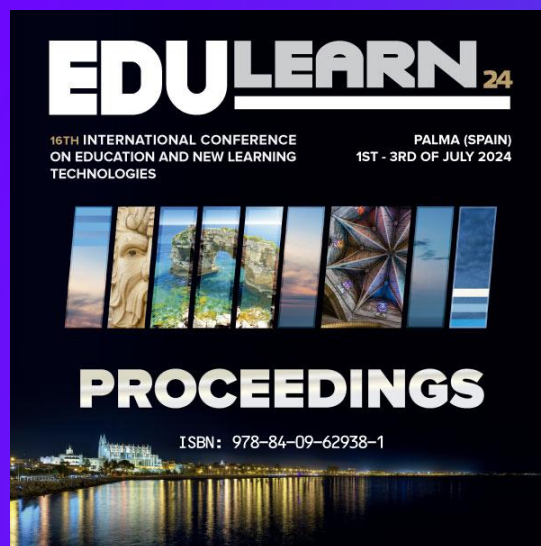


# PATTERN.

Empowering Open and Responsible  
Research and Innovation

## Open educational resources on Open Science and Responsible Research and Innovation (OpenRRI)



CL	C. Lagido <sup>1</sup>	KN	K. Nielsen <sup>1</sup>	GK	G. Kragh <sup>1</sup>	PF	P. Flohr <sup>2</sup>	LB	L. Bezuidenhout <sup>2</sup>	LB	L. Brinkman <sup>3</sup>
AB	A. Baini <sup>4</sup>	CS	C. Saviane <sup>4</sup>	AS	A. Salnikova <sup>5</sup>	AB	A. Brandstetter-Kunc <sup>5</sup>	GC	G. Consolini <sup>6</sup>	AC	A. Correia <sup>7</sup>
PM	P. Moura <sup>7</sup>	MF	M. Fedeli <sup>6</sup>	JE	J. England <sup>8</sup>	SV	S. Venkataraman <sup>8</sup>	AS	A. Skarvøy <sup>9</sup>	TK	T. Konach <sup>9</sup>
BT	B. Taraj <sup>9</sup>	KK	K. Koller <sup>10</sup>	IM	I. Marschalek <sup>10</sup>	MS	M. Schrammel <sup>10</sup>	SJ	S. Jurković <sup>11</sup>		
BM	B. Maçan <sup>11</sup>	AV	A. Vodopijevic <sup>11</sup>	BC	B. Cahill <sup>12</sup>	AG	A. Giraldo Sevilla <sup>13</sup>	NP	N. Pitrelli <sup>4</sup>		
AS	A.L. Spera <sup>14</sup>	CI	C. Iasillo <sup>14</sup>	PP	P. Príncipe <sup>7</sup>	ND	N. De Lorenzo <sup>5</sup>	MH	M. Haklay <sup>13</sup>		

<sup>1</sup> University of Aarhus (DENMARK)  
<sup>2</sup> Leiden University (NETHERLANDS)  
<sup>3</sup> DANS Data Archiving and Networked Services (NETHERLANDS)  
<sup>4</sup> SISSA Scuola Internazionale Superiore di Studi Avanzati (ITALY)  
<sup>5</sup> Fondation Européenne de la Science (FRANCE)  
<sup>6</sup> Università Vita-Salute San Raffaele (ITALY)  
<sup>7</sup> Universidade do Minho (PORTUGAL)  
<sup>8</sup> OpenAIRE AMKE (GREECE)  
<sup>9</sup> European Association of Research Managers and Administrators (BELGIUM)  
<sup>10</sup> Zentrum Für Soziale Innovation GMBH (AUSTRIA)  
<sup>11</sup> Ruđer Bošković Institute, University of Zagreb (CROATIA)  
<sup>12</sup> Stichting SciLink (NETHERLANDS)  
<sup>13</sup> Learning Planet Institute (FRANCE)  
<sup>14</sup> Agenzia per la Promozione della Ricerca Europea (ITALY)



Funded by  
the European Union

# WP1 State of the art of OpenRRI trainings



This study aims to map and analyze the state-of-the-art of learning opportunities for researchers on OpenRRI

## Mixed-methods approach for data collection

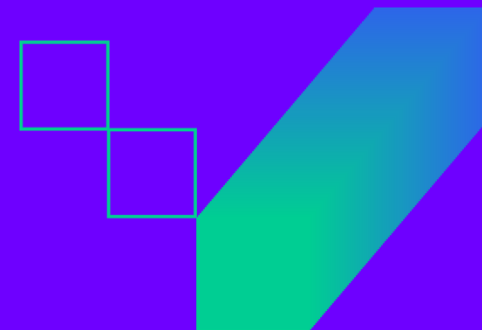
- Desk research and data sprints
- Questionnaire survey (135 complete responses, 248 partial responses)
- Interviews with Key Opinion Leaders (N=12)
- Three mutual learning events and one workshop at the OSFAIR 2023

