



SOPs4RI

D4.7: Final toolbox with SOPs and guidelines (version 5.0)

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1. Introduction

1.1. Abbreviations

ECoC – European code of conduct

FG – Focus group

QRP – Questionable research practice

RFO – Research funding organisation

RE – Research ethics

RI – Research integrity

RIPP – Research integrity promotion plan

RM – Research misconduct

RPO – Research performing organisation

SOP – Standard operating procedure

SoR – Set of recommendation

GRWG – Guideline revision Working Group

1.2. Terminology

Code: A document guiding the members of an organisation on ethical/integrity standards and how to achieve them. Ethics/integrity codes are formal documents sending a message about moral standards guiding professional behaviour by providing principles, values, standards, or rules of behaviour.

Guideline: A statement of principles or issues to consider when performing a task, aimed to guide courses of action. Guidelines give direction and help users make decisions. They are often created based on the consensus of experts after detailed evaluation and assessment of available evidence. They may include checklists.

Standard Operating Procedure (SOP): A detailed, written instruction, aimed to achieve uniform action step-by-step. SOPs prescribe specific actions; they make it easier for users to make decisions. They may come in the shape of a 'decision-tree'/flow-diagram, similar to what is referred to as practical decision making in clinical contexts.

Toolbox: A structured collection of easy-to-use tools (SOPs and guidelines) that RPOs and RFOs can use when developing their own Research Integrity Promotion Plans.

Research Integrity Promotion Plan (RIPP): A document describing how a specific institution will ensure, foster and promote responsible research practices, avoid detrimental practices, and handle misconduct. RPOs and RFOs should formulate their own RIPPs and consider disciplinary, organisational, and national differences.

Set of Recommendation (SoR): A list of recommendations for a sub-topic that has been extracted from the documents that were provided by WP3. The teams will make the SoR per sub-topic by discussing the documents and formulate practical and concrete recommendations.

Inspirations: The main input of the Co-creation Workshops. It is created per sub-topic and represents the SoRs in a visual manner. Inspirations are necessary for the methodology of the co-creation workshops.

Skeleton Guidelines: The main output of the co-creation workshop. Skeleton guidelines are preliminary guidelines for each of the six topics/21 sub-topics addressed in the co-creation workshops. There are two versions of each skeleton guideline. Version 1 is a first rough version of the guideline based on the discussion in the first set of co-creation workshops. Version 2 is a more complete version refined with the feedback gathered during the second set of workshops. These guidelines aim to be as concrete and as practical as possible but will be further harmonized and refined with future steps of the SOPs4RI project, particularly in WP6.

Guideline Revision Working Group: The group put together to undertake revisions of the Skeleton Guidelines V2.

1.3. About SOPs4RI

The project Standard Operating Procedures for Research Integrity (SOPs4RI) aims to contribute to the promotion of good research practices and a strong research integrity culture aligned with the principles and norms of the European Code of Conduct for Research Integrity. The overall objective was to create a toolbox to support and guide research performing organisations (RPOs) and research funding organisations (RFOs) in fostering research integrity and consequently preventing, detecting and handling research misconduct. The project focuses on providing Standard Operating Procedures (SOPs) and guidelines that enable RPOs and RFOs to create and implement Research Integrity Promotion Plans (RIPPs). SOPs4RI will stimulate European organisations involved in performing and funding research to foster responsible conduct of research by organisational measures and policies. SOPs4RI took a mixed-method, co-creative approach to the identification, development and empirical validation of SOPs and guidelines.

The expected end-users of the tools provided by SOPs4RI are decision makers within RPOs and RFOs, e.g. university senior management (vice-chancellors, deans, heads of administration), university academic councils, boards, directors and administrators of funding agencies. The identification and development of SOPs and guidelines takes national, epistemic, and organisational differences into account, and the final toolbox will enable RFOs and RPOs to create Research Integrity Promotion Plans (RIPPs) in accordance with the needs of their organisation.

1.4. About WP4

Work Package 4 (WP4) served as the backbone of SOPs4RI. WP4 creates, improves, sharpens and finalised the content of the toolbox with SOPs and guidelines designed to support RPOs and RFOs.

WP4 built on the empirical work of WP3. It used the inputs from the literature review, expert and delphi interviews to identify the needs of RPOs and RFOs in terms of topics to be covered in the

toolbox. The first version of the toolbox with the SOPs and guidelines, version 1.0, was used in the focus group interviews (WP5). With the feedback from the focus groups comprising researchers, research integrity officers, policy makers, funding agency officers, etc. the second version of the toolbox (version 2.0) was created. Using the sets of recommendation, co-creation workshops with stakeholders, and a repository of relevant resources, the third version of the toolbox (version 3.0) in which SOPs4RI preliminary guidelines figured for the first time, was completed. Selected portions of these guidelines were revised based on results from a survey with researchers (WP6), expert feedback, and guideline revision working groups (WP4). The resulting version 4.0 of the toolbox was then piloted with a sample of RPOs and RFOs in WP7. The resulting toolbox, which will constitute the final output of WP4, is a ready-to-use toolbox with SOPs and guidelines for RPOs and RFOs (version 5.0).

The following components were part of WP4:

- Creating the first, second, third, fourth and fifth version of the SOPs and guidelines to be included in the toolbox.
- Conducting and reporting on the co-creation workshops.
- Continuous communication and consultation with WP1 (coordination) and partners in SOPs4RI.

WP4 was an overarching work package that built on other work packages and involved most consortium members at different times in the process. Without naming all the members involved in these cumulative processes, core WP4 tasks involved Joeri Tjldink, Krishma Labib, Iris Lechner, Noémie Aubert Bonn, Kris Dierickx, Daniel Pizzolato, Borana Taraj, Natalie Evans, and Nikolaos Skoulikaris in the coordination and conduct of co-creation workshops; Panagiotis Kavouras who supported several different steps of the guideline and toolbox creation such as the design of the guidelines and the implementation of the toolbox online; Anna-Kathrine Bendtsen, Nik Claesen, George Gaskell, Ana Marusić, Mads Sørensen, Maura Hiney, Nicole Foeger, Rea Ščepanović, Serge Horbach, Teodora Konach as core members of the Guideline Revision working groups; most of these members as well as Andrea Reyes Elizondo and Abigael Reid who assessed tools for inclusion in the toolbox; Nick Allum who proofread the final guidelines; and Guy Widdershoven and Miranda Langendam who advised on different steps of the process.

1.5. About this deliverable

D4.7 explains the steps taken to accomplish the final version of the toolbox with SOPs and guidelines. It highlights several activities that took place in the last two years of WP4. These activities included:

- The optimisation and finalisation of the co-created guidelines from D4.5
- Populating the toolbox with high quality resources for all SOP topics
- Testing the toolbox with pilot institutions and optimising it based on their feedback
- Migrating the toolbox onto the Embassy of Good Science

2. Final version of the toolbox with SOPs and guidelines

2.1. Introduction of WP4

WP4 created the new versions of the SOPs and guidelines after each empirical step (reviews, Delphi, interviews, focus groups, survey and pilot testing). Furthermore, it created content for the SOPs and guidelines by conducting the co-creation workshops and it interacted with the other WPs throughout the project.

WP4 frequently sought advice from the Executive Board (EB) and the Advisory Board (AB) to steer the process of forming and testing the SOPs and guidelines.

WP4 bridged the empirical phases of the project and structured the content and form of the SOPs and guidelines.

2.2. Work package 4 objectives

The main aim:

To identify existing, draft new, test, improve, and finalise the SOPs and guidelines for the toolbox with input from the literature review, interviews, Delphi interviews (WP3), focus groups (WP5), the international research integrity survey (WP6) and pilot testing (WP7).

To achieve this, the following objectives were formulated:

1. To develop a toolbox with research integrity SOPs and guidelines for RPOs and RFOs, which reflect the principles and norms of the European Code of Conduct for Research Integrity (ALLEA 2017).
2. To streamline the process of all the steps in the project (in close collaboration with WP1).
3. To work with SOPs and guideline experts to construct specific SOPs and guidelines.
4. To ensure that the principles and norms of the European Code of Conduct for Research Integrity (ALLEA 2017) are translated into the drafts and final version of the toolbox.
5. To organise co-creation workshops with diverse stakeholders and incorporate their thoughts and ideas in the toolbox.
6. To help WP6 validate and implement a procedure for a CBA (Cost Benefit Analysis) of the implementation of SOPs and guidelines.
7. To create the first, second, third, fourth and fifth version of the toolbox.

The objectives of D4.7 were to create a final version of the toolbox. This version of the toolbox integrates documents based on the knowledge gathered through the revision, finalisation, and visual design of earlier versions of the SOPs4RI toolbox and activities. The final version of the toolbox includes a) co-created guidelines, b) additional quality assessed research integrity tools, and c) the integration of final feedback from pilot institutions and from users of the toolbox.

2.3. Descriptions of the topics for RPOs and RFOs

As described in D4.2, the Delphi interviews and the scoping review guided the establishment of the prioritised list of the topics for RPOs and RFOs. The two tables below present the prioritised list of topics. In total, nine topics were developed for RPOs and 6 for RFOs (see In earlier deliverables from WP4 (D4.1-D4.3), we highlighted the evolution of the topics for the RPOs. A ranked list of topics for RPOs was agreed upon after a Taskforce Meeting in Vienna 13 Dec 2019. After this meeting, small iterations on the names of the topics with the aim to increase usefulness and improve clarity were made. The sub-topics have been updated in the past 4 years to encompass diverse feedback from consortium members, pilot institutions, and other users of the toolbox.

The agreed-upon topics resulted in a 2-page document where the nine topics are described in more detail. The document also proposes three core pillars in which the topics can be organised. This document is available on the landing page of the toolbox for RPOs (<https://sops4ri.eu/tools/>).

An illustration of how the main topics for RPOs appear in the toolbox is available in

Figure 1. The final topics, sub-topics, and pillars included in the toolbox are presented in Table 1.



Figure 1. Presentation of the topics for RPO as they appear in the toolbox.

Table 1 and Initially, the RFO topic list contained 11 topics which were later merged into six RFO topics. The results of the Delphi interviews formed a starting point for the evolution of the RFO topics. The initial 11 topics were shaped by the empirical cycles of the project including the interviews, reviews and focus groups. One of the main concerns expressed in earlier iterative work (reviews, Delphi interviews, focus groups, and co-creation workshops) was that 11 topics could make the work of RFOs unnecessarily complex. To accommodate this concern, the topics were merged to create six core topics for RFOs.

Figure 2, shows how the 11 topics were grouped into 6 overarching topics.

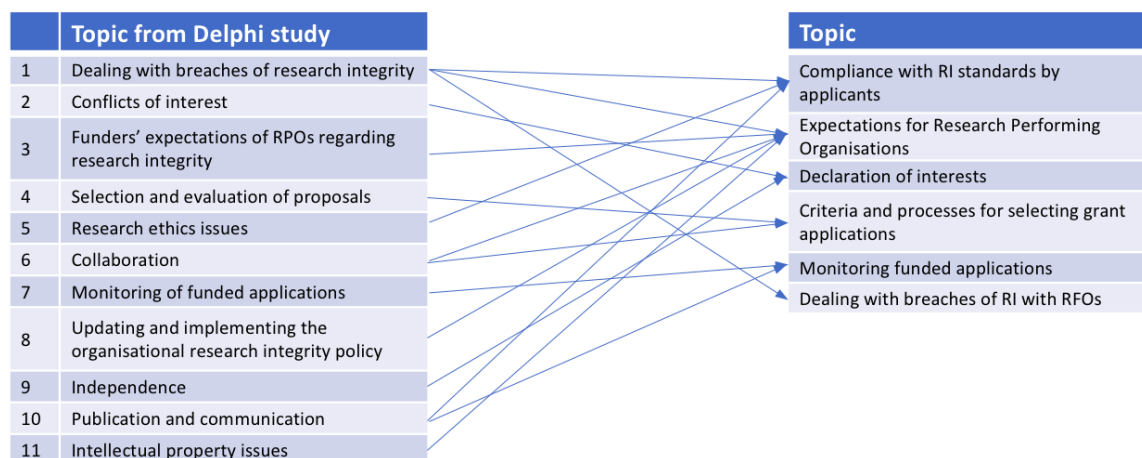


Figure 2. Overview how the 11 topics are distributed among the 6 final topics.

While the sub-topics helped us ensure that all the topics were comprehensively covered in the toolbox, we decided to only include topic-levels in the RFO toolbox to accommodate for the high levels of overlap between the sub-topics and the lower number of resources available.

The six final RFO topics also relate to one another under broader pillars. The three pillars are represented in Table 2. Pillar 1 concerns communicating their expectations related to RI towards RPOs and applicants; Pillar 2 focuses on transparency about how they evaluate applications and ensure that potential competing interests are reported, and Pillar 3 addresses internal structures in an RFO that can safeguard RI in staff members, committees and reviewers. These three pillars are further delineated into two main categories in the toolbox of (1) external expectations and (2) internal procedures. The work on the RFO-topics has resulted in a 2-page document describing the final set of topics in more detail. This document can be found on the landing page of the toolbox for RFOs (<https://sops4ri.eu/tools-for-rfos/>).

The final topics, sub-topics, related pillars, and main categories for RFOs are presented in Table 2. The final topics as displayed in the toolbox are presented in Figure 3.

Table 2 below). Each topic also contains sub-topics. This selection is based on the consensus results and arguments from the Delphi interviews and through discussion with the AB and Work Package leaders. In this selection process, feasibility and practical issues were taken into account. Some topics and sub-topics required new SOP or guideline to be created, while others already had many good examples available.

2.3.1. Descriptions of the nine topics for RPOs (from D4.2)

In earlier deliverables from WP4 (D4.1-D4.3), we highlighted the evolution of the topics for the RPOs. A ranked list of topics for RPOs was agreed upon after a Taskforce Meeting in Vienna 13 Dec 2019. After this meeting, small iterations on the names of the topics with the aim to increase usefulness and

improve clarity were made. The sub-topics have been updated in the past 4 years to encompass diverse feedback from consortium members, pilot institutions, and other users of the toolbox.

The agreed-upon topics resulted in a 2-page document where the nine topics are described in more detail. The document also proposes three core pillars in which the topics can be organised. This document is available on the landing page of the toolbox for RPOs (<https://sops4ri.eu/tools/>).

An illustration of how the main topics for RPOs appear in the toolbox is available in

Figure 1. The final topics, sub-topics, and pillars included in the toolbox are presented in Table 1.



Figure 1. Presentation of the topics for RPO as they appear in the toolbox.

Table 1: Final topics, sub-topics, and related pillars for RPOs

Pillars	Topic	Sub-topics
Prioritising people and enhancing capabilities	Research environment	a. fair procedures for appointments and promotions
		b. education and training
		c. culture building
		d. managing competition and publication pressure
		e. conflict management
		f. diversity and inclusion
		g. supporting a responsible research process
	Research Integrity Training	a. pre-doctorate
		b. post-doctorate
		c. training of RI personnel and teachers
		d. RI counselling and advice
	Supervision and mentoring	a. PhD guidelines
		b. supervision requirements and guidelines
		c. building and leading an effective team
Building research integrity into organizational structure	Dealing with breaches of research integrity	a. RI bodies in the organization
		b. protection of whistleblowers
		c. protection of those accused of misconduct
		d. procedures for investigating allegations
	Research ethics structures	a. set-up and tasks of ethics committees
		b. ethics review procedures
	Data practices and management	a. guidance and support
		b. FAIR principles

Pillars	Topic	Sub-topics
Ensuring clarity and transparency	Declaration of interests	a. in peer review
		b. in the conduct of research
		c. in research evaluations
	Publication and communication	a. publication statement
		b. authorship
		c. open science
		d. use of reporting guidelines
		e. peer review
		f. communicating with the public
	Research collaboration	a. among RPOs inside/outside the EU
		b. with countries with different R&D infrastructures
		c. between public and private RPOs

2.3.2. Descriptions of the six topics for RFOs

Initially, the RFO topic list contained 11 topics which were later merged into six RFO topics. The results of the Delphi interviews formed a starting point for the evolution of the RFO topics. The initial 11 topics were shaped by the empirical cycles of the project including the interviews, reviews and focus groups. One of the main concerns expressed in earlier iterative work (reviews, Delphi interviews, focus groups, and co-creation workshops) was that 11 topics could make the work of RFOs unnecessarily complex. To accommodate this concern, the topics were merged to create six core topics for RFOs.

Figure 2, shows how the 11 topics were grouped into 6 overarching topics.

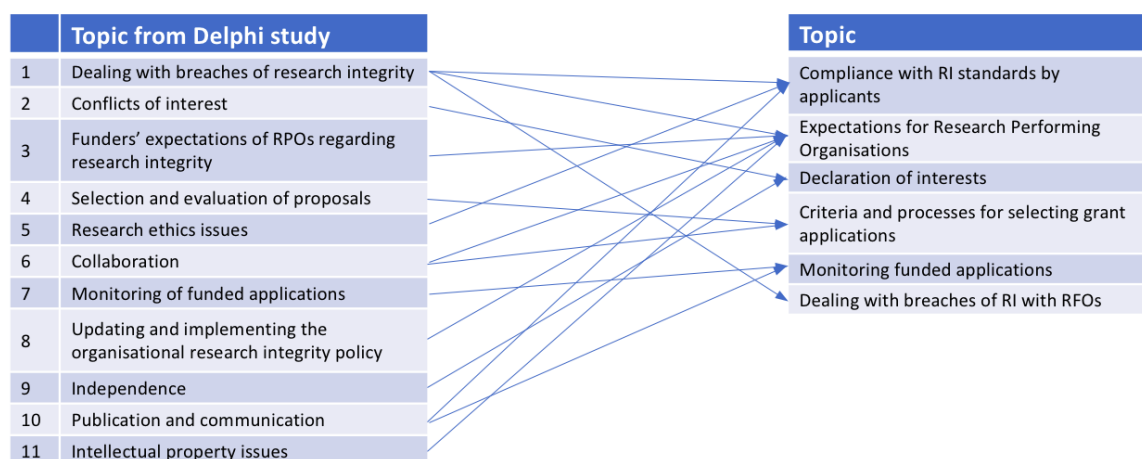


Figure 2. Overview how the 11 topics are distributed among the 6 final topics.

While the sub-topics helped us ensure that all the topics were comprehensively covered in the toolbox, we decided to only include topic-levels in the RFO toolbox to accommodate for the high levels of overlap between the sub-topics and the lower number of resources available.

The six final RFO topics also relate to one another under broader pillars. The three pillars are represented in Table 2. Pillar 1 concerns communicating their expectations related to RI towards RPOs and applicants; Pillar 2 focuses on transparency about how they evaluate applications and ensure that potential competing interests are reported, and Pillar 3 addresses internal structures in an RFO that can safeguard RI in staff members, committees and reviewers. These three pillars are further delineated into two main categories in the toolbox of (1) external expectations and (2) internal procedures. The work on the RFO-topics has resulted in a 2-page document describing the final set of topics in more detail. This document can be found on the landing page of the toolbox for RFOs (<https://sops4ri.eu/tools-for-rfos/>).

The final topics, sub-topics, related pillars, and main categories for RFOs are presented in Table 2. The final topics as displayed in the toolbox are presented in Figure 3.

Table 2: List of topics and sub-topics for RFOs

	Pillar	Topic	Sub-topic
External expectations	Clear and consistent expectations	Compliance with research integrity standards by applicants	a. research ethics requirements
			b. ethics reporting requirements
			c. RI plan
			d. plagiarism
		Expectations for research performing organisations	a. codes of Conduct
			b. assessment of researchers
			c. education and training for RI
			d. processes for investigating allegations of research misconduct
			e. expectations on collaborative research
			f. research that is co-financed by multiple funders
			g. RI bodies in the organization

	Pillar	Topic	Sub-topic
Internal procedures	Ensuring clarity and transparency	Criteria and processes for assessing grant applications	a. methodological requirements
			b. diversity issues
		Declaration of conflicts	a. among review committee members
			b. among reviewers
			c. among staff members
			d. what counts as an unjustifiable interference?
			e. preventing unjustifiable interference by the funder
			f. preventing unjustifiable interference by political or other external influences
			g. preventing unjustifiable interference by commercial influences
	Building research integrity into internal RFO structure	Monitoring funded grants	a. financial monitoring
			b. monitoring of execution of research grant
			c. monitoring of compliance with RI requirements
			d. publication requirements
			e. expectations on authorship
			f. open science (open access, open data, transparency)
		Dealing with internal breaches of research integrity	a. procedures for integrity breaches by funded researchers
			b. by review committee members
			c. by reviewers
			d. by staff members
			e. protection of whistleblowers and the accused
			f. sanctions/other actions
			g. communication with the public in case of breaches



Figure 3. Overview of the main division of RFO topics in the online toolbox.

2.4. Specific activities discussed in the final version of the toolbox

2.4.1. Introduction

The final version of the toolbox builds on the first four versions of the toolbox. The *first* version of the toolbox integrated results from WP3 (literature review, expert and Delphi interviews) to identify topics that guide the construction of the toolbox. The *second* version of the toolbox presented concrete recommendations, taking account of disciplinary differences. The *third* version of the toolbox complemented previous findings by adding insights from the developed Sets of Recommendations (SoRs). These SoRs emerged from the co-creation workshops, which were organised to create guidelines on topics that are underdeveloped in the literature,. The fourth version of the toolbox was further refined by systematically revising the co-created guidelines by internal working groups, describing the results from the application of the quality assessment process on all the existing documents in the repository that helped to populate the toolbox with existing high quality guidelines, and presenting preliminary findings from the survey related to the guidelines which helped to inform and broaden the co-created guidelines. The fifth and final version of the toolbox explains how the guidelines were revised and finalised with expert, survey, and pilot input, reports on the progress made in the selection procedure for inclusion of tools in the toolbox, reiterates the feedback of pilot

institutions on the toolbox, and presents a plan for migrating SOPs4RI guidelines and the toolbox on the Embassy of Good Science in order to improve its sustainability.

2.4.2. Specific activities

The specific activities in WP4 for this deliverable are:

- **Expert input, design, and finalisation of the co-created SOPs4RI guidelines**

In earlier deliverables, we explained how we co-created draft guidelines for six topics that were found to be underdeveloped in the literature and to lack good quality resources such as guidelines, SOPs, and best practices, etc. (See D4.4 and D4.5 for more information). The current deliverable explains the process implemented to revise and finalise these draft guidelines into usable, user-friendly, and high-quality guidelines to be added to the SOPs4RI toolbox.

- **Populating the toolbox with assessed high-quality resources**

The final toolbox includes a selection of high-quality tools on research integrity such as research integrity documents, standard operating procedures, policies, guiding resources, and codes of conduct. Using the assessment procedure described in D4.6, we assessed the quality of a comprehensive selection of research integrity tools retrieved in earlier steps of the research project. Based on the assessment score, we decided which integrity tools should be included in the final toolbox. This deliverable reports on the progress made in the selection procedure, performed by several working groups of consortium members. A list of included documents can be found in Appendix XXI.

- **Testing the toolbox with pilot institutions and optimising it based on their feedback**

In the last phase of the project, different organisations piloted the toolbox and the tools created and reported back on user-friendliness and usefulness. Full pilot results are available in deliverable D7.2, including details on how the pilot activities contributed to the refinement of tools.

- **Migrating the toolbox to the Embassy of Good Science**

As a final step and to ensure the viability and sustainability of the toolbox, the toolbox will be migrated to the Embassy of Good Science. We will detail the plan and ongoing process of this final step below.

2.4.3. Methodological steps

Each specific activity presented in the current deliverable followed a number of methodological steps. Further details on the methodology of each activity are provided within the sections dedicated to specific activities.

- **Expert input, design, and finalisation of the co-created SOPs4RI guidelines**

- a. Design a guideline revision process and devise guideline revision working groups
- b. Undertake the revision process by following the steps of 1. Prioritization according to necessity, feasibility, and relevance; 2. Reorganisation; 3. Optimization; 4. Formatting; 5. External advice; 6. Visual layout; and 7. Closure (see our guideline revision manual at <https://osf.io/f9ghi/>)

- **Populating the toolbox with high-quality resources**

- a. Retrieve documents and resources which were relevant to include in the toolbox

- b. Design a resource quality assessment method and process and create assessor teams
 - c. Assess the resources to ensure quality
 - d. Select high quality resources for inclusion in the toolbox
 - e. Upload the tools in the online toolbox on our website
- **Testing the toolbox with pilot institutions and optimizing it based on their feedback**
 - a. Identify diverse pilot institutions willing to contribute and pilot the toolbox.
 - b. Introduce pilot institutions to the toolbox and test the tools with pilot institutions.
 - c. Analyse the results and, where adequate, adapt the toolbox to improve its user-friendliness and usefulness.
- **Migrating the toolbox on the Embassy of Good Science**
 - a. Initiate contact with the Embassy of Good Science and build a common understanding of the capabilities of the platform towards the objectives of the migration.
 - b. Migrate SOPs4RI material towards the Embassy of Good Science
 - c. Ensure effective retrieval keywords and classification of SOPs4RI materials

In the following sections, we go through each specific activity in greater details.

3. Expert input, design, and finalisation of the co-created SOPs4RI guidelines

3.1. Summary of the process used to develop the SOPs4RI guidelines

The SOPs4RI project aims to help equip RPOs and RFOs to better foster research integrity and good research practices. In early stages of the project, we identified topics and sub-topics essential to consider when making efforts towards research integrity and good research practices (see Deliverables D4.1 to D4.5). At the culmination of the project, the SOPs4RI toolbox will ensure that RPOs and RFOs have access to high-quality guidance on each identified topic and sub-topic so that they can build high quality research integrity promotion plans and standard operating procedures in their own setting.

In searching for high quality guidance documents on each of the topics and sub-topics identified, it was apparent that some of the sub-topics that are important for the promotion of research integrity are underdeveloped and that the guidance needed to help RPOs and RFOs build RPPs in these areas is lacking. As a result, an important task for the SOPs4RI project consisted of creating high-quality guidelines in these underdeveloped topics and sub-topics.

Based on an extensive analysis in earlier steps (See D4.4), we selected six underdeveloped topics (21 sub-topics, see Table 3) in which to build guidelines for RPOs and RFOs.

The complete details on the guideline development, methodology, and results are available in *Deliverable D4.4: Report on the co-creation workshops*.

We conducted 24 co-creation workshops (CCW) with diverse stakeholders during which we covered six different topics (the so-called underdeveloped topics), each separated into several sub-topics. The stakeholders included research consultants, editors, junior researchers, senior researchers, policy makers, funders, and research administrators. Each workshop covered one topic, with each topic being

discussed in four workshops in total. Of these four workshops per topic, two were held in October 2020, while the other two were held in November or December 2020. All workshops were conducted on the collaborative whiteboard software program MIRO, as well as Zoom.

The first set of workshops focused on content creation. During content creation, we asked participants to create ideas for skeleton guidelines on each of the sub-topics included in the topic of the workshop. We analysed the ideas generated in the first set of workshops (i.e., inductive analysis of transcripts), leading to the draft of a first version of the skeleton guidelines (i.e., *Skeleton guidelines V1*) which we used as input for the second set of workshops.

The second set of workshops focused on content refinement. During content refinement, we asked participants to comment on and refine the draft skeleton guidelines, as well as to discuss potential implementation issues of the guidelines. We used the ideas discussed in the second set of workshops (i.e., deductive and inductive analysis of transcripts) to further refine and finalise the skeleton guidelines. We sent the resulting guidelines to the participants for user feedback and adapted the guidelines where needed to obtain the *Skeleton guidelines V2*.

Table 3. Distribution of the 14 final guidelines co-created during the SOPs4RI project. For RPO guidelines, we built one guideline per sub-topic. Per RFO guidelines, we merged sub-topics to create one guideline per topic based on reflections from co-creators, revision working groups, and experts.

User	Topic	Sub-topic (created as separate guidelines in RPOs)
RPO	Education and training in RI	1. Bachelor, master and PhD students
		2. Post-doctorate and senior researchers
		3. Institutional research integrity stakeholders
		4. Continuous research integrity education
	Responsible supervision and mentoring	5. Supporting the PhD trajectory
		6. Responsible supervision
		7. Building and leading effective teams
	Research environment	8. Community building for a positive research culture
		9. Managing competition and publication pressure
		10. Adequate education and skills training
		11. Diversity and inclusion
RFO	12. Selection and evaluation of proposals (including sub-topics of research integrity requirements of the proposals; methodology requirements; diversity considerations)	

User	Topic	Sub-topic (created as separate guidelines in RPOs)
	13. Monitoring of funded applications (including sub-topics of the execution of the research grant; compliance with research integrity requirements; financial monitoring)	
	14. Defining and preventing unjustified interferences from funders, political and commercial actors (including sub-topics of what counts as an unjustifiable interference; interference by the funder; interference by political/other influences; interference by commercial influences)	

Although the *Skeleton Guidelines V2* were well-structured, evidence-based guidelines, they were not fine-tuned yet, were not tested in ‘real life settings’ and were not reviewed by experts. Therefore, this needed to be addressed before adding them to the toolbox. For example, the guidelines were very long and detailed, there was overlapping and sometimes conflicting information between the guidelines; the terms and concepts used were not always consistent; they did not fully address institutional or disciplinary differences, and the format was not *attractive for the users*.

For these reasons, the guidelines underwent a thorough revision process. The detailed description of the revision process is available in Deliverable D4.6. The process contained seven different steps. In short, Guideline Revision Working Groups were created for each guideline topic and topics underwent a *prioritization* of the recommendations according to necessity, feasibility, and relevance (step 1); a *reorganisation* of the guideline elements (step 2); an *optimisation* process to improve understandability, implementability, methodological soundness, and comprehensiveness (step 3), and a general formatting to harmonize and maximise the usability of the guidelines (step 4). This led to an optimised version of the guidelines referred to as *Guidelines V3*. The Guidelines V3 are presented in Deliverable D4.6.

3.2. Revision and finalisation steps since the fourth version of the Toolbox

The *Guidelines V3* resulted in a solid set of guidelines that were ready for finalisation steps, namely External advice (step 5), visual layout (step 6), and closure (step 7).

3.2.1. Step 5. External advice

In the fifth step, advice was taken from outside the Guideline Revision Working Groups to further improve the guidelines. This included survey results; co-creation participant feedback; pilot institution feedback, and external expert feedback.

3.2.1.1. Survey results

As described in deliverable D4.6, most of the survey results were aligned with the guidelines as they currently stood. Upon discussion with the Guideline Revision Working Groups leaders, it was decided that the survey results provided too few updates to be relevant to add or remove elements from the guidelines. In fact, most survey results confirmed areas of priority and the absence of necessary support in research institutions and thus reinforced the need for the guidelines and recommendations, but without necessarily changing the context in which they should be described. Nevertheless, survey

results helped to adapt the wording of the guidelines, for example by encouraging us to provide more details in the introductory paragraphs to help institutions capture the context and reason for the recommendations. Despite the limited impact of the survey results on the content of the guidelines themselves, the results confirmed most of the initial ideas about the recommendations and helped to understand more about the receptivity and willingness of different researchers. These elements have a broader relevance, that of understanding how the guidelines will be received and how their impact can be maximised with users.

3.2.1.2. Co-creation participants feedback

To ensure that the revised guidelines preserved the original idea of their co-creators, they were sent back to the co-creation workshop participants after the revisions from the Guideline Revision Working Groups. This led to slight changes in wording (e.g., removing 'equality' from the guideline on Diversity and Inclusion since participants considered that equality is neither possible nor necessarily adequate; changing the term 'best-practice' examples to 'in-practice' examples to highlight the fact that the examples provided are not necessarily the gold standard but provide good inspiration for implementation; adding new 'in-practice' examples that were suggested by participants, and modifying specific terminology such as suggesting that RI should be a central 'value' rather than aim in the RI education guidelines). For an example of the kinds of comments received from co-creation workshop participants, please see: <https://osf.io/we6pq>.

