FAIRSFAIR
Fostering Fair Data Practices in Europe

How to get FAIR into university curricula and teaching – A handbook to support higher education institutions

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26 November 2021, FAIRsFAIR National Roadshow in Portugal

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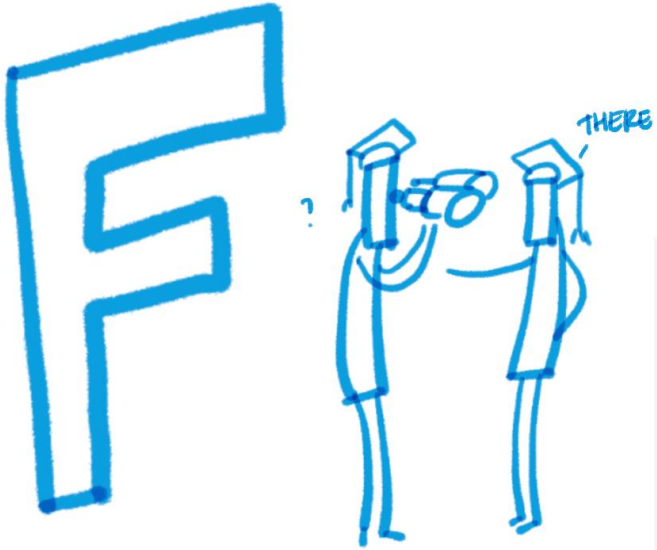
FAIRsFAIR "Fostering FAIR Data Practices in Europe" has received funding from the European Union's Horizon 2020 project call H2020-INFRAEOSC-2018-2020 Grant agreement 831558

Sumário

- Atividades do FAIRsFAIR para apoiar as universidades
- Visão global do FAIR Competence Adoption Handbook
- Conteúdos do Handbook
  - Skills and competences
  - Teaching and training designs
  - Lesson Plans
  - Implementing FAIR at the institutional level

Ações desenvolvidas pelo FAIRsFAIR para apoiar a integração da gestão de dados FAIR nos currículos e formação

- Mapear a integração dos princípios FAIR nos currículos universitários e no ensino e analisar o **panorama da formação sobre dados FAIR** na Europa
- Elaborar um **quadro de competências de dados FAIR** para o ensino superior e profissionais para apoiar o desenvolvimento de uma cultura de dados FAIR e a adoção dos princípios FAIR
- Transpor o quadro de competências para **modelos de currículos e cursos universitários**
- Apoiar a **incorporação da formação sobre dados FAIR nos programas universitários e de doutoramento** através de uma série de workshops e atividades de partilha de conhecimentos



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Progresso e resultados do WP7

FAIR Data Science Curricula & professionalisation

D7.1

Survey

FAIR in European higher education

https://doi.org/10.5281/zenodo.5361815

D7.2

Briefing

FAIR competences and synergies

https://doi.org/10.5281/zenodo.5361913

D7.3

Competence framework

FAIR competence framework for higher education

https://doi.org/10.5281/zenodo.5361917

D7.4

Adoption handbook

FAIR competences adoption handbook for universities (Dec 2021)

D7.5

Good practices

Good practices in FAIR competence training (Dec 2021)

How to be FAIR with your research data – A teaching and training handbook for HEIs

- **Objetivo:**
  Fornecer orientação e apoio prático para a integração dos princípios FAIR e conteúdos relacionados nos currículos e no ensino

- A ser publicado em meados de dezembro 2021
- DOI: https://doi.org/10.5281/zenodo.5665493

Produção colaborativa do Handbook

- Seis sessões (3h/sessão)de book sprint em junho 2021
- 35 participantes de 16 países
- Especialistas de diferentes áreas disciplinares
- A maioria afiliada a universidades, mas também a infra-estruturas de investigação e agências nacionais
- Processo editorial subsequente conduzido pela Equipa Editorial
- Consulta Pública em Agosto e Setembro 2021
- Workshop para apresentação da versão preliminar em outubro 2021 (https://tinyurl.com/543vf4hu)

