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**SUPER MoRRI – Scientific understanding and provision of an enhanced and robust monitoring system for RRI**

## **D.2.1 Implementation Plan for Monitoring Responsible Research and Innovation**

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## 1. INTRODUCTION

The purpose of the Implementation Plan for Monitoring Responsible Research and Innovation is to outline the planned main data collection activities of the SUPER MoRRI project for the full project duration. The Implementation Plan builds upon the SUPER MoRRI Strategic Plan (D1.2) that outlines the SUPER MoRRI monitoring framework. In combination, the two documents set out the basic principles for monitoring activities and provide step-by-step description of the execution of data collection.

As stipulated in the project Grant Agreement, the Implementation Plan is intended to support rigorous and efficient collection of both quantitative and qualitative data. The Implementation Plan carries the ambition of ensuring continuity from monitoring activities within the MoRRI project, while allowing for incremental adaption and improvement of both indicators and methodological approaches. The document at hand reflects the results of the critical inspection of MoRRI indicators performed as part of WP1 and reported in the Strategic Plan. Moreover, it integrates data requirements related to the emerging empirical research programme – the Case Research Plan - in WP5, and bridges with the ecosystem of concurrent H2020 Science with and for Society projects involved in exploring indicators of responsible research and innovation.

Below, the main considerations in relation to the implementation of data collection on responsible research and innovation will be presented. This will be followed by a description of the SUPER MoRRI approach to data storage, security, and sharing. The bulk of this report, however, is a presentation of the implementation plan for each of the primary data collection vehicles employed. Results stemming from each of these primary components of the implementation of the monitoring framework will be reported in one of the three Annual monitoring reports, which are the main outputs from WP2. The 1<sup>st</sup> Annual monitoring report is due in December 2020, the 2<sup>nd</sup> Annual monitoring report in April 2022, and the 3<sup>rd</sup> Annual monitoring report will be published in August 2023.

## 2. MAIN CONSIDERATIONS RELATED TO IMPLEMENTATION

The Implementation Plan includes a set of primary data vehicles, each having a separate step-by-step execution plan. It is important to note, however, that these data vehicles are interrelated in the sense that they provide data collection opportunities for studies that may rely on several sources simultaneously. For example, a study on the effect of universities' use of responsible evaluation and promotion schemes for the behaviour of individual researchers would likely draw on data from both the Country Correspondent Network (CCN) study of research performing organisations and data from the Researcher Survey. The implication is that the full empirical programme needs to respond to the leading research questions of the SUPER MoRRI project, also those emerging in the context of WP5. Careful orchestration of the full composition of data generating mechanisms will enable relevant multi-level analyses.

To support high quality throughout the data collection procedures, succinct protocols will be developed for each of the components of implementation of the monitoring framework. These protocols will include appropriate pilot testing of all interview guides and questionnaires, and will demonstrate how user groups are brought into the data collection activities to co-create the final design of the studies, but also to support processes of credible contextualisation of the resulting indicators. Each of the primary data collection component, then, involve reflective translation of outputs into tangible and relevant information and metrics, that can play a role in processes of change towards more responsible practices at macro-, meso-, and micro levels.

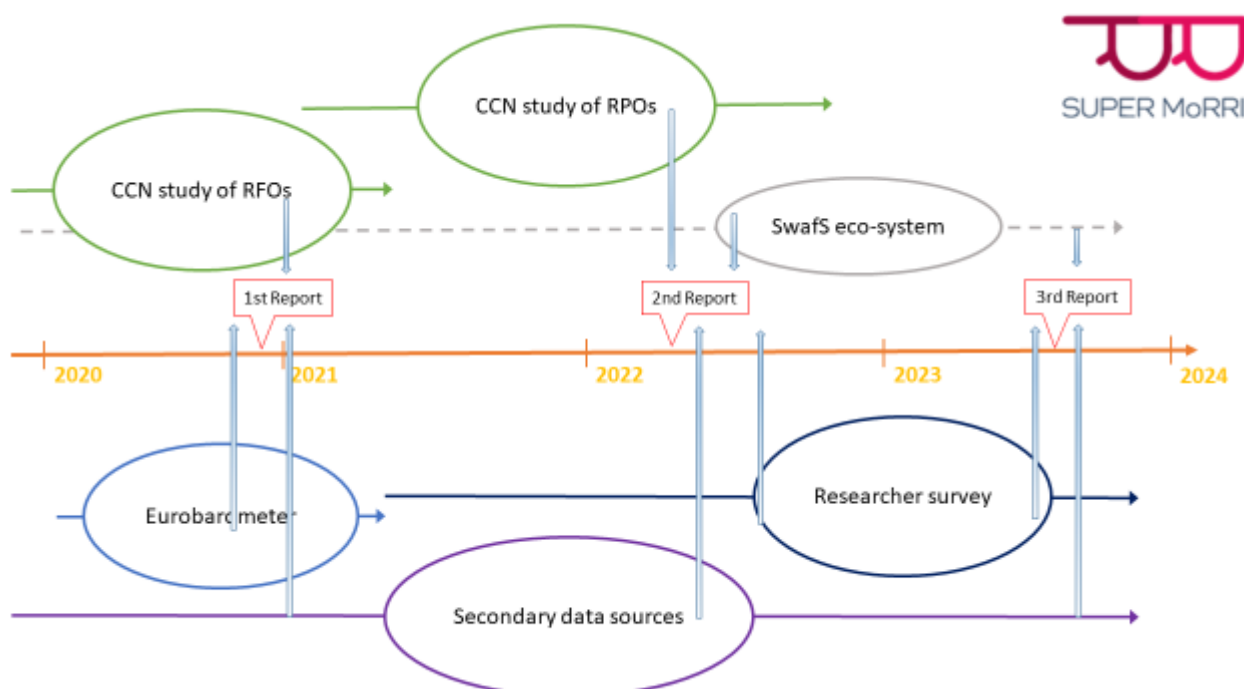
### 3. DATA STORAGE, SECURITY, AND SHARING

