifier of the data it describes;
F4. (meta)data are registered or indexed in a searchable resource;

Accessible:

A1. (meta)data are retrievable by their identifier using a standardized communications protocol;
   \[ A1.1 \text{ the protocol is open, free, and universally implementable;} \]
   \[ A1.2 \text{ the protocol allows for an authentication and authorization procedure, where necessary;} \]
A2. metadata are accessible, even when the data are no longer available;

Interoperable:

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https://www.nature.com/articles/sdata201618
What FAIR is not ...

Cloudy, increasingly FAIR; revisiting the FAIR Data guiding principles for the European Open Science Cloud  DOI: 10.3233/ISU-170824

FAIR is not a standard, it’s a guiding principle

FAIR is not only ‘Semantic Web’

FAIR does not mean ‘Open’ or ‘Free’

*Data are often Open but not FAIR*

*Data could be non-Open yet perfectly FAIR*

*Many data can never be Open*

FAIR principles do not directly prescribe data quality, trustworthiness, ethics or responsibilities.
Measuring FAIRness

Community defined
Objective
Quantifiable
Reproducible
Automatic (scalable)
Certifiable
14 Core FAIR Metrics

**Findable:**

- F1 (meta)data are assigned a globally unique and persistent identifier;  
  - FM-F1A
- F2 data are described with rich metadata;  
  - FM-F2
- F3 metadata clearly and explicitly include the identifier of the data it describes;  
  - FM-F3
- F4 (meta)data are registered or indexed in a searchable resource;  
  - FM-F4

**Accessible:**

- A1 (meta)data are retrievable by their identifier using a standardized communications protocol;  
  - FM-A1
- A1.1 the protocol is open, free, and universally implementable;  
  - FM-A1.1
- A1.2 the protocol allows for an authentication and authorization procedure, where necessary;  
  - FM-A1.2
- A2 metadata are accessible, even when the data are no longer available;  
  - FM-A2

**Interoperable:**

- I1 (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.  
  - FM-I1
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  - FM-I2
- I3 (meta)data include qualified references to other (meta)data;  
  - FM-I3

**Reusable:**

- R1 (meta)data are richly described with a plurality of accurate and relevant attributes;  
  - FM-R1
- R1.1 (meta)data are released with a clear and accessible data usage license;  
  - FM-R1.1
- R1.2 (meta)data are associated with detailed provenance;  
  - FM-R1.2
- R1.3 (meta)data meet domain-relevant community standards;  
  - FM-R1.3

http://fairmetrics.org
https://github.com/FAIRMetrics/Metrics/blob/master/ALL.pdf
### PPB FAIR Score Result Summary

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<td>Before</td>
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<tr>
<td>Bioassay</td>
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<td>75</td>
</tr>
</tbody>
</table>
Freedom to operate

Level 4 - Community agreed semantics / FAIR search

Level 3 - Community agreed data & metadata content

Level 2 - Core metadata elements / access APIs

Level 1 - GUPID / common metadata format

Waist of the hourglass
What iGOFAIR?
GO FAIR supports bottom-up, achievable community practices for establishing the EOSC as part of the Global Internet of FAIR Data and Services (IFDS)

GO FAIR aims to kick-start the development of the EOSC through communities of excellence ‘Implementation Networks’ committed to collectively engage in the IFDS

Supported by three pillars - GO CHANGE (culture), GO TRAIN (data stewards) & GO BUILD (technologies or components)

Any country can join, coordinating national participation in networks and contribute GO FAIR expertise
First report of the Commission High Level Expert Group on the EOSC

Recommendations (2016):

➢ EOSC as a federated environment for scientific data sharing and re-use, based on existing and emerging elements in the Member States, with lightweight international guidance and governance and a large degree of freedom regarding practical implementation

2. Aim at the lightest possible, internationally effective governance.
3. Guidance only where guidance is due.
4. Define Rules of Engagement for formal participation in the EOSC.
5. Federate the Gems across Member States.
How does GO FAIR relate to EOSC?
NOT BUT EOSC

