

Open and Universal Science Project (OPUS)

**OPUS helps reform the
assessment of research towards
a system that incentivise
researchers to practice
#OpenScience**



WP2

INTERVENTIONS TO TEST IN THE PILOTS



Deliverable 2.1 Interventions to test in the pilots

Author: Emma Day (UK Vitae)

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Responsibility

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1. Introduction

1.1 Overview

This report is **D2.1 of the OPUS project on Interventions to Test in the Pilots**. It proposes a first draft framework of interventions that has been designed to support and accompany the **OPUS Research Assessment Framework (RAF)** which offers a comprehensive suite of indicators and metrics for research-performing organisations (RPOs) and research-funding organisations (RFOs) to assess researchers for career progression and grant applications. It will also support a specific framework of indicators and metrics to incentivise and reward Open Science career practice, the **Open Science Career Assessment Matrix (OSCAM)**. Detailed description of the framework can be found in **D3.1 Indicators/Metrics to Test in the Pilots** which should be read in partnership with this document.

This is intended to be a draft framework which will then be tested in two ways during the OPUS project. Firstly, it will be open to wider sector consultation which we intend will be credible and robust to align and build on existing similar initiatives that are in progress for example, the Coalition for Advancing Research Assessment (COARA) and another Horizon Europe project GRASP OS. Secondly it will be tested as part of the OPUS project in our three-pilot RPOs and two RFOs. Feedback will then be incorporated and considered in detail to inform the final versions of the two complementary frameworks – **D2.4 Interventions for Open Science** and **D3.4 Indicators for Open Science**.

1.2 Methodology

D1.1 State of the Art on Open Science Initiatives and **D1.2 State of the Art on Open Science literature** provided a comprehensive basis for developing both the indicators and the interventions, highlighting key themes and essential frameworks that would form the basis for development. Alongside this a meeting with proposed pilot organisations explored further the development of the frameworks and how interventions might work practically in the pilot organisations. It also helped the project to gain an understanding of work already underway in each institution, highlighting where practice could be shared but also the different contexts, languages, approaches, and level to which open science is embedded. This informed our approach and highlighted the need to ensure that both frameworks are both wide ranging but equally able to be tailored to the needs of individual organisations. It also validated that the interventions must support the indicators.

The RAF builds on **key policy developments in research assessment and Open Science** as identified in deliverable D1.2 of OPUS on State-of-the-Art on an Open Science Ecosystem [1]:

- San Francisco Declaration on Research Assessment (DORA) [2]
- Leiden Manifesto for Research Metrics [3]
- Hong Kong Principles [4]

- Recommendations by the Open Science Policy Platform (OSSP) [5] [6]
- Recommendations on Science and Scientific Researchers [7] and Open Science [8]
- Agreement on Reforming Research Assessment [9]
- Research Evaluation in a Context of Open Science and Gender Equality [10]
- Conclusions on Research Assessment and Implementation of Open Science [11]
- European Framework for Research Careers including European Charter for Researchers [12]

The RAF also builds on **key frameworks in research assessment and Open Science** with a focus on developing new indicators and metrics and supporting Open Science as identified in D1.2:

- Researcher Development Framework (RDF) [13]
- Evaluation of Research Careers Fully Acknowledging Open Science Practices [14]
- Next-generation Metrics [15]
- Recommendations of the OSPP on Next-Generation Metrics [16]
- Mutual Learning Exercise on Open Science on Altmetrics and Rewards [17]
- Open Science Monitor [18]
- Indicator Frameworks for Fostering Open Knowledge Practices in Science and Scholarship [19]
- A Pathway towards Multidimensional Academic Careers [20]

The OPUS project decided to approach the development of the two frameworks by first establishing the indicators and metrics frameworks (RAF and OSCAM) and then in turn developing sets of interventions to support them.

1.3 Principles

The RAF has been developed and should be implemented according to **10 guiding principles**:

1. Provide a comprehensive framework of indicators and metrics for RPOs and RFOs
2. Provide a framework which applies across countries, disciplines, and organisations
3. Provide a framework which combines both quantitative and qualitative assessment
4. Focus on the assessment of individual researchers and not teams, groups, or units
5. Cover the full spectrum of activities by researchers and not just research activities
6. Offer a generic framework which allows open and non-open activities by researchers
7. Offer a specific framework which focuses on Open Science activities by researchers
8. Distinguish process, output, and outcome indicators to capture the lifecycle of activities
9. Formulate indicators and metrics at a high level of description for universal application

10. Leave selection, refinement and prioritisation of indicators and metrics to RPOs and RFOs

1.4 Structure

The OPUS RAF *interventions* are structured around the dimensions of the main RAF. There are five main assessment categories with Subcategories.

The interventions are divided by the indicator that they support and then are subdivided into the following categories:

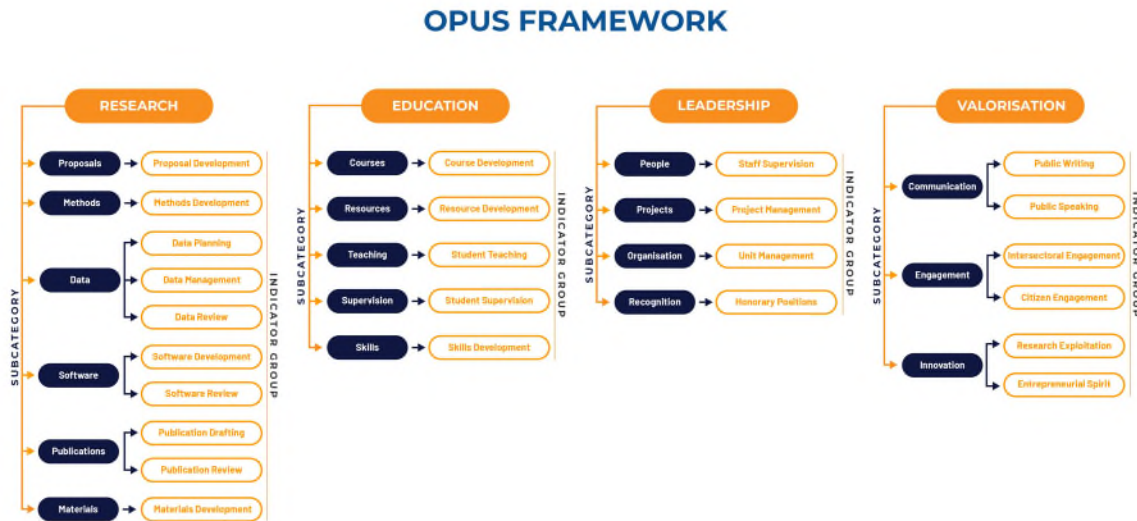


Figure 1 Categories, Subcategories and Indicator Groups of Researcher Assessment Framework

Each indicator group further consists of **3 types of indicators** with associated quantitative metrics:

- **Process:** Activity which is in development or is ongoing
- **Output:** Clear endpoint or tangible product of a process
- **Outcome:** Immediate or short-term result of an output

They are supported by five categories of interventions:

- **Policy** – Senior management support for the collection of the data and evidence required for the indicator with clear strategies and procedure to do this.
- **Resource** – Adequate resource (financial, people and time) to support the collection of data and evidence required for the indicator.
- **Repository** – An easily accessible and suitable repository or database to support the collection of data and evidence required for the indicator.
- **Awareness Raising** – Researchers know how and why they should be collecting the data and evidence required in the indicator and understand the link to researcher assessment.
- **Training** – Training provided to support the collection of the data and evidence required in the indicator and that researchers have the knowledge and skills to do this.

This is shown below:

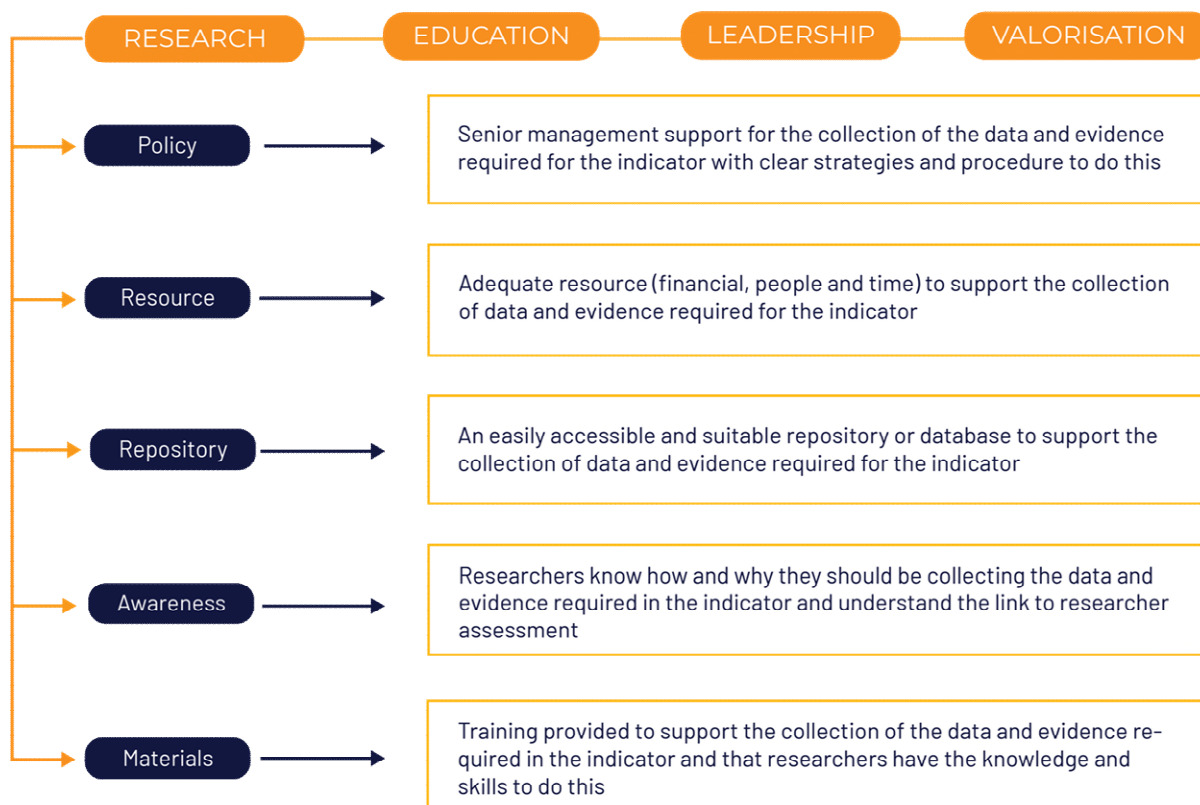


Figure 2 - Intervention Categories to Support RAF and OSCAM

2. Meta-Interventions

This set of meta-interventions has been developed as an overarching set of interventions for any RPO or RFO that wishes to implement the RAF or OSCAM Framework. They are intended as a starting point for consideration and implementation at the top level of an organisation.

Table 1 – Research Assessment Framework and Open Science Career Assessment Matrix – Meta Interventions

Category	Research Assessment Framework	Open Science Career Assessment Matrix
Policy	<ul style="list-style-type: none"> Senior management decision and approval to use the framework at their institution. Senior management decision on the set of indicators they wish to use in their institution. Senior management develop policies and procedures that support the collection of metrics and data relevant to the indicators with clear guidelines and expectations. 	<ul style="list-style-type: none"> Senior management approval and decision, involving all relevant parties to collect and make open metrics and data that are specific to the selected indicator. Senior management decision on which indicators they wish to use in their institution. Senior management develop policies and procedures that support collection of metrics and data relevant to the specific indicators and advocate making open access with clear guidelines and explanation.

Resources	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the relevant metrics and upload the relevant evidence for the selected indicators. • Ensure there is a member (or members) of staff responsible for monitoring, assisting and understanding any ethical queries that arise from collection of data relevant to the selected indicators. • Provide expertise and support relevant to the topic of the selected indicators. 	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record, upload and make open metrics and data relevant to the selected indicators. • Ensure there is a member (or members) of staff responsible for monitoring upload of metrics and data relevant to the selected indicator are open with an understanding of any ethical issues this may create. • Provide expertise and support relevant to the topic of the selected indicators and how to make the topic open.
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate and easily accessible database or repository to record the metrics and data relevant to the selected indicators. 	<ul style="list-style-type: none"> • Ensure there is a suitable and easily accessible database or repository to record data and metrics relevant to the selected indicators and that this is open access.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers are aware of what they should be recording for the selected indicators and where they can get training in how to do this and who they should go to for help. • Ensure researchers understand the benefit to them as individuals and the institution of recording the metrics and data relevant to the indicators and that they understand the link to researcher assessment. 	<ul style="list-style-type: none"> • Ensure researchers know that they should record and ensure open access for all documents relevant to the selected indicators and where they can receive training in how to do this and who they should go to for help. • Explain to researchers the benefit of making the selected indicators open to them as individuals and the institution and that they understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to log metrics and data relevant to the selected indicators. • Train researchers in the skills relevant to the topic of the selected indicators • Ensure there are a range of best practice proposal examples that researchers can access and draw upon relevant to the selected indicators. 	<ul style="list-style-type: none"> • Train researchers in where and how to log and ensure open access documents relevant to selected indicators. • Train researchers and develop skills relevant to specific indicators. • Train researchers in how to make documents relevant to specific indicators open access including issues specific to academic discipline and any ethical concerns. • Ensure there are best practice open access examples relevant to the specific indicators selected.

3. OPUS Researcher Assessment Framework (RAF)

This set of interventions should be used in partnership with the overarching framework shown in Appendix A – Tables of Researcher Assessment Framework with Indicators and Metrics and D3.1 Indicators and Metrics to test in the pilots.

3.1. Research

3.1.1. Proposals

Table 2: Generic Interventions for Research – Subcategory Proposals

Indicator Group	Indicator Type	Quantitative Metric
Proposal Development	Process	# of Project Proposals being developed
	Output	# of Project Proposals Submitted
	Outcome	# of Project Proposals Granted
Category	RAF Proposal Development Interventions	
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of project proposals being developed, submitted, and granted across the institution. Senior management develop policies and procedures to support the collection of the number of proposals being developed, submitted and granted across the institution including clear guidelines and explanations. 	
Resources	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of project proposals being developed, submitted and granted and upload the relevant evidence. Ensure there is a member (or members) of staff responsible for monitoring, assisting and understanding any ethical queries that arise from the collection of the number of project proposals being developed, submitted and granted. Provide expertise and support in proposal writing and development 	
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate and easily accessible database or repository to record the number of project proposals being developed, submitted and granted. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record all project proposals being developed, submitted, and granted and where they can get training in how to do this and who they should go to for help. Ensure researchers understand the benefit to them as individuals and the institution of recording the number of project proposals being developed, submitted, and granted, that they have trust in the process and that there is a clear link to researcher assessment. 	
Training	<ul style="list-style-type: none"> Train researchers in where and how to log project proposals being developed, submitted, and granted. Train researchers in proposal writing and development. Ensure there are a range of best practice proposal examples that researchers can access and draw upon. 	

