From FAIR4S to terms4FAIRskills—describing competences for FAIR RDM and making training more FAIR

Angus Whyte
GO-TRAIN Workshop
ZBW – Leibniz Information Centre for Economics in Hamburg
25 November 2019
Outline

- FAIR4S skills and capability framework 
  profiles of data stewardship skills and roles
- Data Steward + researchers at different 
  career levels, other roles
- Terms4FAIRskills competence terminology – 
  lingua franca drawing across frameworks
- Use Cases - FAIRsFAIR and Elixir
FAIRSFAIR IN ACTION

- **Improve interoperability of FAIR resources**
- **Increase production and use of FAIR data**
- **Build a network of trusted digital repositories**
- **Set up a FAIR competence centre for all communities**
- **Develop a capability maturity model towards FAIR certification**
- **Embed FAIR data education in university programmes**
- **Organise an open call for repositories to get support for certification**
FAIRSFAIR IN ACTION

- Improve interoperability of FAIR resources
- Build a network of trusted digital repositories
- Develop a capability maturity model towards FAIR certification
- Organize an open call for repositories to get support for certification
- Increase production and use of FAIR data
- Set up a FAIR competence centre for all communities
- Embed FAIR data education in university programmes
Back to one year ago

- EOSCpilot developed FAIR4S competence framework
- Stewardship Skills for Science, Scholarship
- “Skills to make data FAIR, keep it FAIR”
- Synthesising frameworks for data science, open science, data management, data literacy
1. RDA Education & Training in Data Handling IG
Competences for researchers, RI managers and research librarians.

2. EDISON competence groups for Data Management (DM) DS Engineering (DSENG) DS Analytics (DSDA) Domain Science/ Research Methods (DSRM)


4. Competency Matrix for Data Management Skills (Sapp Nelson)
Graduate level individual competences, and team/organisation levels.

5. DCC RISE – high-level capabilities for research data services
Evolution of FAIR4S - 7 main influences

1. RDA Education & Training in Data Handling IG
   Competences for researchers, RI managers and research librarians.

2. EDISON competence groups for Data Management (DM) DS Engineering (DSENG) DS Analytics (DSDA) Domain Science/ Research Methods (DSRM)


4. Competency Matrix for Data Management Skills (Sapp Nelson)
   Graduate level individual competences, and team/organisation levels.

5. DCC RISE – high-level capabilities for research data services

6. Open Science Careers Assessment Matrix (OSPP Rewards WG)
   Skills that researchers may expect to get recognition for using
Evolution of FAIR4S - 7 main influences

1. RDA Education & Training in Data Handling IG
   Competences for researchers, RI managers and research librarians.

2. EDISON competence groups for Data Management (DM) DS Engineering (DSENG) DS Analytics (DSDA) Domain Science/ Research Methods (DSRM)


4. Competency Matrix for Data Management Skills (Sapp Nelson)
   Graduate level individual competences, and team/organisation levels.

5. DCC RISE – high-level capabilities for research data services

6. Open Science Careers Assessment Matrix (OSPP Rewards WG)
   Skills that researchers may expect to get recognition for using

7. Towards FAIR Data Steward as profession for the Lifesciences (DTL/ELIXIR) Data steward profiles
Data Stewardship - Shared Responsibility
“skills to make data FAIR and keep it FAIR”

- + other advisory and service roles
- overlaps vary according to context
- organisation and domain
Competences

- Stewardship skills to deliver FAIR data from projects
- And organisational capabilities for sustaining FAIR data across projects
- 59 competences in 9 groups
FAIR4S relates 10 ‘key skills’ to roles, including researchers