# WP1 State of the art of OpenRRI trainings

**This study aims to map and analyze the state-of-the-art of learning opportunities for researchers on OpenRRI**

## **Adapation of quality criteria from EU-Citizen.Science Platform to assess strengths and weaknesses**

- Alignment with PATTERN skill areas
- Comprehensive descriptive metadata
- Accessible resources with easy user entry
- High readability and basic formatting
- Clearly defined aims, goals, and methods
- Interactivity and knowledge exchange opportunities
- Ease of implementation and adaptation
- High image and audio quality
- Evaluation and impact
- Addressing knowledge gaps and emerging issues

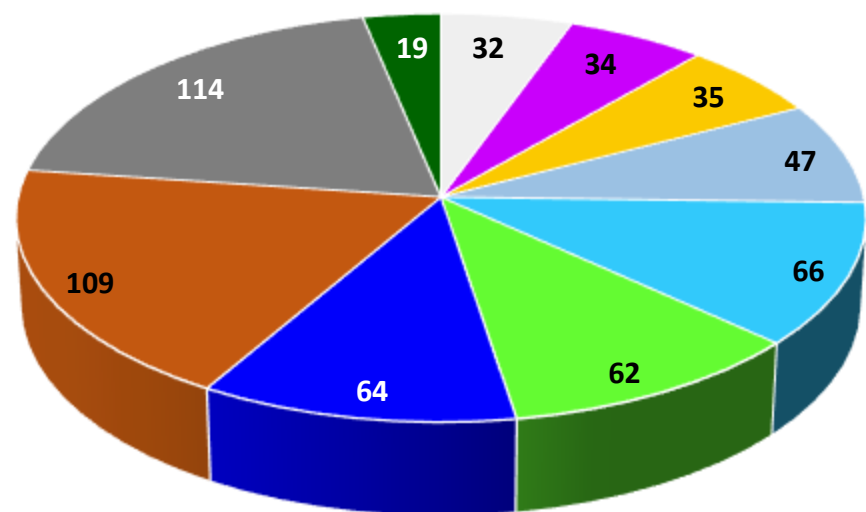


# Results



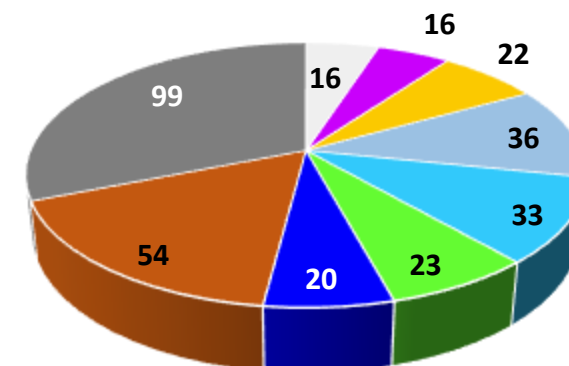
Funded by  
the European Union

# Total training activities and resources mapped

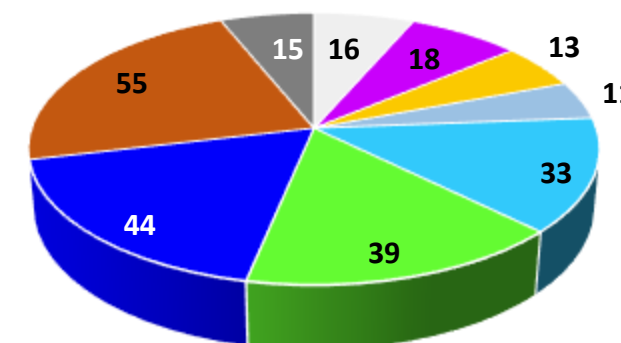


**Total resources (n=571)**

- Research Integrity
- Open Access
- Dissemin/Exploitation
- Managem/Leadership
- OS & RRI
- FAIR and RDM
- Gender, non-discrim. & Inc.
- Citizen Science
- Sci Com (Media & Policy)
- Collections Catalogues Platforms