3.2.1.3. Pilot institution feedback

To further improve the usability of the co-created guidelines, short interviews with pilot institutions (WP7) to obtain feedback on the usefulness and user-friendliness of the guidelines, and on the preferences regarding the format and presentation were conducted. Unfortunately, given the late addition of the revised guidelines in the toolbox, no pilot institutions had used the revised versions in their institutions. Despite this gap, these interviews led to the appreciation that pilot institutions would have liked a clearer distinction between SOPs4RI and non-SOPs4RI material in the toolbox, and this recommendation influenced the decision to add and improve infographics and clear and recognisable formatting to make the SOPs4RI guidelines stand out in the toolbox.

3.2.1.4. External expert feedback

In the final steps of the guideline revisions, the Guideline Revision Working Group Leaders met with a guideline design expert, Miranda Langendam, to better understand what was still needed to optimise the guidelines for use. This meeting and examination of the guidelines led to the decision to invite external experts to provide final input on the co-created guidelines. These experts were selected for their relevance as potential users of the guidelines, for their expertise in similar guideline creation or implementation, or for their knowledge of the settings and requirements of the guidelines' intended users. Up to three experts were selected for each guideline topic. The experts were asked to read through the guidelines and participate in a one-hour interview to report feedback on a number of questions. A sample invitation email is available in Appendix I. A set of pre-defined questions were asked in the interviews.

Box 1 below). These questions were sent to the experts ahead of the meeting.

Table 4 provides an overview of the experts that provided feedback for each guideline topic.

Feedback from the experts provided invaluable input to the recommendations and the overall presentation of the guidelines. For instance, in the *Education and Training in Research Integrity* topic, experts mentioned that the guidelines should change the highly specific recommendation of using 'blended learning' for research integrity training and instead recommended that research integrity training should use multiple platforms or media. In the guidelines on *Research Environment*, the external expert pointed out a number of content gaps and proposed several additional examples of implementation, proposing that these examples be renamed from 'best practice examples', to 'in practice examples' to illustrate that their selection was not necessarily evidence-based. In the expert groups for *Supervision and Leadership*, the discussions highlighted that leadership is not necessarily perceived as a supervision task. This discussion helped us by identifying the need to provide further details in the descriptions included in the guidelines to outline why we consider leadership as an important aspect in this topic.

Box 1. Set of pre-defined questions asked in interviews with external experts

Questions used for the interviews with external experts

Questions at the key recommendation level:

1. Are there any Key Recommendations for which you would change the wording? Any tips/advice on how to do this?
2. Are there any Key Recommendations for which you can foresee implementation problems? If yes, how could we improve the recommendation to address these problems?

General questions:

1. Do you feel that you could work with these guidelines in your institution? How could we adapt the guidelines to resolve any potential implementation problems?
2. Do you think that implementing this guideline would add value to the practices and the policies in place in your institution? How could we adapt the guidelines to ensure that they are most helpful in your context?
3. [Guideline-specific question if needed]

Visual features:

1. Do you have any general suggestions about the overall format of the guidelines?

Table 4. External expert who agreed to revise the guidelines for each topic

Topic	Expert
Education and training in research integrity	Mariëtte van den Hoven, Professor and Head of the Department of Ethics, Law & Humanities, Amsterdam UMC Malcolm Macleod, Professor at the Centre for Clinical Brain Sciences, University of Edinburgh, Scotland

Topic	Expert
	Julia Claire Prieß-Buchheit, Professor at the Academic Centre for Sciences and Humanities, University of Applied Sciences Coburg, Germany
Responsible supervision	Katherine Richardson, Professor at the Section for Biodiversity, Globe Institute, Faculty of Health and Medical Sciences and Leader, University of Copenhagen's Sustainability Science Centre, Denmark Hannerieke van der Boom, Research Policy Advisor, Amsterdam UMC, the Netherlands
Research environment	Karen Stroobants, Research policy adviser, Royal Society of Chemistry, United Kingdom
RFO Guidelines (all guidelines)	Martin Stochof, Emeritus Professor of Philosophy, University of Amsterdam, the Netherlands Henk Smid, Advisor, ZonMW, the Netherlands Lidia Borrell-Damián, Mathilde Reumaux and James Morris, Science Europe

3.2.2. Step 6. Visual layout

Starting in the summer of 2022, there was a collaboration with the design team of SciFy to finalise the design of the guidelines and create infographics for each of the topics targeted by the SOPs4RI co-created guidelines. The infographics and design were inspired by feedback received from co-creation participants on their preferences for visual aspects of guidelines as well as from all other inputs, including the Guideline Revision Working Groups and the external experts.

The design phase involved a collaborative process that extended to October 2022 allowing for further exchanges with the design team at SciFy and with different members of the consortium assigned as proof-readers. The final guidelines are available in Appendix VI to Appendix XIX.

3.2.3. Step 7. Closure

In the last step, the final guidelines were uploaded to the final SOPs4RI toolbox. For each topic for which guidelines were developed, the infographics are now presented in the topic landing page. See Figure 4 for an example of a topic landing page in the toolbox for RPOs topic Research Environment.

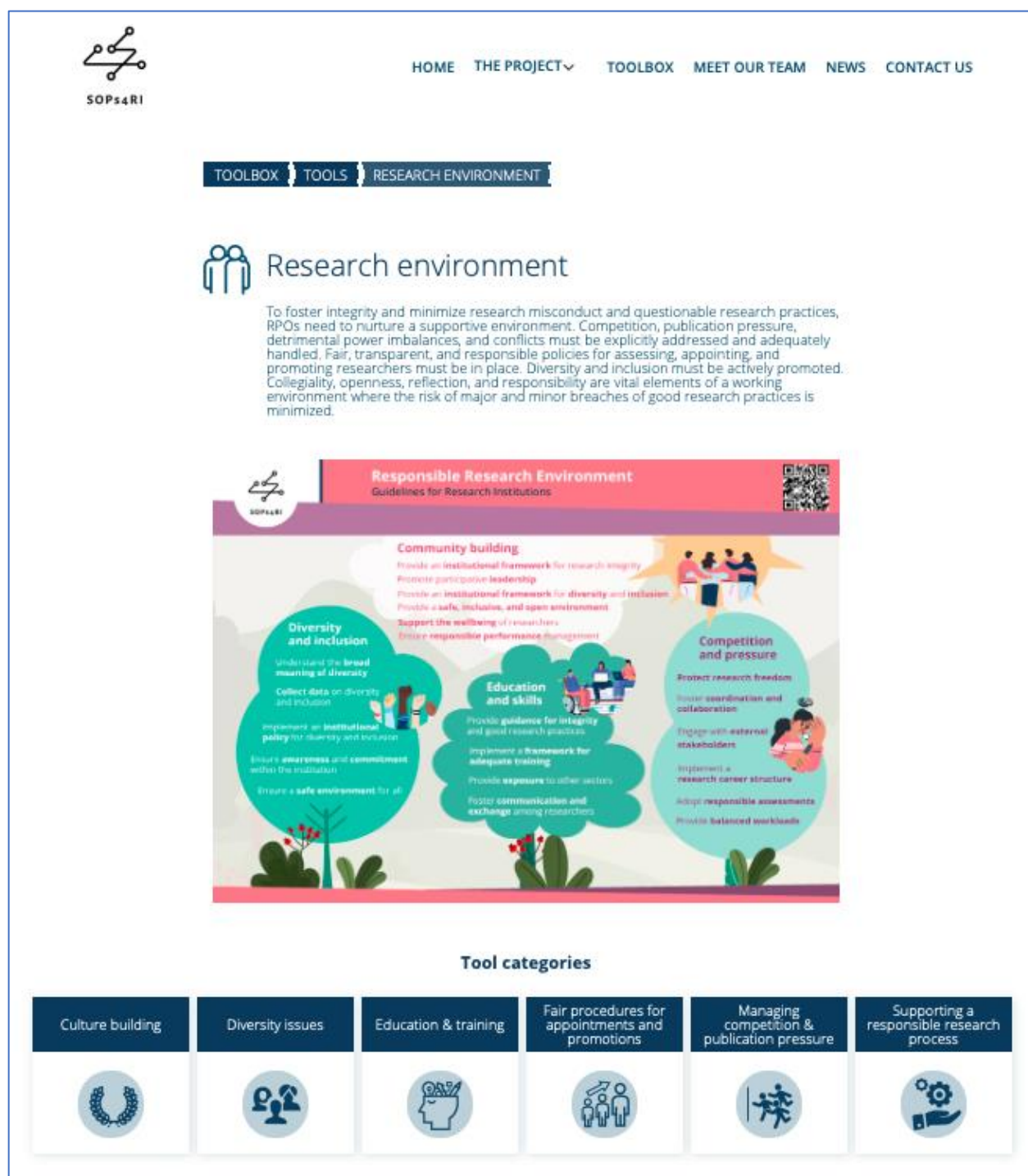


Figure 4. Example of the landing page for RPO - Research environment in which the SOPs4RI Co-created infographic now appears.

4. Populating the toolbox with high-quality resources

4.1. Summary of the Quality Assessment process

The online toolbox that is the core output of the SOPs4RI project has been populated with high-quality² relevant resources that give guidance on RI to institutions (RPOs and RFOs). The resources were selected from different resources that could help RPOs and RFOs develop Research Integrity Promotion Plans (RIPP) and select Standard Operating Procedures (SOPs) for research integrity. To ensure the quality of these documents, we created a system to assess the documents for quality.

We describe the quality assessment system created to ensure that the tools included in the toolbox are of high quality in Deliverable D4.5 (see Section 5 in D4.5). The process is summarised in the guidance for assessors of resources and is included in Appendix XX. In short, we built a system to score resources on four key quality criteria: Understandability, Implementability, Methodological Soundness, and Comprehensiveness. These four criteria were also used in the revision process for the project's created guidelines. Further details are available in Deliverable D4.6 and in the Guideline Revision Manual available on the project Open Science Framework (<https://osf.io/f9ghj>). In addition to these four quality criteria, guideline assessors were asked to select the most fitting classification out of seven different classification pairs (e.g., general vs. specific, visual vs. textual, mandatory vs. optional). Given the difficulty that assessors faced in selecting the classification criteria and since they were not adding substantial user-friendliness for future users of the toolbox, it was decided to drop this aspect in the last rounds of assessments.

In this section, we show the progress in the last few rounds of assessment in populating the toolbox.

Some guidelines targeted multiple different topics and therefore reoccur in different topics or sub-topics of the toolbox. For this reason, the total number of 'included resources' detailed below may be higher than the number of *different* resources included in the toolbox, but each resource was assessed separately for each topic in which it was added. In other words, if a resource was proposed as relevant to four different topics of the toolbox, the resource was assessed four times with specific consideration of the topic for which it was being considered. Each addition of the resource is then considered as 'one resource' in the numbers below.

4.2. Last steps of progress and tools included in the toolbox

The toolbox that is now available on the SOPs4RI website contains all documents that were assessed and judged as 'high-quality documents' in line with the assessment criteria detailed in Appendix XX. Documents were added after several rounds of quality assessments by several project members. This led to the inclusion of 148 'resources' in the toolbox. Members from the consortium were encouraged to recommend new documents for assessment during the project (and are encouraged to keep sending

² For the purpose of SOPs4RI, we define high-quality documents as documents that ranked highly on the four assessment criteria of understandability, implementability, methodological soundness, and comprehensiveness as defined in Appendix XX. We are aware that the tools may be considered of high-quality for other purposes than the ones delineated in the remit of our project and therefore wanted to clarify that we use the term 'high-quality tool' in this limited meaning thereafter.

these documents after the project has ended). As a result, the numbers listed below may have changed slightly since previous assessments given additional resource assessment in specific rounds.

Table 5. Number of resources assessed and included in each round of quality assessment.

Round of assessment	Number assessed	Number included
Preliminary round	See D4.3	30 RPO
First round	38 RFO	20 RFO
Second round	86 RPO	42 RPO
Third round	81 RPO	43 RPO
Fourth Round	12 RFO 7 RPO	6 RFO 3 RPO
Other (e.g., moved resources)	2 RFO 13 RPO	2 RFO 2 RPO
TOTAL	52 RFO 217 RPO	28 RFO 120 RPO

4.2.1. Preliminary round of inclusion of documents for the RPO toolbox in 2020

The first round of selection is extensively described in D4.2 and D4.3. The selection of documents was based on the results of WP3 in which two literature reviews served as a basis for the selection of documents. An initial assessment of these documents was completed and is detailed in D4.3. In this first assessment, 30 resources were included in the toolbox and are described in Appendix XXI.

4.2.2. Second round of inclusion of documents for the RFO toolbox

At the beginning of the summer of 2021, four assessor teams assessed the quality of 38 RFO resources of potential interest for the toolbox. As a result, 20 resources were kept for inclusion in the toolbox and are described in Appendix XXI.

4.2.3. Third round of inclusion of documents for the RPO toolbox

At the end of the summer of 2021, five assessor teams assessed the quality of 86 RPO resources of potential interest for the toolbox. Of these, 42 RPO resources were kept for inclusion in the toolbox and are described in Appendix XXI.

4.2.4. Fourth round of inclusion of documents for the RPO toolbox

In the fall of 2021, another, smaller round of quality assessment for RPO resources took place. This fourth round included 81 resources of potential interest for the toolbox. Of these, 43 resources were kept for inclusion in the toolbox and are described in Appendix XXI.

4.2.5. Final round of inclusion of documents for the RPO toolbox

In the spring of 2022, a last round of quality assessment took place. This round included 12 RFO resources and 7 RPO resources of potential interest for the toolbox. Of these, 6 RFO resources and 3 RFO resources were kept for inclusion in the toolbox and are described in Appendix XXI.

4.2.1. Other assessment of documents for the RPO toolbox

At times, suggested resources were sent to different assessors or resources were moved to different topics to be re-assessed in a given topic. These assessments were sometimes performed outside the formal rounds of assessment by a few selected assessors. 2 RFO and 13 RPO resources were assessed in such a way outside of assessment rounds, and from these, 2 RFO and 2 RPO resources were kept.

5. Summary of results from the pilot institutions

5.1. Summary of pilot activities and results

SOPs4RI WP7 was responsible for conducting pilot studies to test Version 4 of the SOPs4RI toolbox and guidelines in concrete settings among RPOs and RFOs. The pilot study was coordinated by WP7 and further details on the methodology is available in D7.1-7.3. The institutions participating in the pilot are listed in Table 6.

Table 6. List of institutions participating in the Pilot study of WP7.

RFOs	Public	Austrian Science Fund (FWF)
		Research Council Norway (RCN)
		Croatian Science Fund
RPOs	Private	La Caixa Foundation
		Novo Nordisk Foundation
		Ghent University
		Jagiellonian University
		University Pompeu Fabra
		Janssen Pharmaceutica N.V. (member of the European Quality in Preclinical Data project (EQIPD))
		Barcelona Biomedical Research Park
		University of Split

The main objective of the pilot testing was to assess the value and implementation of the SOPs4RI toolbox. This was achieved by creating a space for an open and inclusive, practice-oriented discussion on the tools and resources developed within the project, involving relevant key stakeholders from both RPOs and RFOs. The pilot studies enabled the collection of feedback on the efficiency and effectiveness, as well as on the costs and benefits of the toolbox as a whole, but also the *Research*

Integrity Promotion Plan (RIPP) Templates and the *Implementation Guideline* that accompany the SOPs4RI toolbox.

Pilot institutions contributed to several key steps needed for improving the SOPs4RI toolbox. These included:

- Creation of RIPP templates
- Discussions on the SOPs, guidelines, and tools' efficiency and effectiveness
- Reflection on experiences of the implementation process including its costs and benefits
- Creation of a usable action plan matrix
- Creation of inspirational stories

The specific actions and phases of the pilot studies implementation are presented in Figure 5. Phase 1 included the identification of diverse pilot institutions willing to contribute and pilot the toolbox. The selection of institutions was carefully orchestrated to involve a diversity of sizes, countries, mandates, and types of institutions. Phase 2 involved the introduction of pilot institutions to the toolbox and testing of the tools by the pilot institutions. Phase 3 then analysed the results and, where appropriate, adapted the toolbox to improve its utility and usability.

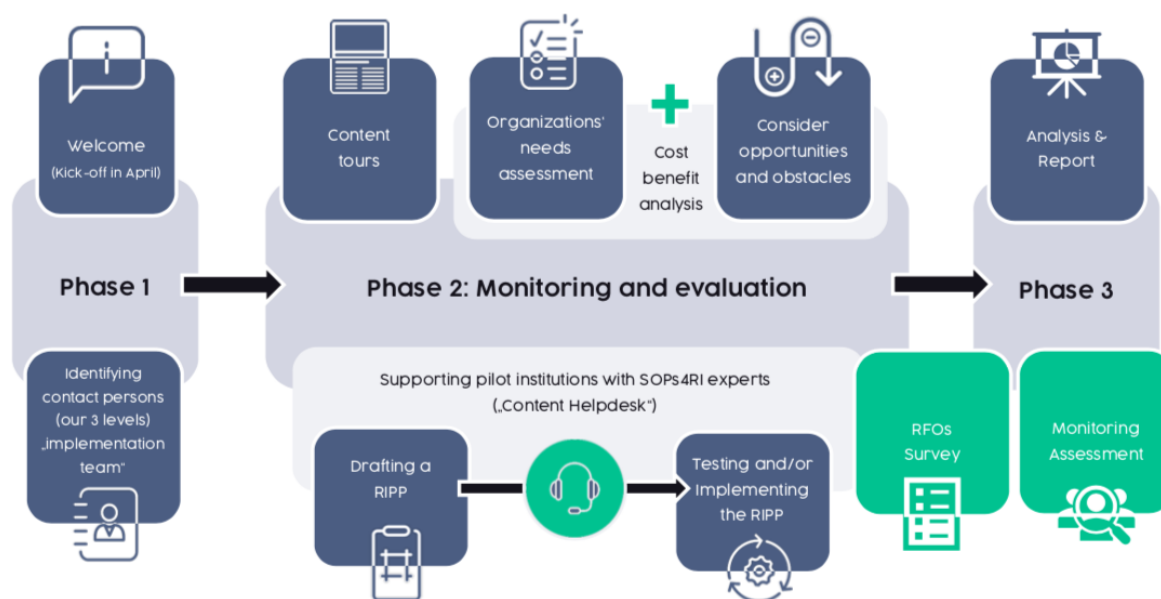


Figure 5. Pilot Implementation Phases

At the end of the pilot involvement, WP4 and WP7 engaged in a two-tier feedback process with pilot institutions, conducting a brief online survey and a follow-up conversation of approximately 20-30 minutes to expand on the responses from the survey. The survey asked pilot institutions about their perspectives on WP7 guidelines namely the Guidelines for promoting research integrity in RPOs and RFOs, the implementation guideline and the Research Integrity Promotion Plan (RIPP) template for RPOs and RFOs and on WP4 SOPs4RI co-created guidelines (Appendix VI to Appendix XIX). Deliverable D7.2 explains the findings from this feedback process.

Pilot institutions expressed positive attitudes to the RIPP template, the Implementation Guideline and the SOPs4RI toolbox. Given the time at which the SOPs4RI guidelines were added to the toolbox, most pilot institutions did not use the SOPs4RI co-created guidelines and therefore provided very little feedback on them. Despite this, the pilot institutions provided feedback on how improvements could be made on the visibility of the guidelines in the toolbox as detailed in Section 3.2.1.3. Further details on the pilot results are available in deliverable D7.2.

In concluding the SOPs4RI involvement with the pilot institutions, WP7 organised an event in Vienna on the 22nd of November 2022. The event emphasised the role of the pilot institutions in making the SOPs4RI project a success and allowed pilots to discuss the steps they are planning to take. The event was successful in strengthening the positive network that links these institutions and the SOP4RI consortium. In the months following the end of the project, it is hoped that the pilot institutions will play a pivotal role in promoting the visibility and the sustainability of the toolbox (see also Section 7.1) and in discussions around the types of events and networks in which the toolbox can be disseminated to stimulate greater visibility of the toolbox.

6. Migration of the Toolbox to the Embassy of Good Science

6.1. Update

Throughout the project, the SOPs4RI consortium has been in close contact with the Embassy of Good Science and a common understanding has been achieved, with regard to the optimal ways that different SOPs4RI outputs can be featured on the Embassy of Good Science platform. These include:

1. An entrance to the SOPs4RI toolbox which will be added to the Embassy theme page section for SOPs4RI;
2. A description of, and link to, SOPs4RI co-created resources from the Embassy Resources/Guidelines section;
3. The SOPs4RI deliverables and peer-reviewed publications are planned to be featured at the **Community/Initiatives** section.

In November 2022, selected SOPs4RI-created tools started to be transferred to the Embassy, a process that will be continued to the end of the project.

7. Dissemination

The toolbox is the main output of the project and the consortium considers the toolbox to be the most impactful output of SOPs4RI. For the toolbox to be as influential as possible, the consortium, with the lead of NTUA (WP2 leader) and AU (coordinator), will use the following "pathways" to impact:

- a. boost visibility through the dissemination and communication channels of SOPs4RI in the coming years
- b. draft plans for a sustainable legacy after the end of the project.

With regard to the dissemination and communication strategy to be followed until the end of the project, SOPs4RI will increase its presence on Social Media, in which it has already established presence (e.g. 1500 followers on twitter). SOPs4RI has also disseminated and communicated its activities via:

- a. the release of the results of the WP6 online survey and the WP7 piloting activities,
- b. the presence of the consortium members at important events, such as the 7th World Conference on Research Integrity and the ENRIO Congress on Research Integrity practice,
- c. the release of the videos that have were created by SOPs4RI and SAGE Publishing,
- d. its active presence on the Theme page, the "Community/Initiatives", and "Resources/Guidelines" sections of The Embassy of Good Science, and
- e. the release of a significant number of peer-reviewed publications (already planned by collectively created and agreed publication plans for each WP).

Regarding the sustainability of the toolbox (online presence, curation, enrichment with new guidelines and SOPs) the consortium has discussed plans to render this challenging target feasible as will be described in the next section.

7.1. Sustainability of the SOPs4RI toolbox, guidelines, and other outcomes

Throughout the project life-time there have been increasingly frequent discussions within the consortium on how to ensure a sustainable legacy of the SOPs4RI toolbox after the project has finished. To ensure that all options are considered, the Consortium will apply the same methods used in the creative phases of the project with a focus on options for continuing with the SOPs4RI mission within the SOPs4RI consortium.

Specifically, during the final General Assembly (GA) of SOPs4RI in Aarhus, co-creation sessions within the consortium explored how to make the SOPs4RI toolbox sustainable. One day before the GA, the consortium members were asked to fill in a 'sensitisation sheet', about what comes to mind when thinking about the word 'sustainability'. They were encouraged to think more broadly than the project and to use text and imagery. During the session on Day 1 of the GA, the consortium members split into four groups, each with a facilitator (JT, BT, JA, KL). Within each group, members first shared how they filled in the sensitization sheet, namely what they think of when hearing the word 'sustainability', for the purpose of stimulating creativity. Following this, a joint brainstorm of ideas explored how to make the SOPs4RI toolbox sustainable. At the end of Day 1, each group delivered a list of ideas on sustainability to the workshop facilitators.

The facilitators compiled the list of ideas into an online voting survey and asked the consortium members to vote for their top three ideas before the next co-creation session on Day 2 of the GA. All members voted, and the top four ideas were selected to be further developed. During the second co-creation session, each group developed one idea in more detail, by considering what steps are needed to realize the idea. Additionally, each group reflected on the facilitators and barriers of implementing their idea. At the end of the session, each group delivered a rough proposal for one way in which SOPs4RI could make its outputs sustainable. The ideas included

- (1) how to curate the toolbox (including creating an alliance of institutions using the toolbox, working together with SAGE, or working with ambassadors)
- (2) creating a structure that supports organisations in using the toolbox (a 'Guardian' providing e-learning, consultancy, updates and new guidelines)
- (3) monetising the toolbox (by acquiring funding, creating an accreditation or consultancy body, working with SAGE, or creating a virtual institute of RI) and
- (4) working with various actors and communities to allow the toolbox to live on (such as the EC, LERU, or other communities with which researchers identify). The Executive Board is now looking into the feasibility of these ideas and any future developments will be communicated on the SOPs4RI website and on SOPs4RI's social media accounts.

Taking into account the combination of the dedication of the consortium members and the contributions of institutions who generously supported the project, there is confidence that the SOPs4RI toolbox will become an established source for RPOs and RFOs in the collective drive for research integrity in Europe and the wider world.

8. Appendices

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Appendix I External expert invitation email

Initial email (Sections in yellow highlight to be adapted)

Subject:

Expert Input for SOPs4RI Guidelines for research institutions/ research funders on TOPIC

Body:

Dear NAME

I am contacting you to ask whether you may be willing to provide expert feedback on some guidelines we are currently working in the SOPs4RI project. In short, we are seeking the feedback from three to four expert to maximise the useability of the guidelines and we thought that you would be an excellent fit to provide feedback on our guidelines on TOPIC for research institutions/research funders

Context

SOPs4RI stands for Standard Operating Procedures for Research Integrity; it is a European Commission project in which we are building a toolbox to help research institutions and research funders build research integrity promotion plans. An important part of the SOPs4RI project consists of creating guidelines on topics for which few resources are currently available. The guidelines are directed at research institutions and funding organizations, so you will find them to be different from guidelines directed at researchers. The guidelines were created through an extensive process which included a scoping review, qualitative interviews and focus groups, a Delphi-consensus study, co-creation expert workshops and selected results from a broad-scale European survey. We are now seeking the feedback from three to four expert to maximize the useability of the resulting guidelines.

X of the resulting guidelines focus on the topic of TOPIC, and given your past work and expertise, I thought that you would be ideally suited to provide your thoughts on our guidelines.

What does expert input imply?

We are looking for a few comments on the structure and useability of the guidelines, and to simplify the task, I will simply schedule a 1h call with you to get your comments (so no need for written answers). We are aiming to hold these calls any time in January 2022.

Please note that this is late-stage feedback; we do not expect a thorough review of the guidelines. Simply read through the guidelines and I will ask you about your impressions and about any issues you encountered so we can think together how to improve the recommendations you found problematic.

In the attachment, you may find three/four guidelines in both PDF and Word format alongside a document with directed questions I will discuss with you in the short feedback call. No need for thorough preparation besides reading through the guidelines.

Acknowledgement

If you accept to act as an expert for our guidelines on research environment, we would of course like to add your name to the contributors of the guidelines!

Please let me know if you would be willing to act as one of our experts, and if yes, we can plan a call.

I am looking forward to hearing from you.

Kind regards,

NAME**Attachment (Sections in yellow highlight to be adapted if needed)****Questions to consider when looking at the SOPs4RI guidelines**

Below are a few questions to consider when looking at the guidelines. We will go back to these questions when we organise a short feedback interview with you.

You are of course welcome to note thoughts and feedback that goes beyond these questions. Simply remember that this is late-stage feedback and that we do not expect you to provide thorough copy-editing.

Questions to consider**Questions at the key recommendation level:**

Note: These two questions should be answered at the level of Key Recommendations. Key recommendations are the main, numbered recommendations that you can see at the top of the guideline pages.

1. Are there any Key Recommendations for which you would change the wording? Any tips/advice on how to do this?
2. Are there any Key Recommendations for which you can foresee implementation problems? If yes, how could we improve the recommendation to address these problems?

General questions:

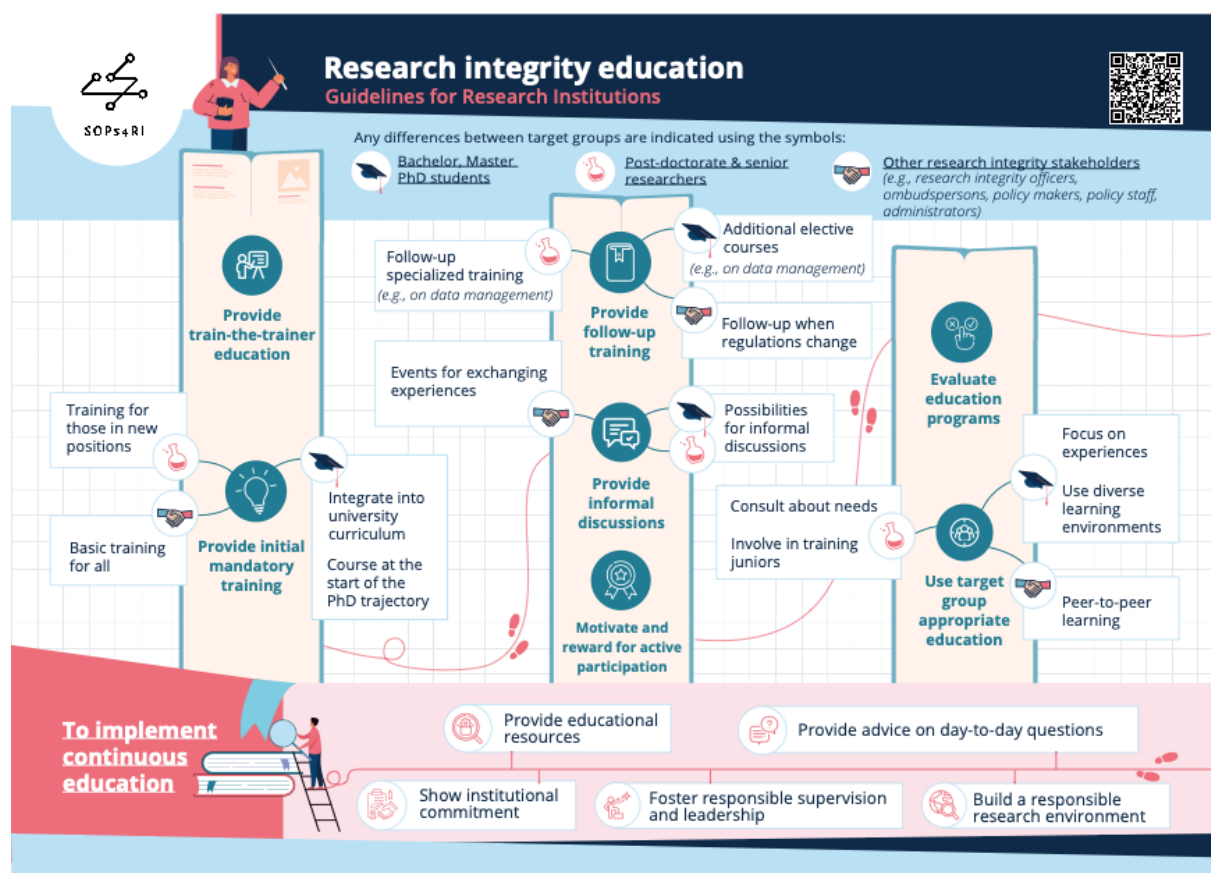
Note: These questions should be answered by thinking about the guidelines as a whole. You can answer the question by discussing aspects that are specific to one of the guidelines, or by giving your overall impression of all the guidelines.

1. Do you feel that you could work with these guidelines in your institution? How could we adapt the guidelines to resolve any potential implementation problems?
2. Do you think that implementing this guideline would add value to the practices and the policies in place in your institution? How could we adapt the guidelines to ensure that they are most helpful in your context?

3. **Guideline-specific question if needed**

We will finalize the visual features of the guidelines at a later stage. If you have any suggestions about the overall format of the guideline, please let us know, but do remember that these are unlikely to be our final format.