Image from OpenStreetMap

Público-alvo do Handbook

Membros das Instituições de Ensino Superior que

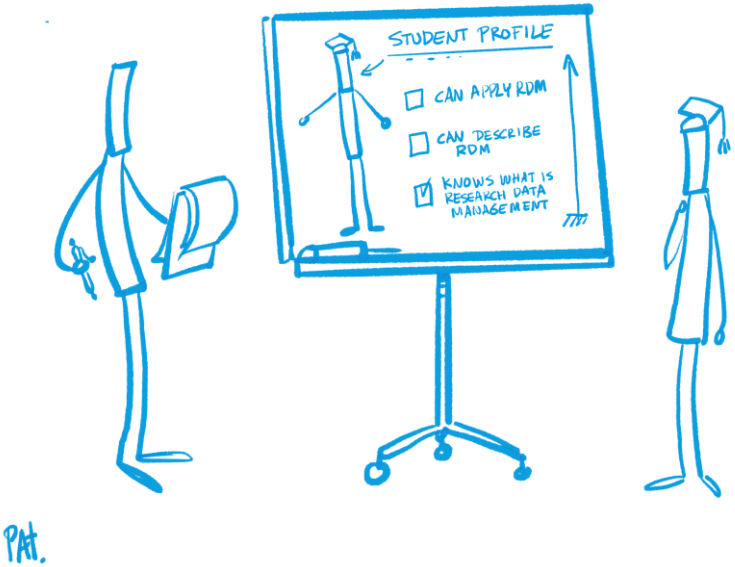
- Criam e lecionam aulas e cursos,
  ex. professores, formadores
- Concebem, adaptam e implementam currículos,
  ex. Coordenadores de programas doutorais, diretores de escola
- Conduzem formação e apoio a estudantes de doutoramento e investigadores em início de carreira,
  ex. equipas de suporte, formadores
- Implementam os princípios FAIR nas estratégias institucionais, políticas, fluxos de trabalho administrativos, etc.
  ex. vice reitores/presidentes, gabinetes de investigação

Conteúdos – visão geral

- 1 Motivation
- 2 About this book
- 3 FAIR Skills and Competences
- 4 Teaching and training designs for FAIR
- 5 FAIR lesson plans
- 6 Implementing FAIR

Capítulo 3: FAIR Skills and Competences

- Perfis de Competências FAIR (licenciatura, mestrado e doutoramento)
- Objetivos de aprendizagem (licenciatura, mestrado e doutoramento)
- Baseados no "FAIR Competence Framework for Higher Education“ (DOI: 10.5281/zenodo.5361917) & experiência e conhecimento dos autores



Competence Profiles

Table 2: Competence profiles for the bachelor, master and doctoral level

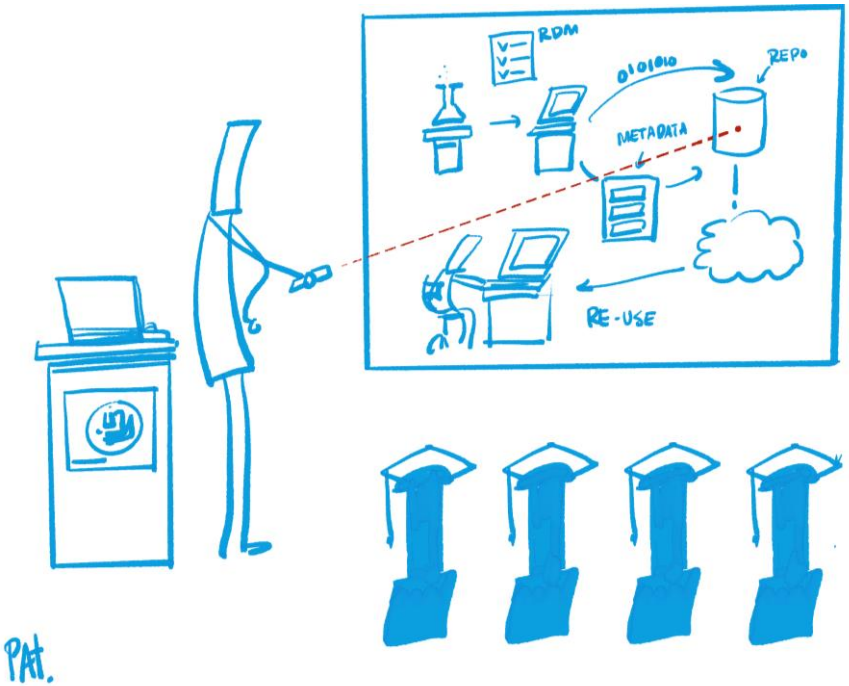
Topic	**Bachelor** (required level)	**Master** (required level)	**PhD** (required level)	**Entry-level content?**
General principles and concepts in data management – overview	basic	intermediate	advanced	yes
Overview of data types, data type registries and data formats	basic	basic	intermediate	yes
Metadata, metadata formats, standards and registries	basic	intermediate	advanced	yes
Open Research, Open Access, Open Data	basic	intermediate	advanced	yes
Metadata management, registries and publication	basic	basic	intermediate	no
Persistent Identifiers (PID), Open Researcher and Contributor ID (ORCID), Research Organization Registry (ROR)	basic	basic	intermediate	yes
FAIR (Findable, Accessible, Interoperable, Reusable) principles in	basic	basic	intermediate	yes