<table>
<thead>
<tr>
<th>Group</th>
<th>Competence topics – each comprising skill, knowledge, attitude</th>
<th>First stage researcher</th>
<th>Recognized researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan and Design</td>
<td><strong>Plan for the stewardship and sharing of FAIR outputs</strong></td>
<td></td>
<td>✮</td>
</tr>
<tr>
<td>Capture and Process</td>
<td><strong>Reuse data from existing sources</strong></td>
<td></td>
<td>✮</td>
</tr>
<tr>
<td>Integrate and Analyse</td>
<td><strong>Use or develop open research tools or services</strong></td>
<td></td>
<td>✮</td>
</tr>
<tr>
<td>Appraise and Preserve</td>
<td><strong>Prepare and document data/code to make research outputs FAIR</strong></td>
<td></td>
<td>✮</td>
</tr>
<tr>
<td>Publish and Release</td>
<td><strong>Publish FAIR outputs on recommended repositories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expose and Discover</td>
<td><strong>Recognise, cite and acknowledge contributions</strong></td>
<td>✮</td>
<td>✮</td>
</tr>
<tr>
<td>Govern and Assess</td>
<td><strong>Apply policies to comply legal requirements, ethical, FAIR principles</strong></td>
<td></td>
<td>✮</td>
</tr>
<tr>
<td>Govern and Assess</td>
<td><strong>Develop open research strategy and vision</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scope and Resource</td>
<td><strong>Secure funding for open science and support services</strong></td>
<td></td>
<td>✮</td>
</tr>
<tr>
<td>Advise and Enable</td>
<td><strong>Lead good practice by example</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Skills profile
template for organisations to define and link relevant competences and capabilities

- Knowledge, skills, aptitudes
- 3 levels of expertise
- What counts as success
- Roles applying the skill
- Organisational capabilities that would amplify it
- Related EOSC service types

<table>
<thead>
<tr>
<th>Competence topics – each comprising skill, knowledge, attitude</th>
<th>R1</th>
<th>R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan for the stewardship and sharing of FAIR outputs</td>
<td>★</td>
<td></td>
</tr>
<tr>
<td>Reuse data from existing sources</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>Use or develop open research tools or services</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>Prepare and document data/code to make research outputs FAIR</td>
<td>★</td>
<td>★</td>
</tr>
</tbody>
</table>

See ‘Time for open science skills to count”
Role profile

template for organisations to define and link relevant support roles

- Narrative about key skills for the role
- Level of expertise
- Related roles should that offer expert support
- Where can role holder learn about each skill

See ‘Time for open science skills to count”
Role profiles: e.g. Data Steward

- Proposed boilerplate text for organisations to adapt.
- Links to online learning resources
- See ‘EOSCpilot D7.5 Strategy for sustainable development of skills and capabilities’

https://eoscpilot.eu/content/d75-strategy-sustainable-development-skills-and-capabilities
Back to the future

- New FAIRsFAIR competence framework for both professional development and university curricula
- Competence centre: learning resources on FAIR skills
- terms4FAIRskills: Activities, K/S/A terms & definitions
Minimal ingredients?

- The dictionary - terms for activities and K/S/A definitions in principle should we try to keep this relatively stable?
- Skill and role profiles: can we adapt for the organisation and domain
  - the narrative describing FAIR activities?
  - the success indicators?
  - relationships between data steward role and others?
terms4FAIRskills?

Organisational structure:

**Coordination Group** - provides oversight, governance, strategy and ensures progress. Provides an editorial function to ensure consistency in all terminology drafts that are made public.

**Annotation groups** - contributors to the terms and definitions created across the terminology, usually working on a specific section of the terminology, as well as providing annotation and comments on all content.