Appendix II Infographic for the guidelines on Research Integrity Education and Training



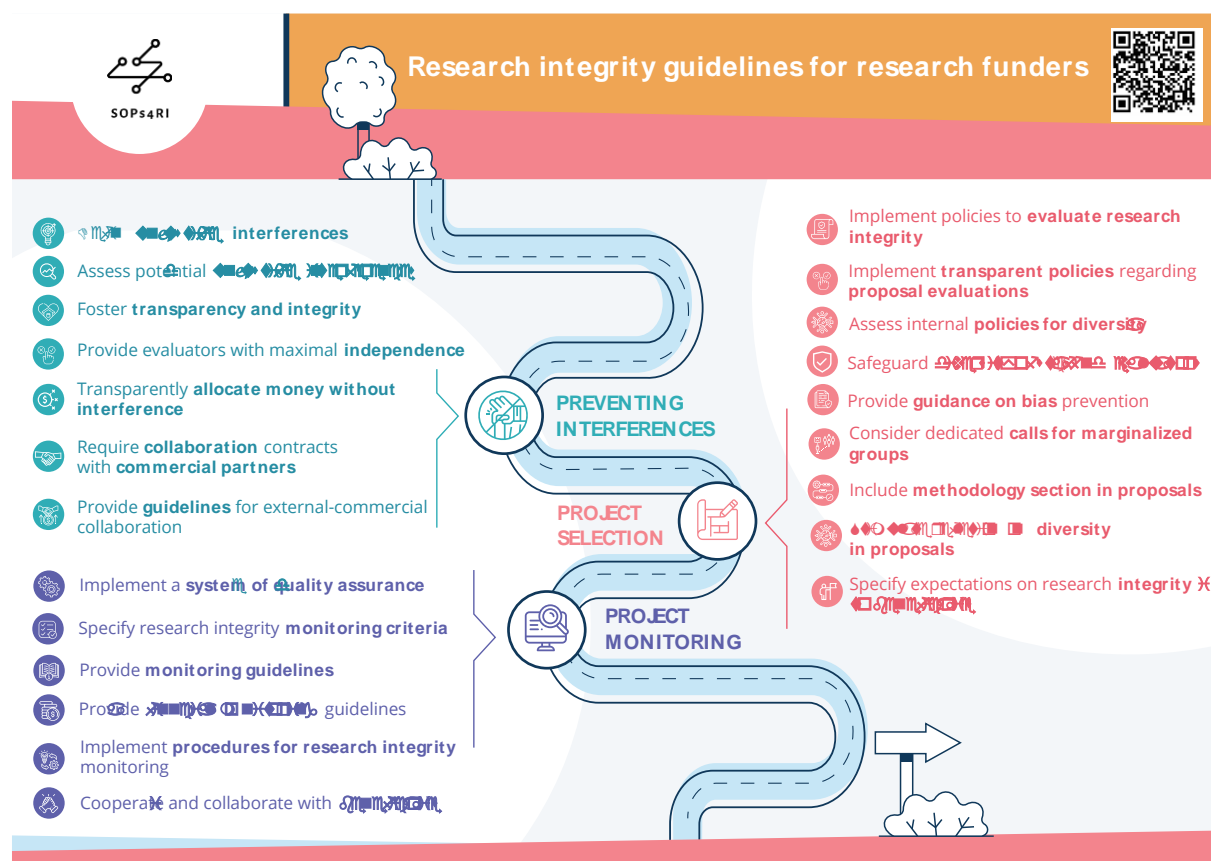
Appendix III Infographic for the guideline on Supervision and Mentoring



Appendix IV Infographic for the guideline on Responsible Research Environment



Appendix V Infographic for the guidelines for RFOs



Appendix VI **Guidelines on Research Integrity Education and Training for Bachelor, master and PhD students**



RI education & training



Guidelines for research institutions on the research integrity education of bachelor, master and PhD students

Why



Education and training are needed to **raise awareness** about research integrity and **provide researchers with the required tools** to promote responsible research practices.



Research integrity education offered to bachelor, master and PhD students ensures that students learn about responsible research practices **at the start of their research trajectory**.



This document provides guidance to research institutions on **what to include in their research integrity education strategy for bachelor, master and PhD students**.



We first provide a one-page overview of all key guideline recommendations. In the subsequent pages, each key recommendation is followed by more detailed guidance and in practice examples to help research institutions bring the recommendations into practice.

What

Who



The guidelines provides information relevant for **research officers, trainers, managers, and coordinators**, as well as to **deans, rectors** and other institutional **leaders**.

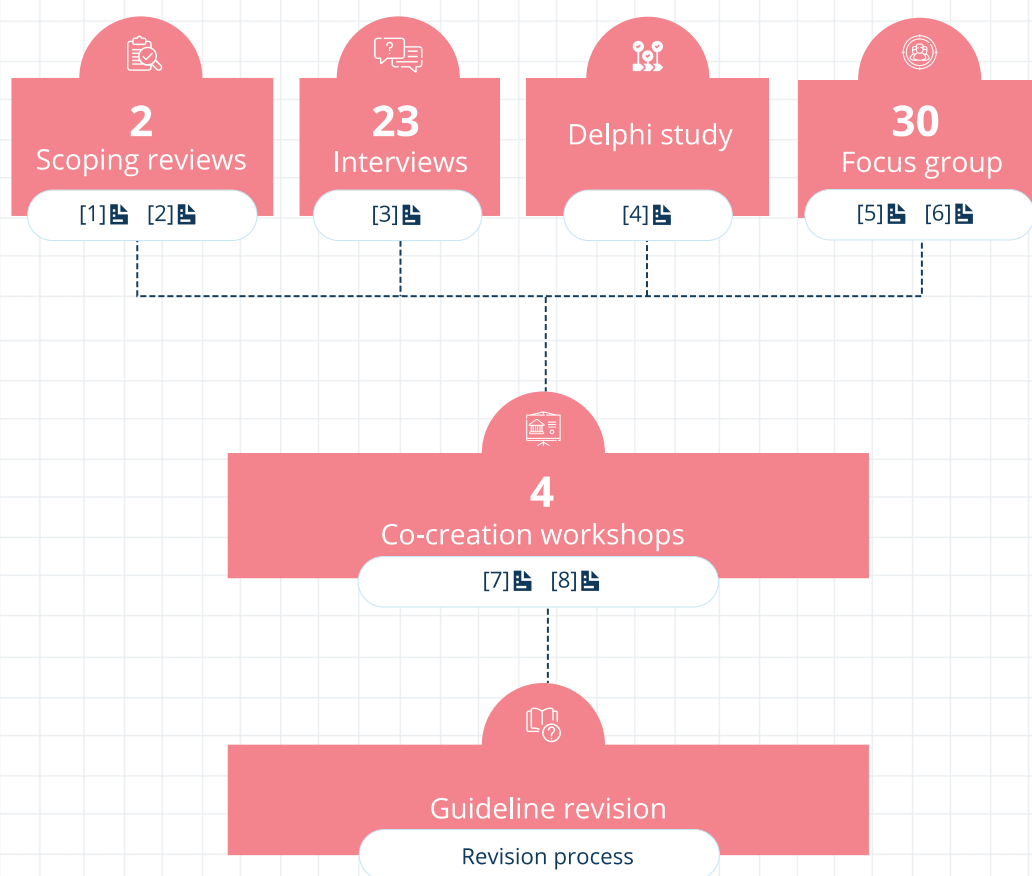
Given the broad diversity that exists among research institutions, it is possible that some recommendations are not applicable in all research settings. For this reason, the guidelines should not be seen as a 'one-size-fits-all', but rather as **a tool that can be used flexibly and adapted to meet institutions' specific needs**.



How to use this

RI education & training

How did we make this?



RI education & training

Key recommendations:

-  Integrate into bachelor and master curriculum [p.4]
-  Deliver mandatory course for PhD students [p.5]
-  Provide follow-up courses for PhD students [p.6]
-  Enable informal research integrity discussions [p.7]
-  Provide train-the-trainer education [p.8]
-  Use diverse learning environments [p.9]
-  Focus on concrete experiences [p.10]
-  Motivate and reward [p.11]
-  Evaluate [p.12]

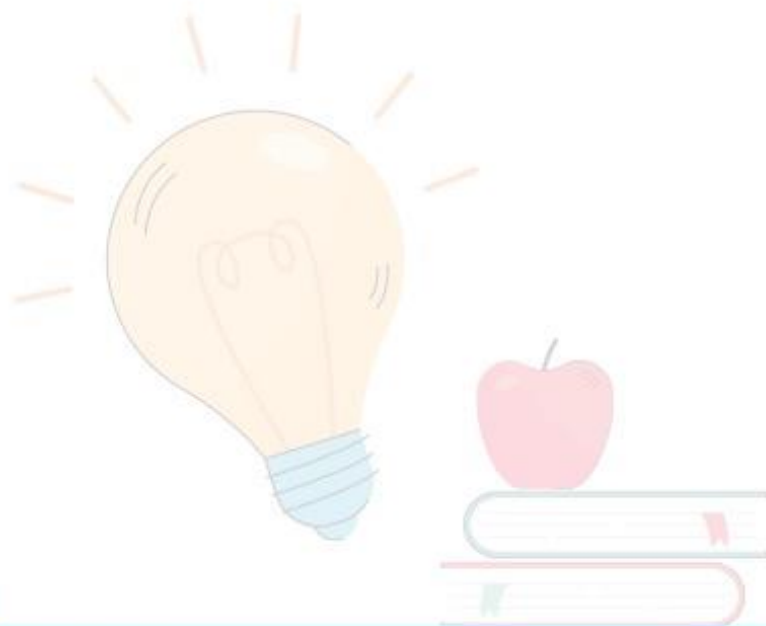
RI education & training



Integrate mandatory research integrity education into the bachelor and master curriculum

Starting research integrity education as early as possible in the academic curriculum ensures that students learn responsible research behaviours as they are being taught about research.

- Set a minimum number of contact hours to dedicate to research integrity throughout the curriculum.
- Integrate research integrity education into the introduction to the study curriculum.
- Integrate research integrity education into the thesis research process.



In practice examples

Example 1: [Path2Integrity learning materials](#)

RI education & training



Deliver a mandatory research integrity course at the start of the PhD trajectory

A mandatory research integrity course ensures that all PhD students are familiarized with research integrity and empowered to engage in responsible research practices.

- Provide this research integrity training as a complete course, with a minimum number of contact hours and ECTs.
- Inform students about research integrity principles, policies and norms.
- Stimulate students to share and discuss potential differences in their understanding and application of research integrity norms.
- During the course, stimulate students to discuss potential research integrity challenges as well as ways of dealing with them.
- Organize interactions between PhD students and more senior researchers about research integrity as part of the course.
- Consider involving representatives from multiple disciplines. For instance, a faculty could decide to include both biologists and chemists in one course.

In practice examples

Example 1: [‘Research ethics for human science’ at Stockholm University](#)

Example 2: [Research integrity training at Nanyang Technological University Singapore](#)

Example 3: [‘Science in Action’ at Pompeu Fabra University \(UPF\) in Barcelona](#)

Example 4: [‘Responsible Conduct of Research: Integrity in Academic Publishing’](#)

RI education & training



Provide PhD students with follow-up elective courses on research integrity

As PhD students progress with their research, they will uncover new research integrity questions and challenges. Follow-up resources and research integrity courses on discipline-specific topics can equip students to address new challenges responsibly.

- Set a minimum requirement about how often students are to follow a discipline-specific elective research integrity course.
- Provide students with access to educational resources on research integrity, such as online training and online accessible materials like codes of conduct and relevant guidelines.



In practice examples

Example 1: [‘Research ethics for human science’ at Stockholm University](#)

Example 2: [‘Research data management’ at Vrije Universiteit Amsterdam](#)

RI education & training



Organize opportunities to discuss research integrity informally

A good research culture entails the possibility for researchers to openly discuss concerns and challenges, and serves as a basis for successful research integrity education.

- Develop policies for building a responsible research environment, as a prerequisite for open discussion during research integrity education (see our detailed guidelines on **community building, skills training, diversity and inclusion**, and **managing pressure**).
- Provide concrete suggestions and tools during research integrity training on how researchers can collaborate responsibly with colleagues and supervisors.
- Stimulate faculties and departments to organize a minimum number of informal events each year to discuss research integrity challenges and solutions.
 - Involve researchers across all seniority levels.
 - Involve representatives from multiple disciplines.



In practice examples

Example 1: **'Met de billen bloot'-Alzheimer Center, Amsterdam UMC**

RI education & training



Provide train-the-trainer education and basic qualifications for research integrity trainers

Train-the-trainer education provides research integrity trainers with the tools and skills necessary to teach about research integrity. Train-the-trainer education ensures that research integrity trainers are qualified and enthusiastic.

- Provide train-the-trainer education and qualifications for research integrity trainers, focusing on the basics of research integrity and didactic skills.
- Provide additional topic-specific training and qualifications for trainers of elective discipline-specific research integrity courses (for instance data management training for data management curators).
- Where necessary, collaborate with trainers or training programs from other institutions to deliver quality research integrity training.



In practice examples

Example 1: **VIRT2UE training program**

RI education & training



Use diverse learning environments, combining online and in-person elements in research integrity education

Diverse learning environments allow students to benefit from the advantages of online and in-person training approaches. Online training can be more efficient for informing students about research integrity basics, and allows students to turn back to training materials and form online support groups. In-person training is suitable for joint discussion of and reflection on the material covered in the online training.

- Use online training programs to inform students about principles, policies and norms.
- Ensure that students are able to turn back to the online training material at later timepoints and inform students accordingly.
- Use in-person training to stimulate discussion and reflection among students in class.
- Provide students with the means to organize peer support groups and encourage them to maintain contact with their research integrity training peers.



In practice examples

Example 1: [Epigeum course on research integrity](#)

Example 2: [VIRT2UE training program](#)

Example 3: [‘Science in Action’ at Pompeu Fabra University \(UPF\) in Barcelona](#)

Example 4: [‘Mind the gap’-Flemish universities](#)

RI education & training



Focus on students' concrete experiences with research rather than merely providing excessive theory in research integrity education

Focusing on the concrete needs of researchers in their daily practice, rather than merely addressing theory, makes research integrity education appealing, useful and relevant to students. Any research integrity principles, policies or norms taught should be connected to actual research practice.

- Integrate research integrity principles, policies and standards with discussions of the daily practice of research.
- Discuss case studies and real-life examples during research integrity education events.
- Tailor research integrity educational content to the research needs of the target group.
 - Consult with potential participants on what to cover during educational events and update the event based on participants' needs in practice.



In practice examples

Example 1: [VIRT2UE training program](#)

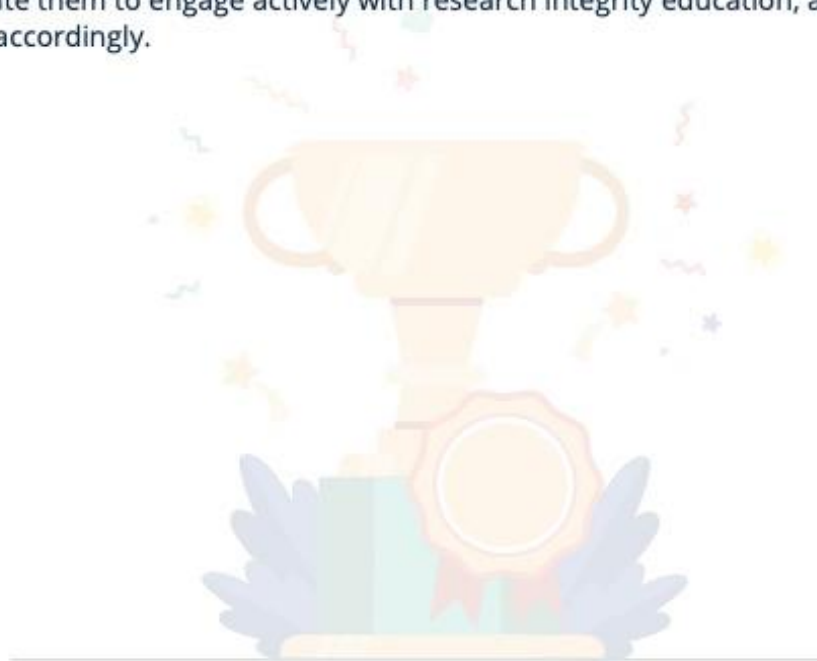
RI education & training



Motivate and reward students to actively take part in research integrity education

Motivations and rewards help students see the value and importance of research integrity and foster active engagement with research integrity education.

- Communicate the purpose and value of research integrity education.
- Frame research integrity training as an opportunity to reflect on how to improve research, rather than an attempt to merely tell students what to do or focus on research misconduct.
- Provide students with a tangible reward after completion of training, such as digital badges or free meals.
- When possible, consult with students about what rewards and incentives motivate them to engage actively with research integrity education, and tailor these accordingly.



RI education & training



Evaluate educational programs

Evaluations of educational programs provide valuable information to research integrity trainers and institutions on how to improve and further develop research integrity education.

- Following each research integrity educational event, conduct an evaluation of the event.
- Gather experiential data such as trainees' perceptions of course usefulness.
- Gather objective data, such as the number of participants enrolled in elective courses.
- Review the evaluation information when organizing the next educational event, to continuously update and improve research integrity education.



In practice examples

Example 1: Consider Kirkpatrick's Model for evaluating events

Example 2: Consider measuring integrity indicators at the institution

RI education & training

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RI education & training

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RI education & training

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- Guy Widdershoven, Professor at the Department of Ethics, Law & Humanities, Amsterdam UMC

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RI education & training

SOPs4PI Consortium



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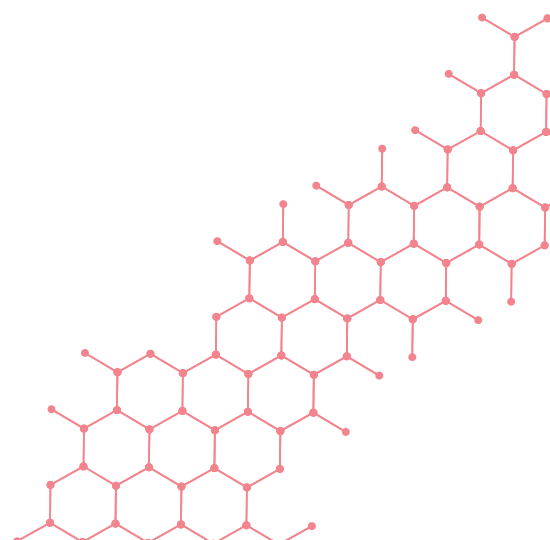
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Appendix VII **Guidelines on Research Integrity Education and Training for Post-doctorate and senior researchers**



RI education & training



Guidelines for research institutions on the research integrity education of **post-doctorate and senior researchers**

Why



Education and training are needed to **raise awareness** about research integrity and **provide researchers with the required tools** to promote responsible research practices.



Research integrity education offered to post-doctorate and senior researchers ensures awareness about research integrity among researchers across seniority levels, and helps researchers to **stay up to date with the latest developments**.



This document provides guidance to research institutions on **what to include in their research integrity education strategy for post-doctorate and senior researchers**.



We first provide a one-page overview of all key guideline recommendations. In the subsequent pages, each key recommendation is followed by more detailed guidance and in practice examples to help research institutions bring the recommendations into practice.

What

Who



The guideline provides information relevant to **research officers, trainers, managers, and coordinators**, as well as **deans, rectors** and other institutional leaders.

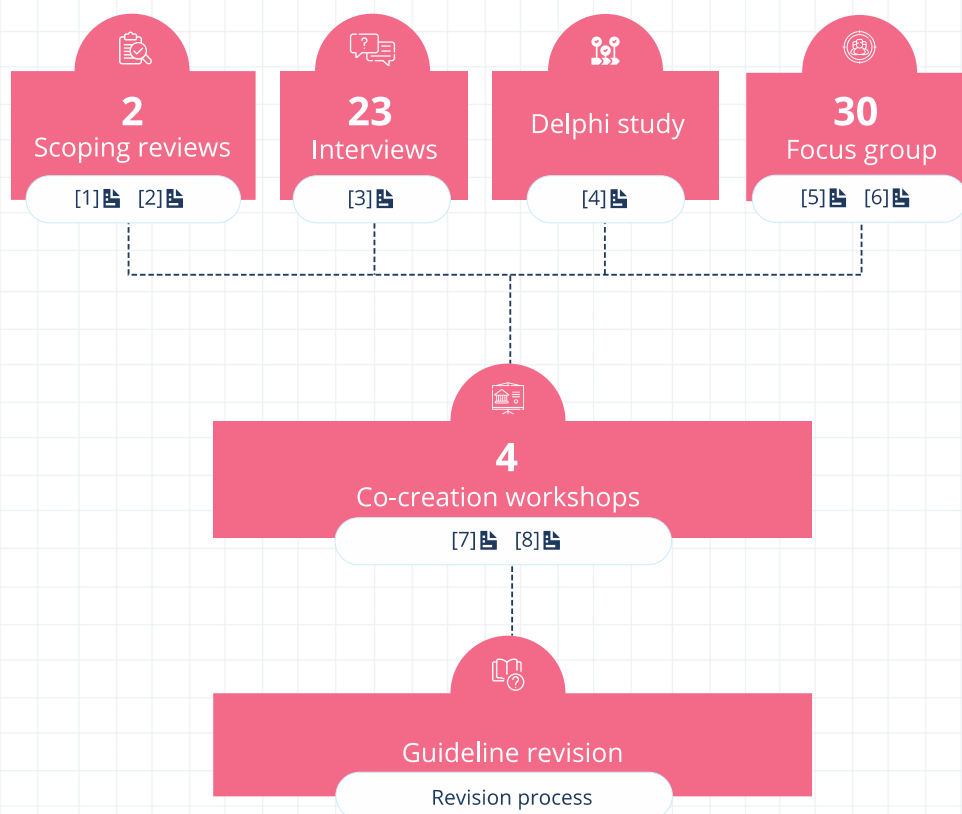
Given the broad diversity that exists among research institutions, it is possible that some recommendations are not applicable in all research settings. For this reason, the guidelines should not be seen as a 'one-size-fits-all', but rather as a **tool that can be used flexibly and adapted to meet institutions' specific needs**.



How to use this

RI education & training

How did we make this?



RI education & training

| Key recommendations:

-  Deliver mandatory training for new positions [p.4]
-  Provide follow-up training [p.5]
-  Involve seniors in the training of juniors [p.6]
-  Enable informal research integrity discussions [p.7]
-  Provide train-the-trainer education [p.8]
-  Use diverse learning environments [p.9]
-  Tailor education to researcher needs [p.10]
-  Motivate and reward [p.11]
-  Evaluate [p.12]

RI education & training



Deliver mandatory training about research integrity for researchers starting new positions

Mandatory training for those starting new positions ensures that researchers have the awareness and skills necessary to conduct their research and fulfill their roles responsibly from the outset.

- Provide research integrity induction training as a smaller workshop rather than a complete course.
- Include training as part of introduction packages for new employees at the institution.
- Include training as part of introductions of employees starting a new position in the same institution, for instance those being promoted as new supervisors or professors.
- Inform researchers about research integrity principles, policies and norms.
- Address the specific responsibilities and skills required for the new position. For instance, training for new supervisors should address supervision skills.
- Stimulate researchers to discuss research integrity challenges as well as ways of dealing with them.
- Stimulate researchers to share and discuss potential differences in their understanding and application of research integrity norms.
- If post-doctorate researchers have not yet followed a PhD-level research integrity training, stimulate them to do so.

In practice examples

Example 1: [Training at University college of London](#)

Example 2: [‘I Supervise’ by KU Leuven](#)

Example 3: [‘Superb supervision’ at Amsterdam University Medical Centers for junior and senior supervisors](#)

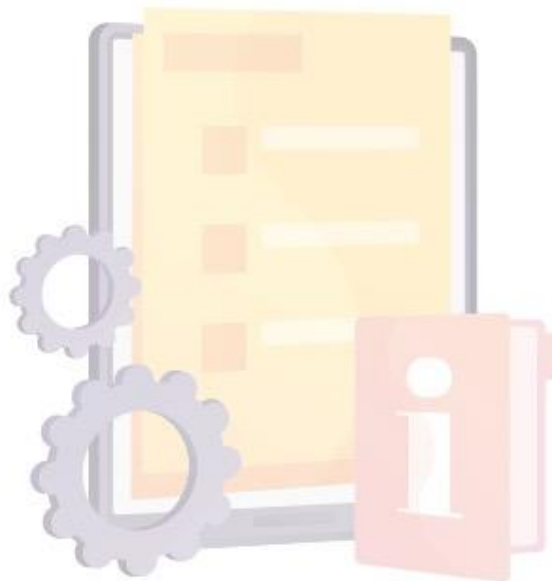
RI education & training



Provide researchers with follow-up specialized training on research integrity

Follow-up training focusing on specific research integrity topics – for example training on integrity challenges faced during data management - supports researchers in keeping up with the latest research regulations and policies.

- Provide follow-up training as smaller workshops rather than complete courses.
- Set a minimum requirement for how often researchers are to follow a discipline-specific follow-up research integrity training.
- Whenever there are changes to research regulations and policies, provide researchers with educational resources to update them, such as online training and online accessible materials like codes of conduct and relevant guidelines.



RI education & training



Involve senior researchers in the research integrity training of students and junior researchers

Interaction between students, junior and senior researchers about research integrity can help researchers to learn from each other and commit more strongly to research integrity. There are numerous ways to organize such an interaction, so as to motivate juniors and seniors to engage in responsible research practices.

- Stimulate students and junior researchers to reflect on research integrity together with their supervisors, as part of their research integrity training assignments.
- Invite senior researchers to share experiences, examples, and challenges relating to research integrity as part of the research integrity training of students and junior researchers.



RI education & training



Organize opportunities to discuss research integrity informally

An open and inclusive research culture entails the possibility for researchers to openly discuss concerns and challenges, and serves as a basis for successful research integrity education.

- Develop policies for building a responsible research environment, as a prerequisite for open discussion during research integrity education (see our detailed guidelines on [community building](#), [skills training](#), [diversity and inclusion](#), and [managing pressure](#))
- Provide concrete suggestions and tools during research integrity training on how to collaborate responsibly with colleagues, supervisors and supervisees.
- Stimulate faculties and departments to organize a minimum number of informal events a year to discuss research integrity challenges and solutions.
 - Involve researchers across seniority levels
 - Involve representatives from multiple disciplines.



RI education & training



Provide train-the-trainer education and basic qualifications for research integrity trainers

Train-the-trainer education provides research integrity trainers with the tools and skills necessary to teach about research integrity. Train-the-trainer education ensures that research integrity trainers are qualified and enthusiastic.

- Provide train-the-trainer education and qualifications for research integrity trainers, focusing on the basics of research integrity and didactic skills.
- Provide additional topic-specific training and qualifications for trainers of elective discipline-specific research integrity courses (for instance data management training for those training researchers on data management).
- Where necessary, collaborate with trainers or training programs from other institutions to deliver quality research integrity training.



RI education & training



Use diverse learning environments, combining online and in-person elements in research integrity education

Diverse learning environments allow researchers to benefit from the advantages of online and in-person training approaches. Online training can be more efficient for informing researchers about research integrity basics, while allowing trainees to keep and return to training materials and to form online support groups. In-person training is suitable for joint discussion and reflection on the material covered in the online training.

- Use online training programs to inform trainees about principles, policies and norms.
- Provide trainees the option to reuse the online training material at later timepoints and inform them accordingly.
- Use in-person training to stimulate discussion and reflection among researchers.
- Provide researchers with the means to organize peer support groups and encourage them to maintain relationships with their research integrity training peers.



In practice examples

- Example 1: [Epigeum course on research integrity](#)
- Example 2: [VIRT2UE training program](#)
- Example 3: [‘Science in Action’ at Pompeu Fabra University \(UPF\) in Barcelona](#)
- Example 4: [‘Mind the gap’-Flemish universities](#)

RI education & training



Consult with researchers about their research integrity education needs and tailor education accordingly

Researchers from different seniority levels and disciplines might have different research integrity education needs. A bottom up approach – in which researchers are first consulted to assess what their needs are and the education is then tailored accordingly – ensures that research integrity education is useful and relevant.

- Decide on a frequency at which a needs analysis regarding research integrity education will be conducted in the institution.
- When conducting the needs analysis, include researchers from different ranks and disciplines in the institution.
- Tailor research integrity education events to adequately address the needs identified for the specific target group.
- If possible, when designing new educational events, plan a consultation meeting with potential participants to obtain their input on how to develop and implement the event.



RI education & training



Motivate and reward researchers to actively take part in research integrity education

Research integrity education may be perceived as time consuming and of little priority for researchers. Motivations and rewards help researchers see the value and importance of research integrity and foster active engagement with research integrity education.

- Reward researchers for their participation in research integrity education and for showing commitment to research integrity in promotions and evaluations.
- Communicate the purpose and value of research integrity education.
- Frame research integrity training as an opportunity to reflect on how to improve research, rather than an attempt to merely tell researchers what to do or focus on research misconduct.
- Where necessary, integrate research integrity training into existing mandatory training about research conduct.
- In case of resistance to training, consider labelling training as 'Masterclass' rather than 'training' to make training sound appealing.
- In case of resistance to training, consider not labelling training with normative titles such as 'research integrity', but rather use more relatable and neutral terms such as 'research practices'.
- Highlight the importance of research integrity for the institution's and researcher's reputation.



RI education & training



Evaluate educational programs

Evaluations of educational programs provide valuable information to research integrity trainers and institutions on how to improve and further develop research integrity education.

- Following each research integrity training or informal educational event, conduct an evaluation of the training or event.
- Gather experiential data such as trainees' perceptions of course usefulness.
- Gather objective data, such as the number of participants enrolled in elective courses.
- Review the evaluation information when organizing the next educational event to continuously update and improve research integrity education.



RI education & training

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RI education & training

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RI education & training

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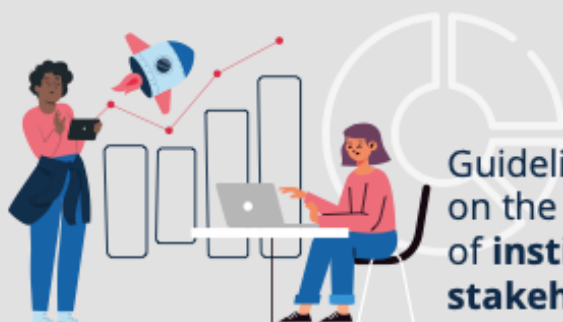
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Appendix VIII Guidelines on Research Integrity Education and Training for Institutional research integrity stakeholders



RI education & training



Guidelines for research institutions on the research integrity education of institutional research integrity stakeholders

Why



Education and training are needed to **raise awareness** about research integrity and **provide stakeholders with the required tools** to promote responsible research practices.



Not only researchers, but also other research integrity stakeholder can benefit from research integrity education. Research integrity education can equip various research integrity stakeholders to **adequately support researchers** in engaging in responsible research practices.



This document provides guidance to research institutions **on what to include in their research integrity education strategy for institutional research integrity stakeholders who are not directly involved in conducting research.**



We first provide a one-page overview of all key guideline recommendations. In the subsequent pages, each key recommendation is followed by more detailed guidance and in practice examples to help research institutions bring the recommendations into practice.

What

Who



The guideline provides information relevant for **research officers, trainers, managers, and coordinators**, as well as **deans, rectors** and other institutional **leaders**.

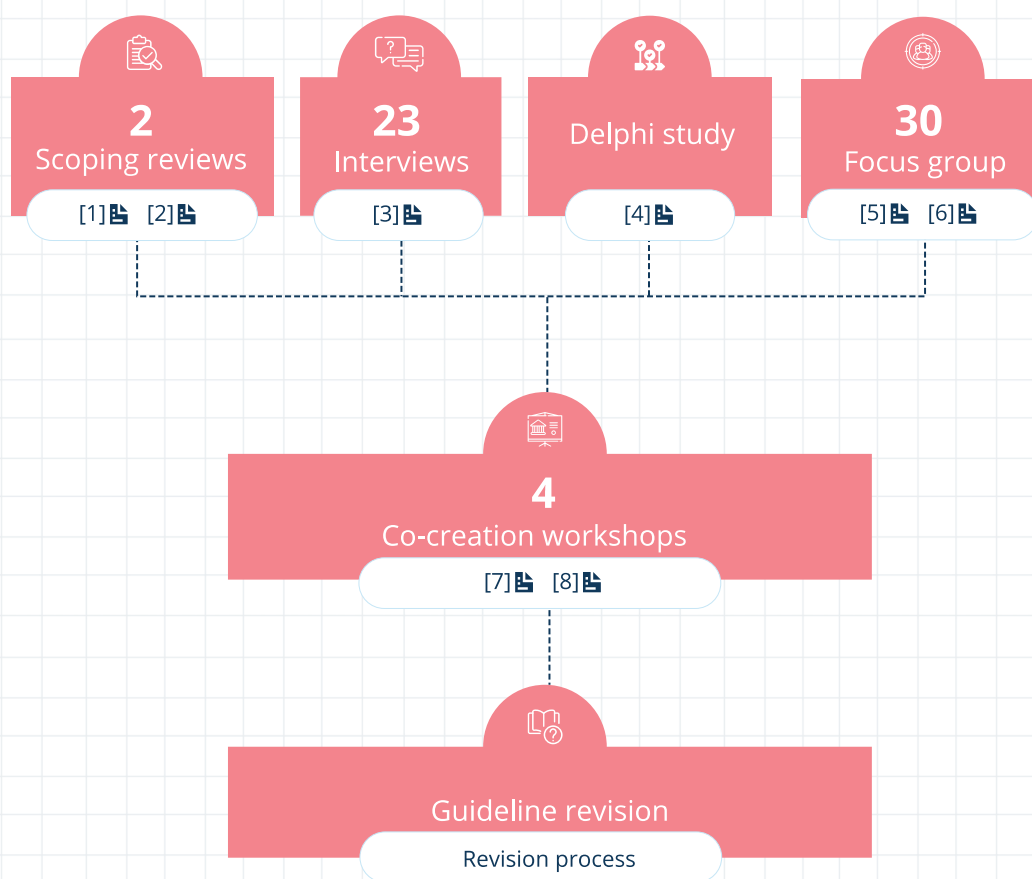
Given the broad diversity that exists among research institutions, it is possible that some recommendations are not applicable in all research settings. For this reason, the guidelines should not be seen as a 'one-size-fits-all', but rather as a **tool that can be used flexibly and adapted to meet institutions' specific needs.**



How to use this

RI education & training

How did we make this?