3.1.2. Methods

Table 3 : Generic Interventions for Research – Subcategory Methods

Indicator Group	Indicator Type	Quantitative Metric
Methods Development	Process	# of Method Sets Being Developed
	Output	# of Method Sets Finalised
	Outcome	# of Method Sets Implemented
		# of Method Sets Accessed
		# of Method Sets Cited

Category	RAF Methods Development Interventions
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect number of methods sets being developed, finalised and implemented across the institution. Senior management approval and decision to collect the number of method sets accessed and cited across the institution. Senior management develop policies and procedures to support the collection of method sets being developed, finalised and implemented across the institution including clear guidelines and explanations. Senior management develop policies and procedures to support the collection of method sets access and cited across the institution including clear guidelines and explanations.
Resources	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of methods sets, being developed, finalised and implemented across the institution and upload the relevant evidence. Allow researchers time (and supporting budget) to record the number of methods sets accessed and cited across the institution and upload the relevant evidence. Ensure there is a member (or members) of staff responsible for monitoring, assisting, and understanding any ethical queries with the recording of the number of method sets being developed and finalised. Ensure there is a member (or members) of staff responsible for monitoring, assisting and understanding any ethical queries with the recording of the number of methods sets accessed and cited across the institution. Provide expertise and support in development and management of method sets.
Repository	<ul style="list-style-type: none"> Ensure there is a suitable and easily accessible database or repository to record method sets being developed, finalised and implemented across the institution. Ensure there is an appropriate and easily accessible database or repository to record method sets accessed and cited across the institution.
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record all method sets, being developed, finalised, and implemented and where they can receive training in how to do this and who they should go to for help. Ensure researchers know that they should record all method sets accessed and cited and where they can receive training in how to do this and who they should go to for help. Ensure researchers understand the benefit of recording the number of methods sets being developed and utilised to them as individuals and the institution, that they trust the process and that there is a clear link to research assessment.
Training	<ul style="list-style-type: none"> Train researchers in where and how to log the number of methods sets developed and finalised across the institution. Train researchers in where and how to log the number of methods sets accessed and cited across the institution. Train researchers in the development of method sets. Ensure there are a range of best practice examples of method sets that researchers can access and draw upon.

3.1.3. Data

Data Planning Interventions

Table 3:

Table 4; Generic Interventions for Research – Subcategory Data

Indicator Group	Indicator Type	Quantitative Metric
Data Planning	Process	# of (FAIR) Data Management Plans Being Developed
	Output	# of (FAIR) Data Management Plans Finalised
	Outcome	# of (FAIR) Data Management Plans Implemented
Data Management	Process	# of (FAIR) Data Sets Being Developed
	Output	# of (FAIR) Data Sets Finalised

		# of (FAIR) Data Sets Archived
	Outcome	# of (FAIR) Data Sets Accessed
		# of (FAIR) Data Sets Cited
Data Review	Process	# of (FAIR) Data Set Peer Reviews Being Drafted
	Output	# of (FAIR) Data Set Peer Reviews Submitted
	Outcome	# of (FAIR) Data Set Peer Reviews Accepted
Category RAF Data Planning Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of data management plans being developed, finalised, and implemented across the institution. Senior management develop policies and procedures to support the collection of the number of data management plans being developed, finalised and implemented including clear guidelines and explanations. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of data management plans being developed, finalised and implemented across the institution and upload the relevant evidence for the selected indicators. Ensure there is a member (or members) of staff responsible for monitoring, assisting and understanding any ethical queries with that arise from monitoring the number of data management plans developed, finalised and implemented across the institution. Provide expertise and support in the development of quality data management plans. 	
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate and easily accessible database or repository to record the number of data management plans being developed, finalised and implemented across the institution. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record the number of data management plans being developed, finalised, and implemented and where they can receive training in how to do this and who they should go to for help. Ensure researchers understand the benefit of them as individuals and the institution of recording the number of data management plan, that they trust the process and that there is a link to researcher assessment. 	
Training	<ul style="list-style-type: none"> Train researchers in where and how to record the number of data management plans being developed, finalised, and implemented. Train researchers in development of quality data management plans. Ensure there are best practice examples of data management plans that researchers can access and draw upon. 	
Category RAF Data Management Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of FAIR data management plans being developed, finalised and archived across the institution. Senior management approval and decision to collect the number of FAIR data management plans accessed and cited across the institution. Senior management develop policies and procedures to support the collection of the number of FAIR data management plans being developed, finalised and archived across the institution with clear guidelines and expectations. Senior management develop policies and procedures to support the collection of the number of FAIR data management plans accessed and cited across the institution with clear guidelines and expectations. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of FAIR data management plans being developed, finalised, and archived across the institution. Allow researchers time (and supporting budget) to record the number of FAIR data management plans accessed and cited across the institution. Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical queries that arise for the number of data management plans being developed, finalised, and archived across the institution. Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical queries that arise for the number of FAIR data management plans accessed and cited across the institution. Provide expertise and support in the development of FAIR data management plans. 	

Repository	<ul style="list-style-type: none"> • Ensure there is a suitable and easily accessible database or repository to record the number of FAIR data management plans being developed, finalised and archived across the institution. • Ensure there is a suitable and easily accessible database or repository to record the number of FAIR data management plans accessed and cited across the institution.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record the number of FAIR data management plans being developed, finalised, and archived and where they can receive training in how to do this and who they should go to for help. • Ensure researchers know that they should record the number of FAIR data management plans accessed and cited and where they can receive training in how to do this and who they should go to for help. • Ensure researchers understand the benefit of recording the number of FAIR data plans in these ways and that they understand the benefit to them as individuals and the institution, that the trust the process and the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of FAIR data management plans being developed, finalised, and implemented. • Train researchers in where and how to record the number of FAIR data management plans developed accessed and cited. • Train researchers in the development of FAIR data management plans. • Ensure there are a range of best practice examples of FAIR data management plans that researchers can access and draw upon.
Category	RAF Data Review Interventions
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of peer reviews being drafted, submitted, and accepted across the institution. • Senior management develop policies and procedures to support the collection of the number of peer reviews being drafted, submitted and accepted across the institution, with clear guidelines and expectations.
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number of peer reviews being drafted submitted and accepted across the institution. • Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical queries for collecting the number of peer reviews being drafted, submitted and accepted. • Provide expertise and support in the development of peer reviews
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate and easily accessible database or repository to record the number of peer reviews being drafted, submitted and accepted.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record all peer reviews being drafted, submitted, and accepted and where they can receive training in how to do this and who they should go to for help. • Ensure researchers understand the benefit to them as individuals and to the institution of collecting the number of peer reviews being drafted, submitted and accepted that the trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record peer reviews being drafted, submitted, and accepted. • Train researchers in the peer review process. • Ensure there are best practice examples of peer reviews that researchers can access and draw upon.

3.1.4. Software

Table 5: Generic Interventions for Research – Subcategory Software

Indicator Group	Indicator Type	Quantitative Metric
Software Development	Process	# of Software Sets Being Developed
	Output	# of Software Sets Finalised
		# of Software Sets Archived
	Outcome	# of Software Sets Accessed
		# of Software Sets Cited
Software Review	Process	# of Software Set Peer Reviews Being Drafted
	Output	# of Software Set Peer Reviews Submitted
	Outcome	# of Software Set Peer Reviews Accepted
Category RAF software Development Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of software sets being developed, finalised, and archived across the institution. Senior management approval and decision to collect the number of software sets accessed and cited across the institution. Senior management develop policies and procedures to support the collection of the number of software sets being developed, finalised and archived across the institution with clear guidelines and explanation. Senior management develop policies and procedures to support the collection of the number of software sets accessed and cited across the institution with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record and upload the relevant evidence for the number of software sets being developed, finalised, and archived across the institution. Allow researchers time (and supporting budget) to record and upload the relevant evidence for the number of software sets accessed and cited across the institution. Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical queries for recording the number of software sets developing, finalised and archived. Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understand any ethical queries with recording the number of software sets accessed and cited. Provide expertise and support in the development of software sets. 	
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate database or repository to record the number of software sets being developed, finalised and archived across the institution. Ensure that there is an appropriate database to record the number of software sets accessed and cited across the institution. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record all software sets being developed, finalised, and implemented and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that that they should record all software sets accessed and cited and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers understand the benefit to them as individuals and to the institution of recording the number of software sets utilised, that the trust the process and understand the link to researcher assessment. 	
Training	<ul style="list-style-type: none"> Train researchers in where and how to record software sets being developed, finalised, and implemented. Train researchers in where and how to record software sets cited and accessed. Train researchers in development of software sets. Ensure there are best practice examples of software sets that researchers can access and draw upon. 	

Category		RAF Software Review Interventions
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of software set peer reviews being drafted, submitted and accepted. Senior management develop policies and procedures to support the collection of software set peer reviews that are being drafted, submitted and accepted including guidelines and explanation 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of software set peer reviews being drafted, submitted, and accepted across the institution and upload relevant supporting evidence. Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical queries for the recording the number of software set peer reviews being drafted, submitted and accepted. Provide expertise and support in the development of software set peer reviews 	
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate and easily accessible database or repository to record the number of software peer reviews being drafted, submitted and accepted. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record all software set peer reviews being drafted, submitted, and accepted and where they can receive training in how to do this and who they should go to for help. Ensure researchers understand the benefit of recording the number of software sets peer reviews being drafted, submitted and accepted to them as individuals and the institution, that they trust the process and understand the link to researcher assessment. 	
Training	<ul style="list-style-type: none"> Train researchers in where and how to record software set peer reviews being drafted, submitted, and accepted. Train researchers in the software set peer review process. Ensure there are best practice examples of software peer reviews that researchers can access and draw upon. 	

3.1.5. Publications

Table 6: Generic Interventions for Research – Subcategory Publications

Indicator Group	Indicator Type	Quantitative Metric
Publication Drafting	Process	# of Publications Being Drafted
	Output	# of Publications Submitted
	Outcome	# of Publications Published
		# of Publications Accessed
		# of Publications Cited
Publication Review	Process	# of Publication Peer Reviews Being Drafted
	Output	# of Publication Peer Reviews Submitted
	Outcome	# of Publication Peer Reviews Accepted
Category		Research Assessment Framework
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of publications being drafted, submitted, and published across the institution. Senior management approval and decision to collect the number of publications accessed and cited across the institution. Senior management develop policies and procedures to support the collection of the number of publications being drafted submitted and published across the institution with clear guidelines and explanation. Senior management develop policies and procedures to support the collection of the number of publications accessed and cited across the institution with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of publications being drafted, submitted, and published across the institution and upload the relevant evidence. 	

	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number of publications, accessed and cited across the institution and upload the relevant evidence. • Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical queries for collecting the number of publications being drafted, submitted, and published across the institution. • Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical queries with collecting the number of publications accessed and cited across the institution. • Provide expertise and support in quality publications.
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate and easily accessible database or repository to record the number of publications being drafted, submitted, and published across the institution. • Ensure that there is an appropriate and easily accessible database or repository to record the number of publications accessed and cited across the institution.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record all publications being drafted, submitted, and published and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that that they should record all publications accessed and cited and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers understand the benefit of recording the number of publications to both individuals and the institution, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record publications being drafted, finalised, and implemented. • Train researchers in where and how to record publications cited and accessed. • Train researchers in how to publish. • Ensure that there are best practice examples of a range of quality publications that researchers can access and draw upon.
Category	RAF Publication Review Interventions
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of publication peer reviews being drafted, submitted, and accepted. • Senior management develop policies and procedures to support the collection of the number of publication peer reviews being drafted, submitted, and accepted, with clear guidelines and expectations.
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number of publication peer reviews being drafted, submitted, and accepted and to upload the relevant evidence. • Ensure there is a member (or members) of staff responsible for recording, assisting with and understanding any ethical queries for recording the number of publication peer reviews being drafted, submitted, and accepted. • Provide expertise and support in the development of publication peer reviews.
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate and easily accessible database or repository to record the number of publication peer reviews being drafted submitted and accepted.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record all publication peer reviews being drafted, submitted, and accepted and where they can get training in how to do this and who they should go to for help. • Ensure researchers understand the benefit of recording publication peer reviews to them as individuals and the institution, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record publication peer reviews being drafted, submitted, and accepted. • Train researchers in the publication peer review process. • Ensure there are best practice examples of publication peer reviews that researchers can access and draw upon.

3.1.6. Materials

Table 7: Generic Interventions for Research – Subcategory Materials

Indicator Group	Indicator Type	Quantitative Metric
Materials Development	Process	# of Material Sets Being Developed
	Output	# of Material Sets Finalised
	Outcome	# of Material Sets Implemented
		# of Material Sets Accessed
		# of Material Sets Cited
Category: Research Assessment Framework Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of materials being developed, finalised, and implemented across the institution. Senior management approval and decision to collect the number of materials accessed and cited across the institution. Senior management develop policies and procedures to support the collection of the number of materials being developed, finalised, and implemented across the institution including clear guidelines and explanation. Senior management develop policies and procedures to support the collection of the number of materials accessed and cited across the institution including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of materials being developed, finalised, and implemented across the institution and upload the relevant evidence. Allow researchers time (and supporting budget) to record the number of materials being developed, accessed, and cited across the institution and upload the relevant evidence. Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical queries for recording the number of materials developing, finalised and implemented across the institution. Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical queries for recording the number of materials accessed and cited across the institution. Provide expertise and support in materials development. 	
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate and easily accessible database or repository to record the number of materials being developed, finalised, and implemented across the institution. Ensure that there is an appropriate and easily accessible database to record the number of materials accessed and cited across the institution. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record all materials being developed, finalised, and implemented and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that that they should record all materials accessed and cited and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers understand the benefit of recording the number of materials being developed, finalised and implemented to both them as individuals and the institution, that they trust the process and understand the link to researcher assessment. 	
Training	<ul style="list-style-type: none"> Train researchers in where and how to record materials being developed, finalised and implemented. Train researchers in where and how to record materials cited and accessed. Train researchers in materials development. Ensure there are a range of best practice examples of quality materials that researchers can access and draw upon. 	

	<ul style="list-style-type: none"> Senior management develop policies and procedures to collect information on the number of resources accessed and cited with clear guidelines and explanation.
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of resources being developed, finalised, and implemented across the institution and upload the relevant evidence. Allow researchers time (and supporting budget) to record the number of resources accessed and cited across the institution. Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical issues for the collection of the number of resources being developed, finalised, and implemented across the institution. Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical issues for the collection of the number of resources accessed and cited across the institution. Provide expertise and support in resource development.
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate and easily accessible database or repository to record the number of resources being developed, finalised and implemented across the institution. Ensure there is an appropriate and easily accessible database or repository to record the number of resources accessed and cited across the institution
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record all resources, being developed finalised and implemented and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that they should record all resources that have been accessed and cited and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers understand the benefit of recording the number of resources being developed, finalised and implemented to both themselves as individuals, that they trust the process and understand the institution and the link to researcher assessment.
Training	<ul style="list-style-type: none"> Train researchers in where and how to record resources being developed, finalised and implemented. Train researchers in resource development. Ensure there are a range of best practice examples of resources developed that researchers can access and draw upon.