**Workshop organising committee(s)** - local workshop organisers (in collaboration with the coordination group)

---

**Coordination Group**

Celia van Gelder (DTL/ELIXIR-NL, NL)
Simon Hodson (CODATA, FR)
Mateusz Kuzak (DTL/ELIXIR-NL, NL)
Yann Le Franc (e-Science Data Factory, FR)
Peter McQuilton (FAIRsharing/Oxford, UK)
Susanna-Assunta Sansone (FAIRsharing/Oxford, UK)
Hugh Shanahan (Royal Holloway, UK)
Angus Whyte (DCC, UK)
Kevin Ashley (DCC, UK)
Laura Molloy (CODATA, FR)

---

**Annotation groups**

**Capture and Process**
Frans Huigen
Laura Molloy
Lennart Stoy

**Integrate and Analyse**
Melanie Imming
Hugh Shanahan
Angus Whyte

**Appraise and Preserve**
Victoria Dominguez Del Angel
Kristina Hettne
Yann Le Franc

**Advisе and Enable**
Allyson Lister
Peter McQuilton
Philippe Rocca-Serra
Susanna-Assunta Sansone

---

**Expose and Discover**
Nancy Hoebelheinrich
Frans Huigen
Peter McQuilton
Laura Molloy
Hugh Shanahan
Sarah Stewart

**Govern and Assess**
Celia van Gelder
Mateusz Kuzak
Yan Wang
Angus Whyte

**Plan and Design; Publish and Release**
Celia van Gelder
Mateusz Kuzak
Yan Wang

**Scope and Resource**
Victoria Dominguez Del Angel
Kristina Hettne
Simon Hodson
The terms4FAIRskills initiative

Scope is to building a terminology for the competencies, skills and knowledge necessary to make data FAIR and to keep it FAIR

Main uses of the terminology include:

- **Discovery**: facilitate the annotation, search and evaluation of FAIR-enabling materials (e.g. training) and resources
- **Design**: assist the creation and assessment of stewardship curricula
- **Training**: help trainers who teach FAIR data skills, researchers who wish to identify skill gaps in their teams
- **Formalisation**: enable the definition of job descriptions and CVs with recognised, structured competencies
Organizations represented in terms4FAIRskills
Working on the terminology

- **Focus on usability and applications**
  - Reused FAIR4S as starting point of the concepts
  - Collected use cases: for is this for and for whom
  - Defined some competency questions: questions this terminology will help user to answer
  - Discussed structure: the richness and type of terminology (e.g. taxonomy or ontology) will be informed by the points above

- **Phase one: create the working structure and list of relevant terms**
  - Defined every term using a standalone, context-independent description and add provenance and editor details
  - Added synonyms and terms from other terminologies
  - Defined levels of hierarchy and necessary relationships
  - Created an OWL file and continue work via WebProtege to ease the collaborative editing
  - Currently over 255 terms, details: [https://github.com/terms4fairskills/FAIRterminology](https://github.com/terms4fairskills/FAIRterminology)

- **Unfunded, high-collaborative work**
  - Started in Jan 2019 at GO-FAIR event, in the GO-TRAIN Implementation Network
  - Currently discussing about next steps and funding opportunities
terms4FAIRskills - potential use cases

- **FAIR competence centre (FAIRsFAIR WP6)**
  - Annotation of training materials

- **ELIXIR**
  - Annotation of training materials in TeSS is a potential use case (which can then be fed to FAIRsharing and other resources)
  - Creation of learning paths for FAIR skills training
  - EOSC-Life FAIRassist tool (from the FAIRsharing team)
terms4FAIRskills and EOSC

- Fills a niche and complements other activities
  - Complements other metadata annotation schemas, incl schema.org, bioschemas (more generic tags for training material), and IEEE LOM
  - Not a new catalogue

- The value proposition
  - Route towards ‘interoperability' of training resources
  - Find content relevant to FAIR data stewardship across a variety of different systems
  - Levels the playing field if RIs and other institutions can benefit by (re)using those materials
Thank you

FAIR4S co-authors: Angus Whyte, Ellen Leenarts, Jerry de Vries, Frans Huigen, Eileen Kuehn, Gergely Sipos, Vasso Kalaitzi, Elly Dijk, Sarah Jones, Kevin Ashley

a.whyte@ed.ac.uk

FAIRsFAIR_EU
In/fairsfair
info@fairsfair.eu