RI education & training

| Key recommendations:

-  Provide basic training [p.4]
-  Organize coming together events [p.5]
-  Provide train-the-trainer education [p.6]
-  Organize follow-up education [p.7]
-  Provide peer-to-peer learning opportunities [p.8]
-  Motivate and reward [p.9]
-  Evaluate [p.10]

RI education & training



Provide institutional research integrity stakeholders who are not performing research with basic research integrity training

Educating all involved in the research endeavour about research integrity contributes towards a culture of research integrity. Educating various stakeholders, also those who do not directly conduct research, ensures that all stakeholders are sufficiently informed to support researchers to engage in responsible research practice.

- During the training, inform non-researcher stakeholders about research integrity principles, policies and norms.
- During the training, discuss disciplinary considerations in the application of the principles, policies and norms.
- During the training, inform stakeholders about their responsibilities in supporting researchers with research integrity.



RI education & training



Organize events where research integrity stakeholders come together to exchange questions and experiences and discuss how to work together on research integrity

Bringing institutional research integrity stakeholders together to share experiences and questions helps them to learn from each other, as well as to work better together in supporting researchers with responsible research practices.

- Include research integrity committee members, data management personnel, research integrity trainers, research integrity and ethics researchers, research integrity policy staff, confidential counselors, ombudspersons, research integrity officers, heads of departments/schools, deans, and others involved in research integrity
- Discuss past and potential research integrity case studies relevant to the institution, in a manner compliant with the General Data Protection Regulation (GDPR) of the European Union.
- Discuss research integrity support needs of researchers.
- Discuss various research integrity stakeholders' roles and responsibilities in ensuring support for researchers with research integrity.
- Discuss disciplinary considerations in the application of research integrity principles, policies and norms.
- Where possible, organize in-person events and use online sessions to supplement in-person sessions.



RI education & training



Provide train-the-trainer education and basic qualifications for research integrity trainers

Train-the-trainer education provides research integrity trainers with the tools and skills necessary to teach about research integrity. Train-the-trainer education ensures that research integrity trainers are qualified and enthusiastic.

- Provide train-the-trainer education and qualifications for research integrity trainers, focusing on the basics of research integrity and didactic skills.
- Provide additional topic-specific training and qualifications for trainers of elective discipline-specific research integrity courses (for instance data management training for data management curators).
- Where necessary, collaborate with trainers or training programs from other institutions, nationally or internationally, to deliver quality research integrity training.



In practice examples

Example 1: [VIRT2UE training](#)

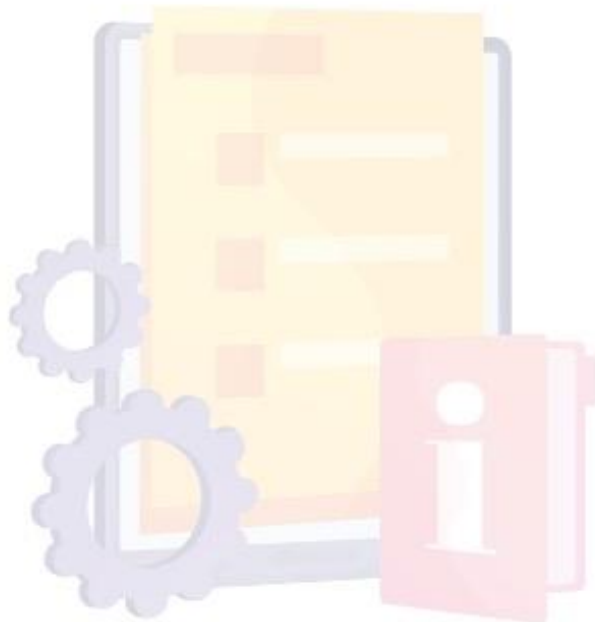
RI education & training



Organize follow-up educational events when research integrity policies and regulations change

Follow-up educational events are necessary to ensure that support staff and research integrity personnel remain up-to-date with the most recent policies and regulations on research integrity, and can refresh their knowledge on an ongoing basis.

- Incorporate integrity policy and regulation changes into follow up events.
- Use examples and cases to illustrate new policies and regulations.



RI education & training



Provide opportunities for peer-to-peer learning about research integrity

Peer-to-peer learning about research integrity can contribute to strengthening the research integrity culture by ensuring that all research stakeholders in the institution are aware of and committed to research integrity.

- Develop policies for building a responsible research environment, in which researchers can exchange responsible research practices and challenges with each other (see our detailed guidelines on [community building](#), [skills training](#), [diversity and inclusion](#), and [managing pressure](#)).
- Provide continuous research integrity education to all students and researchers, in which the importance of research integrity for research is highlighted (see our detailed guidelines on this [here](#)).
- Provide opportunities and financial support for various research integrity stakeholders to participate in national and international support groups, seminars and workshops about research integrity.
- Support open access institutional research integrity resources to allow research integrity personnel to share resources externally and facilitate peer-to-peer learning.

In practice examples

Example 1: [ERION](#)

Example 2: [Recaphe](#)

Example 3: [Eurashe](#)

Example 4: [EURAXESS](#)

Example 5: [Research integrity lunches offered by the Netherlands Research Integrity Network](#)

RI education & training



Motivate and reward various research integrity stakeholders to actively take part in research integrity education

Research integrity stakeholders have many tasks and responsibilities. Motivations and rewards can help ensure their active engagement with research integrity education.

- Reward engagement of institutional research integrity stakeholders in research integrity education during promotions and evaluations.
- Reward the work of research integrity stakeholders in fostering research integrity during promotions and evaluations.
- Reward research integrity stakeholders who also take on research integrity support roles during promotions and evaluations, for instance research integrity stakeholders who also serve as research integrity trainers, confidential advisors, or ombudspersons



RI education & training



Evaluate educational programs

Evaluations of educational programs provide valuable information to research integrity trainers and institutions on how to improve and further develop research integrity education.

- Following each research integrity training or informal educational event for research integrity stakeholders, conduct an evaluation of the training or event.
- Gather subjective data, such as trainees' perceptions of course usefulness.
- Gather objective data, such as the number of participants enrolled in optional training.
- Review the evaluation information when organizing the next educational event, to continuously update and improve research integrity education.



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Contributors

Co-creators

16 co-creators participated in creating these guidelines.
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Appendix IX Guidelines on Continuous research integrity education



RI education & training



Guidelines for research institutions on **continuous research integrity education**

Why



Education is needed to **raise awareness** about research integrity and **provide researchers with the required tools** to promote responsible research practices. Training is an important aspect of research integrity education, but continuous research integrity education also requires **informal approaches**. These include teaching and learning about research integrity through **responsible supervision, socialization in a responsible research environment, as well as learning by doing**.



This document provides guidance to research institutions on **providing continuous research integrity education outside of formal training**.



We first provide a one page overview of the all the key guideline recommendations. In the subsequent pages, each key recommendation is followed by more detailed guidance and in practice examples to help research institutions bring the recommendations into practice.

What

Who



The guideline provides information relevant for **mentors and supervisors, research officers, trainers, managers, and coordinators**, as well as **deans, rectors** and other **institutional leaders**.

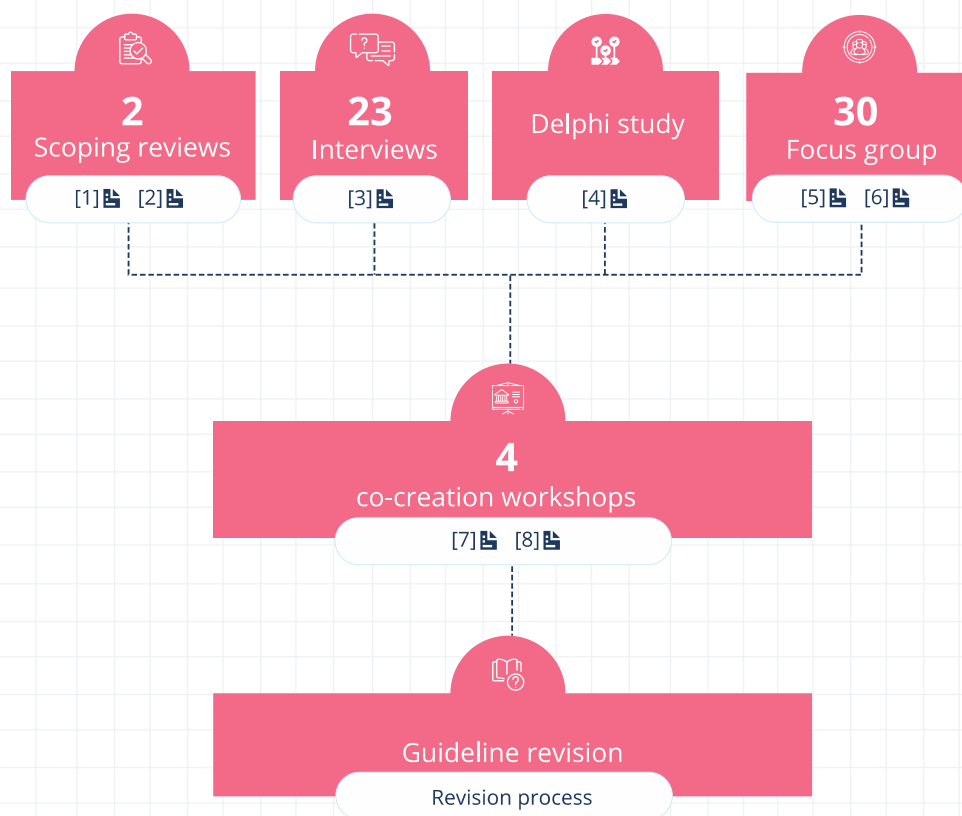
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How to use this

RI education & training

How did we make this?



RI education & training

| Key recommendations:



Provide educational resources

[p.4]



Show institutional commitment

[p.5]



Provide advice on day-to-day questions

[p.6]



Foster responsible supervision and leadership

[p.7]



Build a responsible research environment

[p.8]

RI education & training



Provide researchers with educational research integrity resources to consult when needed

As researchers are conducting research, they will encounter questions and challenges. Providing researchers with access to research integrity educational resources supports their research integrity.

- Provide researchers with information on where to find institutional policies and guidelines for research integrity.
- Provide researchers with information on available courses, guidelines and additional resources related to research integrity practices in the institution, nationally and internationally.
- Refer trainees to offline or online communities where they can exchange experiences and discuss solutions together with other researchers.



In practice examples

Example 1: [The Embassy of Good Science](#)

Example 2: [COPE Resources](#)

Example 3: [Editage resources](#)

RI education & training



Show institutional commitment to provide continuous RI education

Continuous research integrity education requires significant institutional commitment to research integrity, for instance in terms of material and human resources.

- Include research integrity as one of the central values in the institutional mission and vision statement.
- Allocate resources and time to research integrity training for researchers and staff.
- Explore the research integrity education needs of researchers, for example through periodic forums and surveys.
- Stimulate and support research integrity counselors and support staff to contribute towards the formulation of research integrity cases and questions that can be used for research integrity education.



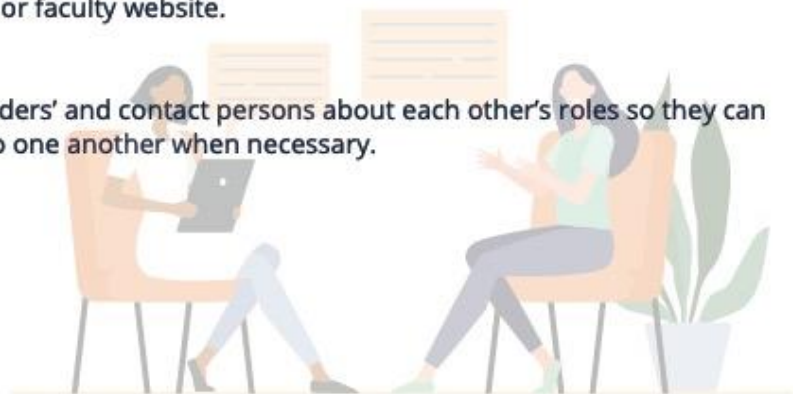
RI education & training



Provide researchers with contact persons who can support continuous research integrity education, by providing low-threshold, disciplinary-specific advice on day-to-day research integrity questions

As researchers are conducting research, they will encounter questions and challenges. Having access to low-threshold advice on day-to-day research integrity questions provides context-specific information to researchers.

- Provide researchers with contact persons for information about domain specific research integrity issues, for instance research integrity or ethics officers, privacy officers, data stewards, librarians and ethics committee members.
- Recruit volunteer researchers in each faculty to act as informal 'first responders' to researchers with day-to-day questions about conducting responsible research.
- Provide research integrity education and basic qualifications for all contact persons and 'first responders'.
- Make 'first responders' and contact persons' information and contact details visible on the institutional or faculty website.
- Inform 'first responders' and contact persons about each other's roles so they can refer researchers to one another when necessary.



In practice examples

Example 1: Research integrity champions at King's College London

RI education & training



Develop policies to foster responsible supervision and leadership

Researchers learn about research practice informally through their supervisors and research leaders. Fostering responsible supervision and leadership supports continuous research integrity education.

- Foster responsible supervision (see our detailed guidelines on this [here](#)).
- Foster responsible leadership (see our detailed guidelines on this [here](#)).
- Inform PhD students about responsible supervision (see our detailed guidelines on this [here](#))



In practice examples

Example 1: Phd Charter at KU Leuven

RI education & training



Develop policies for building a responsible research environment

As researchers are socialized in their research environment, fostering a responsible research environment contributes towards continuous research integrity education.

- Engage in community building for a responsible research culture (see our detailed guidelines on this [here](#)).
- Manage competition and publication pressure (see our detailed guidelines on this [here](#)).
- Provide adequate education and skills training for researchers (see our detailed guidelines on this [here](#)).
- Develop policies on diversity and inclusion (see our detailed guidelines on this [here](#)).



In practice examples

Example 1: [Towards a responsible research climate in Amsterdam](#)

Example 2: [Research culture at KU Leuven](#)

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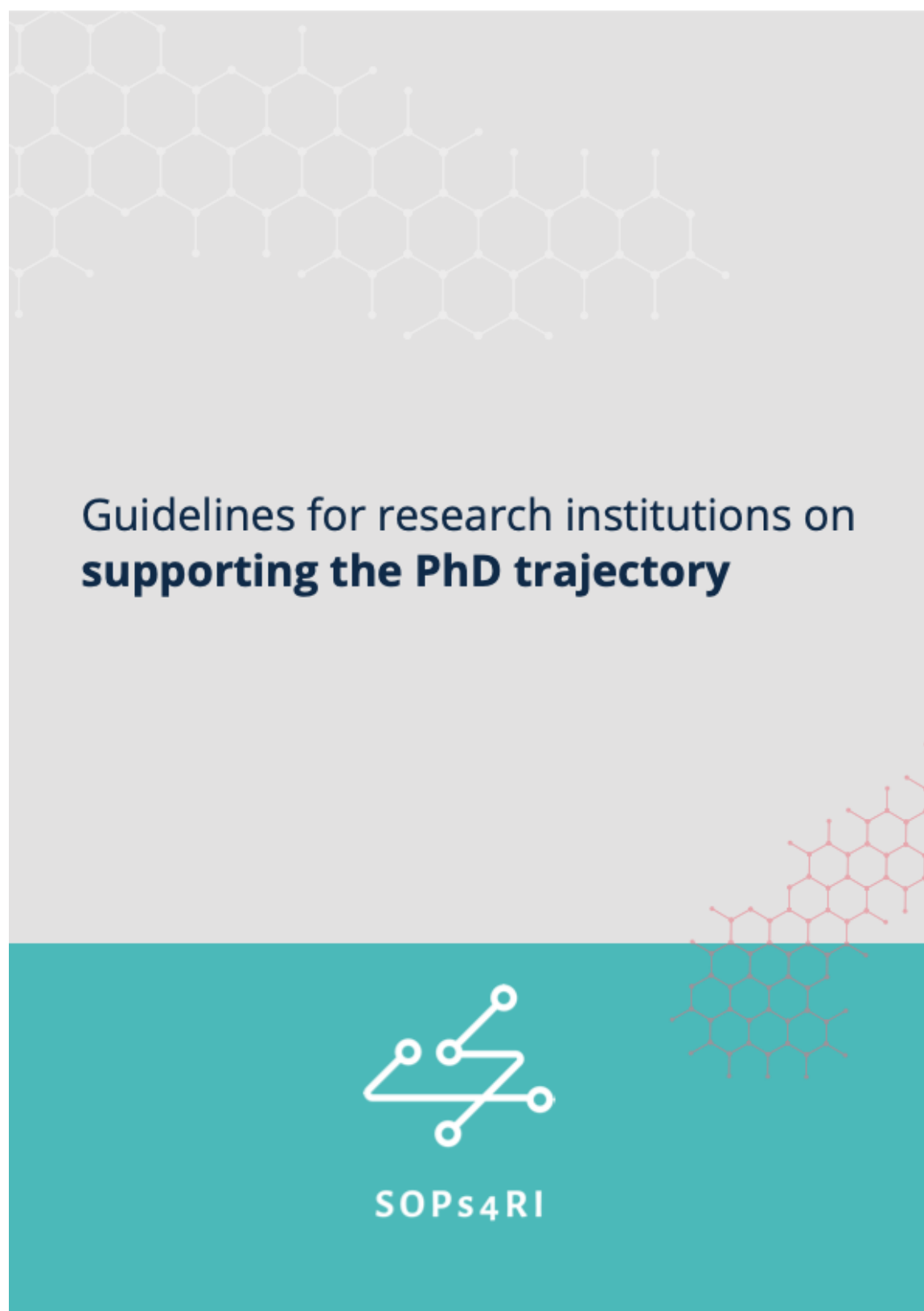
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Appendix X **Guidelines on Supporting the PhD trajectory**



Supervision and leadership



Guidelines for research institutions on supporting the PhD trajectory

Why



Research institutions, supervisors, and mentors have an important role when it comes to research integrity. Responsible supervision and mentorship is necessary to ensure responsible socialisation of supervisees into research, as well as to foster responsible research practices. The relationship between students and supervisors requires respect, openness, and accountability from both sides. PhD students, in particular, need support from their research institutions in engaging in this relationship.



This guideline presents a set of recommendations for research institutions **on informing and empowering PhD students regarding their rights, roles and responsibilities.**



We first provide a one-page overview of all the key guideline recommendations. In the subsequent pages, each key recommendation is followed by more detailed guidance and best practice examples to help research institutions bring the recommendations into practice.

What

Who



The guideline provides information relevant to **PhD students, supervisors and principal investigators, research officers, trainers, managers, and coordinators**, as well as **deans, rectors and other institutional leaders.**

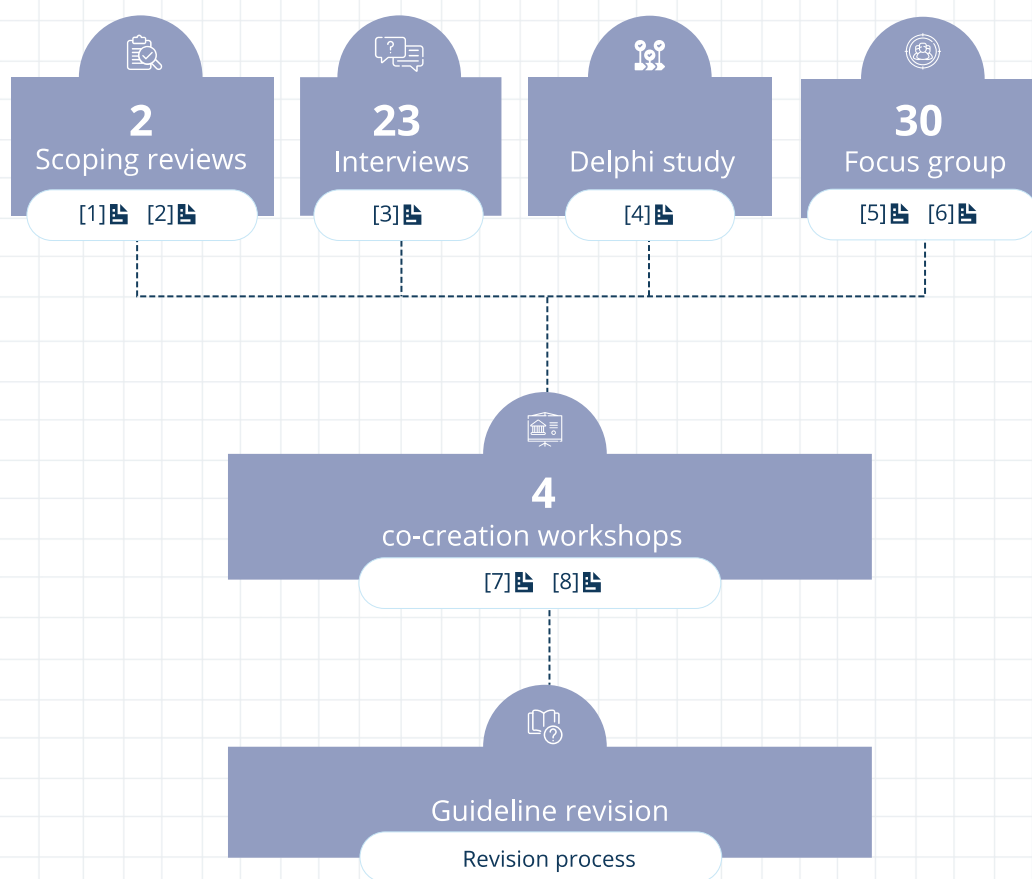
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How to use this





Supervision and leadership

How did we make this?



Supervision and leadership

Key recommendations:

-  Create PhD trajectory guidelines [p.4]
-  Provide training and support [p.5]
-  Promote a written record of agreements [p.6]
-  Provide independent bodies to consult [p.7]

Supervision and leadership



Create and communicate guidelines containing essential information related to the PhD trajectory

PhD trajectory guidelines will improve students' and supervisors' awareness of relevant rules, policies, rights, and responsibilities. This supports and empowers PhD students to engage in responsible research practices.

- Include information related to:
 - Institutional and national rules
 - Policies and guidelines on research
 - The rights and responsibilities of PhD students and (team of) supervisors
 - Procedures to change supervisors or terminate the PhD trajectory
 - Ethical considerations
 - Support structures
 - And any other practicalities about students' research projects
- When developing the PhD trajectory guidelines, implement guidance on supervision presented in national and international codes of conduct on research integrity, and any other relevant guidance documents.
- Communicate the PhD trajectory guidelines to students (and recently appointed supervisors) at the start of their PhD trajectory.

In practice examples

Example 1: If PhD students want to change supervisors or terminate their PhD, have an external board draw up a conclusion for the request.

Example 2: There are several rules that PhD students can use to improve their relationship with their supervisors. For more information, please see [here](#).

Supervision and leadership



Provide adequate training and support for PhD students

Adequate training and support can empower PhD students and equip them with the necessary knowledge, tools and skills to engage in responsible supervision practices.

- Host educational activities for PhD students on how to improve the quality of supervision. These could include seminars, workshops and lectures, or events where former PhD students provide practical advice and tips to current students.
- Implement visible and approachable support structures for the well-being and mental health of PhD students.
- Stimulate and facilitate the formation of disciplinary and interdisciplinary peer support groups for PhD students.
- Provide support suitable for PhD students with various needs, including specific support for foreign and visiting students.
- Provide opportunities for PhD students to supervise juniors, such as bachelor and master students, in their research projects.



Supervision and leadership



Promote a written record of agreements between PhD students and supervisors during the early phase of the PhD trajectory

A written record of agreements can help to define clear standards, responsibilities, and expectations from all parties involved in the PhD trajectory, and can thereby support cooperation between PhD students and supervisors.

- Provide guidance on what the agreement should consist of, for example, the expectations, roles, rights and responsibilities of all parties in the PhD trajectory.
- Advise PhD students and (the team of) supervisors to use the agreement as a tool to discuss not only practical issues and research integrity, but also their general relationship and collaboration.



Supervision and leadership



Provide internal or external independent bodies that PhD students and supervisors can consult, particularly in case of problems

An independent body can be instrumental in the fair resolution of potential challenges and disputes that may arise during the PhD trajectory.

- Clearly define the roles and responsibilities of the independent body in consulting with PhD students and their supervisors, and in handling challenges and potential disputes.
- Make the independent body visible and approachable for PhD students and supervisors.



In practice examples

Example 1: Provide PhD students with an independent mentor with whom they can meet once a year, preferably someone who does not have much interaction with the supervisors to avoid conflict of interest.

Supervision and leadership

Contributors

Co-creators

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Supervision and leadership

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Appendix XI **Guidelines on Responsible supervision**



Supervision and leadership



Guidelines for research institutions on **responsible supervision**

Why



Research institutions, supervisors and mentors have an important role when it comes to research integrity. Responsible supervision and mentorship is necessary to ensure responsible socialisation of supervisees into research, as well as to foster responsible research practices. Supervisors and mentors can benefit from support from their research institutions in providing responsible supervision and mentorship.



This guideline presents a set of recommendations to research institutions on **improving their institutional supervision structures and giving support to supervisors in developing their supervision skills.**



We first provide a one-page overview of all the key guideline recommendations. In the subsequent pages, each key recommendation is followed by more detailed guidance and best practice examples to help research institutions bring the recommendations into practice.

What

Who



The guideline provides information relevant to **PhD students, supervisors and principal investigators or department heads, research officers, trainers, managers, and coordinators**, as well as **deans, rectors** and other institutional **leaders**.

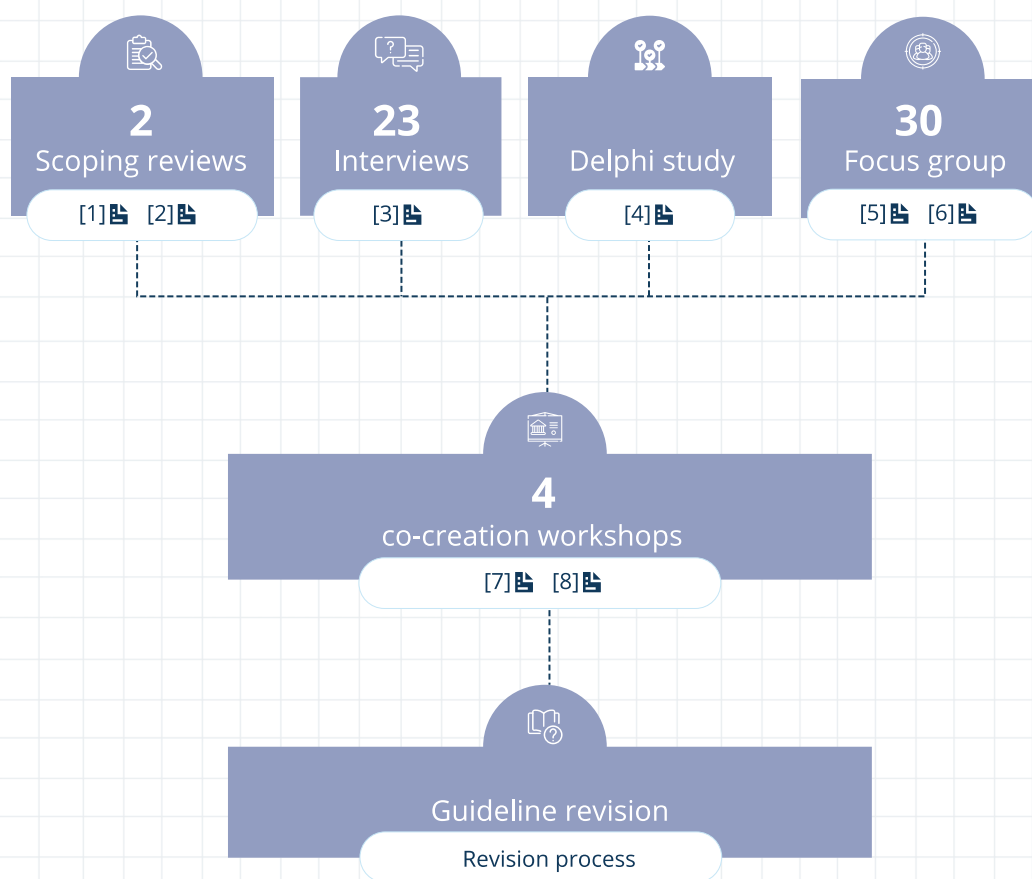
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How to use this

Supervision and leadership

How did we make this?



Supervision and leadership

| Key recommendations:

-  Create supervision policies and guidelines [p.4-5]
-  Provide supervision training [p.6]
-  Stimulate constructive interaction with supervisees [p.7]
-  Recognize and reward good supervision [p.8]

Supervision and leadership



Create and communicate policies and guidelines for supervisors on supervision responsibilities, requirements and support structures

"Policies and guidance on supervision can raise awareness about research integrity and responsible supervision. They can support supervisors in improving their knowledge on the rights and responsibilities of both supervisor and supervisee, and in improving their supervision skills."

- Set clear supervision requirement.
 - Include requirements on knowledge and awareness of PhD procedures, supervision responsibilities, relevant institutional supervision policies and structures, institutional support structures to refer supervisees to when necessary.
 - Include requirements on skills relating to communication with supervisees from different disciplines and cultures, engaging supervisees in the decision making process, supporting supervisees to become sufficiently qualified in their specific research field, and providing support and personal guidance.
 - Set clear expectations on supervisors' roles and responsibilities, for instance by including concrete examples of good supervision.
- Provide supervisors with the necessary supervision support structures.
 - Provide and disseminate clear rules, guidelines and procedures about supervision, and ensure that new supervisors are informed about the requirements.
 - Encourage co-supervisors to meet and support each other.
 - Implement a communication policy between supervisors and higher management levels to encourage cooperation between all parties.
- Stimulate and facilitate the formation of peer support groups for supervisors, for instance through interdisciplinary supervision workshops and meetings between supervisors to exchange experiences.

Supervision and leadership

- **Allocate sufficient time for supervision.**
 - Allocate official research time to all academics doing research.
 - Allocate official supervision time to all research supervisors.
 - Limit the number of PhD students per supervisor.



Supervision and leadership



Provide training on supervision to all supervisors

Supervision training equips supervisors with the necessary knowledge, tools and skills to engage in responsible supervision practices.

- Provide repeated supervision training to promote continuous learning and updating of knowledge and skills.
- Address a broad range of skills in the training, including listening, communication, leadership and conflict management.
- Involve more experienced supervisors in the training of less experienced supervisors.
- Use supervision training as a tool for fostering culture change.