3.2.3. Teaching

Table 10: Generic Indicators for Education – Subcategory Teaching

Indicator Group	Indicator Type	Quantitative Metric
Student Teaching	Process	# of Course Hours Assigned
	Output	# of Course Hours Taught
	Outcome	# of Students Passed in Courses
Category RAF student Teaching Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect information on the number of course hours assigned and taught across the institution. Senior management approval and decision to collect number of students passed in relevant courses across the institution. Senior management develop policies and procedures to support the collection of the number of course hours assigned and taught across the institution with clear guidelines and explanation. Senior management develop policies and procedures to support the collection of the number of students that have passed these courses with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of courses that are being currently taught and have been taught across the institution and upload relevant evidence. 	

	<ul style="list-style-type: none"> • Allow researchers or others time (and supporting budget) to record the number of students that have passed these courses across the institution and upload relevant evidence. • Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical issues for the collection of the number of course hours assigned and taught across the institution. • Ensure there is a member (or members) of staff responsible for monitoring, assisting with and understanding any ethical issues for the recording of the number of students that have passed these courses across the institution. • Provide expertise and support in teaching.
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate and easily accessible database or repository to record the number of course hours assigned and taught across the institution. • Ensure there is an appropriate and easily accessible method or database for recording the number of students that achieve a pass in relevant courses.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record all course hours assigned and taught and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record number of students who achieve a pass in relevant courses taught. • Ensure researchers understand the benefits to them as individuals and the institution of recording this data on course hours assigned, taught and student pass rates and that they trust the process and understand the link to researcher assessment
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record course hours assigned and taught. • Train researchers in where and how to record the number of students who achieve a pass in relevant courses taught. • Train researchers in teaching methods. • Ensure there are a range of best practice courses available that researchers can access and draw upon.

3.2.4. Supervision

Table 11: Generic Interventions for Education – Subcategory Supervision

Indicator Group	Indicator Type	Quantitative Metric
Student Supervision	Process	# of Students Being Supervised
	Output	# of Students Supervised
	Outcome	# of Supervised Student Theses
		# of Supervised Students Graduated
Category RAF Supervision Interventions		
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of students currently being supervised or that have been supervised across the institution. • Senior management approval and decision to collect the number of student theses of those supervised and number of students graduated across the institution. • Senior management develop policies and procedures to support the collection of the number of students that researchers are currently supervising or have supervised including clear guidelines and explanation. • Senior management develop policies and procedures to support the collection of the number of students who publish a theses or graduate with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number of courses that are being currently supervised or have been supervised in the past across the institution. • Allow researchers time to record the number of students theses and the number of students graduated across the institution. 	

	<ul style="list-style-type: none"> • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of students that are currently or have been supervised. • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the recording number of students graduated and theses. • Provide expertise and support in supervision.
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record the number of students currently being supervised or that have been supervised. • Ensure there is an appropriate method or database for recording the number of students that have completed their theses and graduated.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record all students currently being supervised and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record and monitor the number of students they have supervised who have completed their thesis or graduated. • Ensure researchers understand the benefits to them as individuals and the institution of recording this data on students they are or have supervised and the resulting number who have produced a theses or graduated that they trust the process and understand the link to researcher assessment
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record students that are currently being or that have been supervised. • Train researchers in where and how to record the number of students they have supervised who have completed their thesis or graduated. • Train researchers in supervision. • Ensure researchers know where to go to receive support in supervision. • Try to find best practice examples of supervision that researchers can access and draw upon.

3.2.5 Skills

Table 12 Generic Interventions for Education – Subcategory Skills

Indicator Group	Indicator Type	Quantitative Metric
Skills Development	Process	# of Skills Courses Being Followed
	Output	# of Skills Courses Completed
	Outcome	# of Skills Certificates Obtained
Category RAF Skills Interventions		
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect information on the number of skills courses researchers are following, have completed, and obtained across the institution. • Senior management develop policies and procedures to support the collection of information on the number of courses researchers are following, have completed and obtained including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number of courses they are following, have completed and obtained by them individually. • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of skills courses researchers are following, have completed and obtained across the institution. • Provide a comprehensive programme of skills courses for researchers 	
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate and easily accessible database for researchers to record the number of skills courses they are following, have completed and obtained. 	
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record the number of skills courses, they are following, have completed and obtained and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers understand the benefit to individuals and the institution of recording this information about skills courses, that they trust the process and understand the link to researcher assessment. 	

Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of skills courses they are following, have completed and obtained. • Train researchers in the programme of skills courses for researchers that are offered by the institution. • Ensure there is clear advice and guidance on attending skills courses with a clear link to career development and academic success.
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3.3. Leadership

3.3.1 People

Table 13: Generic Interventions for Leadership – Subcategory People

Indicator Group	Indicator Type	Quantitative Metric
Staff Supervision	Process	# of Staff Being Supervised
	Output	# of Staff Supervised
	Outcome	# of Supervised Staff Theses
		# of Supervised Staff Projects
Category RAF Staff Supervision Interventions		
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of staff that a researcher is supervising or has supervised across the institution. • Senior management approval and decision to collect the number of theses and projects that have been produced by staff that a researcher is supervising or has supervised. • Senior management develop policies and procedures to support the collection of the number of staff that researchers are supervising or have supervised including clear guidelines and explanation. • Senior management develop policies and procedures to support the collection of the number of theses written or projects completed by staff a researcher has supervised or is supervising including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number of staff they are currently supervising or have supervised across the institution. • Allow researchers time (and supporting budget) to record the number of theses written and projects completed by staff that have supervised or are supervising across the institution. • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of staff that a researcher is currently supervising or has supervised. • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of these written or projects completed by staff that a researcher is supervising or has supervised. • Provide expertise and support in supervision of staff. 	
Repository	<ul style="list-style-type: none"> • Ensure there is an easily accessible and suitable database or repository to record the number of staff currently being supervised or that have been supervised by the researcher. • Ensure there is an easily accessible database or repository for recording the number of theses written or projects completed by staff supervised by the researcher. 	
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record number of staff they are currently supervising or that they have supervised and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record the number of theses written and projects completed by staff that have supervised or are supervising and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers understand the benefit to individuals and the institution of recording this information about staff supervision, that they trust the process and understand the link to researcher assessment 	

Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of staff they have supervised or are supervising. • Train researchers in where and how to record the number of theses written or projects completed by staff they have supervised or are supervising. • Train researchers in supervision of staff. • Ensure researchers know where to go to receive support in supervision of staff. • Try to find best practice examples of supervision of staff that researchers can access and draw upon.
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3.3.2 Projects

Table 14: Generic Interventions for Leadership – Subcategory Projects

Indicator Group	Indicator Type	Quantitative Metric
Project Management	Process	# of Projects Being Managed
	Output	# of Projects Completed
	Outcome	# of Projects Successfully Evaluated
Category Project Management Interventions		
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of projects that a researcher is managing, has completed and that have been successfully evaluated. • Senior management develop policies and procedures to support the collection of the number of projects that a researcher is managing, has completed and that have been successfully evaluated including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number projects they are managing, have completed and that have been successfully evaluated across the institution. • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of projects that a researcher is managing, has completed and that have been successfully evaluated. • Provide expertise and support in project management. 	
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record the number of projects researchers are managing, have completed and that have been successfully evaluated. 	
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record the number of projects they are currently managing, have completed and that have been successfully evaluated and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers understand the benefit to individuals and the institution of recording this information about project management, that they trust the process and understand the link to researcher assessment 	
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of projects they are currently managing, have completed and that have been successfully evaluated. • Train researchers in project management. • Ensure researchers know where to go to receive support in project management. • Try to find best practice examples of project management that researchers can access and draw upon. 	

3.3.3 Organisation

Table 15: Generic Interventions for Leadership – Subcategory Organisation

Indicator Group	Indicator Type	Quantitative Metric
Unit Management	Process	# of Unit Management Positions Assigned
	Output	# of Unit Management Positions Completed
		# of Agreed Unit Management Outputs

	Outcome	# of Agreed Unit Management Outcomes
RAF Unit Management Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of Unit Management Positions assigned and completed by a researcher across the institution. Senior management approval and decision to collect the number of agreed outputs and outcomes for the unit across the institution. Senior management develop policies and procedures to support the collection of the number of unit management positions assigned and completed by a researcher including clear guidelines and explanation. Senior management develop policies and procedures to collect the number of agreed outputs and outcomes for the unit across the institution including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of unit positions that they have been assigned and completed across the institution. Allow researchers time (and supporting budget) to record the number of agreed outputs and outcomes from units across the institution. Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of unit positions assigned and that have completed. Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of agreed outputs and outcomes from units. Provide expertise and support in Unit (team or department) management. 	
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate database to record the number of unit management positions that have been assigned and completed. Ensure there is an appropriate database to record the number of agreed outputs and outcomes for units. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record the unit positions assigned and completed and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that they should record the number of agreed outputs and outcomes for units and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers understand the benefit to individuals and the institution of recording this information about unit management, that they trust the process and understand the link to researcher assessment 	
Training	<ul style="list-style-type: none"> Train researchers in where and how to record the number of unit positions they have been assigned and have completed. Train researchers in where and how to record the number of agreed outputs and outcomes for units. Train researchers in unit (team or department) management Ensure researchers know where to go to receive support in Unit Management. Try to find best practice examples of Unit Management that researchers can access and draw upon. 	

4.3.4 Recognition

Table 16: Generic Interventions for Leadership – Subcategory Recognition

Indicator Group	Indicator Type	Quantitative Metric
Expert Positions	Process	# of Expert Positions Assigned
	Output	# of Expert Positions Completed
		# of Expert Position Outputs
	Outcome	# of Expert Position Outcomes
		# of Expert Achievement Awards

Category	RAF ExpertPositions Interventions
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of expert positions assigned and completed by a researcher across the institution. Senior management approval and decision to collect the number of expert position outputs, outcomes and achievement awards across the institution. Senior management develop policies and procedures to support the collection of expert positions assigned and completed by a researcher including clear guidelines and explanation. Senior management develop policies and procedures to collect the number of expert position outputs, outcomes and achievement awards for the unit across the institution including clear guidelines and explanation.
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of expert positions assigned and completed across the institution. Allow researchers time (and supporting budget) to record the number of expert positions outputs, outcomes, and achievement awards across the institution. Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of expert positions assigned and that have completed. Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of expert positions outputs, outcomes and achievement awards. Provide expertise and supporting in achieving expert positions.
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate database to record the number of expert positions that have been assigned and completed. Ensure there is an appropriate database to record the number of expert positions outputs, outcomes and achievement awards.
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record any expert positions assigned and completed and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that they should record the number of expert positions outputs, outcomes and achievement awards where they can receive training in how to do this and who they should go to for help and support. Ensure researchers understand the benefit to individuals and the institution of recording this information about expert positions, that they trust the process and understand the link to researcher assessment
Training	<ul style="list-style-type: none"> Train researchers in where and how to record the number of expert positions they have been assigned and have completed. Train researchers in where and how to record the number of expert positions outputs, outcomes and achievements awards. Train researchers in how to find expert position opportunities. Ensure researchers know where to go to receive support in expert positions. Provide best practice examples and case studies of expert positions that researchers can access and draw upon.

3.4. Valorisation

3.4.1 Communication

Table 17: Generic Interventions for Valorisation – Subcategory Communication

Indicator Group	Indicator Type	Quantitative Metric
Public Writing	Process	# of Publications Being Drafted
	Output	# of Publications Published
	Outcome	# of Publications Accessed
		# of Publications Cited
Public Speaking	Process	# of Appearances Planned
	Output	# of Appearances Made

	Outcome	# of Appearances Accessed
		# of Appearances Cited
Category RAF Public Writing Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of publications being drafted and published across the institution. Senior management approval and decision to collect the number of publications accessed and cited across the institution. Senior management develop policies and procedures to support the collection of publications being drafted and published by a researcher including clear guidelines and explanation. Senior management develop policies and procedures to collect the number of publications accessed and cited by a researcher including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of publications being drafted and published across the institution. Allow researchers time (and supporting budget) to record the number of publications accessed and cited across the institution. Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of publications drafted and published across the institution. Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of publications accessed and cited across the institution. Provide expertise and supporting in public writing. 	
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate database to record the number of publications being drafted and published across the institution. Ensure there is an appropriate database to record the number of publications accessed and cited across the institution. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record any publications being drafted and have published and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that they should record the number of publications accessed and cited and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers understand the benefit to individuals and the institution of recording this information about public writing, that they trust the process and understand the link to researcher assessment 	
Training	<ul style="list-style-type: none"> Train researchers in where and how to record the number publications they are being drafted and have published. Train researchers in where and how to record the number of publications they have accessed and cited. Train researchers in public writing. Ensure researchers know where to go to receive support in public writing. Try to find best practice examples and case studies of public writing that researchers can access and draw upon. 	
Category RAF Public Speaking Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of public speaking appearances planned and made across the institution. Senior management approval and decision to collect the number of public speaking appearances accessed and cited across the institution. Senior management develop policies and procedures to support the collection of public speaking appearances planned and made by a researcher including clear guidelines and explanation. Senior management develop policies and procedures to collect the number of public speaking appearances accessed and cited by a researcher including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of public speaking appearances planned and made across the institution. Allow researchers time (and supporting budget) to record the number public speaking appearances accessed and cited across the institution. 	

	<ul style="list-style-type: none"> • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of public speaking appearances planned and made across the institution. • Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of public speaking appearances accessed and cited across the institution. • Provide expertise and supporting in public writing.
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record the number of public speaking appearances planned and made across the institution. • Ensure there is an appropriate database to record the number of public speaking appearances accessed and cited across the institution.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record any public speaking appearances they have planned or have made and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record the number of public speaking appearances and cited and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers understand the benefit to individuals and the institution of recording this information about public speaking, that they trust the process and understand the link to researcher assessment
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number public speaking appearances they have planned or have made. • Train researchers in where and how to record the number of public speaking appearances they have accessed and cited. • Train researchers in public speaking. • Ensure researchers know where to go to receive support in public speaking. • Provide best practice examples and case studies of public speaking that researchers can access and draw upon.

