

**Project Title** Fostering FAIR Data Practices in Europe

Project Acronym **FAIRSFAIR** 

**Grant Agreement No** 831558

H2020-INFRAEOSC-2018-4 Instrument

**Topic** INFRAEOSC-05-2018-2019 Support to the EOSC Governance

Start Date of Project 1st March 2019

Duration of Project 36 months

**Project Website** www.fairsfair.eu

# D7.4 How to be FAIR with your Data

A teaching and training handbook for higher education institutions

Work Package WP7

Lead Author

(Org)

Claudia Engelhardt (University of Göttingen)

(Sciences Po Paris), Yuri Demchenko (University of Amsterdam), Stephen Downes (National Research Council Canada), Christopher Erdmann (American Geophysical Union), Federica Garbuglia (European University Association), Kerstin Germer (Humboldt-Universität zu Berlin), Kerstin Helbig (Humboldt-Universität zu Berlin), Margareta Hellström (Lund University and ICOS Carbon Portal), Kristina Hettne (Leiden University Libraries), Dawn Hibbert (University of Northampton), Mijke Jetten (Dutch Techcentre for Life Sciences and Health-RI), Yulia Karimova (Institute for Systems and Computer Engineering, Technology and Science), Karsten Kryger Hansen (Aalborg University), Mari Elisa Kuusniemi (University of Helsinki), Viviana Letizia (Elsevier), Valerie McCutcheon (University of Glasgow), Barbara McGillivray

(King's College London and The Alan Turing Institute), Jenny Ostrop (University of Bergen), Britta Petersen (Christian-Albrechts-Universität zu Kiel), Ana Petrus

Katarzyna Biernacka (Humboldt-Universität zu Berlin), Aoife Coffey (University College Cork), Ronald Cornet (Amsterdam University Medical Centre), Alina Danciu

Contributing Author(s) (Org)



#### DRAFT NOT YET APPROVED BY THE EUROPEAN COMMISSION

(University of Applied Sciences of the Grisons), Stefan Reichmann (TU Graz), Najla Rettberg (University of Göttingen), Carmen Reverté (Institute of Agrifood Research and Technology), Nick Rochlin (University of British Columbia), Bregt Saenen (European University Association), Birgit Schmidt (University of Göttingen), Jolien Scholten (Vrije Universiteit Amsterdam), Hugh Shanahan (Royal Holloway, University of London), Armin Straube (University of Limerick), Veerle Van den Eynden (KU Leuven), Justine Vandendorpe (ZB Med – Information Centre for Life Sciences), Shanmugasundaram Venkataram (DCC and OpenAIRE), Cord Wiljes (Universität Bielefeld), Ulrike Wuttke (University of Applied Sciences Potsdam), Joanne Yeomans (Leiden University), Biru Zhou (McGill University)

Illustrations Patrick Hochstenbach (Ghent University)

Due Date 31.12.2021

Date 12.11.2021

Version 0.5.1 REVISED DRAFT NOT YET APPROVED BY THE EUROPEAN COMMISSION

DOI ---

#### **Dissemination Level**

X PU: Public
PP: Restricted to other programme participants (including the Commission)
RE: Restricted to a group specified by the consortium (including the Commission)

CO: Confidential, only for members of the consortium (including the Commission)



This work is licensed under a <u>Creative Commons Attribution 4.0 International License</u>.

#### **Abstract**

The handbook was written and edited by a group of about 40 collaborators in a series of six book sprint events that took place between 1 and 10 June 2021. It aims to support higher education institutions with the practical implementation of content relating to the FAIR principles in their curricula and teaching by providing practical material, such as lesson plans and supporting information.

The current version incorporates community feedback received during the public consultation which ran from 27 July to 12 September 2021. The final version of the handbook will be published in December 2021.