In practice examples

Example 1: When providing training for supervisors, include separate training for new and experienced supervisors (see the [Superb supervision course at AmsterdamUMC](#)).

Example 2: ['I-Supervise' by KU Leuven](#).

Supervision and leadership



Stimulate supervisors to interact regularly and openly with their supervisees

Regular and open interaction between supervisors and supervisees contributes towards a constructive supervisor-supervisee relationship, and supports supervisees in their research practice.

- **Facilitate a regular and open exchange with supervisors.**
 - Set minimum requirements for how frequently supervisors and supervisees should meet.
 - Advocate for an 'open door culture', where supervisees feel able to easily contact their supervisors - both offline and online.
 - Advocate for an error-accepting culture, where both supervisors and supervisees are allowed to make and discuss mistakes.
- **Provide supervisors with guidance on what to discuss with supervisees, for instance relating to:**
 - Establishing best practices for research and supervision.
 - Supporting students in all phases of their research.
 - Inquiring about students' well-being and perceived problems.
 - Acknowledging the academic accomplishments of supervisees.
 - Engaging in open and responsive communication with the supervisee about questionable research practices.
 - Creating a structure of regular and constructive feedback between supervisor and supervisee.
- **Promote, and even consider requiring, supervisors and supervisees to sign a written agreement about their cooperation, expectations, roles, rights, and responsibilities.**



Supervision and leadership



Recognise and reward good supervision, by making it part of evaluation structures

Recognising and rewarding good supervision incentivises responsible supervision practices, and contributes to creating a more responsible research culture.

- Reward good supervision with tangible incentives, such as funding, financial rewards and career advancement.
- Give supervision more acknowledgment as an important task in the research process, for instance in evaluation procedures.
- Address supervision problems frequently during department meetings.
- Initiate a body to evaluate supervision and provide feedback to supervisors, and set minimum requirements for how frequently to do this.
- Consider providing alternative pathways to progress in the academic career for those who do not wish to supervise, to create room for everyone's talent in the institution.

In practice examples

Example 1: Reward and stimulate good supervision by attributing a supervisor-of-the-year award.

Supervision and leadership

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Appendix XII **Guidelines on Building and leading effective teams**



Supervision and leadership



Guidelines for research institutions on **building and leading an effective team**

Why



Leaders of research teams are responsible for a multitude of roles, including administration, management, allocation of financial resources and lab infrastructure, mentoring and guiding or inspiring young scientists to achieve their full potential. Research leaders can benefit from support from their research institutions to achieve their full potential as responsible leaders.



This guideline presents a set of recommendations to research institutions **on the guidance and resources to give to research leaders, in order to support them in building and leading an effective research group.**



We first provide a one-page overview of the all the key guideline recommendations. In the subsequent pages, each key recommendation is followed by more detailed guidance and best practice examples to help research institutions bring the recommendations into practice.

What

Who



The guideline provides information relevant to **PhD students, supervisors and principal investigators, research officers, trainers, managers, and coordinators**, as well as **deans, rectors** and other institutional **leaders**.

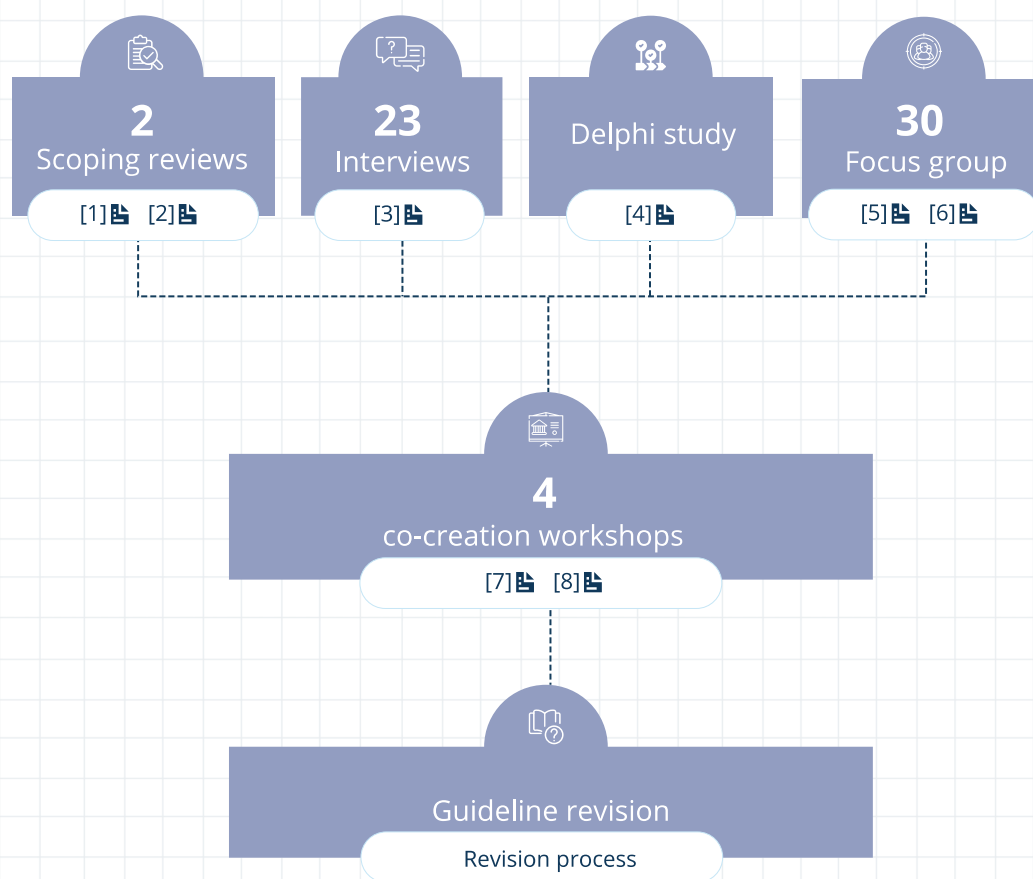
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How to use this

Supervision and leadership

How did we make this?



Supervision and leadership

Key recommendations:

-  Stipulate responsibilities of research leaders [p.4]
-  Support research leaders [p.5]
-  Provide time, guidance and resources [p.6]
-  Provide leadership training [p.7]
-  Recognize and reward good leadership [p.8]
-  Safeguard research freedom [p.9]

Supervision and leadership



Stipulate the responsibilities of research leaders and make those known to both leaders and team members

The responsibilities of the leader should be clear to research leaders and members of the research group. By demarcating the responsibilities of the leader, internal friction between members of the research group and between the leader can be minimised, and a healthy working environment can be cultivated and preserved.

- Clearly describe, demarcate, and communicate which responsibilities are those of the research institutions and which are the responsibilities of research leaders.
- Provide clear guidance to team leaders on how to manage their teams.
- Consider how to prevent research groups from becoming too large to be effectively managed by team leaders.
- Incentivise leaders to stay involved in the research process themselves.
- Implement policies to prevent the abuse of power and the exploitation of dependent relationships.



Supervision and leadership



Provide support structures for research leaders to facilitate leadership

Research institutions can support research leaders in challenging tasks by providing the necessary help, both in terms of alleviating their workload and unnecessary bureaucratic burden, and in terms of providing appropriate mediating procedures when leadership issues arise.

- Provide support services for research leaders concerning:
 - Finances
 - Grant writing and publications
 - Transparent management
 - Easing the administrative burden of research leaders
 - Development of interpersonal skills to improve leadership style
- Implement policies to adequately and fairly address any research integrity concerns that may arise.
- Organise 'leaders for leaders support group' for research leaders to learn, support, exchange, discuss, engage and share experiences, ideas and knowledge.
- Provide support services for the well-being and mental health of research leaders and support a healthy work-life balance.



Supervision and leadership



Provide research leaders with the time, guidance and resources needed to build strong research teams

Provide research leaders with the time, guidance, and resources they need to lead a research team.

- Provide sufficient time, guidance and resources to enable research leaders to create good teams and to:
 - Create a motivating and reflective research environment
 - Devote attention to individual team members
 - Foster cooperation and communication among team members
 - Become role models
- Encourage research leaders to devote and spend sufficient time on their research project.
- Incentivise research leaders to empower team members to do research and to explore and follow their individual research interests.
- Incentivise research leaders to consider the interests of the team before their own interests, where appropriate.
- Provide guidance to help leaders balance time between their own needs and those of their team members.

Supervision and leadership



Provide training for research leaders on responsible leadership

Leadership training can provide research leaders with the necessary knowledge, skills and tools to engage in responsible leadership.

- Provide training for research leaders as part of the employment package and consider making it mandatory.
- Include content relating to research integrity, and how to communicate it to others, in the training.
- Facilitate peer exchange and create peer support structures.
- Train research leaders in important leadership skills such as:
 - The ability to transfer their skills to the research team
 - Good communication skills
 - The ability to develop clear policies and procedures on collecting, maintaining and communicating data with the research team
 - Maintaining a positive attitude
 - Interpersonal skills and empathy
 - Supervision skills (see our guidelines on [supervision](#))
 - Skills in research administration



Supervision and leadership



Reward and recognize good leadership by including leadership in evaluation criteria and procedures

Recognising and rewarding good leadership incentivises responsible leadership practices, and contributes to creating a more responsible research culture.

- Create a working ethos that sees good leadership as important for the conduct of research.
- Recognise supervision as an important task of a research leader.
- Allow researchers and research leaders to set their own goals to realise different ambitions and talents.
- Assess and reward good leadership, for instance by capturing feedback from colleagues.
- Broaden criteria for promotions and assessment to include other elements besides publications and grants, for instance elements related to leadership, collaboration and open science practices.
- Set periodic reviews to assess leadership.
- Safeguard that researchers are sufficiently qualified in their specific research field.
- Consider providing alternative pathways to progress in the academic career for those who do not wish to lead research teams, to create room for everyone's talent in the institution.

Supervision and leadership



Safeguard research freedom by providing research leaders, and by extension the research teams, with adequate opportunities and possibilities to determine the direction of their research

Providing research leaders with a margin of freedom from existing contractual obligations allows them to seek valuable new ideas and research initiatives.

- Give research leaders the flexibility to change the research plan if no other options are available, as long as this is done in a documented and transparent manner.
- Create financial support to help research leaders pursue curiosity-driven research with their team.



In practice examples

Example 1: Cold Spring Harbor Laboratory in New York provides interactive three-day workshops on leadership in bioscience on an annual base.

Example 2: The University of California, San Francisco, provides a 16-hour course on scientific leadership and management skills for individuals who may become leaders of research groups.

Supervision and leadership

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Supervision and leadership

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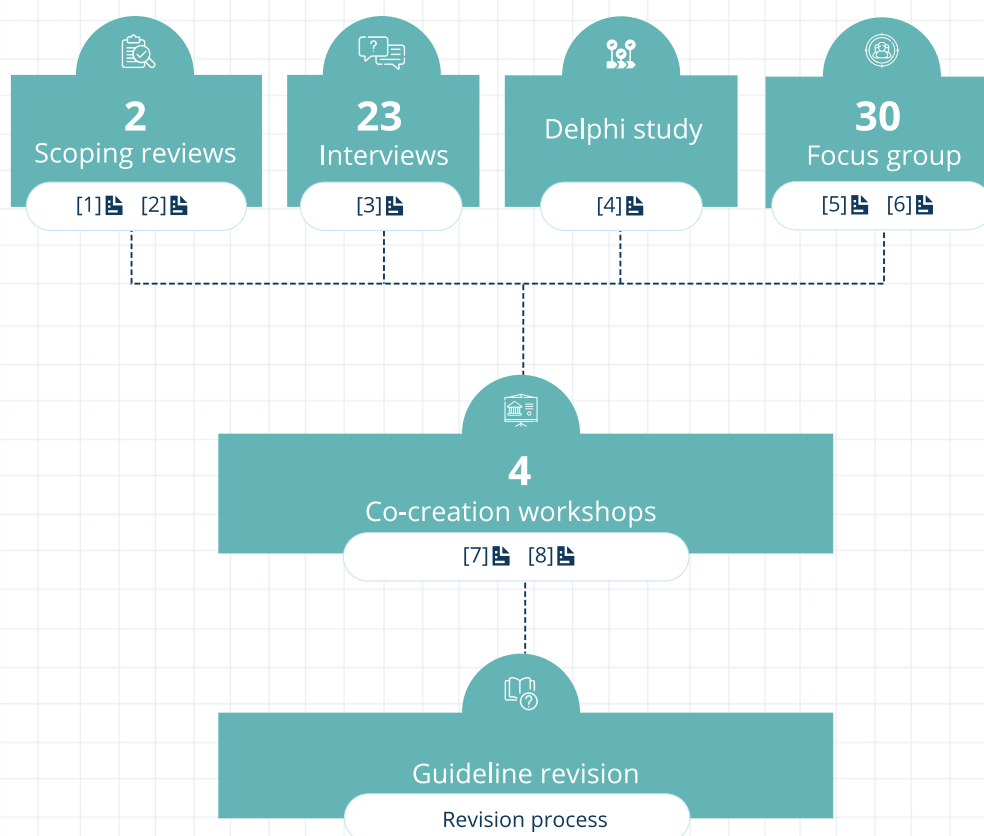
Appendix XIII **Guidelines on Community building for a positive research culture**





Responsible research environment

How did we make this?



Responsible research environment

Key recommendations:



Provide a safe, inclusive, and open environment [p.4]



Implement an integrity framework [p.5-7]



Promote participative leadership [p.8]



Establish responsible performance management [p.9]



Implement a diversity and inclusion framework [p.10]



Support the wellbeing of researchers [p.11]

Responsible research environment



Provide a safe, inclusive and open environment where researchers feel responsible and accountable, can share concerns about dilemmas and can discuss errors made without fearing consequences ('blame-free reporting')

Ensuring that those involved in research feel safe, included, and able to be open and honest is an essential starting point for creating a healthy research culture.

- Create opportunities for community-building activities.
- Create fora, open discussions and dialogues for sharing research activities, viewpoints and ideas.
- Encourage leaders to embrace open discussions, inclusive, and safe environment in their team, for example in team meetings.



Responsible research environment



Implement an institutional framework for research integrity and good research practices by providing training, support mechanisms, documents, and the appropriate infrastructures

Research institutions have an important role to play in building an environment that enables researchers to uphold research integrity and good research practices. The recommendations below serve as a foundation for building a research environment that enables researchers to conduct research with integrity.

- Provide training for research integrity
 - Provide research integrity training for all involved in research within the institutions (see 'In practice' example 1, and see our guidelines on research integrity education for [research students, researchers](#), and [support staff and research integrity personnel](#)).
 - Provide training and other institutional tools for good mentorship and supervision (see our [guidelines on supervision and mentoring](#)).
 - Ensure that training is a continuous process that is adapted to the needs of researcher, including researchers at different career stages (see our guidelines on [continuous research integrity education](#)).
- Provide support mechanisms for researchers, for example research integrity services, library services, data management services, statistical support, information services and packages for new employees, diversity and inclusion support, etc.
 - Invest in digital infrastructures such as data management plans and data limitations to ensure that all researchers can access and share information (see 'In practice' example 2).
- Appoint support persons for research integrity, such as research integrity officers, library services, diversity and inclusion officers, research integrity information services, ombudspersons and resource persons for students (e.g., research integrity advice, mental health support)
 - Where appropriate, provide legal expertise to address data management and data privacy issues, for example experts on the [General Data Protection Regulation \(GDPR\)](#).

Responsible research environment

- Train research integrity champions or ‘first responders’ who can support research integrity at the faculty, departmental, or research group level.
 - Provide a channel of local confidential advisors — researchers who can be consulted in confidence when integrity issues arise — to help address doubts and questions as soon as they arise.
 - Provide confidential and independent channels for support in case of bullying, harassment, and interpersonal conflict (see ‘In practice’ example 3).
 - Provide a safe place for raising concerns in which power differences are minimised, for example by designating integrity champions from different seniority levels (see ‘In practice’ example 4).
 - Implement a clear whistleblowing policy, including a procedure to deal with conflicts of interests when dealing with integrity issues.
 - Inform researchers about what they can expect from each support channel, make sure contact details of support persons are up-to-date, visible, and accessible, and that researchers, research students, and research staff feel confident approaching advisors.
-
- Train all support persons regarding their role, legal responsibilities (where applicable), and the research integrity policies they advise on, and make them aware of the researchers’ expectations and needs, for instance the needs for a timely response and sufficient follow-up.
 - Provide findable and practical guidelines and documents around research integrity and good research practices. These may include:
 - Guidelines for capturing and implementing feedback.
 - Guidelines for collaborating with industry.
 - Guidelines on data management plans.
 - Guidelines on transferring data between institutions and on the portability of research data.
 - Policy on open access.
 - Policy on promotion and assessment processes.

Responsible research environment

- Guidelines on bullying and harassment.
 - Guidelines on diversity and inclusion including in hiring, promotion, and research activities (see our guidelines on [diversity and inclusion](#)).
 - Guidelines on supervision and mentoring (see our guidelines on [supervision and mentoring](#)).
 - Whistleblowing guidance, etc.
- Seek feedback from researchers to capture which support, infrastructures, and documents are needed.
 - Be accountable for implementation, for example by demonstrating implementation of the measures needed and by assessing their usefulness in fostering research integrity.

In practice examples

Example 1: To encourage training, universities can provide eBadge or accreditation for internal ethics training (e.g., [Epigeum](#)).

Example 2: Some universities set mandatory requirements for data management plan at the PhD student level. The university provides the appropriate digital infrastructure. This ensures that student understand the data and its limitations, understand if special approvals are needed, know how to handle the data, etc. (See an example of the documentation that can be used on the library website from the [University of Bath](#)).

Example 3: In Flanders, a research integrity commission external to institutions ([VCWI](#)) is available to provide second, disinterested opinions on integrity cases.

Example 4: In many countries, specific 'ombudspersons' serve to help PhD students deal with problems, including with interpersonal issues with their supervisors and integrity issues.

Responsible research environment



Promote participative leadership of research at the institutional level and within research groups

*Creating an environment in which those performing research can openly communicate with institutional managers and can help foster a cooperative research culture in which all members feel respected, considered, and accountable. For more information, see our **guidelines for responsible leadership**.*

- Encourage regular meetings between leaders, research staff, managers and support staff (see 'In practice' example 1).
- Encourage cooperation between all levels of the institution, including between research support and university management, between research support and research groups, and between leaders and researchers within the research groups.
- Provide researchers (including early career researchers) opportunities and incentives to be involved in institution management and coordination activities (see 'In practice' example 2).

In practice examples

Example 1: Some research institutions embrace an open door policy between researchers and research leaders. This enables researchers to communicate openly with the leadership so that concerns can be raised early and addressed promptly.

Example 2: In some institutions where research integrity committees operate in different phases, students and early career researchers can be involved in the organisational phases of research integrity office meetings where no confidential information is discussed.

Responsible research environment



Safeguard responsible performance management, assessment and evaluation

*Assessments and rewards play an important role in the way researchers define success and perform research. Indicators focusing on quantity can incite researchers to disregard quality and integrity. Consequently, responsible research assessments are key to promoting high quality and high integrity research. Additional recommendations for responsible research assessments are available in the our guidelines **managing competition and publication pressure**.*

- Assess research on aspects such as versatility, quality and actual impact of research.
- Assess researchers on non-research related tasks, such as supervision, leadership, and other professional activities (e.g., peer review)
 - Consider assessments that look at researchers' efforts in aligning with the core values of the institution.
- Do not solely assess research on metrics that emphasise quantity or journal-level impact, such as publication counts, H-index, and Journal Impact Factors, and always complement metrics with human input.
- Appreciate all research outputs, including those that are not published in high impact factor journals.
- Broaden perspectives of impact to include different expressions and forms it can take.
- Provide guidance and incentives for good mentorship.
For more information, see our [guidelines on promoting responsible supervision](#).

Responsible research environment



Implement an institutional framework for diversity and inclusion

*Part of the richness and value of research environments comes from the great diversity of individuals that build these environments. To enable everyone to feel included in this environment, however, diversity and inclusion should be at the core of research institutions. Additional recommendations for diversity and inclusion are available in our guidelines on **diversity and inclusion**.*

- Implement a policy and action plan for diversity and inclusion.
- Foster an environment where diversity and inclusion are part of the culture (see 'In practice' example 1).
- Consider all aspects of diversity, including, but not limited to gender, race, disability, career profiles, career breaks, caring obligations, and consider their intersectionality.
- Provide support to help supervisors and group leaders uphold an inclusive environment. (see our guidelines on **supervision and mentoring** and on **promoting responsible leadership**).
- Provide diversity and inclusion training to all researchers and staff.
 - Include unconscious/implicit bias training and active/responsible bystander programmes as part of the training (see 'In practice' example 2).

In practice examples

Example 1: Some universities assign 'diversity officers' who ensure that diversity issues are considered in all aspects of university tasks.

Example 2: The Royal Society offers good guidance which may be used at a starting point for building training on about **unconscious bias** and **responsible bystander or allyship**.

Responsible research environment



Pay sufficient attention to the wellbeing of research group members and the people who lead them

Performing research can be highly stressful and demanding. Researchers have a high risk of burnout and other mental health problems. Research institutions can help create environments where stressors are kept in control and where resources are available to address problems when they occur.

- Provide a climate that is conducive to a healthy work-life balance
 - Minimise productivity pressures, short-term contracts, competition, and acknowledge their impact on mental health and wellbeing (see our [guidelines on managing competition and publication pressure](#)).
 - Enable researchers to take unpredicted leave to care for a dependent, for instance by providing the possibility for parents to care for their children in their sick leave.
- Increase awareness of mental health issues among researchers to help them detect early signs of burnout and other issues, for instance by including mental health awareness as part of induction training.
- Establish a channel of institutional mental health professionals that are accessible, known, and communicated to everyone.
- Monitor the wellbeing of researchers and act to improve wellbeing wherever problems are detected (see 'In practice' example 1).

In practice examples

Example 1: Several institutions implement wellbeing surveys to investigate the wellbeing of the staff members and research students (see an example from [University of Bristol](#)). A number of these surveys are available in the scientific literature and can help institutions detect issues that would otherwise easily be missed.

Responsible research environment

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Responsible research environment

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Responsible research environment

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Responsible research environment

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Appendix XIV **Guidelines on Managing competition and publication pressure**



Responsible research environment



Guidelines for research institutions on managing **competition and publication pressure**

Why



Publication pressure and competition can create an unhealthy research environment in which researchers might feel tempted to deviate from research integrity.



Research institutions can help foster research integrity and responsible research practices by providing researchers with healthy, collaborative, positive, inclusive, and enriching work environments.



This guideline offers recommendations **that can help research institutions manage the competition between researchers and the publication pressure they face.**



We first provide a one-page overview of all key guideline recommendations. In the subsequent pages, each recommendation is followed by more detailed guidance and 'In practice' examples to help research institutions bring the recommendations into practice.

What

Who



The guideline provides information relevant for **research officers, trainers, managers, and coordinators**, as well as **deans, rectors** and other **institutional leaders**.

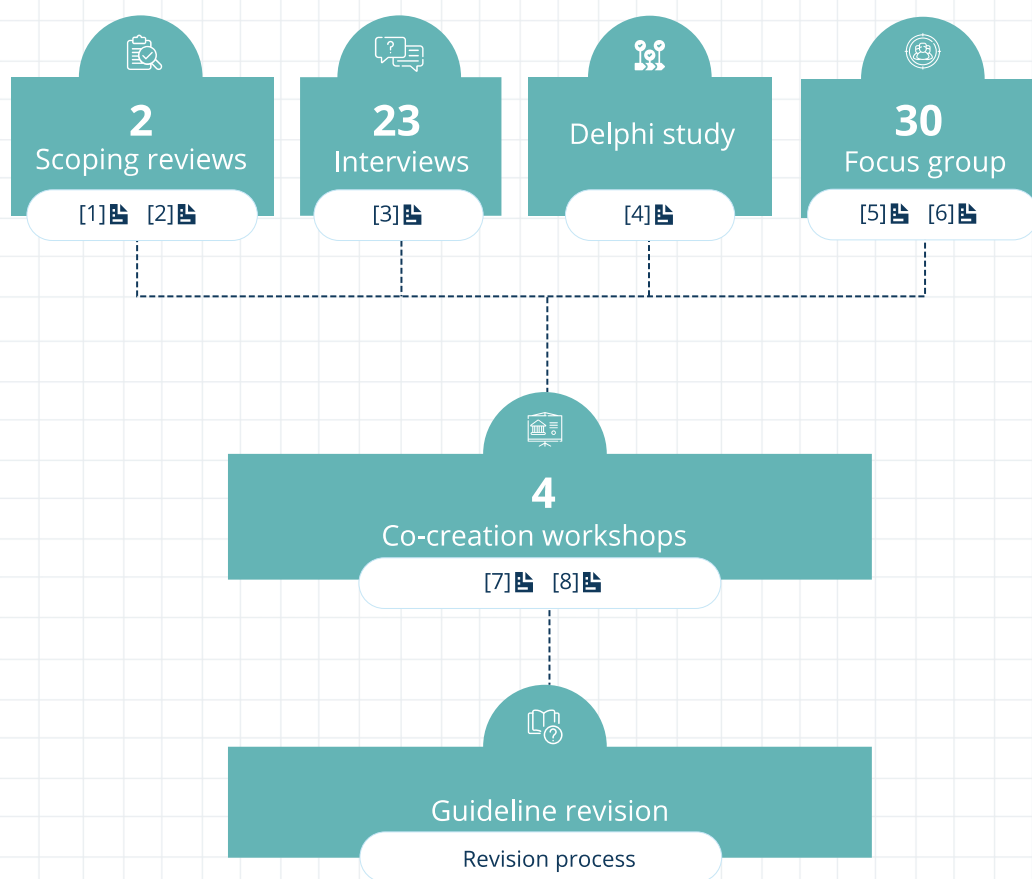
Given the broad diversity that exists among research institutions, it is possible that some recommendations are not applicable in all research settings. For this reason, the guidelines should not be seen as a 'one-size-fits-all', but rather as tools that **can be used flexibly and adapted to meet institutions' specific needs.**



How to use this

Responsible research environment

How did we make this?



Responsible research environment

Key recommendations:

-  Protect research freedom [p.4]
-  Foster coordination and collaboration [p.5]
-  Engage with external stakeholders [p.6]
-  Implement a research career structure [p.7]
-  Adopt responsible assessments [p.8-9]
-  Provide balanced workloads [p.10]

Responsible research environment



Protect researchers' freedom to investigate their own research ideas

While research institutions have a limited capacity in increasing the freedom granted in research funding calls, they can safeguard researchers' freedom in how they undertake and perform their research.

- Provide researchers with flexibility in setting up and performing research.
- Provide researchers with sufficient time to work on research projects truly reflecting their interests.
- Safeguard balance in the institution between basic or fundamental research and applied research focused on societal needs.
- Engage with external stakeholders such as policy makers, funders, and others to promote research freedom more broadly throughout the research process (see more on this point on page 6).



Responsible research environment



Foster a culture of coordination and collaboration

Research is highly competitive. Unfortunately, competition can disrupt the collaborative spirit between researchers. Inciting researchers to collaborate with one another, to cross disciplinary borders, and to join forces when seeking funding may help encourage researchers to foster a culture of collaboration, at least within research institutions.

● Foster collaboration

- Reduce competition between research groups in the same organisation, for instance by taking a more deliberate and collaborative approach where different research groups are applicable for the same funding streams (see 'In practice' example 1).
- Incentivise internal collaboration to apply for joint collaborative projects.

● Promote and support communication between research sectors and disciplines inside and outside the institution.

● Reward, promote and incentivise inter-, trans-, and cross-disciplinary research (see 'In practice' examples 2 and 3).



In practice examples

Example 1: Implementing strategic selection of funding calls within institutions can help decrease competition in a certain field. For example institutions can incite researchers to join forces so that one strong funding application is sent instead of multiple weaker applications.

Example 2: Recognising the value of interdisciplinary journals in research assessments may be a starting point to enable interdisciplinary research without disadvantaging researchers.

Example 3: Ensuring that research integrity and good research practice guidance applies to all research fields can also help foster research integrity in interdisciplinary research.

Responsible research environment



Support engagement with stakeholders such as policy makers, funders, industry and commerce, and civil society to engage in discussion around competition and publication pressure

Competition and publication pressure are multifactorial problems that extend beyond research institutions since policy makers, funders, and the industry have a key role to play in defining what researchers pursue. Engaging with external stakeholders and facilitating a shared discussion on different aspects of research life such as research assessments, research funding, and research objectives may help reduce competition and pressure.

- Facilitate a shared discussion with external stakeholders to address research funding (e.g., freedom of research agendas, competition). See In practice example 1.
- Facilitate a shared discussion with external stakeholders to address research assessments (e.g. success indicators, key performance indicators).
- Facilitate a shared discussion with external stakeholders to address research objectives (e.g., definitions of impact, end-users and service to society).



In practice examples

Example1: Priority setting partnerships can be established to ensure stakeholder involvement. See the **James Lind Alliance** for examples.

Responsible research environment



Create and implement a research career structure that allows for career stability and security

Research careers are often characterised by early career instability and insecurity. Given that the indicators used to assess research careers rarely focus on responsible research practices, researchers who are insecure in their careers may feel the need to prioritise career advancement over responsible research practices. Helping researchers feel safe in their career may help them feel able to practice research with integrity.

- Avoid temporary self-funded contracts and increase permanent career structures in which researchers' salaries are secured.
- Diversify career options within research institutions to enable a range of skills and profiles (e.g., careers with a focus on data stewardship, policy engagement, etc.)
- Share the responsibility of securing funding with the researchers.
- Formally inform students and early career researchers about the range of prospective career paths, for example by organising dedicated events or workshops (see example 1).
- Inform students early on about the odds of pursuing a career in academia and tackle negative attitudes towards those leaving academia, for example by actively introducing students and early career researchers to careers outside academia.

In practice examples

Example1: In Belgium, several funding programmes help PhD students and postdoctoral researchers start spin-off projects, for example institutions in Wallonia benefit from the **'FIRST Spin-Off programme'** while Institutions in Flanders benefit programs such as the **'Qbic fund'**. Connecting with such programmes and raising visibility may help enable intersectoral mobility.

Responsible research environment



Adopt responsible recruitment and assessment practices

Assessments and rewards play an important role in the way researchers define success and perform research. Indicators focusing on quantity can incite researchers to disregard quality and integrity. Consequently, responsible research assessments are key to promoting high quality research.

- Have a discussion to understand what responsible researcher evaluations would mean in your institution (see 'In practice' example 1).
- Base researcher evaluations on inputs from colleagues of various ranks, including individuals in supervisor and supervisee positions as well as internal and external reviewers.
- In evaluations and promotions, ask for a limited number of publications and ask the researcher to reflect on their work to move from quantity to quality (see 'In practice' example 2).
- Provide rewards and incentives for diverse elements of the research process, competencies, and contributions, if possible by enabling researchers to select elements they consider most relevant to their work.
 - These may include – but are not limited to – open science practices such as preregistrations, preprints, publication of negative or null results, open data, open access publications, as well as other professional contributions such as teaching, peer review, editorship, supervision, contribution to support roles, dissemination, outreach, and societal impact.
 - Invest the resources necessary to enable all researchers to contribute to the practices rewarded, for example by providing funding for reasonable open access article processing charges, by providing infrastructure and support for data sharing, and by providing training, support, and opportunities for diverse professional contributions, competencies, and activities.
- Evaluate researchers using diverse forms of impact.

Responsible research environment

- Transparently disclose the criteria used in evaluation.
- Compare and adapt internal procedures with those recommended in the [Declaration on Research Assessments \(DORA\)](#), the [Hong Kong Principles](#), the [Leiden Manifesto](#), and other guidance on good research assessment.
- Implement recruitment and assessment procedures which do not deepen inequalities.
 - For example, implement evaluation policies which do not disadvantage researchers who have gone on parental leave, for instance by not relying on a cumulative number of publications for evaluations, and set reasonable expectations that take into account different stages of the research career.
- Consider joining communities of stakeholders to share efforts in reforming research assessments. (See 'in practice' example 3).



In practice examples

Example 1: The **SCOPE Framework for Research Evaluations** can be a useful starting point to help institution discuss and reshape their evaluation procedures.