3.4.2 Engagement

Table 18: Generic Interventions for Valorisation – Subcategory Engagement

Indicator Group	Indicator Type	Quantitative Metric
Intersectoral Engagement	Process	# of Intersectoral Engagements
	Output	# of Intersectoral Outputs
	Outcome	# of Intersectoral Outcomes
		# of Organisations Engaged
Citizen Engagement	Process	# of Citizen Science Activities Ongoing
	Output	# of Citizen Science Activities Completed
		# of Citizen Science Outputs
	Outcome	# of Citizen Science Outcomes
		# of Citizen Scientists Engaged
Category RAF Intersectoral Engagement Interventions		
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of intersectoral engagements and outputs by a researcher across the institution. • Senior management approval and decision to collect the number of intersectoral outcomes and organisations engaged across the institution. • Senior management develop policies and procedures to support the collection of intersectoral engagements and outputs by a researcher including clear guidelines and explanation. • Senior management develop policies and procedures to collect the number of intersectoral outcomes and organisations engaged across the institution including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number of intersectoral engagements and outputs across the institution. 	

	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number of intersectoral outcomes and organisations engaged across the institution. • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of intersectoral collaborations and outputs across the institution. • Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of intersectoral outcomes and organisations engaged with across the institution. • Provide expertise and supporting in intersectoral collaborations.
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record the number of intersectoral collaborations and outputs across the institution. • Ensure there is an appropriate database to record the number of intersectoral outcomes and organisations engaged with across the institution.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record any intersectoral collaborations and outputs developed and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record the number of outcomes and organisations engaged with and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers understand the benefit to individuals and the institution of recording this information about intersectoral engagement and that they trust the process and understand the link to researcher assessment
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of intersectoral collaborations and outputs developed. • Train researchers in where and how to record the number of intersectoral outcomes and organisations engaged with. • Train researchers in how to find intersectoral collaborations. • Ensure researchers know where to go to receive support in finding and achieving intersectoral collaborations. • Provide best practice examples and case studies of intersectoral collaborations that researchers can access and draw upon.
Category	RAF Citizen Engagement Interventions
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of citizen science activities that are ongoing and completed researchers across the institution. • Senior management approval and decision to collect the number of citizen science outputs, outcomes and citizen scientists engaged across the institution. • Senior management develop policies and procedures to support the collection of citizen science activities that are ongoing or completed by a researcher including clear guidelines and explanation. • Senior management develop policies and procedures to collect the number of citizen science outputs, outcomes and number of citizen scientists engaged by individual researchers across the institution including clear guidelines and explanation.
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number of citizen science activities that are ongoing and completed across the institution. • Allow researchers time (and supporting budget) to record the number of citizen science outputs, outcomes and the number of citizen scientists engaged across the institution. • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of citizen scientist activities ongoing and completed across the institution. • Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of citizen science, outputs and outcomes and the number of citizen scientists engaged with across the institution. • Provide expertise and supporting in citizen science.
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record the number of citizen science activities ongoing and completed across the institution. • Ensure there is an appropriate database to record the number of citizen science outputs, outcomes and the number of citizen scientists engaged with across the institution.

Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record any intersectoral citizen science activities that are ongoing and completed and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that they should record the number of citizen science outputs, outcomes and the number of citizen scientists engaged with and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers understand the benefit to individuals and the institution of recording this information about citizen science and that they trust the process and understand the link to researcher assessment
Training	<ul style="list-style-type: none"> Train researchers in where and how to record the number of citizen scientists activities ongoing and completed. Train researchers in where and how to record the number of citizen science outputs, outcomes and the number of citizen scientists engaged with. Train researchers in citizen science. Ensure researchers know where to go to receive support in citizen science. Provide best practice examples and case studies of citizen science that researchers can access and draw upon.

3.4.3 Innovation

Table 19: Generic Interventions for Valorisation – Subcategory Innovation

Indicator Group	Indicator Type	Quantitative Metric
Research Exploitation	Process	# of Research Outputs Being Legalised
	Output	# of Research Outputs with Defined IPR
		# of Research Outputs Patented
Outcome	# of Research Outputs with Licenses	
Entrepreneurial Spirit	Process	# of Spin-offs/Start-ups Being Created
	Output	# of Spin-offs/Start-ups Created
	Outcome	# of Spin-off/Start-up Employees
		# of Spin-off/Start-up Products
		# of Spin-off/Start-up Services
Category RAF Research Exploitation Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of research outputs that are in the process of being legalised across the institution. Senior management approval and decision to collect the number of research outputs with defined IPR, patented and with licenses by researchers across the institution. Senior management develop policies and procedures to support the collection of the number of research outputs that are in the process of being legalised by a researcher including clear guidelines and explanation. Senior management develop policies and procedures to collect the number of research outputs with defined IPR, patents or licenses by individual researchers across the institution including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of research outputs that are currently in the process of being legalised across the institution. Allow researchers time (and supporting budget) to record the number the number of research outputs with defined IPR, patents awarded and licensed. Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of research outputs in the process of being legalised across the institution. Ensure there is a member (or members) of staff responsible for monitoring the number or research outputs with defined IPR, patents awarded and licensed across the institution. Provide expertise and supporting in legalisation of research outputs including defined IPR, patents and licensing 	

Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record the number of research outputs in the process of being legalised across the institution. • Ensure there is an appropriate database to record the number of research outputs with defined IPR, patents awarded and licensed across the institution.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record any research outputs in the process of being legalised and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record the number of research outputs with defined IPR, patents awarded and licensed and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers understand the benefit to individuals and the institution of recording this information about research exploitation and that they trust the process and understand the link to researcher assessment
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of research outputs that are in the process of being legalised. • Train researchers in where and how to record the number of research outputs with defined IPR, patents awarded, and licenses granted. • Train researchers in legalisation of research outputs including IPR, patents and licensing. • Ensure researchers know where to go to receive support in legalisation of research outputs including defined IPR, patents and licensing. • Provide best practice examples and legalisation of research outputs including defined IPR, patents and licensing that researchers can access and draw upon.
Category	RAF Entrepreneurial Spirit Interventions
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of Spin-offs/Start-ups that are in the process currently being created or that have been created across the institution. • Senior management approval and decision to collect the number of Spin-off/Start-up employees, products and services across the institution. • Senior management develop policies and procedures to support the collection of the number of Spin-offs/Start-ups that are in the process currently being created her including clear guidelines and explanation. • Senior management develop policies and procedures to collect the number of Spin-off/Start-up employees, products and services across the institution including clear guidelines and explanation.
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number of Spin-offs/Start-ups that are in the process currently being created or that have been created across the institution. • Allow researchers time (and supporting budget) to record the number the number of Spin-off/Start-up employees, products and services across the institution. • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of of Spin-offs/Start-ups that are in the process currently being created or that have been created across the institution. • Ensure there is a member (or members) of staff responsible for monitoring the number of Spin-off/Start-up employees, products and services across the institution. • Provide expertise and support in Spin-offs and Start-ups
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record the number of research outputs in the process of being legalised across the institution. • Ensure there is an appropriate database to record the number of research outputs with IPR, patents awarded and licensed across the institution.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record Spin-offs/Start-ups that are in the process currently being created or that have been created across the institution. and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record the number of Spin-off/Start-up employees, products and services across the institution and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers understand the benefit to individuals and the institution of recording this information about entrepreneurial spirit, that they trust the process and understand the link to researcher assessment
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record Spin-offs/Start-ups that are in the process currently being created or that have been created

	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of Spin-off/Start-up employees, products and services. • Train researchers in how to establish a Spin-offs/Start-ups • Ensure researchers know where to go to receive support in Spin-offs/Start-ups • Try to find best practice examples and legalisation of Spin-offs/Start-ups that researchers can access and draw upon.
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4. OPUS Open Science Career Assessment Matrix (OS-CAM)

4.1. Research

4.1.1. Proposals

Table 20: Open Science Interventions for Research – Subcategory Proposals

Indicator Group	Indicator Type	Quantitative Metric
Proposal Development	Process	# of Developing Project Proposals Openly Available
	Output	# of Submitted Project Proposals Openly Available
	Outcome	# of Granted Project Proposals Openly Available € of Granted Project Proposals Involving Open Science
Category OSCAM Proposal Development Interventions		
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect and make open project proposals being developed, submitted, granted across the institution, and record the funding received. • Senior management develop policies and procedures to make project proposals openly available (where possible) with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record, upload and make open project proposals being developed, submitted and granted across the institution and to record the funding received. • Ensure there is a member (or members) of staff responsible for monitoring upload and ensuring openly available project proposals being developed, submitted and granted are open with an understanding of any ethical issues this may create, and that they record the funding received. • Provide expertise and support in proposal writing and development. 	
Repository	<ul style="list-style-type: none"> • Ensure there is suitable and easily accessible database or repository to record project proposals, developed, submitted and granted and that this is open access and can record the funding received. 	
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record and ensure open access for all project proposals, developed, submitted, granted and the funding received and where they can receive training in how to do this and who they should go to for help. • Ensure researchers understand the benefit to individuals and the institution of recording this information about project proposals that are openly available, that they trust the process and understand the link to researcher assessment 	
Training	<ul style="list-style-type: none"> • Train researchers in where and how to log and ensure open access of project proposals being developed, submitted, granted and the funding received. • Train researchers in proposal writing and development. • Train researchers in how to make proposals openly available including issues specific to academic discipline and any ethical concerns. • Ensure there are best practice examples of open access proposals developed. 	

4.1.2. Methods

Table 21: Open Science Interventions for Research – Subcategory Methods

Indicator Group	Indicator Type	Quantitative Metric
Methods Development	Process	# of Developing Method Sets Openly Available
	Output	# of Finalised Method Sets Openly Available
	Outcome	# of Openly Available Method Sets Implemented
		# of Openly Available Method Sets Accessed
		# of Openly Available Method Sets Cited
Category OSCAM Methods Development Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of methods sets being developed, finalised, and implemented across the institution. Senior management approval and decision to collect the number of methods sets accessed and cited across the institution. Senior management develop policies and procedures to make method sets being developed, finalised, and implemented openly available (where possible) with clear guidelines and explanation. Senior management develop policies and procedures to record the number of openly available method sets accessed and cited (where possible) with clear guidelines and expectations 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record, upload and make open access method sets, being developed, finalised, and implemented across the institution. Allow researchers time (and supporting budget) to record, upload and make open access method sets accessed and cited across the institution. Ensure there is a member (or members) of staff responsible for monitoring upload of method sets developed, finalised, and implemented across the institution and ensuring they are open access, with an understanding of any ethical issues this may create. Ensure there is a member (or members) of staff responsible for monitoring upload of method sets accessed and cited across the institution and ensuring they are open access; with an understanding of any ethical issues this may create. Provide expertise and support in development and management of method sets and ensuring they are open access, 	
Repository	<ul style="list-style-type: none"> Ensure there is a suitable and easily accessible database or repository to record method sets developed, finalised, and implemented and that this is open access. Ensure there is a suitable and easily accessible database or repository to record method sets accessed and cited and that this is open access. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record and make open access all method sets, developed, finalised, and implemented and where they can receive training in how to do this and who they should go to for help. Ensure researchers know that they should record and make open access all method sets accessed and cited and where they can receive training in how to do this and who they should go to for help. Explain to researchers the benefit of making method sets open access to both them as individuals and the institution, that they trust the process and understand the link to research assessment. 	
Training	<ul style="list-style-type: none"> Train researchers in where and how to log openly available method sets being developed, finalised and implemented. Train researchers in where and how to log openly available method sets accessed and cited. Train researchers in development of openly available method sets. Train researchers in how to ensure method sets are open access including issues specific to academic discipline and any ethical concerns. Ensure there are a range of best practice examples of open access method sets. 	

4.1.3. Data

Table 22: Open Science Interventions for Research – Subcategory Data

Indicator Group	Indicator Type	Quantitative Metric
Data Planning	Process	# of (FAIR) Developing Data Management Plans Openly Available
	Output	# of (FAIR) Finalised Data Management Plans Openly Available
	Outcome	# of (FAIR) Implemented Data Management Plans Openly Available
Data Management	Process	# of (FAIR) Data Set Peer Reviews Being Drafted
	Output	# of Finalised (FAIR) Data Sets Openly Available
		# of Archived (FAIR) Data Sets Openly Available
	Outcome	# of Openly Available (FAIR) Data Sets Accessed
# of Openly Available (FAIR) Data Sets Cited		
Data Review	Process	# of (FAIR) Data Set Peer Reviews Being Drafted
	Output	# of Submitted (FAIR) Data Set Peer Reviews Openly Available
	Outcome	# of Accepted (FAIR) Data Set Peer Reviews Openly Available
Category OSCAM Data Planning Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of openly available data management plans being developed, finalised, and implemented across the institution. Senior management policies and procedures to make data management plans openly available (where possible) with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record, upload and make open access data management plans being developed, finalised, and implemented across the institution. Ensure there is a member (or members) of staff responsible for monitoring upload and ensuring data management plans being developed, finalised, and implemented are open access (where possible) with an understanding of any ethical issues this may create. Provide expertise and support in the development of openly available data management plans. 	
Repository	<ul style="list-style-type: none"> Ensure there is a suitable and easily accessible database or repository to record project proposals being developed, finalised and implemented and that this is open access. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record and ensure open access for all data management plans being developed, finalised and implemented and where they can receive training in how to do this and who they should go to for help. Explain to researchers the benefit of making data management plans open access to both them as individuals and the institution and the link to researcher assessment. 	
Training	<ul style="list-style-type: none"> Train researchers in where and how to share openly available data management plans being developed, finalised, and implemented. Train researchers in the development of openly available data management plans. Train researchers in how to make data management plans open access including any issues specific to the relevant academic discipline and any ethical concerns. Ensure there are a range of best practice examples of openly available data management plans 	
Category OSCAM Data Management Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of openly available FAIR data management sets being developed, finalised, and archived across the institution. Senior management approval and decision to collect the number of openly available FAIR data management sets accessed and cited across the institution. 	