Asia, Australia, Africa

EUROPE + AC

North America, South America
...and to other major international players....?
What are Implementation Networks?
GO FAIR - Implementation Networks

• Open to all: e.g. individuals, institutions, infrastructures, projects with a common interest in RDM form a consortium: Implementation Network (IN)

• Defines and creates materials and tools as elements of the Internet of FAIR Data and Services (IFDS)

• Committed to FAIR principles

• Benefits from synergies between INs

• Engages in one of the three GO FAIR pillars
GO FAIR Pillars

GO FAIR International Support and Coordination Office
Added value for Implementation Networks

- Joint Implementation of FAIR Principles for research data, algorithms, processes, software etc.

- Cooperation ensures technical compatibility

- Further fragmentation will be prevented

- Opportunity to help shape the Internet of Fair Data and Services
6 active INs such as *Personal Health Train, GeRDI, Training Curricula*

17 preparatory INs such as *Vaccines IS, Chemistry, Metrology*

8 interested INs such as *Social Sciences and Humanities, FAIR Journalism*
What is the role of the International Support and Coordination Office?
Founding of the GO FAIR International Support and Coordination Office

In cooperation with national and regional GO FAIR offices
GO FAIR International Support and Coordination Office (GFISCO)

- GFISCO serves as a hub → broadening network
- GFISCO pillar coordinators ensure synergy between implementation networks
- GFISCO organizes workshops and collaborative meetings for knowledge exchange and knowledge transfer
- GFISCO offers expert advice regarding FAIRification
- Project outcomes and best practices gain visibility as they are promoted by the GFISCO
- **Contact point** for national GO FAIR offices
- GFISCO follows recommendations of EOSC High Level Expert Group → INs stay up-to-date
Joining GOFAIR
Implementation Network (IN) should:

- Have a defined goal/objective (building a service, deliver training, in the context of implementing FAIR).
- Comply with the Rules of Engagement, as part of the IN Manifesto.
- Have enough critical mass to be regarded as thought leaders in the field of expertise: Potential International Community Impact (PICI).
  - Anyone can join (open, global)
  - Everyone co-signs the manifesto
  - Membership is free and for as long as useful
Rules of Engagement

(to be signed by all participants of implementation networks)

To join a GO FAIR Implementation Network, each partner should:

Answer to the FAIR Data Principles: The GO FAIR implementation plan for the IFDS as a whole will answer to the FAIR Guiding Principles. This means that data resources, services, and training materials will be developed according to these principles and will be adorned with rich, machine-readable metadata, and that they will thus be Findable, Accessible, Interoperable, and Reusable under well-defined conditions, by machines and humans.

Abide by the Governance Principles: A GO FAIR partner should formally acknowledge and endorse the General Governance Principles of the GO FAIR Initiative.

Accept to be stakeholder-governed: The GO FAIR implementation approach for the IFDS is stakeholder-governed. A self-coordinating, board-governed organisation drawn from the stakeholder Implementation Network community creates trust that the organisation will take decisions driven by community consensus, considering different interests.

Accept non-discriminatory membership: When willing to sign the Rules of Engagement, any stakeholder may express an interest in and should be welcome to join GO FAIR.

Conduct transparent operations: Achieving trust in the selection of representatives in governance groups will be best achieved through transparent processes and operations in general (within the constraints of privacy laws).

Not abuse its trusted provider or GO FAIR status for undue lobbying for its own services, especially with the aim to monopolise critical components of the IFDS.

Motivation

Safeguarding The General Governance Principles
As the goal of GO FAIR is to jointly develop a **shared ecosystem**, **light governance**, **sustainability** and **community ownership** are key.