Example 2: Narrative CV formats, such as the **Résumé for Researchers (R4R)** formats may help provide a structure to capture the qualitative elements of a researcher's achievements. In the UK, several stakeholders such as **UK Research and Innovation**, the **Wellcome Trust**, and the **Royal Society** have jointly **agreed to commit towards a shared approach to using narrative CVs** (several **resources and templates** are available online). Research institutions are also moving towards narrative CVs. Studies by the **University of Glasgow in collaboration with the UK Reproducibility Network**, the **Swiss National Science Foundation**, and **FNR Luxembourg** report on the use of Narrative CVs.

Example 3: Several communities aiming to reshape research assessment already exist. Joining or contributing to these communities can enable research institutions to connect with other institutions and external stakeholders. For instance, the Coalition resulting from the **Agreement on Reforming Research Assessment** led by the European Commission, European University Association (EUA), and Science Europe, allows international stakeholders to discuss, help, and support one another in changing research assessment.

Responsible research environment



Adopt responsible recruitment and assessment practices

Researchers are generally expected to balance their time between a wide range of professional activities. Depending on the type of research institution, these may include research-related activities, education-related activities, and service-related activities. Institutions can help safeguard sufficient time for research-related activities to researchers.

- Ensure researchers have dedicated research time.
- Ensure researchers have equal opportunities to publish.
- Ensure researchers can balance teaching and research activities or, wherever possible, can choose areas they wish to specialise in (see 'In practice' examples 1 and 2).
- Ensure that researchers who take on additional roles, such as data stewards or confidential advisors are recognised for their commitment and are not overburdened.



In practice examples

Example 1: The Recognition and Reward programme in the Netherlands – with position paper **Room for Everyone's Talent** – enables researchers to select areas in which they would like to focus their careers, for example Research, Education, Leadership, Impact, and Patient Care (in university medical centres). Researchers are then evaluated based on their own selected profiles, and are encouraged to change these areas as their career evolves.

Example 2: Similar to example 1, several research institutions now use a portfolio approach to enable researchers to select areas they wish to specialise, to define their own key performance indicators, and to reflect on the meaning and the impact of their work (see for example the programmes in place in **Ghent university** and **UMC Utrecht**).

Responsible research environment

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Responsible research environment

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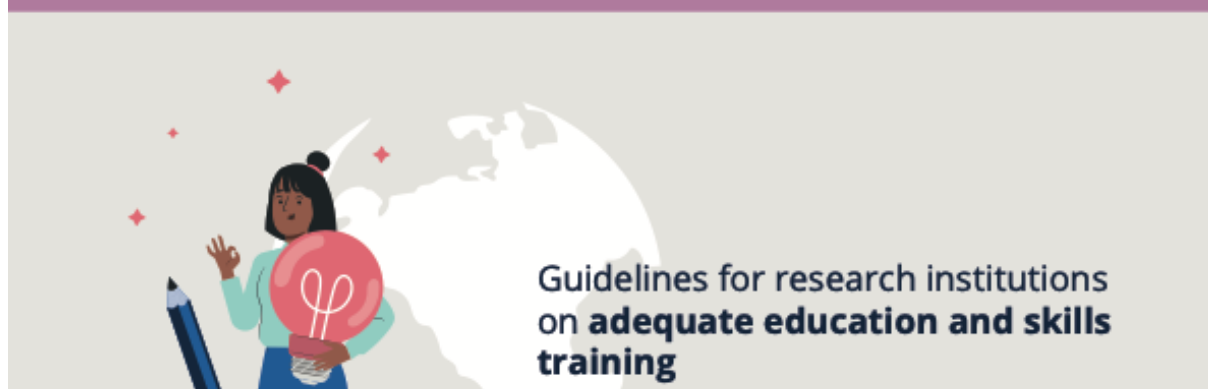
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Appendix XV Guidelines on Adequate education and skills training



Responsible research environment



Guidelines for research institutions on adequate education and skills training

Why



Ensuring that **researchers are competent and versatile in their work** will help them perform research of higher quality and enable them to build the skills necessary to deal with dilemmas and career uncertainty.



Research institutions can help foster research integrity and responsible research practices by providing researchers with healthy, collaborative, positive, inclusive, and enriching work environments.



This guideline offers recommendations that can **help research institutions provide researchers with adequate education and skills building opportunities.**



We first provide a one-page overview of all key guideline recommendations. In the subsequent pages, each recommendation is followed by more detailed guidance and 'In practice' examples to help research institutions bring the recommendations into practice.

What

Who



The guideline provides information relevant for **research officers, trainers, managers, and coordinators**, as well as **deans, rectors** and other **institutional leaders**.

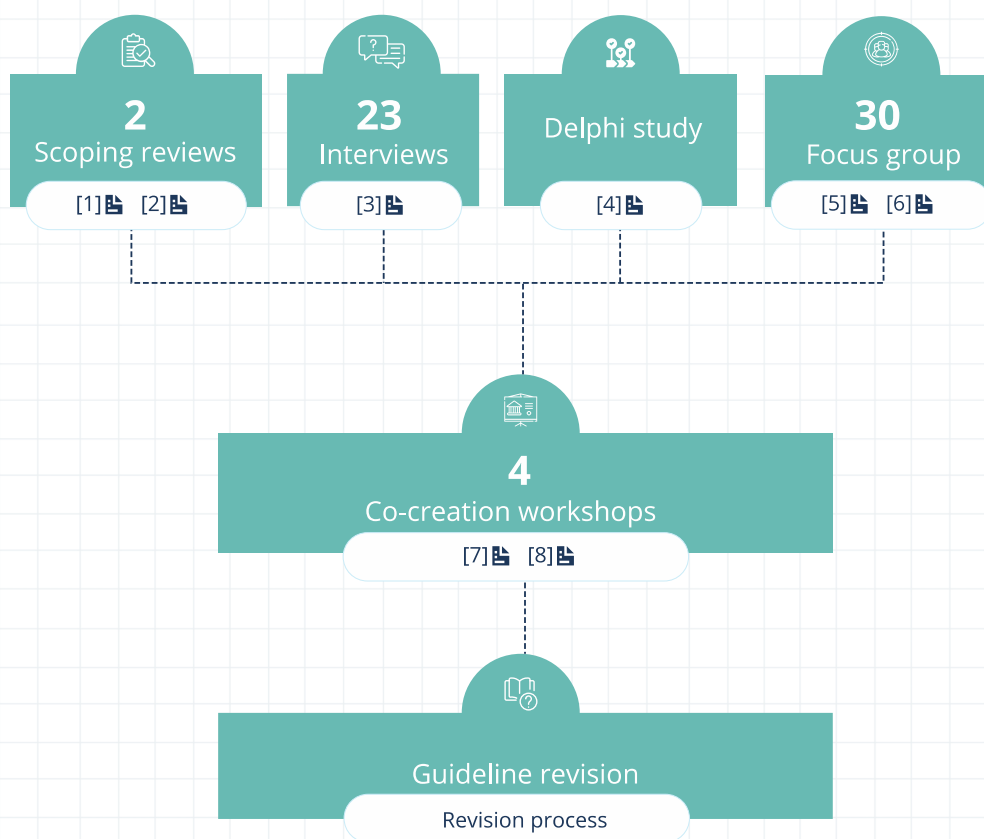
Given the broad diversity that exists among research institutions, it is possible that some recommendations are not applicable in all research settings. For this reason, the guidelines should not be seen as a 'one-size-fits-all', but rather as tools that **can be used flexibly and adapted to meet institutions' specific needs.**



How to use this

Responsible research environment

How did we make this?



Responsible research environment

Key recommendations:



Guide responsible practice

[p.4]



Implement a training framework

[p.5-6]



Provide exposure to non-academic settings

[p.7-8]



Foster communication among researchers

[p.9]

Responsible research environment



Provide adequate guidance about responsible research practices and research integrity

Supporting researchers' education and skills training begins with good research practices and research integrity. Providing training, support, and infrastructures to enable all those involved in research to conduct research with integrity is a necessary starting point for performing high quality research.

- Provide training on research integrity to all involved in research, including researchers at all seniority levels (see our guidelines on [research integrity education for research students, researchers, and support staff and research integrity personnel](#)).
- Provide training, guidance, support, and infrastructures for good data management, ethical conduct of research, and adequate research methods.
- Communicate the responsibility of research leaders and research institutions to researchers, for instance related to grants, conflict management, research practices, people management.
- Increase visibility, foster awareness, and promote the use of relevant European guidance on responsible research practices.
- When possible, coordinate requirements for good research practice across (see 'In practice' example 1).



In practice examples

Example 1: In Denmark, Responsible Conduct of Research courses are coordinated across institutions to ensure a common agreement on what is good scientific practice.

Responsible research environment



Implement a framework for adequate training of researchers within the institution

Beyond good research practices and research integrity, supporting researchers in building the right skills and knowledge to conduct research and navigate their career is also key to high quality research.

- Dedicate a budget for training, training infrastructures, and training staff.
- Provide training that targets a broad range of skills. These skills may include:
 - Direct research skills, such as research methods, technical skills, analytical skills, data management practices, experimental (see 'In practice' example 1), etc.
 - Essential skills and knowledge necessary for a research career, such as peer review, reproducibility, open science, diversity and inclusion, leadership and mentorship, history of science, etc.
 - Transferable skills, such as organization, project management, conflict management, negotiation, communication, people management, etc.
 - Personal and interpersonal skills, such as emotional intelligence, curiosity, empathy, listening, etc.
- Provide training opportunities and dedicated time for skills building to researchers across seniority levels, for example through continuing education programmes (see 'In practice' example 2).
- Involve researchers in designing the training curriculum to ensure that the training offered corresponds to their needs.

Responsible research environment

- Provide researchers the opportunity to set their own skills development objectives upon which their progress is monitored.
- Establish collaboration between research offices, libraries, and research management to ensure that the training and services provided are aligned.
- Strengthen collaboration with other research institutions to enable researchers to benefit from external training and skills development opportunities (see 'In practice' example 3)



In practice examples

Example 1: The **Experimental Design Assistant (EDA)** is a free online tool from the National Centre for the Replacement Refinement & Reduction of Animals in Research (NC3Rs) that is designed to guide researchers through the design of their experiments. Such a tool can be helpful in building skills and promoting responsible research practices.

Example 2: The **"Intervals"** Continuing Professional Development Programme at the Barcelona Biomedical Research Park (PRBB) offers free transferable, personal and interpersonal skills courses to all the staff of the six research centres that are part of the park.

Example 3: In Flanders, PhD students and postdoctoral researchers are often invited to participate in training provided by other Flemish institutions. Flemish universities also enables inter-university training networks such as the **Flanders' Training Network for Methodology and Statistics (FLAMES)** in which students from all Flemish universities can take part.

Responsible research environment



Provide researchers with exposure to different academic settings, non-academic sectors, and public sectors

Exposing researchers, research students, and research staff to different settings is essential to enabling broad transferable skills, adaptability, and intersectoral mobility. Research institutions can help provide and increase visibility to co-financing and mobility opportunities.

- Research institutions in the academic sector should provide opportunities to conduct research in non-academic sectors and vice versa in order to build transferable skills for future employment in careers outside academia/industry.
 - Encourage co-financing of research from industry partners to open opportunities for investment and employment (see 'In practice' examples 1 and 2).
 - For the academic sector, provide clear instructions about circumstances under which new industry collaborations are allowed, for instance communicating that collaboration with the tobacco industry is prohibited.
 - Safeguard transparency about preferences and contributions during industrial collaborations, for instance by mentioning both institutions on publications.
 - Provide mentorship opportunities for research students by external partners.
 - Move towards better collaboration with non-academic sectors to gradually enable better intersectoral mobility (see 'In practice' example 1).
- Provide opportunities to conduct research at other institutions or abroad, for example by encouraging mobility schemes at student, faculty, and staff levels (see 'In practice' examples 3 and 4).



Responsible research environment

- Also provide opportunities to experience relevant training beyond specific research settings, for example by providing opportunities towards policy, funding, and professional associations (see 'In practice' example 5).

In practice examples

Example 1: In Belgium, several funding programmes help PhD students and postdoctoral researchers start spin-off projects. For example, research institutions in Wallonia benefit from the **'FIRST Spin-Off programme'** while Institutions in Flanders benefit from programmes such as the 'Qbic fund'. Connecting with such programmes and raising visibility may help enable intersectoral mobility.

Example 2: The **European Commission COFUND action** enables regional, national, and international funding bodies to obtain co-funding from the European Commission for PhD or Postdoctoral training programmes, provided that they include a secondment in non-academic sectors to foster inter-sectoral mobility.

Example 3: Exchange programmes can encourage research students and research staff to perform research in the industry or in different settings for part of their or employment. These programmes can be offered at the university level, but international programmes also exist such as the **Marie Skłodowska-Curie Actions Researcher Exchanges** which offer funding and support for staff secondment and exchanges.

Example 4: **Erasmus+ schemes** can help support exchanges at student and faculty levels.

Example 5: In the United Kingdom, the **The Parliamentary Office of Science and Technology (POST) fellowship schemes** help bridge research and policy by offering a wide range of experiences in which young researchers collaborate with learned societies, professional associations, and funding bodies.

Responsible research environment



Foster cooperation, communicate and discussion among researchers to support learning from each other's skills

Promoting exchanges and bottom-up initiatives between researchers can help them share and expand their skills and communicate their needs for future skills development. Despite the fact that many research groups already organise exchange groups and seminars, research institutions can help foster interdisciplinary exchanges more efficiently by providing resources and support for researchers' initiatives.

- Provide the infrastructure, fora, and opportunities to enable researchers to develop and maintain cooperation, communication and discussion:
 - Provide researchers and students the space and the resources needed to enable them to organise bottom up initiatives for support, training, and informal discussion.
 - Encourage researchers to organise events where they can discuss non-project-specific affairs, such as questions related to integrity, policy, etc.
- Encourage researchers to collaborate with those outside their research group.
 - Encourage work-in-progress seminars within research groups and faculties but also at the interdisciplinary level.



Responsible research environment

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Responsible research environment

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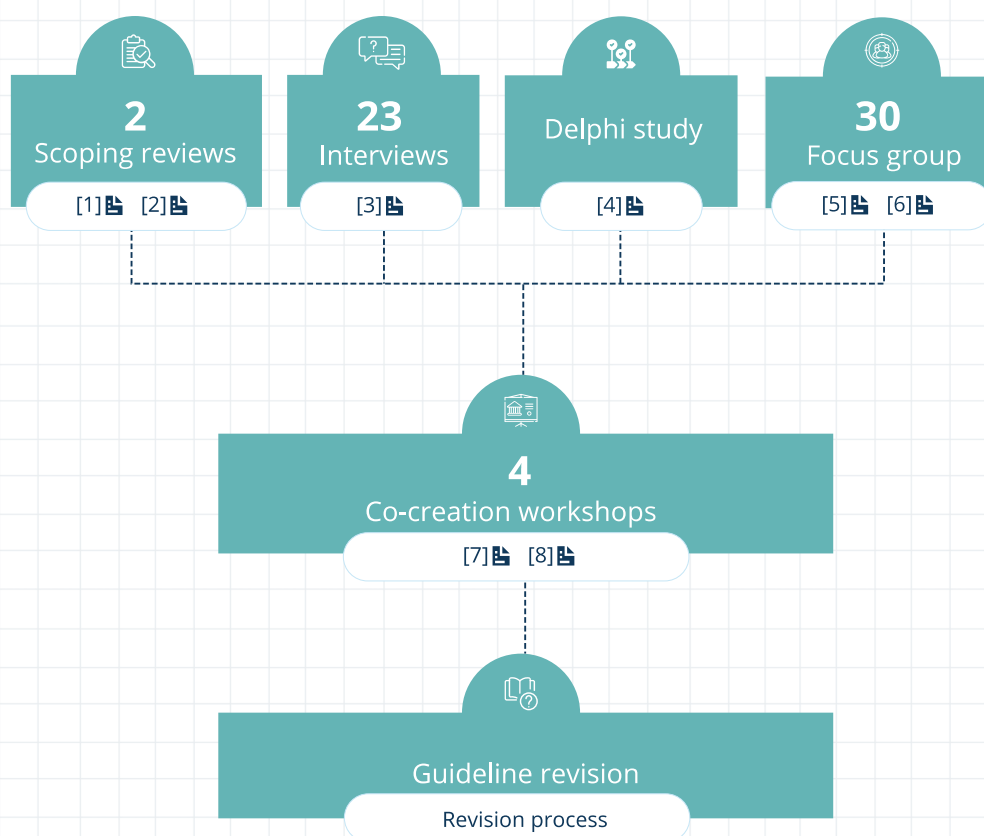
Appendix XVI Guidelines on Diversity and inclusion





Responsible research environment

How did we make this?



Responsible research environment

Key recommendations:



Understand the broad meaning of diversity

[p.4]



Implement an institutional diversity and inclusion policy

[p.5-6]



Raise awareness and commitment within the institution

[p.7-8]



Report progress on diversity and inclusion

[p.9]



Establish and safeguard a safe environment for all

[p.10]

Responsible research environment



Understand diversity in its broad meaning, without limiting to specific diversity issues

The way in which diversity is understood plays an important role in the actions that are taken to foster diversity and inclusion. Gender is an essential aspect of diversity, but diversity goes beyond gender and also includes cultures and ethnicity, disability, and even diversity in terms of background, skills, and sectors.

- Consider all aspects of diversity, including gender, ethnicity, sexual orientation, disability, including invisible populations such as those with learning disabilities, but also different factors that may impact researchers' outputs and achievements, such as caring duties, family issues, medical issues, career change, and differences in backgrounds and sectors.
- Embrace an intersectional approach to diversity issues that considers cumulative impacts.



Responsible research environment



Implement an institutional diversity and inclusion policy

By implementing their own institutional policy for diversity and inclusion, research institutions reinforce the importance that diversity plays in their research environment.

- Implement a holistic institutional framework on increasing diversity and inclusion where various issues are addressed including recruitment, promotions, mentorship, research performance assessment, conference and seminar organization, training, fair pay, and working conditions.
- Implement recruitment strategies that foster diversity and inclusion. These may include:
 - Always taking into account the context from which applicants come from, such as past opportunities, seniority, and caring duties to fairly assess different profiles.
 - Considering diversity also in the composition of selection panels.
 - Providing training on diversity and inclusion to those involved in recruitment and interviewing.
 - Ensuring that applications and job advertisements are transparent, visible, and open to all (see 'In practice' examples 1 and 2). This may include posting vacancies on public websites, but also allowing applicants to submit an application in diverse formats (i.e., also accept applications by post, not only by email).
 - Considering a broad set of skills across different team responsibilities to enable the selection of diverse individuals with complementary skills.
- Create action plans on diversity and inclusion with clear deliverables, timeline, resources, responsibilities, monitoring, and progress reporting.
- Avoid that the burden to progress on inclusion and diversity disproportionately falls on minorities or underrepresented groups.

Responsible research environment

- Seek feedback, perspectives, and personal experiences from both minorities and majorities and adapt policies and initiatives to address their concerns (see 'In practice' example 3).
- Remove physical barriers for people with mental or physical disabilities.
- Clearly and transparently communicate the diversity and inclusion policy to the research community.



In practice examples

Example 1: Placing vacancy advertisements on national and international publicly accessible websites, where all academic job advertising is presented, will enable better, more diverse visibility to vacancies than announcing the vacancies only on the university website. **EURAXESS** is a good example that can make vacancies visible throughout Europe. Academic vacancies websites sometimes also exist on a national level, such as **jobs.ac.uk**, which announces all academia-related employment in the UK.

Example 2: The way in which vacancy advertisements are worded can impact the types of applicants that feel qualified for the position. It is advisable to formulate advertisements in such a way that they do not only attract the majority profiles but also minorities (e.g., use collaborative terminology and not only leadership terminology). Existing **tools and guidance from recruitment websites** may help notice wording that may be discriminatory.

Example 3: In research institutions where associations representing certain minority groups are available (e.g., LGBTQ associations, women in science associations), it is advisable to seek the input from these representative associations in the policy building process.

Responsible research environment



Provide awareness and commitment to diversity and inclusion at all sections of the institution

A diverse and inclusive research environment is, before anything else, a result of the community that builds this environment. Institutions should commit to the standards they set and raise awareness through training, open communication, and engagement with those performing research.

- Foster high level institutional awareness and commitment towards diversity and inclusion, including among the institution management.
- Adhere to national and international diversity and inclusion schemes (see 'In practice' example 1).
- Set performance expectations that allow for and support diversity and inclusion.
 - Always take into account the context from which applicants come from, such as past opportunities, seniority and caring duties to fairly assess different profiles.
 - Reduce use of short term contracts since those can impact diversity differently (see more details on career continuity in our guideline on [managing competition and publication pressure](#)).
 - Consider adding a diversity statement showcasing existing support and policies directly on vacancies.
- Provide diversity and inclusion training for all researchers and research staff, and further increase awareness by providing a platform for exchange on diversity and inclusion (see 'In practice' example 2).
 - Include a broad range of topics, such as cultural awareness, tolerance and openness, acceptance of different ideas and viewpoints, diversity policies and practices, unconscious bias (including in recruitment, hiring, and promotion), sex and gender dimensions in research, intersectionality issues, active bystander training and allyship, etc. (see 'In practice' example 3).

Responsible research environment

- Adopt models, examples, and success stories to showcase the benefits of diversity and inclusion. For example, give prizes and visibility to research teams where diversity efforts were successful or name important structures such as buildings and conference halls to reflect diversity.



In practice examples

Example 1: See the Advance HE **Athena SWAN Charter** and **Race equality Charter**.

Example 2: Events and discussion can be organised in the institution as a platform to increase awareness to political events in which diversity issues are discussed.

Example 3: The Royal Society offers good guidance which may be used as a starting point for building training on about **unconscious bias** and **responsible bystander or allyship**.

Responsible research environment



Implement a structure of data collection and metrics for diversity and inclusion and report on the progress made

Data collection and metrics on diversity and inclusion enable research institutions to evaluate whether the policies they put in place are effective at improving diversity in the institution. These serve as the backbone of any diversity and inclusion guideline or policy.

- Monitor diversity policies to ensure that they are adapted to the context and remain helpful without generating further discrimination.
- Include the full spectrum relevant to diversity in the data collection, such as gender, ethnicity, disabilities, and socio-economic background.
- Transparently report the progress on diversity initiatives and diversity metrics, for instance on the institutional website, reflecting on the areas that require further efforts in the institution (see 'In practice' example 1).



In practice example

Example 1: Using comparative metrics with other institutions can help motivate efforts on diversity and inclusion

Responsible research environment



Safeguard a safe research environment for all

Discrimination is often invisible to the majority, especially when those who feel discriminated do not feel safe enough to raise their voice. Research institutions can help to foster a safe environment in which clear mechanisms are in place to help minorities communicate their perspective and concerns.

- Implement policies to safeguard that researchers can work in a safe, inclusive and open environment where they feel responsible and accountable, can share their thoughts, feelings, and concerns about diversity and inclusion, racism, sexual harassment and discrimination (see 'In practice' example 1).
- Create and communicate safe and transparent mechanisms in place for reporting diversity and inclusion issues.
- Adopt and uphold strict consequences for derogatory and discriminatory behaviours as well as harassment and bullying.
- Provide support structures to allow for mediation and discussion.



In practice example

Example 1: Involving affected collectives is important to determine what a safe environment means to them.

Responsible research environment

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8. Daniel Pizzolato, Kris Dierickx, Joeri K Tjldink, Krishma Labib, Iris Lechner, Noémie Aubert Bonn, et al. D4.4: Report on the Co-Creation Workshops. 2021.

Responsible research environment

SOPs4PI Consortium



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Appendix XVII **Guidelines for research funders on defining and preventing unjustified interferences from funders, political and commercial actors**



Defining and preventing interference



Guidelines for research funders on defining and preventing unjustified interferences from funders, political and commercial actors

Why



Independence and the avoidance of unjustifiable interference are key considerations to address in creating a **Research Integrity Promotion Plan** for research funding organisations. Independence and transparency in the research funding processes have a bearing on the integrity and trustworthiness of research outputs and are, therefore, vital for the research funding organisation to uphold and protect.



The guidelines concern unjustifiable interferences, by which we mean any financial, professional, or other interests of any stakeholder involved, that might be seen to adversely influence a decision or to be affected by the outcome of a decision. The recommendations in this guideline concern what measures research funding organisations can take to define unjustified interferences, ensuring transparency and integrity in their procedures, and preventing unjustified interferences by funders themselves, political, and commercial actors.

What



We first provide a one page overview of all the key guideline recommendations. In the subsequent pages, each key recommendation is followed by more detailed guidance and best practice examples to help research funders bring the recommendations into practice.

Who



These guidelines are designed to provide inspiration and best practice examples on areas that may be considered for those setting up **Research Integrity Promotion Plans** in research funding organisations.

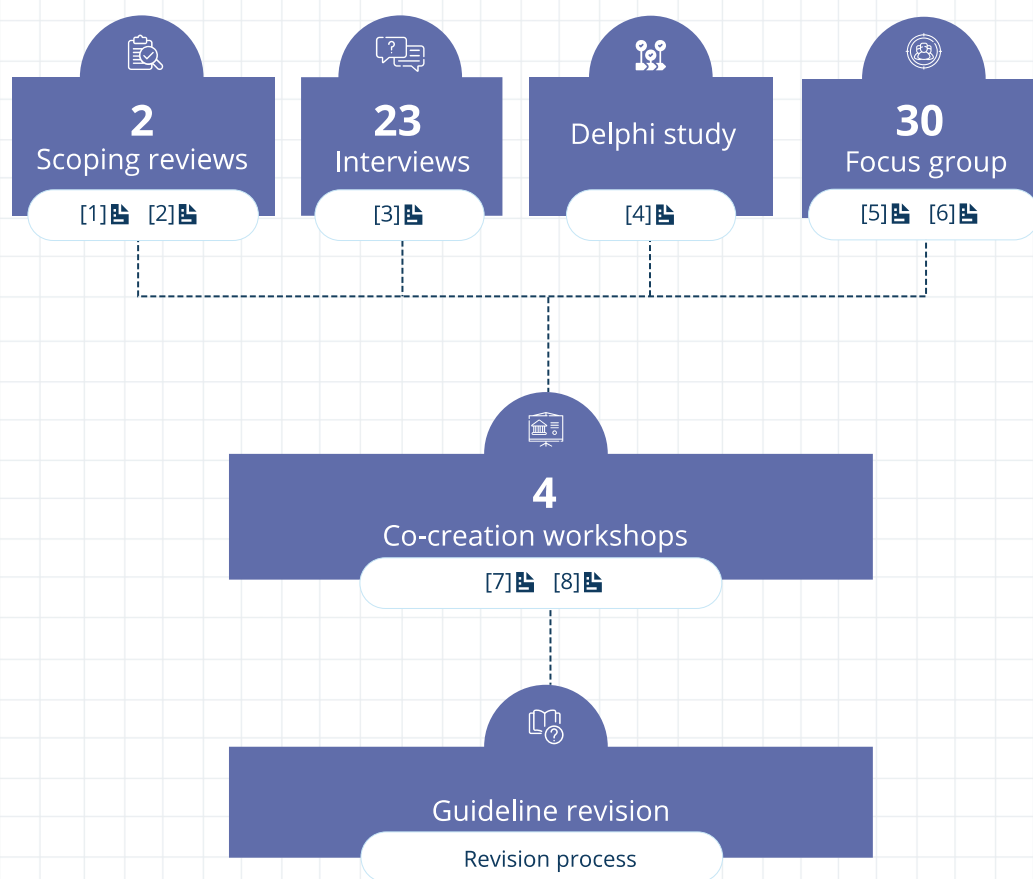
The guidelines are designed to provide inspiration and best practice examples on areas that may be considered when setting up **Research Integrity Promotion Plans**. We recognize that research funding organisations are a very heterogeneous group depending amongst other things on the country (e.g. legal systems), the size of the organisation, the disciplines of interest, the types of contracts or funding schemes, etc. We also recognise that some research funding organisations have longstanding experience in implementing **Research Integrity Promotion Plans** while others will start to implement these in the near future. For these reasons, the guidelines are not as a 'one-size-fits-all', but rather as a tool that can be used flexibly and adapted to meet users' specific needs.



How to use this

Defining and preventing interference

How did we make this?



Defining and preventing interference

| Key recommendations:

-  Define and describe unjustified interferences [p.4]
-  Foster transparency and integrity [p.5]
-  Assess potential unjustified interferences [p.6]
-  Provide evaluators with maximal independence [p.7]
-  Transparently allocate money without interference [p.8]
-  Provide guidelines for external-commercial collaboration [p.9]
-  Require collaboration contracts with commercial partner [p.10]

Defining and preventing interference



Provide a description and definition of unjustified interferences

It is important that descriptions and definitions are stated clearly to avoid misinterpretation. Clear definitions provide a foundational framework for research funders to deal with issues of interferences in their procedures.

- Provide a clear description and definition that is publicly available online, potentially including a list of major or most relevant unjustified interferences.
- In general terms, inspect and consider legislative, cultural, national, institutional and local differences when defining unjustified interferences.



Examples of unjustifiable interferences

The recommendations do not prescribe how and what research funding organisations should define as unjustifiable interferences. The table below presents some examples, which may inspire research funding organisations when drafting their own definitions of interferences.

Defining and preventing interference



Foster transparency and integrity during the evaluation process and in the subsequent funding period

It is important that research funding fosters transparency and integrity in their procedures to avoid unjustifiable interferences.

- Provide clear guidelines and training for grant proposal evaluators, including a briefing session on unjustified interference and unconscious bias before starting the evaluations.
- Require evaluators to disclose any conflicts of interest (COIs).
- Direct special attention to research projects involving collaboration with industrial sponsors, political and other external sponsors.
- Implement a review of the evaluation process, and decide how frequently to carry out this review.
- Maintain impartiality and independence and implement internal policies for staff members to prevent any unjustifiable interference at any phase of the research process.
 - Require internal staff in the research funding organisation to disclose all possible COIs.
 - Provide guidance to internal staff in research funders organisation's policies.
- Provide clear guidelines for internal staff on how to deal with possible unjustified interferences in the research funding organisation.
- Provide clear guidelines to enable funded researchers to report undesirable interference during the funding period.
- When defining unjustified interferences, commit the research funding organisation to refrain from unjustifiably interfering with any phase of the research process in the funded research.

Defining and preventing interference



Implement procedures to detect potential unjustified interference in all stages of the research funding process, including in selection of proposals, in monitoring of funded projects, and in the final reporting

Implementing and upholding regular assessment procedures is considered important to detect when unjustifiable interferences occur.



Defining and preventing interference



Strive for impartial evaluators who have maximal independence from applicants

Research funding organisations are encouraged to use independent evaluators, as a means to avoid unjustifiable interference in the evaluation process.

- Select diverse evaluators, for example diverse in terms of gender, country, discipline, and expertise.
- Provide clear guidelines to prevent the selection of evaluators that are:
 - Associated with the research application.
 - A colleague or co-author of the applicants.
 - Applying for funding in the same scheme.
 - Personally gaining from the outcome of the evaluation.
- Ideally, select evaluators that are located in a different organisation or location than applicants.



Defining and preventing interference



Where possible, allocate funding freely without political, external, or commercial interference and be transparent about allocation of funding

- Clearly communicate if specific research priorities have already been set or demands for specific research priorities have been specified.
- Foster transparency on funding allocation, for instance by:
 - Publishing the titles of projects that have been funded on the funder's website.
 - Clearly highlighting the research funder's strategic objectives on the organisation's website.



Defining and preventing interference



Provide clear guidelines about collaborations or co-financing projects with external commercial partners

Not all collaboration with commercial partners is problematic or leads to unjustified interference. The idea is not to discourage public-private collaboration but to identify cases of unjustified interference altering scientific quality and integrity.

Specific guidelines can help to direct attention to collaborations that may be prone to interferences, such as collaboration with industry or external sponsors. This could include scenarios where a commercial entity would potentially interfere with the selection process and where it would interfere with a project. Below we provide an overview of the kinds of aspects that can be considered in such a guideline.