	<ul style="list-style-type: none"> Senior management develop policies and procedures to make FAIR data sets openly available (where possible) with clear guidelines and explanations.
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record, upload and make open FAIR data management plans being developed, finalised and archived across the institution. Allow researchers time (and supporting budget) to record and upload and make open FAIR data management plans accessed and cited across the institution. Ensure there is a member (or members) of staff responsible for monitoring upload of and ensuring FAIR data sets being developed, finalised and archived are open access (where possible) with an understanding of any ethical issues this may create. Ensure there is a member (or members) of staff responsible for monitoring upload of and ensuring FAIR data sets accessed and cited are open access (where possible) with an understanding of any ethical issues this may create Provide expertise and support in the development of openly available FAIR data sets.
Repository	<ul style="list-style-type: none"> Ensure there is a suitable and easily accessible database or repository to record FAIR datasets developed, finalised and implemented and that this is open access. Ensure there is a suitable and easily accessible database or repository to record FAIR datasets accessed and cited and that this is open access.
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record all openly available FAIR datasets developed, finalised and implemented and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that they should record all openly available FAIR datasets accessed and cited and where they can receive training in how to do this and who they should go to for help and support. Explain to researchers the benefit of making FAIR datasets openly available to both them as individuals and the institution, that they trust the process and understand the link to research assessment.
Training	<ul style="list-style-type: none"> Train researchers in where and how to log and ensure open access of FAIR datasets developed, finalised, and implemented. Train researchers in where and how to record open access FAIR datasets cited and accessed. Train researchers in the development of openly available FAIR datasets Train researchers in how to make FAIR datasets open access including any issues specific to academic disciplines and any ethical concerns. Ensure there are best practice examples of openly available FAIR datasets developed.
Category	OSCAM Data Review Interventions
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect and make open (FAIR) Data set peer reviews being drafted, submitted and accepted. Senior management develop policies and procedures to make (FAIR) data set peer reviews openly available (where possible) with clear guidelines and explanation.
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record, upload and make open (FAIR) data set peer reviews being drafted, submitted and accepted across the institution. Ensure there is a member (or members) of staff responsible for monitoring upload and ensuring (FAIR) data set peer reviews being drafted, submitted and accepted are open with an understanding of any ethical issues this may create. Provide expertise and support in the development of openly accessible (FAIR) data set peer reviews.
Repository	<ul style="list-style-type: none"> Ensure there is a suitable and easily accessible database or repository to record (FAIR) data set peer reviews drafting, submitted and accepted and that this is open access.
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record and ensure open access for all (FAIR) data set peer reviews being drafted, submitted and accepted and where they can receive training in how to do this and who they should go to for help. Explain to researchers the benefit of making(FAIR) data set peer reviews open access to both them as individuals and the institution and the link to researcher assessment.
Training	<ul style="list-style-type: none"> Train researchers in where and how to share openly available (FAIR) data set peer reviews being drafted, submitted and accepted.

	<ul style="list-style-type: none"> • Train researchers in the (FAIR) data set peer review process. • Train researchers in how to make (FAIR) data set peer review open access including any issues specific to the relevant academic discipline and any ethical concerns. • Ensure there are a range of best practice examples of (FAIR) data set peer reviews.
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4.1.4. Software

Table 23: Open Science Interventions for Research – Subcategory Software

Indicator Group	Indicator Type	Quantitative Metric
Software Development	Process	# of Developing Software Sets Openly Available
	Output	# of Finalised Software Sets Openly Available
		# of Archived Software Sets Openly Available
	Outcome	# of Openly Available Software Sets Accessed
# of Openly Available Software Sets Cited		
Software Review	Process	# of Draft Software Set Peer Reviews Openly Available
	Output	# of Submitted Software Set Peer Reviews Openly Available
	Outcome	# of Accepted Software Set Peer Reviews Openly Available
Category OSCAM Software Development Interventions		
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to make software sets being developed, finalised and archived across the institution openly available, • Senior management approval and decision to make software sets accessed and cited across the institution openly available, • Senior management develop policies and procedures to make software sets openly available (where possible) with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record, upload and make open software sets being developed, finalised and archived across the institution. • Allow researchers time (and supporting budget) to collect the number of software sets accessed and cited across the institution. • Ensure there is a member (or members) of staff responsible for monitoring the upload and ensuring software sets being developed, finalised and archived are open access (where possible) with an understanding of any ethical issues this may create. • Provide expertise and support in the development of openly available software sets 	
Repository	<ul style="list-style-type: none"> • Ensure there is a suitable and easily accessible database to record software sets being developed, finalised and archived and that this is open access. • Ensure there is a suitable and easily accessible database to record software sets accessed and cited and that this is open access. 	
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record and ensure open access for all software sets being developed, finalised and archived and where they can receive training in how to do this and who they should go to for help. • Ensure researchers know that they should record and ensure open access for all software sets accessed and cited and where they can receive training in how to do this and who they should go to for help. • Explain to researchers the benefit of making software sets open access to both them as individuals and the institutions and the link to researcher assessment. 	
Training	<ul style="list-style-type: none"> • Train researchers in where and how to share openly available software sets being developed, finalised and archived. • Train researchers in where and how to share openly available software sets accessed and cited. • Train researchers in development of openly available software sets. 	

Category	OSCAM Software Review Interventions
	<ul style="list-style-type: none"> • Train researchers in how to make software sets open access including any issues specific to the relevant academic discipline and any ethical concerns. • Ensure there are a range of best practice examples of open access software sets.
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of openly available software set peer reviews being drafted, submitted and accepted across the institution. • Senior management develop policies and procedures to make software set peer reviews openly available (where possible) with clear guidelines and expectations.
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record, upload and make open access software set peer reviews being drafted, submitted and accepted across the institution. • Ensure there is a member (or members) of staff responsible for monitoring upload and ensuring software set peer reviews drafting, submitted and accepted are open access (where possible) with an understanding of any ethical issues this may create. • Provide expertise and support in the development of openly available software set peer reviews
Repository	<ul style="list-style-type: none"> • Ensure there is a suitable and easily accessible database or repository to record software set peer reviews being drafted, submitted, and accepted and that this is open access.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record and ensure open access for all software set peer reviews being drafted, submitted, and accepted and where they can receive training in how to do this and who they should go to for help. • Explain to researchers the benefit of making software set peer reviews open access to both them as individuals and the institution, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record open software set peer reviews drafted, submitted and accepted. • Train researchers in the software set peer review process. • Train researchers in how to make software set peer reviews open access including any issues specific to the relevant academic discipline and any ethical concerns. • Ensure there are a range of best practice examples of open access software set peer reviews.

4.1.5. Publications

Table 24: Open Science Interventions for Research – Subcategory Publications

Indicator Group	Indicator Type	Quantitative Metric
Publication Drafting	Process	# of Drafting Publications Openly Available
	Output	# of Submitted Publications Openly Available
	Outcome	# of Published Publications Openly Available
		# of Openly Available Publications Accessed
		# of Openly Available Publications Cited
Publication Review	Process	# of Draft Publication Peer Reviews Openly Available
	Output	# of Submitted Publication Peer Reviews Openly Available
	Outcome	# of Accepted Publication Peer Reviews Openly Available
Category OSCAM Publication Drafting Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to make publications being drafted, submitted and published openly available, Senior management approval and decision to make publications accessed and cited across the institution openly available, Senior management develop policies and procedures to make publications openly available (where possible) with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record, upload and make open publications being drafted, submitted and published across the institution. Allow researchers time (and supporting budget) to collect the number of publications accessed and cited across the institution. Ensure there is a member (or members) of staff responsible for monitoring upload and ensuring publications are open access (where possible) with an understanding of any ethical issues this may create. Provide expertise and support in the development of openly available publications 	
Repository	<ul style="list-style-type: none"> Ensure there is a suitable and easily accessible database or repository to record publications being drafted, submitted and published that this is open access. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record and ensure open access for all publications being drafted, submitted and published and where they can receive training in how to do this and who they should go to for help. Ensure researchers know that they should record and ensure open access for all publications accessed and cited and where they can receive training in how to do this and who they should go to for help. Explain to researchers the benefit of making publications open access to both them as individuals and the institutions that they trust the process and understand the link to researcher assessment. 	
Training	<ul style="list-style-type: none"> Train researchers in where and how to share openly available publications being drafted, submitted and published. Train researchers in where and how to record openly available publications accessed and cited. Train researchers in drafting publications. Train researchers in how to make publications open access including any issues specific to the relevant academic discipline and any ethical concerns. Ensure there are a range of best practice examples of openly available publications 	
Category OSCAM Publication Review		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to make publication peer reviews that are being drafted, submitted and published openly available. Senior management approval and decision to collect the number of openly available peer reviews that are being drafted, submitted and accepted across the institution. Senior management develop policies and procedures to make publication peer reviews openly available (where possible) with clear guidelines and expectations. 	

Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record, upload and make open access publication peer reviews drafting, submitted and accepted across the institution. Ensure there is a member (or members) of staff responsible for monitoring upload and ensuring publication peer reviews drafting, submitted and accepted are open access (where possible) with an understanding of any ethical issues this may create. Provide expertise and support in the development of openly available publication peer reviews.
Repository	<ul style="list-style-type: none"> Ensure there is a suitable and easily accessible database or repository to record publication peer reviews that are being drafted, submitted and accepted across the institution.
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record and ensure open access for all publication peer reviews drafting, submitted and accepted and where they can receive training in how to do this and who they should go to for help. Explain to researchers the benefit of making publication peer reviews open access to both them as individuals and the institution, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> Train researchers in where and how to record openly available publication peer reviews being drafted, submitted and accepted. Train researchers in the publication peer review process. Train researchers in how to develop openly available publication peer reviews including any issues specific to the relevant academic discipline and any ethical concerns. Ensure there are a range of best practice examples of openly available publication peer reviews.

4.1.6. Materials

Table 25: Open Science Interventions for Research – Subcategory Materials

Indicator Group	Indicator Type	Quantitative Metric
Materials Development	Process	# of Developing Material Sets Openly Available
	Output	# of Finalised Material Sets Openly Available
	Outcome	# of Implemented Material Sets Openly Available
		# of Openly Available Material Sets Accessed
		# of Openly Available Material Sets Cited
Category OSCAM Material Set Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect number of openly available material sets being developed, finalised and implemented across the institution. Senior management approval and decision to collect number of openly available material sets accessed and cited across the institution. Senior management develop policies and procedures to make material sets openly available (where possible) with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record, upload and make open access material sets developed, finalised and implemented across the institution. Allow researchers time (and supporting budget) to record openly available material sets accessed and cited across the institution. Ensure there is a member (or members) of staff responsible for monitoring upload of and ensuring materials being developed, finalised and implemented are open access (where possible) with an understanding of any ethical issues this may create. Ensure there is a member (or members) of staff responsible for recording the number of openly available materials accessed and cited with an understanding of any ethical issues this may create. Provide expertise and support in the development of openly available material sets. 	

Repository	<ul style="list-style-type: none"> • Ensure there is a suitable and easily accessible database or repository to record material sets being developed, finalised, and accessed and that this is open access. • Ensure there is a suitable and easily accessible database to record openly available material sets accessed and cited.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record and ensure open access for all material sets being developed, finalised and implemented and where they can receive training in how to do this and who they should go to for help. • Ensure researchers know that they should record all openly available material sets accessed and cited and where they can receive training in how to do this and who they should go to for help. • Explain to researchers the benefit of making material sets open access to both them as individuals and the institutions, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to share openly accessible material sets being drafted, finalised and implemented. • Train researchers in where and how to record openly available material sets accessed and cited. • Train researchers in developing material sets. • Train researchers in how to make material sets open access including any issues specific to the relevant academic discipline and any ethical concerns. • Ensure there are a range of best practice examples of open access material sets.

4.2. Education

4.2.1. Courses

Table 26: Open Science Interventions for Education – Subcategory Courses

Indicator Group	Indicator Type	Quantitative Metric
Course Development	Process	# of Open Science Courses Being Developed
		# of Developing Courses Openly Available
	Output	# of Open Science Courses Finalised
		# of Finalised Courses Openly Available
	Outcome	# of Open Science Courses Implemented
		# of Implemented Courses Openly Available
Category Open Science Career Assessment Matrix Interventions		
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of open science courses that are being developed, finalised and implemented across the institution. • Senior management approval and decision to collect the number of openly available courses that are being developed finalised and implemented across the institution. • Senior management develop policies and procedures to make open courses that are being developed, finalised and implemented open access (where possible) with clear guidelines and explanation. • Senior management develop policies and procedures to implement open science courses with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record, upload and make open courses that are being developed, finalised and implemented across the institution. • Allow researchers time (and supporting budget) to record, upload and make open, open science courses that are openly available that are being developed, finalised and implemented across the institution. • Ensure there is a member (or members) of staff responsible for monitoring the number of open science courses developed, finalised and implemented across the institution. 	

	<ul style="list-style-type: none"> • Ensure there is a member (or members) of staff responsible for monitoring number courses openly available and for assisting with making them open access (where possible) with an understanding of any ethical issues this may create. • Provide expertise in design of open science courses • Provide expertise in course development
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database and repository to record the number of open science courses being developed, finalised and implemented across the institution. • Ensure there is a suitable and easily accessible database or repository to record and upload courses openly available.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers are aware of the institution policy to make open science courses as open as possible. • Ensure researchers know that they should record, upload and share all open science courses being developed, finalised and implemented and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record, upload and share all courses developed openly. • Explain to researchers the benefit of making open science courses open access to both them as individuals and the institution, that they trust the process and understand the link to researcher assessment
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record open science courses being developed, finalised and implemented. • Train researchers in where and how to make open science courses openly available. • Train researchers in open science course development • Train researchers in how to share courses developed, finalised and implemented openly.

4.2.2. Resource Development

Table 27: Open Science Interventions for Education – Subcategory Resources

Indicator Group	Indicator Type	Quantitative Metric
Resource Development	Process	# of Open Science Resources Being Developed
		# of Developing Resources Openly Available
	Output	# of Open Science Resources Finalised
		# of Finalised Resources Openly Available
	Outcome	# of Open Science Resources Implemented
		# of Implemented Resources Openly Available
Category OSCAM Resource Development Interventions		
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect information on the number of open science resources being developed, finalised and implemented. • Senior management approval and decision to collect information on the number of resources openly available being developed, finalised and implemented. • Senior management develop policies and procedures to support the collection of information on the number of open science resources being developed finalised and implemented including clear guidelines and explanation. • Senior management develop policies and procedures to support the collection of information on the number of resources openly available being developed, finalised and implemented including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record, upload and make open, open science resources being developed, finalised and implemented. • Allow researchers time (and supporting budget) to record upload and make open, resources openly available being developed, finalised and implemented. • Ensure there is a member (or members) of staff responsible for monitoring the number of resources being developed, finalised and implemented across the institution. 	

	<ul style="list-style-type: none"> • Ensure there is a member (or members) of staff responsible for monitoring the number of resources openly available, being developed, finalised and implemented. • Provide expertise and support in resource development and how to ensure course materials are open access. • Provide expertise in design of open science resources.
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database and repository to record the number of open science resources being developed, finalised and implemented across the institution. • Ensure there is an appropriate database and repository to record the number of resources openly available.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers are aware of the institution policy to make resources as open as possible. • Ensure researchers know that they should record, upload and share all open science resources being developed, finalised and implemented and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record, upload and share all resources developed openly. • Explain to researchers the benefit of making resources openly available to both them as individuals and the institution, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record resources being developed, finalised and implemented. • Train researchers in resource development • Train researchers in how to share resources being developed, finalised and implemented openly. • Train researchers in how to incorporate open science in the resources they develop. • Ensure there are best practice examples of open access resources available.