Rules of Engagement have been developed with the following premises:

- All data (and services) should have a PID and FAIR metadata
- Sustainability for IFDS as an common public good
- PPP’s can be a fruitful approach for sustainability
- Appropriate resources should be foreseen for IN operation
- Data should be as open as possible
- Data stewardship should be part and parcel of open science
COUNTRY PARTICIPATION IN GO FAIR

The country is expected to **acknowledge and support** the principles that form the basis for the GO FAIR initiative of **independent, yet coordinating implementation networks**

- **A country/region establishing an office should:**
  - Reach an overview of national research communities and e-infrastructures
  - Encourage/support the national community in getting organised
  - Stimulate/support participation in GO FAIR INs
  - Appoint a contact person for interaction with the GFISCO
Governance Structure
Composition of Boards and Committees

GO FAIR Steering Committee
- Propose members
- Nominate director and deputy
- Send representative
- Approve further members for executive board

Executive Board
- Chair
- Vice Chair
- Executive Board Members
  - Elect
  - Propose

Stakeholder Forum
- Send representative

International Support and Coordination Office

National Support Offices
- National Support Offices
- National Support Offices
- ...

[Diagram showing the flow of responsibilities and decision-making processes within the governance structure of GO FAIR]
Guidelines for GO FAIR involvement on a country level

The following guidelines describe the actions expected to have been implemented by interested member states (MS) or associated countries (AC) before joining the GO FAIR initiative:

1. The MS/AC is expected to acknowledge and support the principles that form the basis for the GO FAIR initiative of independent, yet coordinating implementation networks:
   - GO FAIR is a community-led and self-governed initiative.
   - GO FAIR is a bottom-up initiative.
   - An open and inclusive ecosystem of GO FAIR implementation networks will evolve, as the number of scientific institutions committing to the principles of GO FAIR increases.

2. In order to ensure a smooth and swift involvement of the interested communities in the respective MS/AC, the following steps should be taken on the national level:
   - Reaching an overview of which research communities and e-infrastructures in the respective country would want to participate in the GO FAIR initiative.
   - Encouraging the community in getting organised, in preparing them for connection to the GO FAIR initiative. This means to engage all relevant parties such as research communities, e-infrastructures, Research Funding Organizations (RFO’s), Research Performing Organizations (RPO’s) and the ministerial level as a facilitator. This will facilitate coordinating the interactions with the GO FAIR initiative.
   - Encouraging and stimulating this group of interested parties in the respective MS/AC to discuss and explore how the different communities could grow into a “GO FAIR implementation network” (i.e. practically implementing one part of the Internet of FAIR data and services, for example setting standards, developing templates, FAIRifying data for one scientific domain).
   - Appointing a contact person for interaction with the ISCO that provides information on the previously described process to the ISCO. Ideally, the contact person will team up with a national support office in the medium term.

MS/AC that have the intention to implement these guidelines are invited to contact the ISCO, which can support them in the process to join. In due time, MS/AC who have taken the steps set out above can send to the ISCO a letter expressing their intent to join the GO FAIR initiative and providing the information required to assess the implementation of the guidelines. On this basis, the Steering Committee of the GO FAIR initiative will decide if the MS/AC can join and is offered to nominate members to the Steering Committee.
How can GO FAIR Help you?
WAYS GFISCO OPERATES

- Dedicated staff to support and coordinate implementation networks
- (limited) funds for strategic and collaborative meetings
- Office space for temporary collaborations/BYOD’s/hackathons
- Speaking with one voice (within and amongst IN > get coordinated funding)
- Collect, expose best practices and tooling and show to the community (and newcomers) what is already there and works well *(according to INs, no formal certification)*
EXAMPLES OF ORGANIZATIONS IN THE PROCESS OF GOING FAIR

Many organizations (20+) have participated in FAIR BYODs and trainings

Several academic institutions and funders have started or are considering GO FAIR Readiness programs

Several companies have started or are considering the GO FAIR Readiness program
What can you bring to

we look forward to your Flash Presentations this afternoon....
Welcome!

Austria Belgium Brazil China Czech Republic Denmark Finland Greece Hungary Italy Ireland Kenya Norway Portugal Slovenia Spain Sweden Switzerland UK USA Zimbabwe