

# Identifying Gaps in Research Software Policy: A report from Subgroup 3/4 of the ReSA & RDA Policies in Research Organisations for Research Software (PRO4RS) Working Group

May 2025

By Hernandez Serrano, Pedro; Barker, Michelle; Katz, Daniel S.; Martinez Ortiz, Carlos; Shanahan, Hugh

## 1. Introduction

As software has become an increasingly important element of research across domains, there is a need for better recognition of its value in research processes and outputs. Research-performing organisations need to provide guidance<sup>1</sup> and set up policies that can support the long-term sustainability, recognition, and impact of research software.

The [Policies in Research Organisations for Research Software \(PRO4RS\) Working Group](#) (WG), co-convened by the [Research Software Alliance](#) (ReSA) and the [Research Data Alliance](#) (RDA), contributes to this effort by collecting, analysing, and proposing examples and recommendations for institutional policies that support research software and its personnel.

This report presents the joint outcomes of the PRO4RS WG Subgroup 3 and Subgroup 4 (as outlined in the PRO4RS WG [case statement](#)), which were merged to form one working effort (Sub-WG 3/4):

- (1) Defining a common framework for research software policy, and
- (2) Identification of areas where policies are lacking, such as recognition of research software contributions in relation to research assessment reform, to catalyse efforts in this area<sup>2</sup>.

Following the completion of policy collection activities in Sub-WG 1 to create a [database of policies](#), Sub-WG 3/4 began its activities in mid-2024. This report presents the findings of the analysis of the 38 policies contained in the database, from a range of research-performing organisations, to provide a recommendation for research organisations in developing policy in this area.

## 2. Policy Classification and Coverage

---

<sup>1</sup> This need is explicitly conceptualized in the Science Europe recommendations: [Developing and Aligning Policies on Research Software: Recommendations for Research Funding and Research Performing Organisations](#)

<sup>2</sup> Objective (2) aligned to the CoARA commitments (1): <https://coara.eu/agreement/the-commitments/>

The first step of the analysis was that each policy was manually reviewed and grouped into one of three types as shown in table 1:

Type	Description	Number of policies	% of policies
1	Policies specifically phrased to regulate research software or only certain aspects of research software	19	50%
2	Broader policies (e.g. on IP or open science) that include “in passing” clauses on research software	16	42%
3	Policies that do not regulate research software, nor mention it (following the FAIR4RS) definition	3	8%
	Total policies	38	100%

Table 1: Summary of policies

The policies identified as type 3 are out of scope for this analysis but were included in the database, either due to ambiguity in the definition of research software or because they appeared in keyword searches. The PRO4RS WG uses the definition of research software as defined in the [FAIR4RS Principles](#) as including “source code files, algorithms, scripts, computational workflows and executables that were created during the research process or for a research purpose. Software components (e.g., operating systems, libraries, dependencies, packages, scripts, etc.) that are used for research but were not created during or with a clear research intent should be considered software in research and not research software.” The type 3 policies referred to software used in research and not research software.

The second step of the analysis was to identify categories that should be included in policies to support research software. These categories were crowdsourced during a [community consultation](#) (see also [slides](#)) with 29 participants at the RDA [Plenary 21](#) on 26 October 2023 (Salzburg, Austria). Participants were invited to rank and group issues such as career recognition, collaboration and third-party agreements, licensing and distribution, software sustainability, software citation and credit, and training and capacity.

The resulting 15 categories identified represent a broad spectrum of elements that organisational policies need to address to support research software and its personnel. This work was modelled on exemplars such as the [ANR BRIDGE](#) project analysis of research data governance policies at a range of levels in France. We have also looked at the Checklist for a Research Software Management Policy for Australian Universities / Institutions [ARDC](#).

The third analysis step was to code the 35 in-scope (type 1 and 2) policies against 15 predefined content categories, to gain insights about each policy. The results are shown in table 2.

<b>Policy Category</b>	<b>Number of Policies</b>	<b>% of Total Policies (n=35)</b>
11. Research outcomes/output	27	77.1%
3. Copyrights and Software Licensing	27	77.1%
9. Open access and access to research	26	74.3%
4. Open science (open software is one of the pillars)	26	74.3%
2. Intellectual Property	25	71.4%
1. Open source software	24	68.6%
12. Research data (include data analysis/methods)	21	60.0%
8. Research infrastructure	20	57.1%
10, Research ethics and integrity	16	45.7%
6. Research skills and training	13	37.1%
5. FAIR research outputs	11	31.4%
14. Privacy and protecting human subjects	10	28.6%
15. Research software impacting education	8	22.9%
7. Research assessment reform	5	14.3%
13. Diversity, equity and inclusion in research	3	8.6%

Table 2: Occurrence of different categories in policy documents.

The results contained in the above table are also presented in graphical form in figure 1. These results show that the majority of policies focused on categories related specifically to software usage, such as licensing (77%) and intellectual property (71%). Many policies also included categories related to research outputs (77%), open science (74%) and open access (74%). In contrast, inclusion of categories relating to the people who develop and maintain research software were in the minority, such as research skills and training (37%) and research assessment reform (14%).