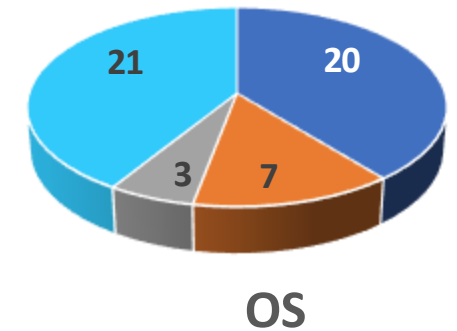
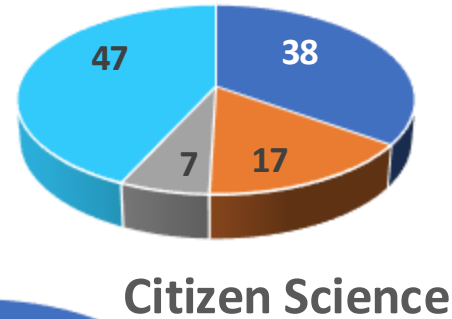
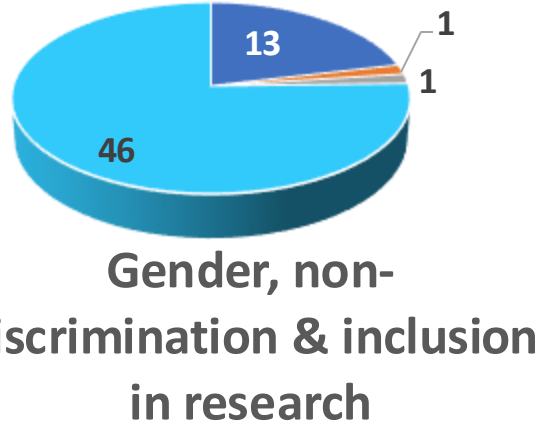
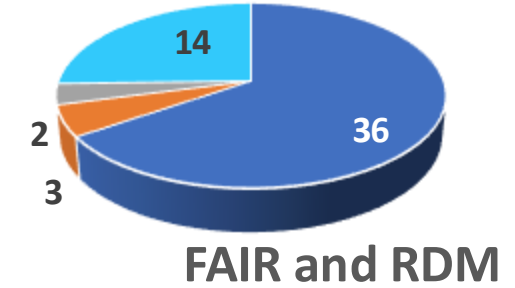
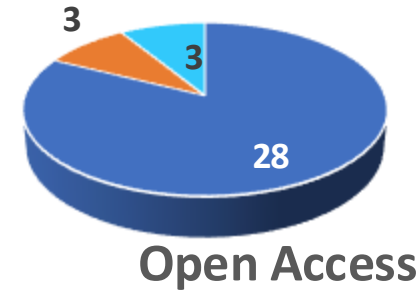
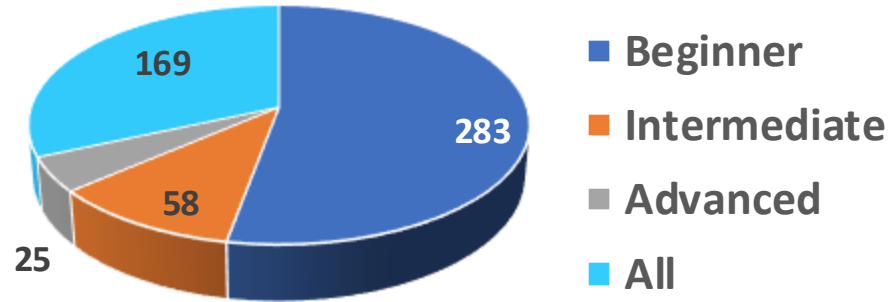


**Course, E-learning module, workshop**

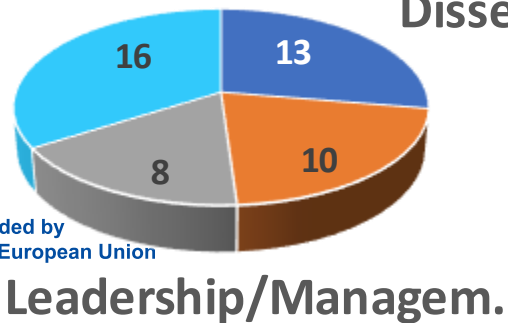
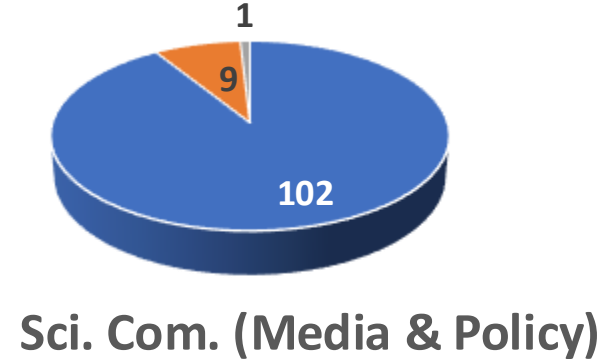
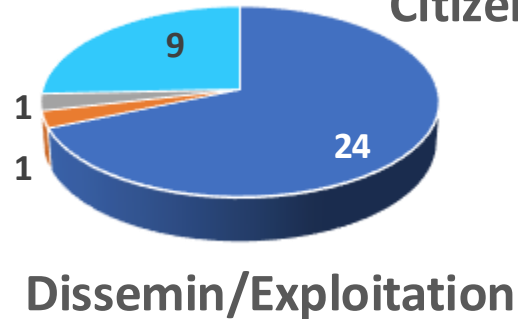