- Provide guidelines on how to make the decision process independent from commercial influences.
- Provide guidelines that cover how to be transparent about the allocation of funding from the research funder and external-commercial partners in co-funded projects.
- Provide guidelines that require the research institution to conduct research that is in line with good research practices, for example in line with [The European Code of Conduct for Research Integrity](#).
- Provide guidelines that require full disclosure of all interests, including financial ones, in all formal inputs and outputs of the project.

Defining and preventing interference



In case of collaborations between commercial partners and funded researchers, require clear collaborative contracts between the parties involved, covering all phases of collaboration

- Require that contracts are available at the beginning of the project, prior to the release of the funding.
- Require contracts that contain clear definitions of the role and responsibilities of each partner.
- Require contracts that contain clear descriptions of the objectives, design, methodology and analysis of the research, and clear agreements on publication of outputs, availability of data and research materials, ownership of intellectual property of the research, and expected use of research outputs (to detect dual-use, illegal use, or use for goals not aligned with national or funders' values).



Additional resources

In the SOPs4RI project, a toolbox of already existing, relevant and easy-to-use guidelines have been collected, including examples of research funding organisations' conflicts of interest policies:

- Fonds National de la Recherche Luxembourg: **Ethics Charter and Code of Conduct for Research Assessment**
- Wellcome Trust: **Conflicts of interest policy**
- The Netherlands Organisation for Health Research and Development: **Integrity and conflicts of interests**
- Dutch Research Council: **Code for dealing with personal interests**
- The US National Institutes of Health: **Integrity and confidentiality in Peer Review**

These resources may inspire research funding organisations when drafting their own guidelines, policies and frameworks on prevention of unjustifiable interferences.

Defining and preventing interference

Contributors

Co-creators (from the SOPs4RI co-creation workshops)

13 co-creators participated in creating these guidelines.
Among those, the following consented to be acknowledged:

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- Professor Dr. Stan Gielen, Former Chairman of NWO executive board, Netherlands
- Nina Hedlund, The Research Council of Norway
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Defining and preventing interference

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Defining and preventing interference

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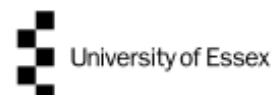
Defining and preventing interference

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Defining and preventing interference

SOPs4PI Consortium



Appendix XVIII Guidelines for research funders on monitoring funded projects



Monitoring funded projects



Guidelines for research funders on monitoring funded projects

Why



These guidelines can serve as inspiration to help research funders develop internal guidelines about the entire monitoring process, as well as external guidelines to inform beneficiaries of funders' expectations towards them. The monitoring process can help research funders and governmental institutions to think about the structural problems that make compliance difficult for the beneficiaries.



The guidelines on monitoring of funded projects address research funders organisations with the aim to give them general recommendations on how to monitor the execution of research grants with regards to scientific, research integrity and financial aspects.



For each guideline, we provide a one page overview of the key recommendations it includes. In the subsequent pages, these key recommendations are further elaborated on, and more details are provided on how they can be approached.

What

Who



These guidelines were designed to provide inspiration and best practice examples on areas that may be considered for those setting up **Research Integrity Promotion Plans** at research funding organisations.

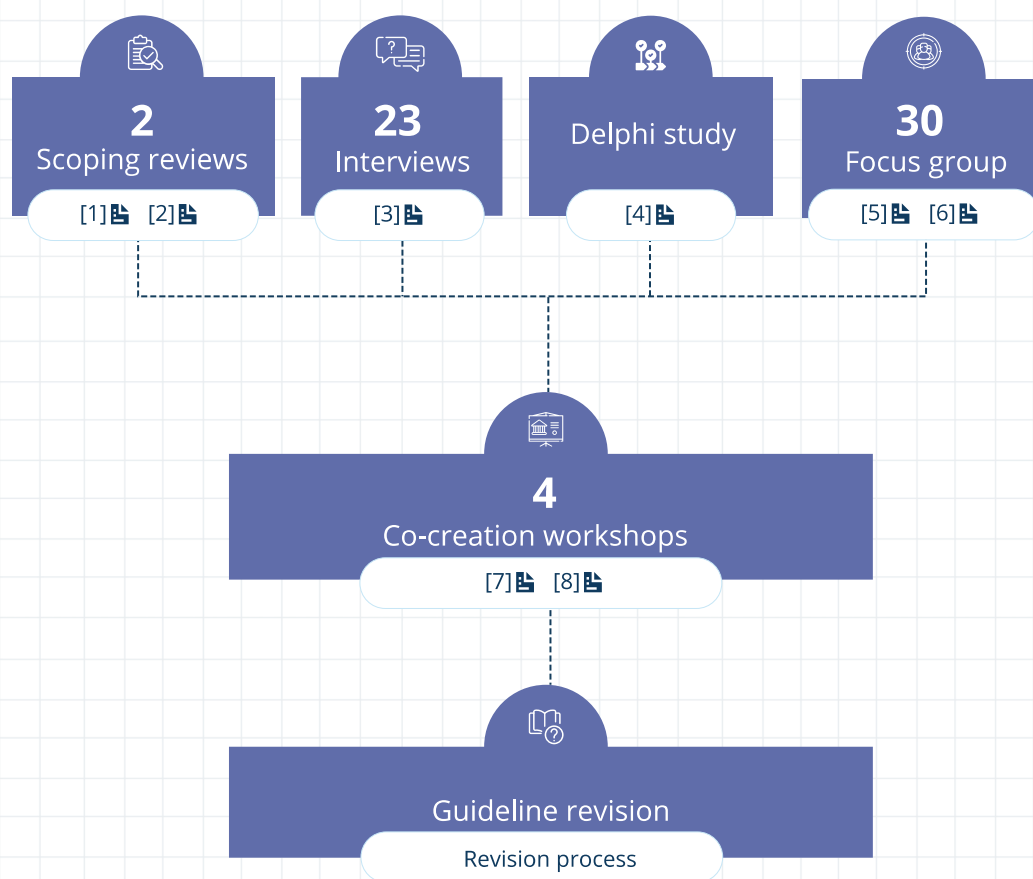
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How to use this

Monitoring funded projects

How did we make this?



Monitoring funded projects

| Guidelines

- 1.** The execution of the research grant [p.4]
- 2.** Compliance with research integrity requirements [p.7]
- 3.** Financial monitoring [p.10]

Monitoring funded projects

The execution of the research grant

Key recommendations:



Provide monitoring guidelines

[p.5]



Implement a system of quality assurance

[p.6]



Cooperate and collaborate with beneficiaries

[p.6]

Monitoring funded projects



Provide clear guidelines about monitoring the execution of research grants

The following recommendations contains information concerning the content, process, and timeline of the monitoring process. The monitoring process depends on the lifetime of the funded project, the budget, and the capacity and size of the research funding organisation.

- Provide internal guidelines what and how aspects of the execution of the funded research project will be monitored. For instance, consider monitoring through periodic deliverables.
- Provide external guidelines for the beneficiary about what is expected in the monitoring process and how to comply with the grant agreement.
- Set a clear monitoring timeline, including reporting deadlines where applicable.
- Provide beneficiaries with information on when and how they can request an amendment to the monitoring timeline.
 - Clearly identify the circumstances and conditions under which an amendment can be provided.
 - Inform beneficiaries about the time frame in which they can report any difficulties with the timeline.
 - Inform beneficiaries about how they can provide justification for any delays.
 - Inform beneficiaries about any possible penalties to not providing a justification for delays in a timely manner.

In practice examples

Example 1: Clearly and transparently communicate elements that will be monitored. These may include expected deliverables, publications, participation in conferences, meetings, open access, social impact (depending on the scope of the grant call), and all other activities related to the project.

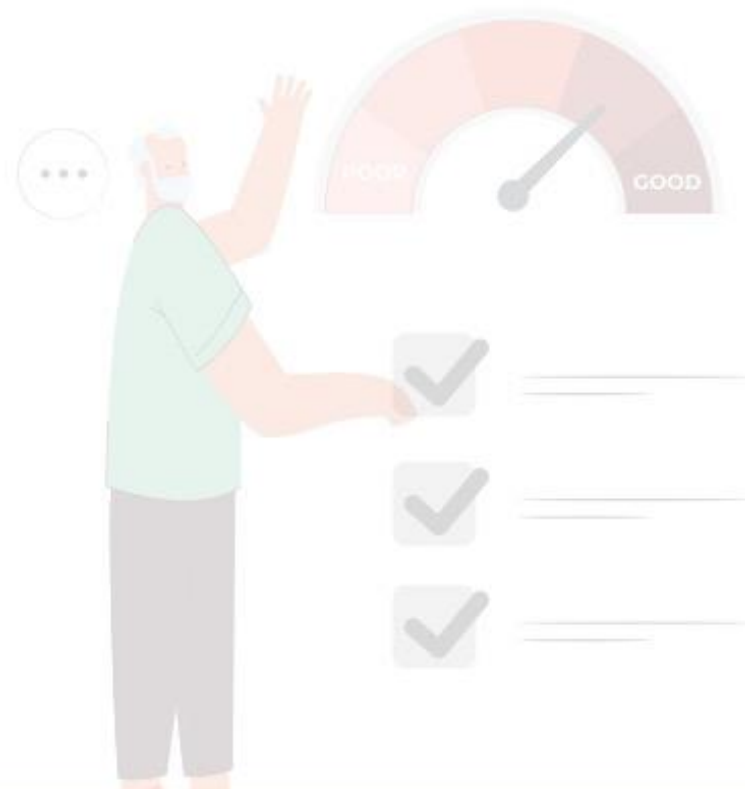
Monitoring funded projects



Implement a high quality research assessment process

Monitoring and assessing the monitoring process can help to increase the efficiency and transparency of all procedures and can help in preventing possible gaps and problems.

- Implement internal procedures to evaluate the monitoring process step by step.
- Implement procedures to monitor any conflict of interest of actors involved in the monitoring process.



Monitoring funded projects



Clearly define points of contact and cooperation with the beneficiary during the lifetime of the project

Cooperation and collaboration between the funder and beneficiary, rather than policing and imposing too much control, contributes towards increasing accountability on both sides. This can contribute towards more responsible research practices.

- Where possible, provide researchers with the possibility to ask for flexibility regarding timeframes and plans.
- Frame monitoring as an opportunity to check in on beneficiaries and provide needed support, rather than solely to check compliance.



In practice examples

Example 1: Good Information Technology (IT) tools are valuable for effective communication.

Example 2: A pre-monitoring checklist can be used as informal assessment to help researchers prepare for formal monitoring.

Example 3: A dedicated office where beneficiaries can submit complaints can be valuable for increasing accountability for all parties.

Example 4: Science Europe provides a section on monitoring the assessment processes of research institutions.

Monitoring funded projects

Compliance with research integrity requirements

Key recommendations:



Specify research integrity monitoring criteria

[p.11]



Implement procedures for research integrity monitoring

[p.12]

Monitoring funded projects



Specify the criteria that will be used to assess the research integrity and ethics requirements of funded projects

Setting and communicating research integrity and ethics criteria can help incentivise responsible research practices. There are different elements of research integrity and ethics that research funders might want to assess during monitoring, such as training, supervision and instigation procedures, ethics and data management.

- Provide clear guidelines to explain what is expected from the beneficiary.
- Ask the beneficiary to delineate who is responsible for what at the onset of the project.
- Align monitoring criteria with relevant institutional and national codes of conduct.



In practice examples

Example1: Assign an ethics or integrity advisor within the the funded project to provide internal monitoring.

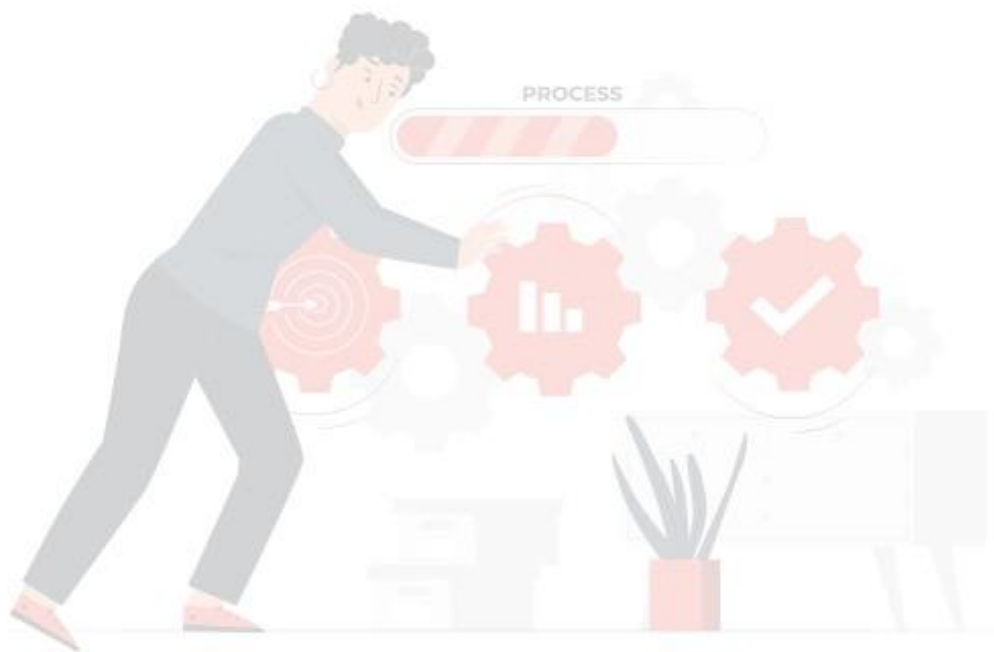
Monitoring funded projects



Implement and communicate the procedures through which research integrity and ethics requirements will be monitored

Implementing and communicating transparent procedures for monitoring research integrity and ethics requirements helps to increase accountability and promote responsible research practices.

- Where possible, align monitoring of research integrity and ethics requirements within the general monitoring of the execution of the research grant.
- Implement a positive, trust-based approach to monitoring procedures.



Monitoring funded projects

Compliance with research integrity requirements

Key recommendations:



Provide financial monitoring guidelines

[p.11]



Connect financial and scientific monitoring

[p.12]

Monitoring funded projects



Provide clear and transparent guidelines for financial monitoring

Implementing and communicating transparent procedures for financial monitoring helps to increase accountability and promote responsible use of funds.

- Create an agreement with the beneficiary at the onset of the project regarding expected use of funding and financial monitoring.
 - Keep the funding agreement independent from the direction of the research findings, wherever possible.
- Where possible, for instance in large funders, consider carrying out financial monitoring in a dedicated department.
- Set a clear monitoring timeline, including reporting deadlines, where applicable.
- Provide beneficiaries with information on when and how they can request an amendment to the financial monitoring timeline or project budget.
 - Clearly identify the circumstances and conditions under which an amendment can be provided.
 - Inform beneficiaries about the time frame in which they can report any difficulties with the timeline or budget.
 - Inform beneficiaries about how they can provide justification amendment request.
 - Inform beneficiaries about any possible penalties to not providing a justification for amendments in a timely manner.

Monitoring funded projects



Facilitate communication between persons responsible for the financial monitoring and scientific monitoring of research projects

Communication between the financial and scientific monitoring departments allows for a holistic approach to monitoring.

- Provide clear guidelines regarding the interaction of persons responsible for financial and scientific monitoring.
- Inform the scientific project manager about the results of the financial monitoring, and vice versa.



Monitoring funded projects

Contributors

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14 co-creators participated in creating these guidelines.
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Monitoring funded projects

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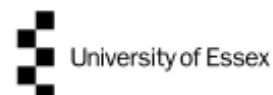
Monitoring funded projects

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Monitoring funded projects

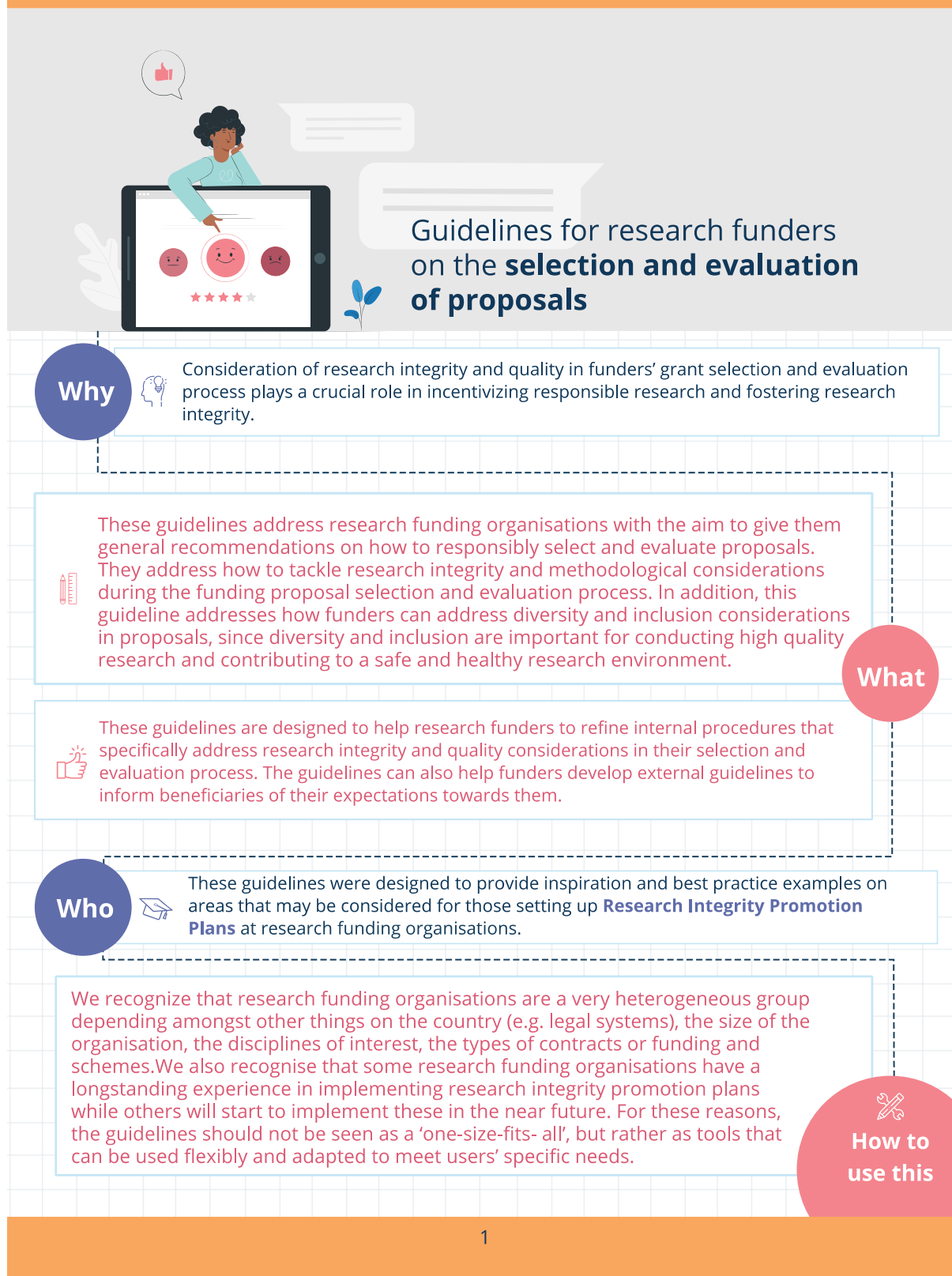
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Appendix XIX **Guidelines for research funders on selection and evaluation of proposals**

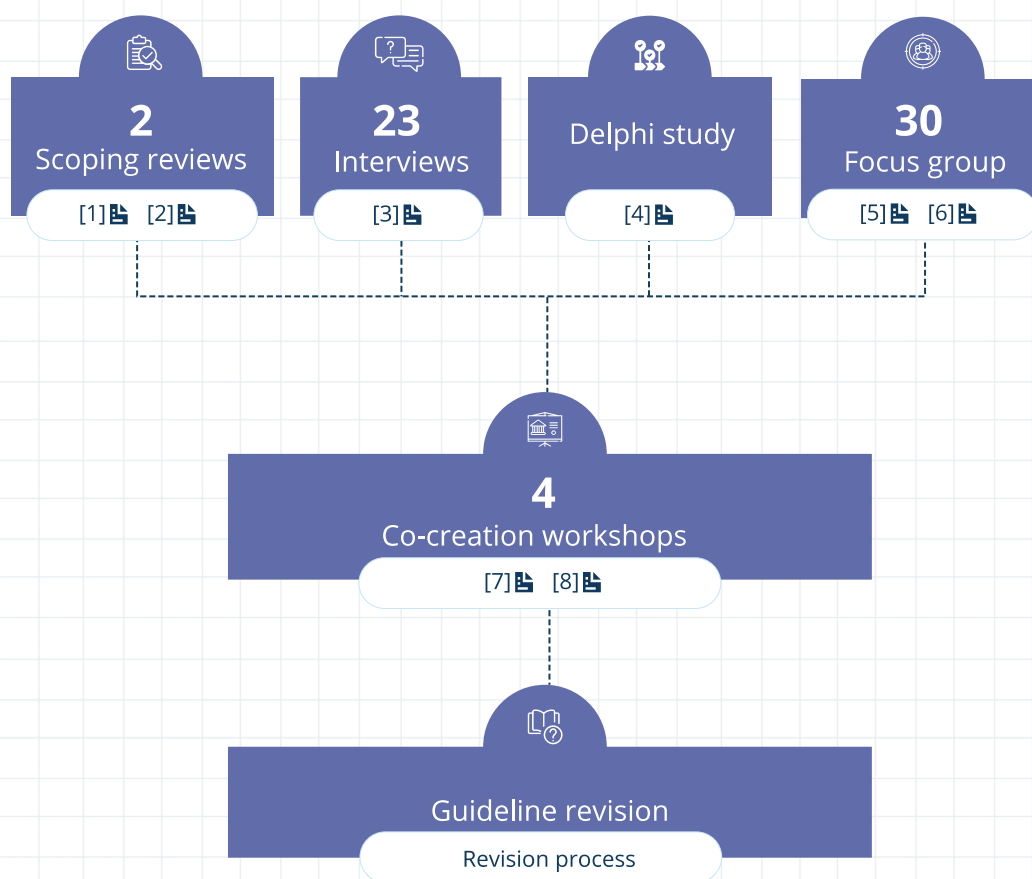


Selection and evaluation of proposals



Selection and evaluation of proposals

How did we make this?



Selection and evaluation of proposals

| Guidelines

- 1.** Research integrity requirements of the proposals [p.4]
- 2.** Methodology requirements [p.7]
- 3.** Diversity considerations [p.10]

Selection and evaluation of proposals

Research integrity requirements of proposals

Key recommendations:



Specify expectations on research integrity to beneficiaries

[p.5]



Implement policies to evaluate research integrity

[p.6]

Selection and evaluation of proposals



Specify research integrity expectations to research grant applicants and their respective institutions

- Specify expectations for research grant applicants, addressing relevant parts of the **European Code of Conduct for Research Integrity**, as well as national codes of conduct.
- Specify expectations for research institutions, addressing relevant parts of the **European Code of Conduct for Research Integrity**, national codes of conduct, and more concretely the **priorities outlined by the SOPs4RI consortium**.



Selection and evaluation of proposals



Improve and communicate policies and procedures on how to assess research integrity requirements when selecting and evaluating proposals

- Provide and optimise clear checklists for evaluators on the evaluation of research integrity requirements .
- Communicate the requirements of methodological rigour and its evaluation criteria in submitted proposals.
- Remain sensitive to disciplinary considerations in the methodology section.



Selection and evaluation of proposals

Methodology requirements

Key recommendations:



Include a methodology section in proposals

[p.8]



Implement transparent policies regarding proposal evaluations

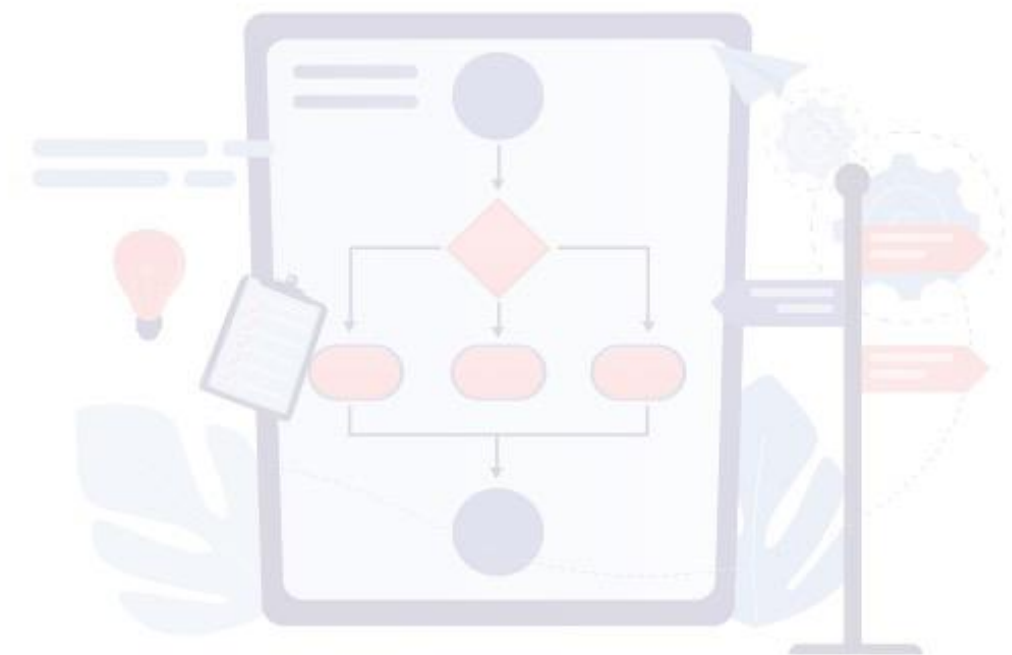
[p.9]

Selection and evaluation of proposals



Include a section in grant proposals where applicants can discuss methodological considerations and its relation with research integrity

- Provide guidance on methodological considerations to address, such as transparency, and reliability.
- Remain sensitive to disciplinary considerations in the methodology section.



Selection and evaluation of proposals



Implement and communicate policies and procedures on how to assess methodology and other relevant scientific considerations when selecting and evaluating proposals

- Provide clear and transparent evaluation criteria and guidelines, including a checklist for evaluators and best practice examples that integrate research integrity considerations into the assessment of methodological rigour.
- Communicate evaluation procedures of methodology transparently to research grant applicants.



Selection and evaluation of proposals

Diversity considerations

Key recommendations:

-  Safeguard diversity of staff and evaluators [p.11]
-  Stimulate reflection on diversity in proposals [p.12]
-  Assess internal policies for diversity [p.13]
-  Provide guidance on bias prevention [p.14]
-  Consider dedicated calls for UK marginalised groups [p.15]

Selection and evaluation of proposals



Implement policies and procedures which safeguard the diversity of staff and grant evaluators within the research funder

- Safeguard inclusive communication in recruitment processes.
- Implement policies to reduce and prevent bias in the recruitment and hiring process.
- Consider all aspects of diversity using an intersectional approach, which includes:
 - Gender, ethnicity, sexual orientation, disability, including invisible populations such as those with learning disabilities.
 - Factors that may impact outputs and achievements, such as caring duties, family issues, medical issues, career change.
 - Differences in disciplinary backgrounds, methods, topics, and sectors within the focus area.



Selection and evaluation of proposals



Stimulate reflection on the diversity of research teams and populations in the selection and evaluation procedure

- Safeguard inclusive communication when disseminating funding calls.
- Consider asking grant applicants to reflect on the diversity of the research team in the proposal, in a manner compliant with the General Data Protection Regulation (GDPR) of the European Union.
 - Do not require disclosure of sensitive personal information (e.g. about applicants' sexual orientation).
- Consider asking grant applicants to reflect on the diversity of the research sample and population in the proposal.
- Embrace an intersectional approach to diversity that considers cumulative impacts.
- Provide transparent evaluation guidelines which safeguard the quality, as well as the diversity of granted application.



Selection and evaluation of proposals



Assess whether the funder's internal policies are susceptible to diversity challenges

- Determine how often to monitor the funder's internal policies and outcomes for diversity challenges.
- In case diversity challenges are detected, develop and implement a plan to mitigate the challenges.
- Commit to diversity at the level of leadership.



In practice examples

Example1: **Wellcome's Anti-Racism Principles and Toolkit.**

Selection and evaluation of proposals



Provide guidance on how to recognise and prevent diversity related biased, which is supported by literature

- Deliver bias training to staff and evaluators.
- Implement conflict of interest considerations into the guidance provided.



Selection and evaluation of proposals



Consider providing dedicated calls for specific marginalised researchers

- Evaluate grant calls based on merit.
- Focus these calls on grant applicants (for instance by including specific calls for junior researchers or women), or on topics of interest specifically for marginalised groups (for instance related to colonisation or the well-being of indigenous groups).



Selection and evaluation of proposals

Contributors

Co-creators (from the SOPs4RI co-creation workshops)

15 co-creators participated in creating these guidelines.
Among those, the following consented to be acknowledged:

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Selection and evaluation of proposals

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Selection and evaluation of proposals

Contributors

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Selection and evaluation of proposals

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Selection and evaluation of proposals

SOPs4PI Consortium



Appendix XX - Toolbox Quality assessment guidance

1. Background of previous steps leading to the online toolbox

In previous empirical steps, we collected 137 guidelines and SOPs from the systematic scoping review, the Delphi study, and the focus group interviews (see deliverables D3.1, 3.2, 3.4, and 5.2 for more details). All documents were classified per sub-topic(s), and their quality was assessed by two independent reviewers (note that this initial Quality Assessment (QA) is separate from the main QA to be applied in later stages and it is described below). The reviewers gave each document or section of a document a score on a scale from 1 to 5. A score of 1 indicated “*no existing/no information or very scarce and not useful*”, a score of 3 indicated “*there is guidance and some information on the topic, but not very structured or complete*”, and a score of 5 indicated “*detailed and clear guidance on a topic*” (see D4.2). When discrepancies arose in scoring these were discussed by the reviewers until consensus was reached.

The set of documents and SOPs retrieved in these earlier steps will be the basis for the creation of a repository, the “SOPs4RI repository”. Hereafter, all resources in the SOPs4RI repository will be quality assessed (see below) and the resources that have a sufficient quality level of four or above will be included as tools in the online toolbox. Documents included in the online toolbox will be described with tags and general characteristics to help users find relevant, high-quality documents. Section 4 provides an example of the presentation of the general characteristics and information of a resource to be included in the SOPs4RI repository, while section 5 describes the tags to be used for each SOPs4RI repository item. The utility of this amount of information in this specific form has been proven by its use in the initial filling of the RPO part of the online toolbox.

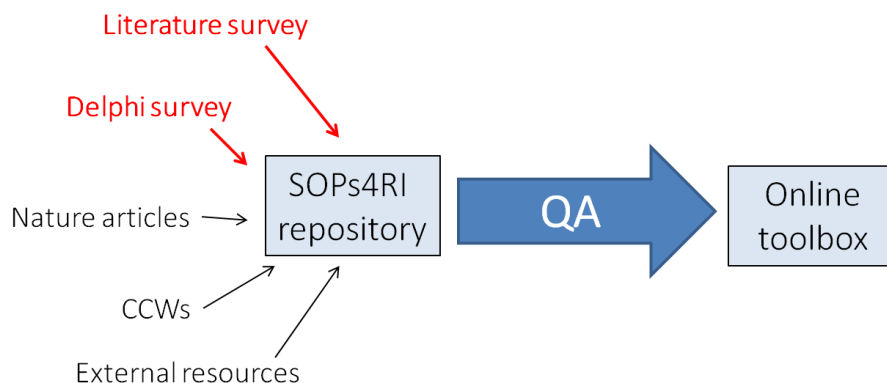


Figure 1: The QA procedure will transform the resources found in the SOPs4RI repository into tools for the SOPs4RI online toolbox. The “front-line” resources, found through the empirical steps in WP3, are indicated in **red letters**. The other resources were found with “*ad hoc*” processes and will act as back-up solutions.