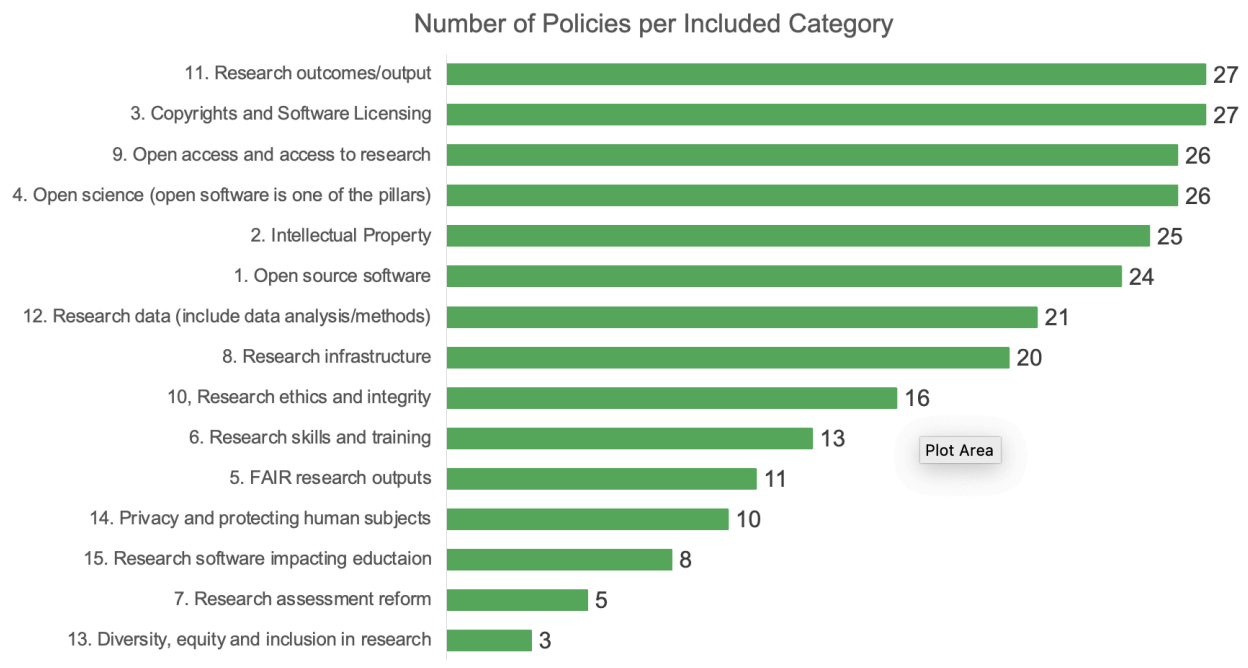


Figure 1: Bar plot of occurrence of categories in policy documents.

The fourth part of the analysis was to consider how many categories each policy addressed, to understand if research software policy categories are commonly covered in documents that focus specifically on research software, or are spread across the contents of many policies with a broader focus (such as open science). The top 5 policies that include most categories are shown in table 3.

Research organisation	Policy	Number of covered categories
Department of Energy (DOE) Office of Scientific and Technical Information, USA	<a href="#">DOE CODE Software Policy</a>	11
Helmholtz Open Science Office, Germany	<a href="#">Model Policy on Sustainable Software at the Helmholtz Centers</a>	11
University of Stuttgart, Germany	<a href="#">Handling Research Software at the University of Stuttgart (In German)</a>	11
Max Planck Institute for Meteorology, Germany	<a href="#">Software Licensing and Copyright Policy for Research Software Code cites the Contributor Licence Agreement (CLA)</a>	10
TU Delft, the Netherlands	<a href="#">Research Software Policy</a>	10

Table 3: Number of covered categories in the top 5 policies.

### 3. Conclusion and Recommendation

One of the two goals of this analysis was to identify where policies are lacking in order to catalyse efforts in this area. The analysis of the 35 policies shows that while many institutions address research software in terms of infrastructure, licensing, and general research processes, few policies cover skills and training, and/or inclusion of research

software in assessment frameworks. In most cases, research software is still seen as a technical element supporting research, not as a research output in itself.

Given the key nature of research software to research it is critical that research organisations treat research software as a first class research object, i.e., a research artifact that is as important as a peer reviewed publication; and that they value and recognise research software personnel. Hence, there is a need to orient future policies to enable this.

The second goal of this analysis was to define a common framework for research software policy, which is provided by the 15 categories. It is recommended that research organisations conduct an audit of their policies against the 15 categories to analyse their coverage of support and recognition of research software. The analysis of the content of the 33 policies showed that most policies focus on only a few categories related to research software, and policies specifically addressing research software are rare. Even where the latter do exist, they do not cover all relevant categories.

Consequently, there is no single solution that covers all necessary policy aspects; and this is to be expected given the complexity of institutional governance mechanisms. Research organisations can respond by either incorporating research software into policies on broader topics (such as open science, data management, research assessment reform); and/or creating a policy focused on research software, to address multiple categories in one policy. However, it is unlikely that any research organisation will either have or create a single policy that addresses all categories.