4.2.3. Teaching

Table 28: Open Science Interventions for Education – Subcategory Teaching

Indicator Group	Indicator Type	Quantitative Metric
Student Teaching	Process	# of Open Science Course Hours Assigned
	Output	# of Open Science Course Hours Taught
	Outcome	# of Students Passed in Open Science Courses # of Students Passed in Openly Available Courses
Category OSCAM Student Teaching Interventions		
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of open science courses hours assigned or taught across the institution. • Senior management approval and decision to collect the number of students that have passed open science courses or courses openly available open science currently being taught or that have been taught across the institution. • Senior management policies and procedures to make open science courses that are currently being taught or that have been taught open access (where possible) with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record and upload the number of open science courses that are currently being taught or that have been taught across the institution and make materials open access. • Allow researchers time to record the number of students who have passed open science courses or courses openly available across the institution. • Ensure there is a member (or members) of staff responsible for monitoring the number of open science courses that are currently being taught or have been taught across the institution and any ethical issues this might create. • Ensure there is a member (or members) of staff responsible for monitoring the number of students who have passed open science courses or courses openly 	

	<p>available and providing assistance with ensuring materials are open access with an understanding of any ethical issues this may create.</p> <ul style="list-style-type: none"> • Provide expertise and support in teaching and how to ensure course materials are open access. • Provide expertise in design of open science courses
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database and repository to record and upload the number of open science courses that are currently being taught or have been taught across the institution. • Ensure there is an appropriate database to record the number of students who have passed open science courses or courses openly available that are currently being taught or have been taught across the institution. • Ensure there is an appropriate database to record the number of students who have passed teaching courses that are openly available both currently or that have been taught across the institution.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers are aware that open science courses are available to them for teaching purposes. • Ensure researchers know that they should record, upload and share all open science courses taught or currently being taught. • Ensure researchers know that they should record, upload and share all open science teaching courses (where possible) and where they can receive training in how to do this and who they should go to for help and support. • Explain to researchers the benefit of making courses that are being taught or have been taught openly available to both them as individuals and the institution, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record and upload courses being currently taught or that have been taught. • Train researchers in teaching methods. • Train researchers in how to share open science courses taught and courses that have been taught openly. • Train researchers in how to incorporate open science in their course materials. • Ensure there are best practice examples of open access teaching courses available.

4.2.4. Supervision

Table 29: Open Science Interventions for Education – Subcategory Supervision

Indicator Group	Indicator Type	Quantitative Metric
Student Supervision	Process	# of Students Being Supervised in Open Science
	Output	# of Students Supervised in Open Science
	Outcome	# of Supervised Student Theses Openly Available
		# of Supervised Students in Open Science Graduated
Category OSCAM Student Supervision Interventions		
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of students that researchers are supervising and have supervised in open science. • Senior management approval and decision to collect number of supervised student theses that are openly available and the number of supervised students in open science that have graduated. • Senior management develop policies and procedures that support the collection of the number of researchers that are being supervised or have been supervised in open science (where possible) with clear guidelines and explanation. • Senior management develop policies and procedures that support the collection of the number of researchers supervised student theses that are openly available and the number of supervised students in open science that have graduated (where possible) with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time to record the number of students that they are supervising or have supervised in open science. 	

	<ul style="list-style-type: none"> • Allow researchers time to record the number of supervised student theses that are openly available and the number of supervised students in open science that have graduated. • Ensure there is a member (or members) of staff responsible for monitoring the number of students that are being supervised or have been supervised in open science across the institution. • Ensure there is a member (or members) of staff responsible for monitoring the theses that are openly available and the number of supervised students in open science that have graduated. • Provide expertise and support in open science supervision.
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record the number of students currently being supervised or that have been supervised in open science. • Ensure there is an appropriate method or database for recording the number of supervised theses that are openly available and the number of supervised students in open science that have graduated
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record all students currently being supervised or that have been supervised in open science and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record the number of supervised theses that are openly available and the number of supervised students in open science that have graduated and where they can receive training in how to do this and who they should go to for help and support. • Explain to researchers the benefit of collecting data on the number of students that are being or have been supervised in open science to both them as individuals and the institution, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of students that are currently or that have been supervised. • Train researchers in where and how to record the number of students they have supervised who have completed their thesis or graduated. • Train researchers in open science supervision. • Ensure researchers know where to go to receive support in supervision. • Ensure there are some best practice examples of open science supervision available.

4.2.5 Skills

Table 30: Open Science Interventions for Education – Subcategory Skills

Indicator Group	Indicator Type	Quantitative Metric
Skills Development	Process	# of Open Science Skills Being Followed
	Output	# of Open Science Skills Courses Completed
	Outcome	# of Open Science Skills Certificates Obtained
Category	OSCAM Skills Development Interventions	
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect information on the number of open science skills courses individuals are following, have completed and obtained across the institution. • Senior management develop policies and procedures to support the collection of information on the number of open science skills courses individuals are following, completed and obtained including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record the number of open science skills courses individuals are following, have completed and obtained by them, • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of open science skills courses individuals are following, have completed and obtained across the institution, with an understanding of any ethical issues this may create. • Provide a comprehensive programme of open science skills courses for researchers. 	

Repository	<ul style="list-style-type: none"> Ensure there is an appropriate and easily accessible database for researchers to record the number of open science skills courses they are following, have completed, and obtained.
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record the number of open science skills courses they are following, have completed, and obtained and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers understand the benefit to individuals and the institution of recording this information about open science skills courses, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> Train researchers in where and how to record the number of open science skills courses they are following, have completed and obtained. Train researchers in the programme of open science skills courses for researchers that are offered by the institution. Ensure there is clear advice and guidance on attending open science skills courses with a clear link to career development and academic success.

4.3 Leadership

4.3.1. People

Table 31: Open Science Interventions for Leadership – Subcategory People

Indicator Group	Indicator Type	Quantitative Metric
Staff Supervision	Process	# of Staff Being Supervised in Open Science
	Output	# of Staff Supervised in Open Science
	Outcome	# of Supervised Staff Theses Openly Available
# of Supervised Staff Projects involving Open Science		
Category Open Science Career Assessment Matrix		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of staff that researchers are supervising and have supervised in open science. Senior management approval and decision to collect number of supervised student theses that are openly available and the number of supervised staff projects in open science by staff researchers are supervising or have supervised. Senior management develop policies and procedures that support the collection of the number of staff that are being supervised or have been supervised in open science (where possible) by researchers with clear guidelines and explanation. Senior management develop policies and procedures that support the collection of the number of staff theses that are openly available and the number of staff projects involving open science by staff that are currently being supervised or have been supervised by researchers. 	
Resource	<ul style="list-style-type: none"> Allow researchers time to record the number of staff that they are supervising or have supervised in open science. Allow researchers time to record the number of supervised staff theses that are openly available and the number of staff projects in open science by staff researchers are supervising or have been supervised. Ensure there is a member (or members) of staff responsible for monitoring the number of staff that are being supervised or have been supervised in open science by researchers across the institution, with an understanding of any ethical issues this may create. Ensure there is a member (or members) of staff responsible for monitoring the number of theses that are openly available and the number of staff projects involving open science by staff that are currently being supervised or have been supervised by researchers with an understanding of any ethical issues this may create. Provide expertise and support in open science supervision. 	
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate database or repository to record the number of staff currently being supervised or that have been supervised in open science. 	

	<ul style="list-style-type: none"> Ensure there is an appropriate database or repository for recording the number of supervised staff theses that are openly available and the number of staff projects involving open science by staff that have been supervised by researchers or are currently being supervised.
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record all staff currently being supervised or that have been supervised in open science and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that they should record the number of supervised staff theses that are openly available and the number of supervised staff projects involving open science and where they can receive training in how to do this and who they should go to for help and support. Explain to researchers the benefit of collecting data on the number of staff that are being or have been supervised in open science to both them as individuals and the institution, that they trust the process and understand the link to researcher assessment. Explain to researchers the benefit of collecting data on staff theses that are openly available and staff projects involving open science in which they have supervised staff to both them as individuals, and the institution, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> Train researchers in where and how to record the number of staff that are currently or that have been supervised by researchers. Train researchers in where and how to record the number of staff theses that have been written and are openly available and the number of open science projects in which staff they have supervised or are supervising are involved. Train researchers in open science supervision. Ensure researchers know where to go to receive support in supervision of staff. Ensure there are some best practice examples of open science staff supervision available.

4.3.2 Projects

Table 32: Open Science Interventions for Leadership – Subcategory Projects

Indicator Group	Indicator Type	Quantitative Metric
Project Management	Process	# of Projects involving Open Science Being Managed
	Output	# of Projects involving Open Science Completed
	Outcome	# of Projects involving Open Science Successfully Evaluated
Category OSCAM Project Management Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of projects involving open science that researchers are currently managing, have completed or have been successfully evaluated across the institution. Senior management develop policies and procedures that support the collection of the number of projects involving open science that researchers are managing, have completed and that have been successfully evaluated (where possible) with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time to record the number of projects involving Open Science they are currently managing, have completed and that have been successfully evaluated. Ensure there is a member (or members) of staff responsible for monitoring the number of projects involving Open Science that researchers are currently managing, have completed and that have been successfully evaluated across the institution with an understanding of any ethical issues this may create. Provide expertise and support in projects involving Open Science. 	
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate database or repository to record the number of projects involving open science that researchers are managing, have completed and that have been successfully evaluated. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record the number of projects involving Open Science they are managing, have completed and that have been 	

	<p>successfully evaluated and where they can receive training in how to do this and who they should go to for help and support.</p> <ul style="list-style-type: none"> Explain to researchers the benefit of collecting data on the number of projects that they are managing, have completed and that have been successfully evaluated to both them as individuals and the institution, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> Train researchers in where and how to record the number of projects that they are currently managing, have completed and that have been successfully evaluated. Train researchers in projects involving Open Science. Ensure researchers know where to go to receive support in projects involving Open Science. Ensure there are some best practice examples of projects involving Open Science available.

4.3.3 Organisation

Table 33: Open Science Interventions for Leadership – Subcategory Organisation

Indicator Group	Indicator Type	Quantitative Metric
Unit Management	Process	# Unit Management Positions in Open Science Assigned
	Output	# Unit Management Positions in Open Science Completed # of Agreed Unit Management) Outputs involving Open Science
	Outcome	# of Agreed Unit Management Outputs involving Open Science
Category OSCAM Unit Management Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of unit management positions in open science that researchers have been assigned and completed. Senior management approval and decision to collect the number of agreed Unit management outputs and outcomes involving open science. Senior management develop policies and procedures that support the collection of the number of unit management positions in open science that are assigned and completed with clear guidelines and explanation. Senior management develop policies and procedures that support the collection of the number of agreed unit management outputs and outcomes involving open science with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time to record the number of unit management positions in open science that researchers have been assigned and completed. Allow researchers time to collect the number of agreed unit management outputs and outcomes involving open science. Ensure there is a member (or members) of staff responsible for monitoring the number of unit management positions in open science that researchers have been assigned and completed across the institution with an understanding of any ethical issues this may create. Ensure there is a member (or members) of staff responsible for monitoring the number of agreed unit management outputs and outcomes involving open science across the institution, with an understanding of any ethical issues this may create. Provide expertise and support in projects involving Unit Management in Open Science. 	
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate database to record the number of Unit Management positions in open science assigned and completed. Ensure there is an appropriate database to record the number of agreed unit management outputs and outcomes involving open science. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record the number of Unit Management positions in open science assigned and completed and where they can receive training in how to do this and who they should go to for help and support. 	

	<ul style="list-style-type: none"> • Ensure researchers know that they should record the number agreed unit management outputs and outcomes involving open science and where they can receive training in how to do this and who they should go to for help and support. • Explain to researchers the benefit of collecting data on the number of Unit management positions in open science assigned and completed to them as individuals and the institution, that they trust the process and understand the link to researcher assessment. • Explain to researchers the benefit of collecting data on the number of unit management outputs and outcomes involving open science to them as individuals and the institution, so that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of unit management positions in open science assigned and completed. • Train researchers in where and how to record the number of agreed unit management outputs and outcomes involving open science. • Train researchers in Unit management in open science. • Ensure researchers know where to go to receive support in Open Science Unit Management. • Ensure there are some best practice examples of projects involving Open Science Unit Management.

4.3.4 Recognition

Table 34: Open Science Interventions for Leadership – Subcategory Recognition

Indicator Group	Indicator Type	Quantitative Metric
Expert Positions	Process	# of Expert Positions in Open Science Assigned
	Output	# of Expert Positions in Open Science Completed
		# of Open Science Expert Position Outputs
		# of Expert Position Outputs Openly Available
Category	OSCAM Expert Positions Interventions	
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of open science expert positions that researchers have been assigned and completed. • Senior management approval and decision to collect the number of open science expert position outputs, expert position outputs openly available, expert position outcomes openly available and expert achievement awards in open science. • Senior management develop policies and procedures that support the collection of the number of open science expert positions that researchers have been assigned and completed with clear guidelines and explanation. • Senior management develop policies and procedures that support the collection of the number of open science expert position outputs, expert position outputs openly available, expert position outcomes openly available and expert achievement awards in open science with clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> • Allow researchers time to record the number of open science expert positions that researchers have been assigned and completed. • Allow researchers time to record the number of open science expert position outputs, expert position outputs openly available, expert position outcomes openly available and expert achievement awards in open science with clear guidelines and explanation. • Ensure there is a member (or members) of staff responsible for monitoring the number of open science expert positions that researchers have been assigned and completed across the institution. • Ensure there is a member (or members) of staff responsible for monitoring the number of expert position outputs, expert position outputs openly available, expert position outcomes openly available and expert achievement awards in open science across the institution. • Provide expertise and support in projects involving open science expert positions. 	
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record the number of open science expert positions that researchers have been assigned and completed. 	

	<ul style="list-style-type: none"> Ensure there is an appropriate database to record the number of expert position outputs, expert position outputs openly available, expert position outcomes openly available and expert achievement awards in open science across the institution.
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record the number of open science expert positions that researchers have been assigned and completed and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that they should record the number of Expert position outputs, expert position outputs openly available, expert position outcomes openly available and expert achievement awards in open science and where they can receive training in how to do this and who they should go to for help and support. Explain to researchers the benefit of collecting data on the number of open science expert positions that researchers have been assigned and completed them as individuals and the institution, that they trust the process and understand the link to researcher assessment. Explain to researchers the benefit of collecting data on the number of expert position outputs, expert position outputs openly available, expert position outcomes openly available and expert achievement awards in open science to them as individuals and the institution and the link to researcher assessment.
Training	<ul style="list-style-type: none"> Train researchers in where and how to record the open science expert positions that researchers have been assigned and completed. Train researchers in where and how to record the number of expert position outputs, expert position outputs openly available, expert position outcomes openly available and expert achievement awards in open science, Train researchers in open science expert positions. Ensure researchers know where to go to receive support in open science expert positions. Ensure there are some best practice examples of projects involving open science expert positions.