General characteristics

1. Title to present the resource in the Toolbox (NOT necessarily the original title of the resource – up to 20 words)

Example: A procedure to render a replication study as effective as possible.

2. Purpose/Aim of the resource (up to 50 words)

Example: To establish a procedure that is called “precommitment”, agreed between the authors of a peer reviewed scientific publication and replicators that will render a replication study to be conducted in an effective and collaborative manner.

3. Text of the resource (the exact content as found translated into plain English– up to 200 words)

Example: Failure to replicate often brings intellectual gridlock. Some researchers insist that a replication refutes the original paper’s ideas; others find flaws in the reproduced work. Both replicators and original authors defend their conclusions — or at least their competence — rather than getting on with the difficult, intellectual work of using new evidence to revise ideas. Human nature and the academic incentive system make it hard to do otherwise. How can researchers avoid such stalemates? We need to spend more time early on resolving what is to be tested, the crucial features for doing so and the insight we expect. We need a process that appeals to our better natures, or at least requires that we reveal our lesser selves. The approach should favour seeking an accurate answer over defending previous results. We call it precommitment. After a paper is made public, but before it is replicated, the original authors and independent replicators collaborate to design a replication experiment that both agree will be meaningful, whatever the results. This process will be documented using preregistration or, ideally, a Registered Report (see ‘Routes to replication’).

4. Link of the resource (if available)

Example: <https://www.nature.com/articles/d41586-020-02142-6>

5. Reference of the resource

Example: Brian A. Nosek & Timothy M. Errington “Argue about what a replication means before you do it” Nature 583 (2020) 518-520.

6. Which SOPs4RI Topic(s)/Subtopic(s) does the resource cover?

Example:

- RPO Topic: Research environment

Subtopic: Supporting a responsible research process (transparency, quality assurance, requirements)

Box 2. Example of descriptions of characteristics of an item included in the SOPs4RI repository.

Tags will include

1. Which of the following best describes the resource?

- ☐ SOP
- ☐ Guideline
- ☐ Case study/example

2. For which discipline(s) is the resource relevant?

- ☐ All
- ☐ Social Sciences
- ☐ Humanities
- ☐ Biomedical
- ☐ Natural Sciences/Engineering

3. For which stakeholders is the resource relevant?

- | | |
|--|--|
| <input type="radio"/> Pre-graduate students | <input type="radio"/> RPO senior management staff (Rectors, Deans) |
| <input type="radio"/> Post-graduate students | <input type="radio"/> Members of RPO research committees |
| <input type="radio"/> PhD candidates | <input type="radio"/> Ombudsmen |
| <input type="radio"/> Early career researchers | <input type="radio"/> Funders |
| <input type="radio"/> Senior researchers | <input type="radio"/> Technicians in RPOs |
| <input type="radio"/> Researchers in industry | <input type="radio"/> Editors |
| <input type="radio"/> Supervisors | <input type="radio"/> Publishers |
| <input type="radio"/> Tenured faculty members | <input type="radio"/> Peer reviewers |
| <input type="radio"/> Research administrators | <input type="radio"/> Policy makers |
| <input type="radio"/> Members of Research Ethics Committees | <input type="radio"/> All stakeholders of research |
| <input type="radio"/> Members of Research Integrity Offices/Bodies | |

Box 3. Descriptive tags added to the items included in the SOPs4RI repository

2. Objective of the Quality Assessment

To populate the online toolbox of SOPs4RI, we will undertake a second, more in-depth assessment of the resources in the SOPs4RI repository. This second assessment will also be designed and applied to new documents, found after the initial work described in D4.2. These additional documents have been or will be included in the SOPs4RI repository based on other empirical steps in the SOPs4RI project. They include a collection of Nature papers, documents referred to in the co-creation workshops, and other relevant documents.

The second quality assessment (QA) is meant to maximise the chances that the resources included in the online toolbox are of high quality and can be useful to the end users. Defining quality is difficult and we cannot exclude that different assessors or users in different contexts may perceive the quality of documents differently. Furthermore, parameters such as usefulness or implementability are highly context-dependent, and assessors with different expertise may score them differently.

For these reasons, we find important to reiterate two points. First individual scores will not be shared outside the research team and will only be kept with the research team to ensure transparency on the inclusion/exclusion decisions made towards the toolbox. Second, to capture different perspectives on the selected resources, we chose to assign one assessor with a research-oriented expertise and one assessor with a practice-oriented expertise to each resource. Each assessor will score the resource independently and an average of the two assessors' scores will be computed for each assessment parameter.

In addition to this second QA, a set of new classification terms will be assigned to the documents. The aim of these new classification terms is to provide a more nuanced description of the content of the resources.

Details and methods of the Quality Assessment scheme

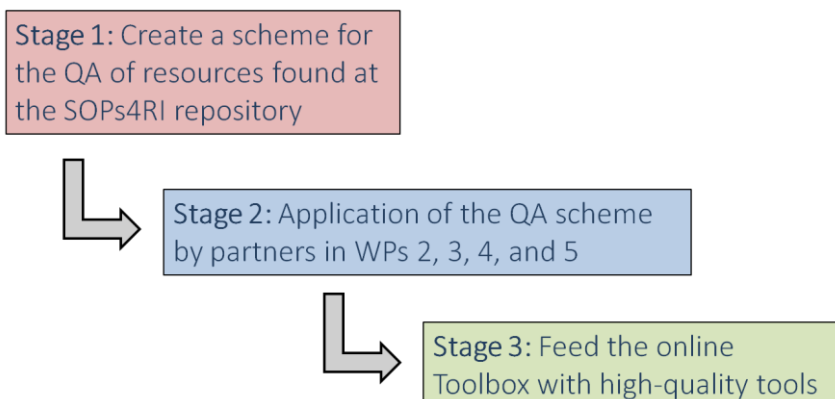


Figure 2: Building the QA methodology

The QA procedure consists of three consecutive stages. First, we created a scheme to evaluate and assess the quality of existing resources in the SOPs4RI repository. Second, in the coming months, we will apply this QA methodology to the resources gathered by partners in WP2, WP3, WP4, and WP5 and stored in the SOPs4RI repository, to be hosted at SOPs4RI's SharePoint site. Third, based on the outcomes of the QA, we will populate the online toolbox of SOPs4RI with high quality tools.

3. Creating the Quality Assessment scheme

To create a robust QA scheme, we took the following steps. First, we created an initial QA scheme, based on discussions between four members of the SOPs4RI team. Next, we tested the scheme by assessing 10 documents (5 documents per member, i.e. each document was assessed by two

members). We discussed the results of the test and optimization of the scheme including discussing which points should be changed, and how specific issues of the grading scheme should be addressed. Next, the QA scheme was assessed by two independent reviewers, who are experts in developing guidelines. Based on their feedback, the QA scheme will then be revised and finalized. In the next section we describe the proposed assessment scheme.

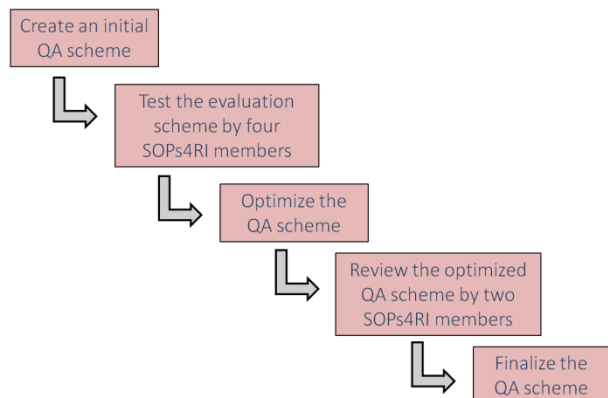


Figure 3: Flowchart of Stage 1

4. The Quality Assessment

To maximise the chances that the toolbox includes resources of high quality, we built the following scoring system that includes **four quality parameters** for each resource (Box 3). As mentioned above, the QA will be used for internal purposes only, and the outcomes will be used to select high quality resources for the SOPs4RI online toolbox. Two independent assessors will evaluate the assigned resources and come to a consensus.

Two independent assessors will score resources document on these four quality parameters and come to consensus. After scores on all 4 parameters are determined, an average score is calculated. The average score determines whether the resource is included in the online toolbox or not. In Table 1, the four parameters and a description of scores 1, 3 and 5 are provided.

- 1: Understandability (easiness to grasp the content of the resource)
- 2: Implementability (presence of concrete details enabling users to implement the resource)
- 3: Methodological soundness (robustness of the methodology with which it has been created)
- 4: Comprehensiveness: (Completeness of the resource/coverage of the subtopic in the context of a specific discipline)

Box 3. Quality parameters for each resource to be included in the SOPs4RI repository.

Score	1	3	5
-------	---	---	---

1) Understandability	The content of the resource is difficult to understand. The resource presents conflicting information, uses confusing language and has unclear terminology.	The content of the resource can be understood for a large part. The resource does not present conflicting information, presents the information in understandable language and has clear terminology most of the times.	The content of resource is very easy to understand. The resource presents extremely coherent information, presents the information in very clear and understandable language and uses the appropriate terminology
2) Implementability	The resource contains little or no guidance for implementation and few or no examples that could help implement the recommendations.	The resource contains some guidance for implementation and/or some examples of implementation, but it is not always clear how the resource can be implemented.	The resource contains clear guidance for implementation and/or concrete examples that provide sufficient details to understand how the resource can be implemented.
3) Methodological soundness	The process used to develop the resource is not methodologically sound or is not reported	The process used to develop the resource is reported and somewhat methodologically sound	The process used to develop the resource is reported, robust and methodologically sound
4) Comprehensiveness*	The resource does not cover the information relevant for the topic at all.	The resource presents a partial image of the topic but provides relevant information most of the time.	The resource covers the topic fully, considers different settings and provides a complete image of the issues related to the topic.

Table1. Detailed criteria used for assessing the resources

*Note: *It should also be noted that, in line with our proposed quality parameters, highly specific resources might not be able to receive a 5 on comprehensiveness. In such cases, for resources assigned to a specific sub-topic (i.e., RPO resources), assessors may assess the comprehensiveness of the resource on the sub topic in which the resource specialises, provided that they classify the resource as 'Specific' (Classification A, as explained below). In other words, a sub topic- or discipline-specific resource may still receive a 5 on comprehensiveness if it covers the sub topic or discipline appropriately.*

To visualize the outcome, a radar chart or dot system will be used (Figure 4). The visualization will be used for internal purposes and analyses only.

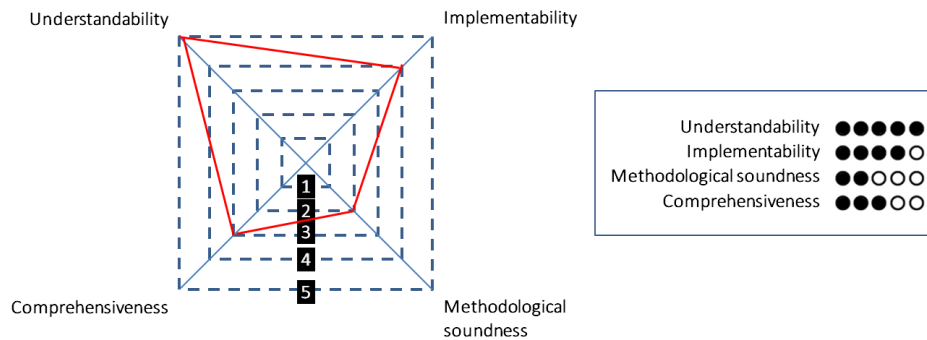


Figure 4: Visualizing the outcome of the QA.

5. The Classification

In addition to the scoring, through the QA scheme described above, additional classification terms will be used internally to describe the nature of documents included in each topic. The classification is especially useful to be able to describe the content of the toolbox, and, at a later stage to enrich the functionalities of the online toolbox.

A) General versus specific: topic specific versus sub-topic specific

The documents will be classified to topics or sub-topics, based on the Delphi ranking. Topic-specific documents describe information about a specific topic and include several sub-topics. Sub-topic-specific documents only cover a certain sub-topic.

B) Descriptive versus concrete

Concrete documents provide concrete/explicit measures. Descriptive documents set a framework and/or implicit measures or provide information on a topic.

C) Normative versus aspirational

The normativity of the document is measured in the language used and in how strongly recommendations are prescribed. Aspirational documents set out aspirational measures, and often include or explain principles.

D) Rigid versus flexible

Flexible documents leave room for flexibility in using the guidelines or provide different options. This is, for instance, relevant for setting up research ethics committees which should account for different situations or institutions. Rigid is when only one course of action can be followed or should be adhered to. For example, when following procedures for breaches of RI this is relevant. This classification is not applicable to all documents.

E) Mandatory versus optional

Mandatory documents enforce the implementation of the guidance. In optional documents, the choice for implementation measures remains open.

F) Visual versus textual

Visual documents use images or other visual elements to convey the message. Textual documents only use text to set out the guidelines.

6. QA teams

NOTE: For returning assessors, please note that your team number may have changed.

Assessors will be organised in 'pairs' (hereafter referred to as teams). We tried to build teams in which assessors may have different perspectives by selecting someone with experience in research as well as someone with experience in practice, policy, or research funding. The teams will be as follows:

- Team 1: Nicole Foeger (Practice) + Noémie Aubert Bonn (Research)
- Team 2: Borana Taraj/Nik Claesen (Practice) + Rea Ščepanović (Research)
- Team 3: Teodora Konach (Practice) + Andrea Reyes Elizondo (Research)
- Team 4: Nick Allum (Practice) + Serge Horbach (Research)
- Team 5: Panagiotis Kavouras (Practice) + Krishma Labib (Research)

Assessors will independently score each resource on the four dimensions of quality indicators. They will then discuss any strong disagreement in scores with the assessor they are paired with, and will classify the resource on the six different classification levels. In case of doubt or disagreement, assessors should reach out to **JT** who will act as referee and guide throughout the Quality Assessment process.

7. Procedure for Quality Assessment teams

Note: These instructions are available in a short explanatory movie in the SharePoint folder.

1. Log into the SOPs4RI SharePoint

Note: If you do not have access to the SharePoint, please contact SF to request access

2. Locate the folder of resources by reaching to:

... / SOPs4RI / WP4 - Developing SOPs and guidelines / Repository Quality Assessment / RPO resources / Team assignments

The folder will contain a word document entitled '*List of resources to review for Team X (where 'X' is your team number)*', in which the resources assigned to your assessor team will be listed.

NOTE: You may notice that resources are sometimes repeated in different topics. When assessing the quality of a resource, you should **assess it for the topic and sub-topic** in which it is placed. In this regard, it is possible that a resource obtains a different score in different topics or sub-topics. This will help us understand where the resources should be located in the toolbox.

3. Score each resource on each of the 4 criteria detailed in Box 3. See Table 1 for examples of scores. Do this individually, noting your scores on your own to avoid biasing your scores with the scores of the assessor you are working with.

NOTE: You are welcome to use the [Optional individual working sheet](#) template (download only) to log your scores and notes about the resources if it helps you, but a piece of paper works just fine too, so it's really up to you.

4. Once you're done assessing the references, fill in your scores and evaluations in the shared Excel sheet entitled 'QA Resource Evaluation Scoring Sheet' available at /... /Repository Quality Assessment / RPO resources / 'Shared QA Scoring Sheet RPO'.

NOTE: Again, keep your scores as you ranked them even if they differ from the scores of your peer, just note the difference and you will discuss them in Step 6.

5. If you think of any additional resources that may be useful to include in the toolbox, you may add them to the 'List of resources to review' document where the resources to assess were listed. You will find a section entitled 'Recommendations of additional resources to include' and can add the resource, direct link, and note directly in the table provided.
6. After you finished assessing the assigned resources, connect with your team member and discuss any strong disagreement (i.e., resources which received a passing average score ≥ 4 from one assessor and an average score < 4 from the other assessor) or differences in the classification options. If possible, highlight your argumentation in the designated section of the 'List of Resources to Review Team X' word document. JT if you need to discuss disagreements further.
7. Together with your team mate, agree on the classifications to each resource according to the classifications A–F detailed in the section "The Classification" above. Feel free to contact NAB for any additional questions in the assessment process.

Appendix XXI – List of documents included in the Toolbox

List of new RFO resources added to the toolbox

RPO RESOURCES INCLUDED IN THE TOOLBOX			
Topic	Sub-Topic	Resource	Round of evaluation
1. Education and training in RI	Pre-doctorate	Training on responsible and ethical conduct of research provided by the National Institute of Health	2
1. Education and training in RI	Pre-doctorate	Research Integrity Training Framework	Preliminary
1. Education and training in RI	Post-doctorate	The Next Generation of Biomedical and Behavioral Sciences Researchers	2
1. Education and training in RI	Post-doctorate	Research Integrity Training Framework	Preliminary
1. Education and training in RI	Training of RI personnel and teachers	European network of Research Ethics and Research Integrity (ENERI) training materials site – The ENERI Classroom	Preliminary
2. Supervision and mentoring	Supervision requirements and guidelines	CSIC Spain – various guidelines/codes	2
2. Supervision and mentoring	Supervision requirements and guidelines	KU Leuven Charter of the PhD Researcher and the Supervisor	2
2. Supervision and mentoring	Supervision requirements and guidelines	UCL - The good supervision guide	Preliminary
2. Supervision and mentoring	Supervision requirements and guidelines	University of Copenhagen – Guidelines for the competency development of PhD supervisors	Preliminary
2. Supervision and mentoring	Building and leading an effective team	Resources for research ethics education: Mentoring	2
3. Dealing with breaches or RI	RI bodies in the organization	ENRIO Handbook – Recommendations for the investigation of research misconduct	2
3. Dealing with breaches or RI	RI bodies in the organization	Self-assessment tool UKRIO	2
3. Dealing with breaches or RI	Protection of whistle blowers	Guidelines for Institutions and Whistleblowers: Responding to Possible Retaliation Against Whistleblowers in Extramural Research	2
3. Dealing with breaches or RI	Protection of whistle blowers	Self-assessment tool UKRIO	2
3. Dealing with breaches or RI	Protection of those accused of misconduct	You have been accused of research misconduct – Now what?	2

3. Dealing with breaches or RI	Procedures for investigation allegations	ENRIO Handbook – Recommendations for the investigation of research misconduct	Preliminary
3. Dealing with breaches or RI	Procedures for investigation allegations	UKRIO - Procedure for the investigation of misconduct in research	Preliminary
3. Dealing with breaches or RI	Procedures for investigation allegations	Environmental protection Agency - Policy and procedures for addressing research misconduct	3
3. Dealing with breaches or RI	Procedures for investigation allegations	Responsible conduct of research and procedures for handling allegations of misconduct in Finland	3
3. Dealing with breaches or RI	Procedures for investigation allegations	Self-assessment tool UKRIO	3
3. Dealing with breaches or RI	Procedures for investigation allegations	Tips for Handling Physical Evidence in Research Misconduct Cases	3
3. Dealing with breaches or RI	Procedures for investigation allegations	Canada – Policies on dealing with allegations of misconduct	3
3. Dealing with breaches or RI	Procedures for investigation allegations	NHMRC Australia – different guidelines	3
3. Dealing with breaches or RI	Procedures for investigation allegations	National Statement on the Ethical Conduct of Research Involving Humans	3
3. Dealing with breaches or RI	Procedures for investigation allegations	Cooperation between research institutions and journals on research integrity cases: guidance from the Committee on Publication Ethics (COPE)	3
3. Dealing with breaches or RI	Sanctions	ENRIO Handbook – Recommendations for the investigation of research misconduct	2
3. Dealing with breaches or RI	Sanctions	UKRIO - Procedure for the investigation of misconduct in research	2
3. Dealing with breaches or RI	Other actions including mobility issues	ENRIO Handbook – Recommendations for the investigation of research misconduct	Preliminary
4. Research ethics structures	Set-up and tasks of ethics committees	Declaration of Helsinki	3
4. Research ethics structures	Set-up and tasks of ethics committees	Tri-Council Policy Statement: Ethical conduct for research involving humans	3
4. Research ethics structures	Set-up and tasks of ethics committees	National Statement on the Ethical Conduct of Research Involving Humans	3
4. Research ethics structures	Set-up and tasks of ethics committees	International Ethical Guidelines for Health-related Research Involving Humans (CIOMS)	Preliminary
4. Research ethics structures	Set-up and tasks of ethics committees	Pharmaceutical Research and Manufacturers of America – Principles on conduct of clinical trials and communication of clinical trial results	3

4. Research ethics structures	Ethics review procedure	National Ethical Guidelines for Health Research in Nepal and Standard Operating Procedures	Preliminary
4. Research ethics structures	Ethics review procedure	CIOMS guidelines on Research involving Human subjects	3
4. Research ethics structures	Ethics review procedure	Tri-Council Policy Statement: Ethical conduct for research involving humans	3
4. Research ethics structures	Ethics review procedure	European Commission – ethics in social science and humanities	3
4. Research ethics structures	Ethics review procedure	International Ethical Guidelines for Health-related Research Involving Humans (CIOMS)	Preliminary
5. Data practice and management	Guidance and support	The South African Medical Research Council Guidelines on the responsible conduct of research	3
5. Data practice and management	Guidance and support	Guidelines for responsible data management in scientific research	3
5. Data practice and management	Guidance and support	Digital Curation Centre	3
5. Data practice and management	Guidance and support	Guidelines for the archiving of academic research for faculties of Behavioural and social sciences of the Netherlands	3
5. Data practice and management	Guidance and support	Resources for Research Ethics Education – Data Management	3
5. Data practice and management	Guidance and support	NTU Singapore – Research Data Policy	3
5. Data practice and management	Guidance and support	UCL – Managing research outputs according to the research lifecycle: a phased approach	Preliminary
5. Data practice and management	Guidance and support	University of Edinburgh – Writing a DMP	Preliminary
5. Data practice and management	Guidance and support	Introduction to the EQIPD Quality System	Preliminary
5. Data practice and management	Secure data storage infrastructure	Guidelines for responsible data management in scientific research	3
5. Data practice and management	Secure data storage infrastructure	Guidelines for the archiving of academic research for faculties of Behavioural and social sciences of the Netherlands	3
5. Data practice and management	Secure data storage infrastructure	NTU Singapore – Research Data Policy	3
5. Data practice and management	FAIR principle	Guidelines for responsible data management in scientific research	2

5. Data practice and management	FAIR principle	Nature – Editorial policies	2
5. Data practice and management	FAIR principle	ERC – Open Research Data and Data Management Plans	2
5. Data practice and management	FAIR principle	How to GO FAIR	Preliminary
6. Declaration of competing interests	In peer-review	Nature – Editorial policies - Competing interest	2
6. Declaration of competing interests	In the conduct of research	CSIC Manual of Conflict of Interest	2
6. Declaration of competing interests	In the conduct of research	Guidelines for the relationships involving medical practitioners and industry	2
6. Declaration of competing interests	In the conduct of research	COPE flowcharts	2
6. Declaration of competing interests	In the conduct of research	COPE flowcharts	2
6. Declaration of competing interests	In the conduct of research	International Ethical Guidelines for Health-related Research Involving Humans (CIOMS)	2
6. Declaration of competing interests	In the conduct of research	Conflict of Interests, Scientific Misconduct and Ethical Issues	Preliminary
6. Declaration of competing interests	In the conduct of research	The power of transparency	Preliminary
6. Declaration of competing interests	In appointments and promotion	CSIC Manual of Conflict of Interest	2
6. Declaration of competing interests	In research evaluations	COPE flowcharts	2
6. Declaration of competing interests	In consultancy	CSIC Manual of Conflict of Interest	2
7. Research Environment	Fair procedures for appointments, promotions and numeration	San Francisco Declaration on Research Assessment	2
7. Research Environment	Fair procedures for appointments, promotions and numeration	WCRI – The Hong Kong Principles	2
7. Research Environment	Fair procedures for appointments, promotions and numeration	Royal Society - Résumé for researchers	2

7. Research Environment	Fair procedures for appointments, promotions and numeration	The Leiden Manifesto	2
7. Research Environment	Fair procedures for appointments, promotions and numeration	The Metric Tide	2
7. Research Environment	Fair procedures for appointments, promotions and numeration	Science Europe - Position Statement and Recommendations on Research Assessment Processes	2
7. Research Environment	Fair procedures for appointments, promotions and numeration	Making FAIRer assessments possible	2
7. Research Environment	Fair procedures for appointments, promotions and numeration	Dutch Recognition and Rewards Programme - Position paper 'Room for everyone's talent'	2
7. Research Environment	Fair procedures for appointments, promotions and numeration	Ten ways to improve academic CVs for fairer research assessment	3
7. Research Environment	Fair procedures for appointments, promotions and numeration	INORMS - SCOPE	4
7. Research Environment	Fair procedures for appointments, promotions and numeration	IDRC - RQ+ Evaluating Research Differently	Other
7. Research Environment	Adequate education and skills training	ISQA Guideline for GCP Auditing	2
7. Research Environment	Adequate education and skills training	The Next Generation of Biomedical and Behavioral Sciences Researchers	Preliminary
7. Research Environment	Culture building	The Netherlands Code of Conduct for RI	3
7. Research Environment	Culture building	Nuffield Council on Bioethics	3
7. Research Environment	Culture building	Royal Society - Research culture: embedding inclusive excellence	3
7. Research Environment	Culture building	Russell Group - Research Culture and Environment Toolkit	3
7. Research Environment	Managing competition and publication pressure	Nuffield Council on Bioethics	2
7. Research Environment	Managing competition and publication pressure	SPACE to evolve academic assessment: A rubric for analyzing institutional conditions and progress indicators	2
7. Research Environment	Diversity issues	Advance HE - Creating an inclusive environment	2

7. Research Environment	Supporting a responsible research process: transparency, quality assurance, requirements	Best Practice Guidelines on Publishing Ethics	3
7. Research Environment	Supporting a responsible research process: transparency, quality assurance, requirements	UK research integrity office guideline: code of practice for research	3
7. Research Environment	Supporting a responsible research process: transparency, quality assurance, requirements	The Netherlands Code of Conduct for RI	3
7. Research Environment	Supporting a responsible research process: transparency, quality assurance, requirements	Introduction to the EQIPD Quality System	Preliminary
7. Research Environment	Supporting a responsible research process: transparency, quality assurance, requirements	Working with research integrity – guidance for RPOs: The Bonn PRINTEGER Statement	Preliminary
8. Publication and communication	Publication statement	Responsible research publication: international standards for authors	2
8. Publication and communication	Publication statement	COPE guidelines on good publication practice	2
8. Publication and communication	Authorship	Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals	Preliminary
8. Publication and communication	Authorship	MedComm Good Publication Practices (MedComm GPP) guidelines	3
8. Publication and communication	Authorship	COPE flowcharts - How to recognise potential authorship problems	3
8. Publication and communication	Authorship	COPE flowcharts - How to spot authorship problems	3

8. Publication and communication	Authorship	UK research integrity office guidance on Authorship	4
8. Publication and communication	Authorship	Committee on Publication Ethics (COPE) How to handle authorship disputes: a guide for new researchers	4
8. Publication and communication	Open science	Journal of Development Economics. Pre-Results Review (Registered Reports). Guidelines for Authors	3
8. Publication and communication	Open Science	Open Access Policy Guidelines for Research Performing Organizations	Preliminary
8. Publication and communication	Use of reporting guidelines	Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals	2
8. Publication and communication	Use of reporting guidelines	Understanding Text Recycling: A Guide for Editors	2
8. Publication and communication	Use of reporting guidelines	International standards for responsible publication of research – The Singapore Statement	Preliminary
8. Publication and communication	Peer Review	International standards for responsible publication of research – The Singapore Statement	Preliminary
8. Publication and communication	Peer Review	Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals	Preliminary
8. Publication and communication	Peer Review	Nature – Editorial policies	3
8. Publication and communication	Peer Review	Best Practice Guidelines on Publishing Ethics	3
8. Publication and communication	Peer Review	COPE flowcharts - What to do if you suspect peer-reviewer manipulation	3
8. Publication and communication	Peer Review	COPE flowcharts - What to consider when asked to peer review a manuscript	3
8. Publication and communication	Peer Review	COPE - Ethical guidelines for peer reviewers	3

communication			
8. Publication and communication	Predatory publishing	Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals	Preliminary
8. Publication and communication	Communication with the public	MedComm Good Publication Practices (MedComm GPP) guidelines	3
8. Publication and communication	Communication with the public	AAAS Communication Toolkit	Preliminary
9. Collaborative research among RPOs	With countries with different R&D infrastructure	International Ethical Guidelines for Health-related Research Involving Humans (CIOMS)	3
9. Collaborative research among RPOs	With countries with different R&D infrastructure	Ten Simple Rules for Establishing International Research Collaborations	Preliminary
9. Collaborative research among RPOs	With countries with different R&D infrastructure	Montreal Statement on Research Integrity in Cross-Boundary Research Collaborations	Preliminary
9. Collaborative research among RPOs	With countries with different R&D infrastructure	Global Code of Conduct for Research in Resource-Poor Settings	Preliminary
9. Collaborative research among RPOs	Between public and private RPOs	MedComm Good Publication Practices (MedComm GPP) guidelines	2
9. Collaborative research among RPOs	Between public and private RPOs	Code of conduct of ethics for research in the social behavioural sciences involving human participants	2
9. Collaborative research among RPOs	Among RPOs inside/outside the EU	Montreal Statement on Research Integrity in Cross-Boundary Research Collaborations	Preliminary
RFO RESOURCES INCLUDED IN THE TOOLBOX			
1. Compliance with RI standards by applicants		Wellcome Trust - Research involving animals	1
1. Compliance with RI standards by applicants		Wellcome Trust - Research involving human participants policy	1
1. Compliance with RI standards by applicants		Wiley - Best Practice Guidelines on Publishing Ethics	1
1. Compliance with RI standards by applicants		Netherlands Code of Conduct for Research Integrity	2
1. Compliance with RI standards by applicants		Wellcome Trust - Anti-racist principles, guidance, and toolkit	Other

2. Expectations for research organisations	Research Integrity within the FWO	1
2. Expectations for research organisations	Wellcome Trust Guidelines on Good Research Practice	1
2. Expectations for research organisations	Wellcome Trust - Conflicts of interest policy: Wellcome-funded researchers and commercial organisations	1
2. Expectations for research organisations	Wellcome Trust - Bullying and harassment policy	1
2. Expectations for research organisations	Wellcome Trust - Guidance for research organisations on how to implement responsible and fair approaches for research assessment	1
2. Expectations for research organisations	San Francisco Declaration on Research Assessment	1
2. Expectations for research organisations	Wellcome Trust - Misconduct	1
2. Expectations for research organisations	Royal Society - Research culture: embedding inclusive excellence	Other
3. Criteria and processes for selecting grant applications	NIH - Changes to the Biosketch	1
3. Criteria and processes for selecting grant applications	Science Europe - Recommendation on Research Assessment Processes	Other
4. Declarations of interest	FNR Ethics Charter and Code of Conduct for Research Assessment	1
4. Declarations of interest	NWO - Code for Dealing with Personal Interests	1
4. Declarations of interest	ZonMw enforces a Code for dealing with personal interests in order to guarantee that the decision-making process is objective.	1
4. Declarations of interest	Wellcome Trust - Conflicts of interest policy: Wellcome-funded researchers and commercial organisations	1
5. Monitoring funded research	HRB - How we monitor and evaluate	1
5. Monitoring funded research	Wellcome Trust - Data, software and materials management and sharing policy	1
5. Monitoring funded research	NSF - OIG Review of Institutions' Implementation of NSF's Responsible Conduct of Research Requirements	1
5. Monitoring funded research	How to design a monitoring and evaluation framework for a policy research project	2
6. Dealing with internal breaches of research integrity	NWO Scientific Integrity Complaints Procedure	1
6. Dealing with internal breaches of research integrity	Science Foundation Ireland - Research integrity	1
6. Dealing with internal breaches of research integrity	FWF procedure in cases of suspected violation of the standards of good scientific practice	2
6. Dealing with internal breaches of research integrity	NHMRC Research Integrity and Misconduct Policy	2
6. Dealing with internal breaches of research integrity	Netherlands Code of Conduct for Research Integrity	Other



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