**Non-course training materials,  
including recorded webinars**

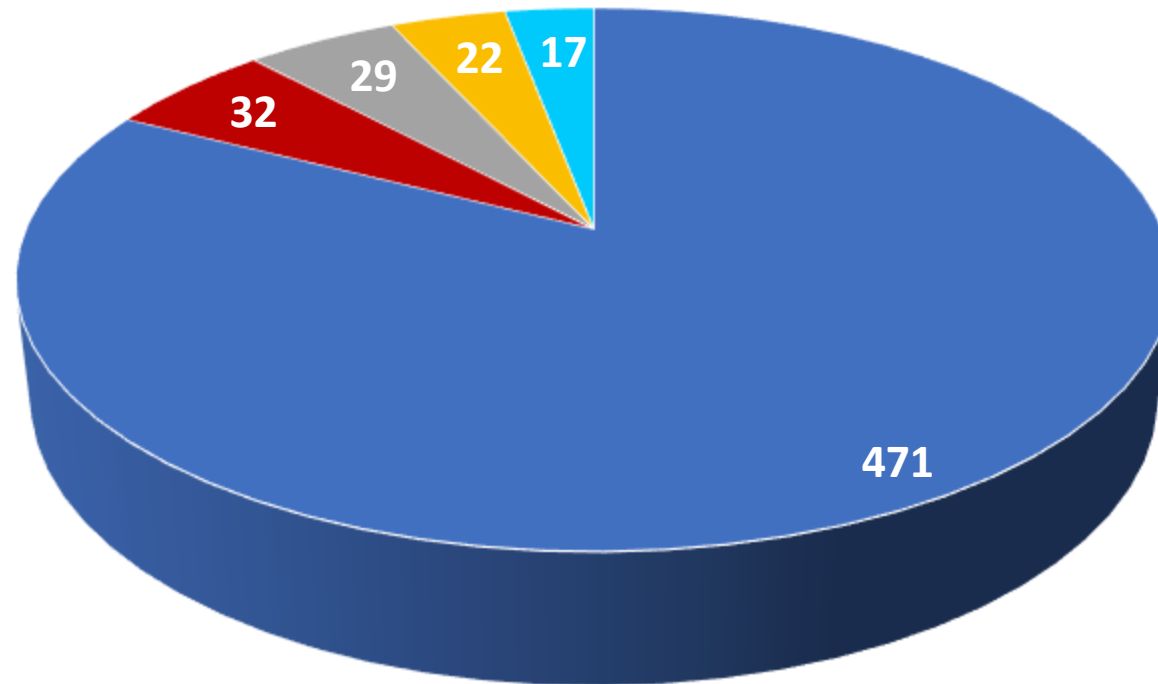
# Expertise level of the mapped training



Gender, non-discrimination & inclusion in research



# Primary language of the mapped resources



■ English ■ Other ■ Italian ■ German ■ French

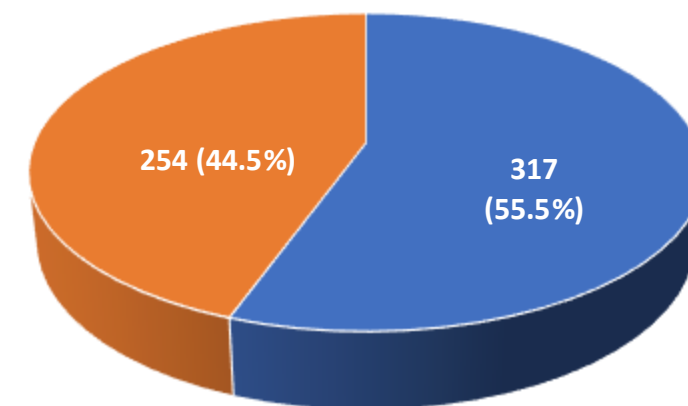
Other: Croatian (8), Spanish (6), Portuguese (4), Finnish (4), Greek (3), Dutch (2), Hungarian (2), Swedish (1), Norwegian (1), Slovak (1)