4.4 Valorisation

4.4.1 Communication

Table 35: Open Science Interventions for Valorisation – Subcategory Communication

Indicator Group	Indicator Type	Quantitative Metric
Public Writing	Process	# of Draft Publications Openly Available
	Output	# of Published Publications Openly Available
	Outcome	# of Openly Available Publications Accessed
		# of Openly Available Publications Cited
Public Speaking	Process	# of Appearances on Open Science Planned
	Output	# of Appearances on Open Science Given
	Outcome	# of Appearances on Open Science Accessed
		# of Appearances on Open Science Cited
		# of Appearances Openly Available
Category OSCAM Public Writing Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of openly available publications that are being drafted and published across the institution. Senior management approval and decision to collect the number of openly available publications accessed and cited across the institution. Senior management develop policies and procedures to support the collection and sharing of openly available publications drafting and published by a researcher including clear guidelines and explanation. 	

	<ul style="list-style-type: none"> Senior management develop policies and procedures to collect the number of openly available publications accessed and cited by a researcher including clear guidelines and explanation.
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record and upload the number of openly available publications drafted and published across the institution. Allow researchers time (and supporting budget) to record the number of openly available publications accessed and cited across the institution. Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of openly available publications that are being drafted and published across the institution and support to help make them open. Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of openly available publications accessed and cited across the institution. Provide expertise and supporting in public writing.
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate database to record and share the number of openly available publications that are being drafted and published across the institution. Ensure there is an appropriate database to record the number of openly available publications accessed and cited across the institution.
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record and make open (where possible) publications they are drafting and have published and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that they should record the number of openly available publications accessed and cited and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers understand the benefit to individuals and the institution of recording this information about openly available publications, that they trust the process and understand the link to researcher assessment
Training	<ul style="list-style-type: none"> Train researchers in where and how to record the number and upload the documents for openly available publications they are drafting and have published. Train researchers in where and how to record the number of openly available publications they have accessed and cited. Train researchers in openly available public writing. Ensure researchers know where to go to receive support in openly available public writing. Try to find best practice examples and case studies of openly available public writing that researchers can access and draw upon.
Category OSCAM Public Speaking Interventions	
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of public speaking appearances on open science planned and given across the institution. Senior management approval and decision to collect the number open science public speaking appearances accessed and cited across the institution. Senior management approval and decision to make as collect and make public speaking appearances openly available (where possible). Senior management develop policies and procedures to support the collection of open science public speaking appearances planned and given by a researcher including clear guidelines and explanation. Senior management develop policies and procedures to collect the number of open science public speaking appearances accessed and cited by a researcher including clear guidelines and explanation. Senior management develop policies and procedures to public speaking appearances openly available (where possible) including clear guidelines and explanation.
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of open science public speaking appearances planned and given across the institution. Allow researchers time (and supporting budget) to record the number open science public speaking appearances accessed and cited across the institution. Allow researchers time (and supporting budget) to make public speaking appearances openly available (where possible). Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of open science public speaking appearances planned and made across the institution.

	<ul style="list-style-type: none"> • Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of open science public speaking appearances accessed and cited across the institution. • Ensure there is a member (or members) of staff responsible for monitoring, assisting and helping to make open public appearances (where possible.) • Provide expertise and supporting in public speaking
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record the number of open science public speaking appearances planned and made across the institution. • Ensure there is an appropriate database to record the number of open science public speaking appearances accessed and cited across the institution. • Ensure there is an appropriate database to record and assist with making open, openly available public appearances.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record any open science public speaking appearances they have planned or have made and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record the number of open science public speaking appearances and cited and where they can receive training in how to do this and who they should go to for help and support. • Explain to researchers the benefit of collecting data on the number of openly available public speaking appearances they have planned and make to them as individuals and the institution, that they trust the process and understand the link to researcher assessment. • Explain to researchers the benefit of making public appearances openly available (where possible) to them as individuals and the institution, that they trust the process and understand the link to researcher assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number open science public speaking appearances they have planned or have made. • Train researchers in where and how to record the number of open science public speaking appearances they have accessed and cited • Train researchers in where and how to record and share openly available public speaking appearances. • Train researchers in open science public speaking • Train researchers in public speaking • Ensure researchers know where to go to receive support in public speaking. • Try to find best practice examples and case studies of open science public speaking that researchers can access and draw upon.

4.4 Engagement

4.4.2 Intersectoral Engagement

Table 36: Open Science Interventions for Valorisation – Subcategory Engagement

Indicator Group	Indicator Type	Quantitative Metric
Intersectoral Engagement	Process	# of Intersectoral Engagements involving Open Science
	Output	# of Intersectoral Outputs involving Open Science
	Outcome	# of Intersectoral Outcomes involving Open Science # of Organisations Engaged for Open Science
Citizen Engagement	Process	# of Citizen Science Activities involving Open Science Ongoing
	Output	# of Citizen Science Activities involving Open Science Completed
		# of Citizen Science Outputs for Open Science
	Outcome	# of Citizen Science Outcomes for Open Science
# of Citizen Scientists Engaged in Open Science		

Category		OSCAM Intersectoral Engagement Interventions
Policy		<ul style="list-style-type: none"> Senior management approval and decision to collect the number of intersectoral engagements and outputs for open science by a researcher across the institution. Senior management approval and decision to collect the number of intersectoral outcomes for open science and organisations engaged for open science across the institution. Senior management develop policies and procedures to support the collection of intersectoral collaborations involving open science and outputs for open science by a researcher including clear guidelines and explanation. Senior management develop policies and procedures to collect the number of intersectoral outcomes for open science and organisations engaged for open science across the institution including clear guidelines and explanation.
Resource		<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record the number of intersectoral collaborations involving open science and outputs for open science across the institution. Allow researchers time (and supporting budget) to record the number of intersectoral outcomes for open science and organisations engaged for open science across the institution. Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of intersectoral collaborations for open science and intersectoral outputs for open science across the institution. Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of intersectoral outcomes for open science and organisations engaged for open science. across the institution. Provide expertise and supporting in intersectoral collaborations involving open science.
Repository		<ul style="list-style-type: none"> Ensure there is an appropriate database to record and make open the number of intersectoral collaborations involving and outputs for open science across the institution. Ensure there is an appropriate database to record and make open the number of intersectoral outcomes for open science and organisations engaged for open science with across the institution.
Awareness Raising		<ul style="list-style-type: none"> Ensure researchers know that they should record and make open any intersectoral collaborations involving open science and outputs for open science developed and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that they should record and make open the number of intersectoral outcomes for open science and organisations for open science engaged with and where they can receive training in how to do this and who they should go to for help and support. Explain to researchers the benefit of collecting and making open data on the number of intersectoral engagements involving open science and outputs for open science to both, them as individuals and the institution, that they trust the process and understand the link to researcher assessment. Explain to researchers the benefit of collecting and intersectoral outcomes for open science and organisations engaged for open science both to them as individuals and the institution, that they trust the process and the understand the link to researcher assessment.
Training		<ul style="list-style-type: none"> Train researchers in where and how to record and make open intersectoral collaborations involving open science and outputs for open science. Train researchers in where and how to record and make open intersectoral outcomes for open science and organisations engaged for open science. Train researchers in how to find open science intersectoral collaborations. Ensure researchers know where to go to receive support in finding and achieving open science intersectoral collaborations. Try to find best practice examples and case studies of open science intersectoral collaborations that researchers can access and draw upon.
Category		OSCAM Citizen Engagement Interventions
Policy		<ul style="list-style-type: none"> Senior management approval and decision to collect the number of citizen science activities involving open science that are ongoing and completed researchers across the institution.

	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of citizen science for open science outputs, outcomes and citizen scientists engaged across the institution. • Senior management develop policies and procedures to support the collection of citizen science activities involving open science that are ongoing or completed by a researcher including clear guidelines and explanation. • Senior management develop policies and procedures to collect the number of citizen science outputs for open science, outcomes for open science and number of citizen scientists engaged by individual researchers across the institution including clear guidelines and explanation.
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record and make open the number of citizen science activities involving open science that are ongoing and completed across the institution. • Allow researchers time (and supporting budget) to record the number of citizen science outputs for open science, outcomes for open science and the number of citizen scientists engaged across the institution and make them open (where possible). • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of citizen scientist activities ongoing and completed across the institution and to support open access (where possible) • Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of citizen science, outputs and outcomes and the number of citizen scientists engaged with across the institution and to support open access (where possible) • Provide expertise and supporting in citizen science involving open science
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record and make open the number of citizen science activities involving open science ongoing and completed across the institution. • Ensure there is an appropriate database to record and make open the number of citizen science outputs for open science, outcomes for open science and the number of citizen scientists engaged with across the institution.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record and make open any citizen science activities involving open science that are ongoing and completed and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record and make open the number of citizen science outputs for open science, outcomes for open science and the number of citizen scientists engaged with and where they can receive training in how to do this and who they should go to for help and support. • Explain to researchers the benefit of collecting and making open data on the number of citizen science activities involving open science that are ongoing or completed to both, them as individuals and the institution, that they trust the process and understand the link to researcher assessment. • Explain to researchers the benefit of collecting and making open the number of citizen science outputs for open science, outcomes for open science and the number of citizen scientists engaged to both them as individuals and the institution, that they trust the process and understand the link to research assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of citizen scientist's activities involving open science that are ongoing and completed. • Train researchers in where and how to record the number of citizen science outputs for open science, outcomes for open science and the number of citizen scientists engaged in open science with. • Train researchers in citizen science for open science. • Ensure researchers know where to go to receive support in citizen science involving open science. • Try to find best practice examples and case studies of citizen science involving open science that researchers can access and draw upon.

4.4.3 Innovation

Table 37: Open Science Interventions for Valorisation – Subcategory Innovation

Indicator Group	Indicator Type	Quantitative Metric
Research Exploitation	Process	# of Openly Available Research Outputs Being Legalised
	Output	# of Openly Available Research Outputs with defined IPR
		# of Openly Available Research Outputs Patented
Outcome	# of Research Outputs with Open Licenses	
Entrepreneurial Spirit	Process	# of Open Science Spin-offs/Start-ups Creating
	Output	# of Open Science Spin-offs/Start-ups Being Created
	Outcome	# of Open Science Spin-off/Start-up Employees
		# of Open Science Spin-off/Start-up Products
		# of Open Science Spin-off/Start-up Services
Category OSCAM Research Exploitation Interventions		
Policy	<ul style="list-style-type: none"> Senior management approval and decision to collect the number of openly available research outputs that are in the process of being legalised across the institution. Senior management approval and decision to collect the number of openly available research outputs with defined IPR, patents awarded, and licenses granted across the institution. Senior management develop policies and procedures to support the collection of the number of openly available research outputs that are in the process of being legalised across the institution including clear guidelines and explanation. Senior management develop policies and procedures to collect the number of openly available research outputs with defined IPR, patents awarded and licenses granted by individual researchers across the institution including clear guidelines and explanation. 	
Resource	<ul style="list-style-type: none"> Allow researchers time (and supporting budget) to record and make open the number of openly available research outputs that are in the process of being legalised across the institution. Allow researchers time (and supporting budget) to record the number of openly available research outputs with defined IPR, patents awarded, and licenses granted make them open (where possible). Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of openly available research outputs in the process of being legalised across the institution and to support open access (where possible) Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of openly available research outputs with defined IPR, patents awarded, and licenses granted across the institution and to support open access (where possible) Provide expertise and supporting in openly available research outputs, defined IPR, Patents and Licensing 	
Repository	<ul style="list-style-type: none"> Ensure there is an appropriate database to record and make open the number of openly available research outputs that are currently in the process of being legalised across the institution. Ensure there is an appropriate database to record and make open the number of openly available research outputs with defined IPR, patents awarded and licenses granted across the institution. 	
Awareness Raising	<ul style="list-style-type: none"> Ensure researchers know that they should record and make open openly available research outputs that are currently in the process of being legalised and where they can receive training in how to do this and who they should go to for help and support. Ensure researchers know that they should record and make open the number of openly available research outputs with defined IPR, patents awarded and licenses 	

	<p>granted and where they can receive training in how to do this and who they should go to for help and support.</p> <ul style="list-style-type: none"> • Explain to researchers the benefit of collecting and making openly available research outputs that are in the process of being legalised to both, them as individuals and the institution, that they trust the process and understand the link to researcher assessment. • Explain to researchers the benefit of collecting and making open openly available research outputs with defined IPR, patents awarded, and licenses granted to both them as individuals and the institution, so that they trust the process and understand the link to research assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of openly available research outputs that are in the process of being legalised. • Train researchers in where and how to record the number of openly available research outputs with defined IPR, patents awarded and licenses awarded. • Train researchers in openly available research outputs legalising, defined IPR, patents and licensing. • Ensure researchers know where to go to receive support in legalisation of research outputs, defined IPR, patents and licensing. • Try to find best practice examples and case studies of openly available research outputs defined IPR, patents and licensing citizen science that researchers can access and draw upon.
Category	OSCAM Entrepreneurial Spirit Interventions
Policy	<ul style="list-style-type: none"> • Senior management approval and decision to collect the number of open science spin-offs/starts ups that are being created or have been created across the institution. • Senior management approval and decision to collect the number of open science spin-offs/start-ups employees, products and services across the institution. • Senior management develop policies and procedures to support the collection of the number of open science spin-offs/starts ups that are being created or have been created across the institution including clear guidelines and explanation. • Senior management develop policies and procedures to collect the number of open science spin-offs/start-ups employees, products and services across the institution including clear guidelines and explanation.
Resource	<ul style="list-style-type: none"> • Allow researchers time (and supporting budget) to record and make open the number of open science spin-offs/starts ups that are being created or have been created across the institution. • Allow researchers time (and supporting budget) to record the number of open science spin-offs/start-ups employees, products and services across the institution including clear guidelines and explanation. • Ensure there is a member (or members) of staff responsible for monitoring and assisting with the collection of the number of open science spin-offs/starts ups that are being created or have been created and to support open access (where possible) • Ensure there is a member (or members) of staff responsible for monitor and assisting with the collection of the number of open science spin-offs/starts ups that are being created or have been created and to support open access (where possible) • Provide expertise and support in all aspects of open science start-ups/spin-offs
Repository	<ul style="list-style-type: none"> • Ensure there is an appropriate database to record and make open the number of number of open science spin-offs/starts ups that are being created across the institution. • Ensure there is an appropriate database to record and make open the number of number of open science spin-offs/start-ups employees, products and services across the institution.
Awareness Raising	<ul style="list-style-type: none"> • Ensure researchers know that they should record and make open, open science spin-offs/starts ups and where they can receive training in how to do this and who they should go to for help and support. • Ensure researchers know that they should record and make open the open science spin-offs/starts ups and where they can receive training in how to do this and who they should go to for help and support. • Explain to researchers the benefit of collecting and making openly available open science spin-offs/starts to both, them as individuals and the institution, that they trust the process and understand the link to researcher assessment.