Based on this, we propose to further revisit the idea of a fixed “common framework” and suggest work on a set of layers for policy development to consider when developing or revising research software policies. We envision to continue and conclude these recommendations as part of the activities of the RDA TIGER cascading project.

## Annex

Organization	Policy Name	Number of Topics Covered	Policy Type	Policy Insight
University of Sheffield	University statement on Open Research	13	In passing	It's a statement on open research/open science, which includes software.
CERN	Open Science Policy	12	In passing	It's a policy on open science that includes research software.
Department of Energy (DOE) Office of Scientific and Technical Information	DOE CODE Software Policy	11	Yes	It's a policy that regulates how to publish software outputs.
Helmholtz Open Science Office	Model Policy on Sustainable Software at the Helmholtz Centers	11	Yes	It's a model policy that applies all Helmholtz centers.
University of Stuttgart	Handling Research Software at the University of Stuttgart (In German)	11	Yes	It's a policy that regulates research software and cover most topics.
Norwegian University of Science and Technology (NTNU)	Guidelines for policy for Open Science	11	In passing	It's a policy on open research/open science which covers research software.
University of Maryland	Department of Psychology Procedures for Promotion to Associate Professor with Tenure	11	In passing	It's the regulation of tenure (shortly) mentions the recognition of software as outputs.
Max Planck Institute for Meteorology	Software Licensing and Copyright Policy for Research Software Code cites the Contributor Licence Agreement (CLA)	10	Yes	It's a research software policy that regulates its IP.
TU Delft	Research Software Policy	10	Yes	It's a policy that regulates research software and cover most topics.
Maastricht University	Open Science	10	In passing	It's a policy on open research/open science which covers research software.

University of Groningen	Research Data Management Policy of the Faculty of Science and Engineering	10	In passing	It's an RDM policy that covers some aspects of software management.
Netherlands eScience Center	Policy towards publishing, licensing and intellectual property	9	Yes	It's a research software policy that regulates its IP.
Netherlands Institute for Radio Astronomy (ASTRON)	Open Source Policy v2.0 and publication	9	Yes	It's a policy on how to properly share software open source.
Technische Universität München (Technical University of Munich)	Handreichung für die Veröffentlichung wissenschaftlicher Daten und Softwareprogramme (Guide for the publication of scientific data and software programs)	9	Yes	It's a policy on the research software and data publishing.
University of Edinburgh	Research Data Management Policy	8	In passing	It's an RDM policy which covers a bit of software.
University of Minnesota	Reporting Inventions or Software Arising from Research	8	In passing	It's a patents policy, which considers inventions and patents.
European Space Agency (ESA)	ESA open source policy	7	Yes	It's a policy that regulates how to publish open source software.
Leipzig University Library	Guidelines for the Development of Open Source Software at Leipzig University Library v1.0 and Github (both in German)	7	Yes	These are best practices to develop and manage open source software developed in Leipzig library.
NASA (Science Mission Directorate)	Open-Source Science Guidance	7	In passing	It's a policy on open research/open science which covers research software.
Netherlands eScience Center	Special conditions Netherlands eScience Center grants	7	In passing	It's a policy on the conditions of the NLeSC grants, and it covers research software.
Aalto University	Open Source Policy	6	Yes	It regulates how to properly make open source data, and software.
Caltech (California Institute of Technology)	Caltech Copyright and Software Policy	6	Yes	It's a policy that regulates software outputs and its IP/copyrights.
Finnish Meteorological Institute	Open-Source Software Policy	6	Yes	It's a policy on how to properly share software open source.

Helmholtz-Centrum Postdam (GFZ)	Policy on Use and Licensing of Research Software	6	Yes	It's a policy about research software and it focuses on best licensing practice.
Netherlands eScience Center	Policy concerning the use of Generative AI at the Netherlands eScience Center	6	Yes	It's on research software, in the sub topic of AI
University of North Texas (UNT)	Open Source Software Policy	6	Yes	It's a policy on open-source software
University College London	Intellectual Policy Property	6	In passing	It's a policy that regulates IP, and it covers software
Monash University (Business School)	Research Software Standards	5	Yes	It's a policy that proposes research software to be considered as research output
Kings College London	Fair Publication Policy	5	In passing	It's a policy on recognition of research output and it covers software
ETH Zurich	Guidelines for the Financial Exploitation of Research Results at ETH Zurich	4	Yes	It's a policy that regulates financial exploitation of research outputs which includes software
Royal Holloway University London	Open Research policy	4	In passing	It's a policy on open research/open science which covers research software
Stanford University	Inventions, Patents, and Licensing   DoResearch	4	In passing	It's a policy that regulates patents and it covers publishable software
University of Illinois	Open Source Licensing policy	3	Yes	Only in the subbranch of open source licensing
McGill University	Policy on inventions and software	3	In passing	It's a policy that regulates IP, and it covers software
University of Calgary	Faculty of Social Sciences Policy Guidelines Relative to Appointment, Increment, Promotion and Tenure	1	In passing	It's a tenure policy, that mentions software briefly on passing (section 2.5)