# Training activities and resources evaluated for quality



## Selection Criteria for Quality Assessment

- **Accessibility and usability** – Prioritized freely available digital resources with straightforward access
- **Relevance to researchers** – Focused on resources tailored to researchers' specific challenges rather than overly broad or misaligned target audiences
- **Adaptability and licensing** – Assessed resources for clear reuse permissions, avoiding those with restrictive copyright or unclear licensing terms



■ Not selected ■ Total quality assessed





# Identified strengths and examples

**Key strengths and features identified in high-quality training resources, based on an analysis of diverse courses and materials.**

- **Diverse training materials:** Effective courses utilize multiple formats (text, videos, infographics, quizzes) to accommodate different learning styles and enhance engagement
- **Interactivity and knowledge exchange:** Courses that integrate discussion forums, feedback opportunities, quizzes, and access to communities of practice foster dynamic learning
- **Orientation towards practice:** High-quality training includes step-by-step guidance, real-world case studies, and practical exercises tailored to learners' needs
- **Inclusivity:** The most impactful resources ensure accessibility through multilingual content, gender balance, and representation of diverse and underrepresented groups
- **Clear structure:** Well-organized courses provide logical progression, summaries, visual aids, and clearly defined learning objectives for easy navigation
- **Clear and engaging language:** Resources with conversational, jargon-free language and active voice improve comprehension and ease translation
- **Ease of implementation and adaptation:** Training materials that are modular, openly licensed, and include clear instructions allow for flexibility and reuse
- **Addressing knowledge gaps and emerging issues:** The best resources incorporate new methodologies, policy connections, ethical considerations, and interdisciplinary perspectives.



# Key gaps in training delivery, content, and audiences

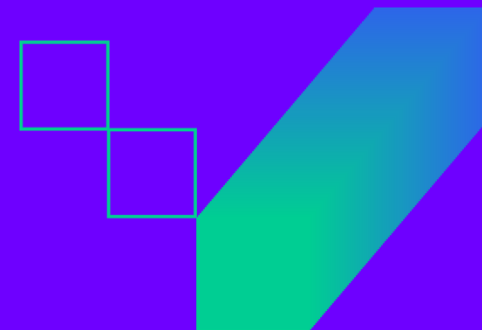


- **Limited multilingual training resources:** The predominance of English limits access for diverse audiences.
- **Need for intersectionality in training:** Diversity, inclusion, and cultural competence require more emphasis, particularly in Citizen Science and Science Communication
- **Training in interdisciplinarity:** Researchers need guidance on integrating multidisciplinary approaches
- **Open Science and Intellectual Property Rights (IPR) training:** UNESCO highlights IPR as an underdeveloped area
- **Artificial Intelligence in research:** Training on AI's impact on research practices is needed
- **Emphasis on interactive and community-driven learning:** Current best practices focus on interactivity and engagement in online training
- **Hands-on, applied learning approaches:** Co-creation, case studies, and project-based learning improve engagement and retention
- **Lack of advanced-level training:** Tailored content for senior researchers and institutions is needed, along with strategies to attract experienced professionals
- **Importance of Train-the-Trainer programs:** These accelerate knowledge dissemination and organizational impact.



# Challenges in implementation and how to ensure quality, sustainability, and impact

- **Need for meaningful certification and credentialing:** The value of training badges and certificates remains unclear, with a call for standardization
- **Incentives and rewards:** Research institutions and funding bodies could play a role in encouraging engagement with training
- **Quality evaluation methods need refinement:** Traditional assessment of learning outcomes may not fully capture real-world application
- **Sustainability through training reuse:** Resources should be FAIR, editable, and unbranded for easier adaptation and long-term use
- **Integration with institutional learning platforms:** Compatibility with SCORM (standards for e-learning) and existing university systems enhances sustainability
- **Stronger coordination between projects:** Collaborative efforts are needed to transfer knowledge between initiatives and improve training continuity
- **Investment in 'Train-the-Trainer' and continuous updates:** Regular revisions and engagement with established training communities help maintain relevance



**Project deliverable  
with all the details  
available on Zenodo**



Funded by  
the European Union

# PATTERN.



## Thank you!

### OUR CONSORTIUM