	<ul style="list-style-type: none"> • Explain to researchers the benefit of collecting and making open, open science spin-offs/start ups that are being created or have being created and the number of employees, products and services these created to both them as individuals and the institution, that they trust the process and understand the link to research assessment.
Training	<ul style="list-style-type: none"> • Train researchers in where and how to record the number of open science spin-offs/start ups openly available that are being or have been created. • Train researchers in where and how to record the number of open science spin-offs/start-ups employees, products and services. • Train researchers in all aspects of Open Science Spin-off/Start-up. • Ensure researchers know where to go to receive support in Open Science Spin-off/Start-ups • Try to find best practice examples and case studies of Open Science Spin-off/Start ups that researchers can access and draw upon.

5. Next Steps

This is very much an initial draft of this intervention supporting framework and we anticipate that there will be many further iterations. The next eighteen months will allow the pilot institutions to test the framework thoroughly in their institutions and provide regular feedback on how they are finding both the indicators and the interventions to support them. Alongside this a comprehensive sector wide consultation will take place in addition to ongoing conversations with key organisations, projects and sector partners to ensure that the final OPUS framework output is thoroughly embedded and a practical and usable tool for European RPOs and RFOs. We have already identified several points to consider and ideas for how the final framework could be improved. They are:

- ***The size and scope of the framework*** is designed to be comprehensive whilst allowing individual organisations to select their priorities. Are there are areas that we have excluded and have the right categories and indicator groups been selected?
- ***The language*** is deliberately broad to allow for different interpretations of the framework. Is it informative enough? Do we have the right categories of interventions and again has anything been excluded?
- ***Practical case studies and examples*** – Should we provide examples of particular types of interventions in order to demonstrate good practice and ensure the framework is user friendly particularly providing more information about the qualified support staff that would help to implement the framework and with the monitoring, teaching and awareness raising. It may also be useful to highlight examples of repositories and databases that would work to incorporate the collection of metrics (cumulatively) and as open research repositories.
- ***Suitability for RFO's*** – This draft framework is pitched for RPOs and we need to explore have this might relate to RFOs including the interplay between the generic and open science frameworks. This may mean translating the questions into an easy to use questionnaire for RFOs. It is important to consider interventions from alternative perspectives.

End Notes

[1] There are 5 pilot organisations in OPUS. The 3 pilot RPOs are Nova University of Lisbon, University of Cyprus, and University of Rijeka. The 2 pilot RFOs are Research Council of Lithuania and Executive Agency for Higher Education, Research, Development, and Innovation Funding.

[2] We would like to thank Amanda Crowfoot, Barend Mons, Cecilia Cabello Valdés, Volker Beckmann, and Wilhelm Widmark for their input and feedback on the framework and deliverables.

[3] We would like to thank Association of European Research Libraries (LIBER), Coalition for Advancing Research Assessment (CoARA), cOAlition S, EOSC Steering Board, and European Organisation for Nuclear Research (CERN) for preliminary discussions on the framework.

[4] We would like to thank Clifford Tatum, Ismael Refols Garcia, Karel Luijben, Ludo Waltman, and Mark van de Sanden for extensive discussions on the framework and research assessment.

[5] Five types of indicators were originally considered: Input; Process; Output; Outcome; Impact. The input indicator was ruled out as this was not deemed relevant for the activities of researchers. The impact indicator was also ruled out as this typically looks at long-term and societal impact which is difficult to define and causally prove within the scope of individual researcher assessment.

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6. Appendix A – Table of Researcher Assessment Framework with Indicators and Metrics

Category	Subcategory	Indicator Group	Dimension	Indicator Type	Quantitative Metric			
Research	Proposals	Proposal Development	Generic	Process	# of Project Proposals Being Developed			
				Output	# of Project Proposals Submitted			
				Outcome	# of Project Proposals Granted			
					€ of Project Proposals Granted			
			Open	Process	# of Developing Project Proposals Openly Available			
				Output	# of Submitted Project Proposals Openly Available			
				Outcome	# of Granted Project Proposals Openly Available			
					€ of Granted Project Proposals involving Open Science			
		Methods	Methods Development	Generic	Process	# of Method Sets Being Developed		
	Output				# of Method Sets Finalised			
	Outcome				# of Method Sets Implemented			
					# of Method Sets Accessed			
					# of Method Sets Cited			
						Open	Process	# of Developing Method Sets Openly Available
							Output	# of Finalised Method Sets Openly Available
							Outcome	# of Openly Available Method Sets Implemented
			# of Openly Available Method Sets Accessed					

[Deliverable 2.1: Interventions to Test in the Pilots]

			# of Openly Available Method Sets Cited		
	Data	Data Planning	Generic	Process	# of (FAIR) Data Management Plans Being Developed
				Output	# of (FAIR) Data Management Plans Finalised
				Outcome	# of (FAIR) Data Management Plans Implemented
			Open	Process	# of (FAIR) Developing Data Management Plans Openly Available
				Output	# of (FAIR) Finalised Data Management Plans Openly Available
				Outcome	# of (FAIR) Implemented Data Management Plans Openly Available
		Data Management	Generic	Process	# of (FAIR) Data Sets Being Developed
				Output	# of (FAIR) Data Sets Finalised
					# of (FAIR) Data Sets Archived
				Outcome	# of (FAIR) Data Sets Accessed
					# of (FAIR) Data Sets Cited
			Open	Process	# of Developing (FAIR) Data Sets Openly Available
				Output	# of Finalised (FAIR) Data Sets Openly Available
					# of Archived (FAIR) Data Sets Openly Available
				Outcome	# of Openly Available (FAIR) Data Sets Accessed
					# of Openly Available (FAIR) Data Sets Cited
		Data Review	Generic	Process	# of (FAIR) Data Set Peer Reviews Being Drafted
				Output	# of (FAIR) Data Set Peer Reviews Submitted
				Outcome	# of (FAIR) Data Set Peer Reviews Accepted

[Deliverable 2.1: Interventions to Test in the Pilots]

			Open	Process	# of Draft (FAIR) Data Set Peer Reviews Openly Available
				Output	# of Submitted (FAIR) Data Set Peer Reviews Openly Available
				Outcome	# of Accepted (FAIR) Data Set Peer Reviews Openly Available
	Software	Software Development	Generic	Process	# of Software Sets Being Developed
				Output	# of Software Sets Finalised
					# of Software Sets Archived
				Outcome	# of Software Sets Accessed
					# of Software Sets Cited
			Open	Process	# of Developing Software Sets Openly Available
				Output	# of Finalised Software Sets Openly Available
					# of Archived Software Sets Openly Available
				Outcome	# of Openly Available Software Sets Accessed
					# of Openly Available Software Sets Cited
		Software Review	Generic	Process	# of Software Set Peer Reviews Being Drafted
				Output	# of Software Set Peer Reviews Submitted
				Outcome	# of Software Set Peer Reviews Accepted
			Open	Process	# of Draft Software Set Peer Reviews Openly Available
				Output	# of Submitted Software Set Peer Reviews Openly Available
				Outcome	# of Accepted Software Set Peer Reviews Openly Available
	Publications	Publication Drafting	Generic	Process	# of Publications Being Drafted

[Deliverable 2.1: Interventions to Test in the Pilots]

				Output	# of Publications Submitted
				Outcome	# of Publications Published
					# of Publications Accessed
					# of Publications Cited
			Open	Process	# of Draft Publications Openly Available
				Output	# of Submitted Publications Openly Available
				Outcome	# of Published Publications Openly Available
					# of Openly Available Publications Accessed
					# of Openly Available Publications Cited
		Publication Review	Generic	Process	# of Publication Peer Reviews Being Drafted
				Output	# of Publication Peer Reviews Submitted
				Outcome	# of Publication Peer Reviews Accepted
			Open	Process	# of Draft Publication Peer Reviews Openly Available
				Output	# of Submitted Publication Peer Reviews Openly Available
				Outcome	# of Accepted Publication Peer Reviews Openly Available
	Materials	Materials Development	Generic	Process	# of Material Sets Being Developed
				Output	# of Material Sets Finalised
				Outcome	# of Material Sets Implemented
					# of Material Sets Accessed
					# of Material Sets Cited

[Deliverable 2.1: Interventions to Test in the Pilots]

			Open	Process	# of Developing Material Sets Openly Available
				Output	# of Finalised Material Sets Openly Available
				Outcome	# of Implemented Material Sets Openly Available
					# of Openly Available Material Sets Accessed
					# of Openly Available Material Sets Cited
Education	Courses	Course Development	Generic	Process	# of Courses Being Developed
				Output	# of Courses Finalised
				Outcome	# of Courses Implemented
			Open	Process	# of Open Science Courses Being Developed
					# of Developing Courses Openly Available
				Output	# of Open Science Courses Finalised
					# of Finalised Courses Openly Available
				Outcome	# of Open Science Courses Implemented
					# of Implemented Courses Openly Available
	Resources	Resource Development	Generic	Process	# of Resources Being Developed
				Output	# of Resources Finalised
				Outcome	# of Resources Implemented
					# of Resources Accessed
					# of Resources Cited
			Open	Process	# of Open Science Resources Being Developed

[Deliverable 2.1: Interventions to Test in the Pilots]

					# of Developing Resources Openly Available
				Output	# of Open Science Resources Finalised
					# of Finalised Resources Openly Available
				Outcome	# of Open Science Resources Implemented
					# of Implemented Resources Openly Available
	Teaching	Student Teaching	Generic	Process	# of Course Hours Assigned
				Output	# of Course Hours Taught
				Outcome	# of Students Passed in Courses
			Open	Process	# of Open Science Course Hours Assigned
				Output	# of Open Science Course Hours Taught
				Outcome	# of Students Passed in Open Science Courses
					# of Students Passed in Openly Available Courses
	Supervision	Student Supervision	Generic	Process	# of Students Being Supervised
				Output	# of Students Supervised
				Outcome	# of Supervised Student Theses
					# of Supervised Students Graduated
			Open	Process	# of Students Being Supervised in Open Science
				Output	# of Students Supervised in Open Science
				Outcome	# of Supervised Student Theses Openly Available
					# of Supervised Students in Open Science Graduated

[Deliverable 2.1: Interventions to Test in the Pilots]

	Skills	Skills Development	Generic	Process	# of Skills Courses Being Followed
				Output	# of Skills Courses Completed
				Outcome	# of Skills Certificates Obtained
			Open	Process	# of Open Science Skills Courses Being Followed
				Output	# of Open Science Skills Courses Completed
				Outcome	# of Open Science Skills Certificates Obtained
Leadership	People	Staff Supervision	Generic	Process	# of Staff Being Supervised
				Output	# of Staff Supervised
				Outcome	# of Supervised Staff Theses
					# of Supervised Staff Projects
			Open	Process	# of Staff Being Supervised in Open Science
				Output	# of Staff Supervised in Open Science
				Outcome	# of Supervised Staff Theses Openly Available
					# of Supervised Staff Projects involving Open Science
	Projects	Project Management	Generic	Process	# of Projects Being Managed
				Output	# of Projects Completed
				Outcome	# of Projects Successfully Evaluated
			Open	Process	# of Projects involving Open Science Being Managed
				Output	# of Projects involving Open Science Completed
				Outcome	# of Projects involving Open Science Successfully Evaluated

[Deliverable 2.1: Interventions to Test in the Pilots]

	Organisation	Unit Management	Generic	Process	# Unit Management Positions Assigned
				Output	# Unit Management Positions Completed
					# of Agreed Unit Management Outputs
				Outcome	# of Agreed Unit Management Outcomes
			Open	Process	# Unit Management Positions in Open Science Assigned
				Output	# Unit Management Positions in Open Science Completed
					# of Agreed Unit Management Outputs involving Open Science
				Outcome	# of Agreed Unit Management Outcomes involving Open Science
	Recognition	Expert Positions	Generic	Process	# of Expert Positions Assigned
				Output	# of Expert Positions Completed
					# of Expert Position Outputs
				Outcome	# of Expert Position Outcomes
					# of Expert Achievement Awards
			Open	Process	# of Expert Positions in Open Science Assigned
				Output	# of Expert Positions in Open Science Completed
					# of Open Science Expert Position Outputs
					# of Expert Position Outputs Openly Available
				Outcome	# of Expert Position Outcomes Openly Available
					# of Expert Achievement Awards for Open Science
Valorisation	Communication	Public Writing	Generic	Process	# of Publications Being Drafted

[Deliverable 2.1: Interventions to Test in the Pilots]

				Output	# of Publications Published
				Outcome	# of Publications Accessed
					# of Publications Cited
			Open	Process	# of Draft Publications Openly Available
				Output	# of Published Publications Openly Available
				Outcome	# of Openly Available Publications Accessed
					# of Openly Available Publications Cited
		Public Speaking	Generic	Process	# of Appearances Planned
				Output	# of Appearances Made
				Outcome	# of Appearances Accessed
					# of Appearances Cited
			Open	Process	# of Appearances on Open Science Planned
				Output	# of Appearances on Open Science Given
				Outcome	# of Appearances on Open Science Accessed
					# of Appearances on Open Science Cited
					# of Appearances Openly Available
	Engagement	Intersectoral Engagement	Generic	Process	# of Intersectoral Engagements
				Output	# of Intersectoral Outputs
				Outcome	# of Intersectoral Outcomes
					# of Organisations Engaged

[Deliverable 2.1: Interventions to Test in the Pilots]

			Open	Process	# of Intersectoral Engagements involving Open Science
				Output	# of Intersectoral Outputs involving Open Science
				Outcome	# of Intersectoral Outcomes involving Open Science
					# of Organisations Engaged for Open Science
		Citizen Engagement	Generic	Process	# of Citizen Science Activities Ongoing
				Output	# of Citizen Science Activities Completed
					# of Citizen Science Outputs
				Outcome	# of Citizen Science Outcomes
					# of Citizen Scientists Engaged
			Open	Process	# of Citizen Science Activities involving Open Science Ongoing
				Output	# of Citizen Science Activities involving Open Science Completed
					# of Citizen Science Outputs involving Open Science
				Outcome	# of Citizen Science Outcomes involving Open Science
					# of Citizen Scientists Engaged in Open Science
	Innovation	Research Exploitation	Generic	Process	# of Research Outputs Being Legalised
				Output	# of Research Outputs with Defined IPR
					# of Research Outputs Patented
				Outcome	# of Research Outputs with Licenses
			Open	Process	# of Openly Available Research Outputs Being Legalised
				Output	# of Openly Available Research Outputs with Defined IPR

[Deliverable 2.1: Interventions to Test in the Pilots]

					# of Openly Available Research Outputs Patented
				Outcome	# of Research Outputs with Open Licenses
		Entrepreneurial Spirit	Generic	Process	# of Spin-offs/Start-ups Being Created
				Output	# of Spin-offs/Start-ups Created
				Outcome	# of Spin-off/Start-up Employees
					# of Spin-off/Start-up Products
					# of Spin-off/Start-up Services
			Open	Process	# of Open Science Spin-offs/Start-ups Being Created
				Output	# of Open Science Spin-offs/Start-ups Created
				Outcome	# of Open Science Spin-off/Start-up Employees
					# of Open Science Spin-off/Start-up Products
					# of Open Science Spin-off/Start-up Services