Table 5: Entry-level content including learning outcomes – doctoral level

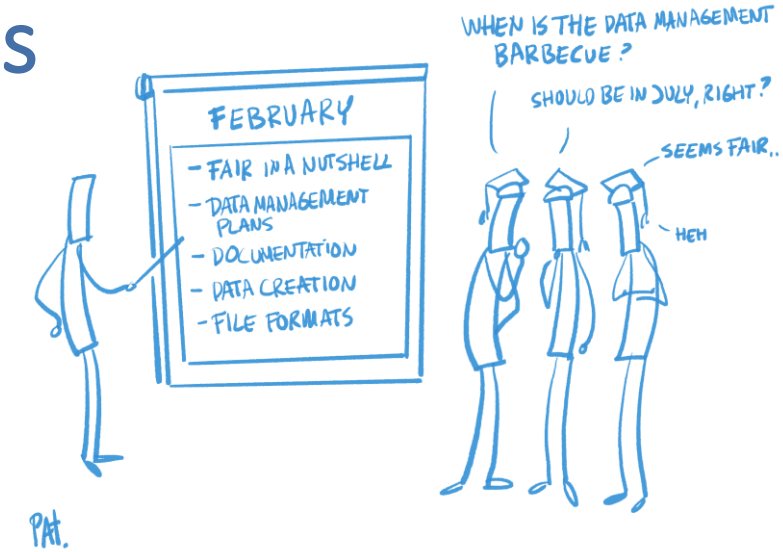
Topic	**Required level**	**Learning outcomes** [b]=basic, [i]=intermediate, [a]=advanced]
General principles and concepts in data management – overview	advanced	- [b] Can define Research Data Management (RDM) and can describe its relevance and benefits. - [i] Can describe RDM measures to be taken (including explaining why) at different stages of the research process. - [a] Can practically apply theoretical knowledge about proper RDM measures to be taken at different stages to their own research process/project.
Overview of data types, data type registries and data formats	inter-mediate	- [b] Can describe what types of data exist (Knowledge). - [b] Can explain what data type registries are (Knowledge). - [b] Can identify data formats (Knowledge). - [i] Can determine proper data types for a resource (Analyse). - [i] Can use a data type registry (Apply). - [i] Can use proper data formats to express resources (Apply).
Metadata, metadata formats, standards and registries	advanced	- [b] Can describe types of metadata. - [b] Can recognise metadata formats.

Capítulo 4: Teaching and training designs

- Fases da conceção de cursos
  - Selecionar/Identificar os Objetivos de Aprendizagem
  - Selecionar/Desenvolver Experiências de Aprendizagem
  - Selecionar conteúdos
  - Identificar/desenvolver avaliações
  - Avaliar a eficácia do curso



Capítulo 5: Lesson Plans



- FAIR in a nutshell
- DMPs
- Documentation
- Data Creation
- File Formats
- Data Standardisation and Ontologies
- PIDs
- Licences, Copyright, IPR
- Data reuse
- Repositories
- Sensitive data & ethical aspects
- Data Access
- FAIR Software/citable code
- RDM – overview & best practices
- Data Management and Governance in Industry and Research

Capítulo 5: Lesson Plans

Exemplo

Topic 15: Research Data Management: Overview and Best Practices

Audience/Target learners group:
This lesson is intended to deliver a concise overview of the Research Data Management (RDM) principles and practices for master students or professional audiences of vocational education and training.

Learning outcomes:

1) Understanding RDM process and main use cases
2) Understanding Open Research and Open Data (Definition, Standards, Open Data use and reuse, open government data, European policies and initiatives)
3) Understanding FAIR principles in Research Data Management, maturity model and compliance
4) Working with sensitive, personal or private data (General Data Protection Regulation [GDPR] and its requirements, Ethics approval process and form)
5) Understand what a Data Management Plan is, its purpose and benefits for a project or organisation
6) Know tools, guides, templates to support RDM, metadata management, DMP creation
7) Apply the acquired knowledge in practice, namely be able to create a DMP, create and publish data and metadata
8) Understand the key roles in RDM: Data Steward, Chief Data Officer, Data Protection Officer and other employees of the institution who can support the creation of DMP;

Delivery format:
This lesson can be delivered in form of tutorial, webinar or self-paced self-study course
Required time: 2 sessions of lecture (1.5 hrs) and 1 session practice (approx 1.5 hrs)

Prerequisites:
Basic knowledge of computer software and applications
Understanding of organisational and/or research process and data used or produced

Lesson topics (Summary of Tasks / Actions):

A. Use cases for research data management and stewardship
   - Preserving the Scientific Record
B. Data Management elements (organisational and individual)
   - Goals and motivation for managing your data
   - Data formats, Metadata, related standards
   - Creating documentation and metadata, metadata for discovery
   - Using data portals and metadata registries
   - Tracking Data Usage, data provenance, linked data

Practice:
Hands on practice including the following topics:

a) Data Management Plan design, templates and tools
b) Metadata and tools, metadata registries
c) Selection of licences for open data and contents (e.g. Creative Common, and Open Database)

Materials / Equipment

1) Collection of DMP templates
2) Example metadata for research data and publications
3) Collection of links to RDM tools, metadata registries,

References

- General Data Protection regulation - https://gdpr-info.eu/
- LIcense selector - https://ufal.github.io/public-license-selector/
- DMP Online - https://dmponline.dcc.ac.uk/
- DMP Templates - https://guides.lib.umich.edu/c.php?g=283277&p=2138498
- Towards FAIR principles for research software - https://content.iospress.com/articles/data-science/ds190026

Capítulo 6: Implementing FAIR

- Getting to FAIR institutional policies
- Data Management Planning
- Data processing and documentation
- Support Infrastructure
- Data Publication
- Data reuse

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Obrigado!

Questões?

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