## Versioning and contribution history

Version	Date	Authors	Notes
0.1	10.06.2021	Claudia Engelhardt, all book sprint contributors (authors and editors)	Draft for internal review
0.2	23.07.2021	Claudia Engelhardt, Editorial Team	Content ready for community review
0.3	23.07.2021	Claudia Engelhardt	Version for community review
0.4	12.09.2021	Community reviewers (see Acknowledgements)	Comments and suggestions for consideration by the authors and editors
0.5	11.10.2021	Claudia Engelhardt, all book sprint contributors (authors and editors)	Revised version incorporating comments and suggestions received during the community review

#### **Disclaimer**

FAIRsFAIR has received funding from the European Commission's Horizon 2020 research and innovation programme under Grant Agreement no. 831558. The content of this document does not represent the opinion of the European Commission, and the European Commission is not responsible for any use that might be made of such content.







#### **Acknowledgements**

This handbook underwent a community review from 26 July to 12 September 2021. We thank all contributors for their valuable, much appreciated feedback.

# We would like to extend special thanks for their extensive and thorough review to:

Romain David, Hervé L'Hours, Karsten Peters, Esther Plomp, Muriel Swijghuisen Reigersberg, Francesco Varrato, Niklas Zimmer

### Furthermore, we thank:

Anonymous, Esther Asef, Bill Ayres, Noemi BC, Fay Campbell, Leyla Jael Castro, Julien Colomb, Philipp Conzett, Antica Culina, Stefanie De Bodt, Vilém Děd, Julian Dederke, Mary Donaldson, Christina Elsenga, Jeanine Finn, Vinciane Gaillard, Marjan Grootveld, W H, Simon Kerridge, Ilja Kocken, Ellen Leenarts, Allyson Lister, Lachlan MacLeod, Izaskun Mallona, Paula Martinez Lavanchy, Janice Masud-Paul, Joke Meeus, Gene Melzack, Megan O'Donnell, Lisanna Paladin, Limor Peer, Robin Rice, Jürgen Rohrwild, Susanna-Assunta Sansone, Gabriele Schwiertz, Yasmeen Shorish, Shelley Stall, Alexander Steckel, Liz Stokes, Annette Strauch, Ádám Száldobágyi, Rick Thompson, Christophe Trefois, Enrique Wulff









# Table of contents

1 -	Motivation	7			
2 -	About this book	11			
	2.1 How this book came about	11			
	2.2 What is FAIR?	12			
	2.3 Why make data FAIR?	16			
	2.4 - Who will find this book useful and why?	17			
3 -	FAIR Skills and Competences	18			
	3.1 The FAIRsFAIR Competence Framework and Body of Knowledge for Higher Education	19			
	3.2 FAIR Competence profiles for the Bachelor, Master and Doctoral level	21			
	3.3 Learning Outcomes	23			
4 1	Teaching and training designs for FAIR	35			
	4.1 Introduction	35			
	4.2 Elemental phases in course design	37			
	Step 1. Select or identify learning outcomes (LOs)	38			
	Step 2. Select or develop learning experiences (LEs)	40			
	Step 3: Select content that is relevant to the Learning Outcomes	48			
	Step 4: Identify or develop assessments to ensure the learning is progressing towards Lear Outcomes	rning 48			
	Step 5: Evaluate course effectiveness	49			
<b>5 - FAIR lesson plans</b> 5					
6 -	Implementing FAIR	53			
6.1	5.1 Introduction 53				
	6.2 Getting to FAIR institutional policies	53			
	6.3 Data Management Planning	57			







# DRAFT NOT YET APPROVED BY THE EUROPEAN COMMISSION

6.4 Data processing and documentation	57			
6.5 Support Infrastructure	58			
6.6 Data Publication	64			
6.7 Data reuse	64			
7 - References				
8 - About the authors & facilitators	73			
Appendix A - Resources Fehler! Textmarke nicht defin				
Appendix B - Target audience personas	78			
Appendix C - Data Stewardship Competence Groups (CF-DSP) and enumeration (according to FAIRsFAIR Deliverable D7.3)				
Appendix D - FAIR Competence Framework - draft Body of Knowledge 78				
Appendix E - Knowledge Units and corresponding Lear	ning Outcomes for Bachelor, Master and PhD			