In accordance with the principle of responsible quantification presented in the Strategic Plan for the monitoring framework, non-sensitive, anonymized primary data underpinning tools and resources provided in SUPER MoRRI will be available to prospective users under FAIR (findable, accessible, interoperable, reusable) principles. Guidance on the responsible use of these data will also be provided. During data collection phases, an encrypted area of the SUPER MoRRI Own Cloud will constitute a secure site for storing data with personal identifiers and for enabling access to collective analyses for a restricted set of researchers. The data storage and sharing procedures for the SUPER MoRRI project are extensively described in Deliverable D8.1, the Data Management Plan, which will regulate the approach taken throughout the implementation of the empirical programme.

## 4. PRIMARY DATA COLLECTION VEHICLES

There are six primary data collection vehicles included in the overall Implementation Plan. In combination, these include both quantitative and qualitative approaches, and span both the macro-, meso-, and micro levels. The overall composition and timing of the data vehicles in the SUPER MoRRI Implementation Plan is illustrated in Figure 1 below.

**Figure 1: Timing of main data collection vehicles**



In the following sections, each of the six components will be described, and a detailed implementation scheme will be provided.

### 4.1 CCN study of Research Funding Organisations (planned for inclusion in 1st Annual Report)

The overall aim of this component of the implementation of the monitoring framework is to examine the mechanisms through which research funding organisations (RFOs) enhance responsibility in research and innovation. Such mechanisms relate to 1) setting priorities for research (e.g. inclusion of stakeholders in deciding which areas of research to support and which societal needs to give priority to in the composition of funding schemes); 2) designing responsible funding instruments (e.g. developing funding instruments that reduce perverse effects of publication pressures or cultivate fairness in career trajectories); and 3) assessment (e.g. mitigating gender biases by ensuring balanced

panels or acknowledging outreach, collegiality, and academic citizenship as carrying weight in evaluation).

For each of the countries covered by the monitoring framework, a selected number of RFOs will be examined. This could, e.g., include the main public research funding agency that employs competitive grants (e.g. the national research council) and the main private research foundation. Within each country, the national correspondent will 1) study publicly available strategic documents relating to the policies and priorities of the organisation, and 2) perform a limited number of interviews tapping into issues of priority setting, design of funding instruments, and assessment procedures. The CCN will work from a shared study protocol specifying procedures for sampling, document analyses, interviews, and quality assurance procedure. The protocol will include interview guide, informed consent forms, and reporting template. To the extent that the SUPER MoRRI international satellite partners are able to contribute to this study, the main public research funding agency and the main private research foundation of their respective country will be included in the overall sample of RFOs.

Ahead of finalisation of the study protocol, a small user-group consisting of representatives from RFOs will contribute to informing the final design of the study and interview guide. The study protocol will undergo pilot tests in Denmark (AU) and Spain (CSIC) with representatives from RFOs who meet the selection criteria. The study protocol will be submitted for ethical review by the SUPER MoRRI partner leading this study.

The national correspondent will not transcribe interviews, but will produce a one-page summary of each interview to be included in a finale case report, which will be submitted to the SUPER MoRRI partners responsible for conducting the CCN-RFO study. In addition, the national correspondent will provide a succinct list of the documents that were examined and used for analyses. The national correspondents will deliver a case report for each RFO examined. Following a quality assurance procedure (to be specified in the study protocol), the case reports will be coded using computer assisted qualitative data analyses software (e.g. NVivo), combining pre-set coding schemes and inductive coding. A provisional study synthesis, potential indicators emerging from the analyses, and descriptive summative results (tables or visualisations) will be included in the 1<sup>st</sup> Annual monitoring report and the individual case reports will be appended.

Upon completion of all tasks and delivery of a case report for each organisation, the national correspondent will transfer all on-page summaries of interviews and lists of analysed documents to a designated, encrypted space at the SUPER MoRRI Own Cloud. Following confirmation that the material is safely stored, the national correspondent will erase all locally stored versions of the study material.

Following the release of the 1<sup>st</sup> Annual monitoring report, a small user-group will be invited to discuss the relevance and quality of the results and provisional indicators, in order to inform selection of indicators, materials, examples etc. to be transferred to the SUPER MoRRI dashboard (WP3) and self-assessment platform (WP6).

The CCN study of Research Funding Organisations is planned for inclusion in the 1<sup>st</sup> Annual monitoring report (due in Dec 2020). The table below specifies the implementation steps and division of responsibilities.



**Table 1: Implementation steps in the CCN study of RFOs**

Period	Activity	Responsible
Dec 2019 – Feb 2020	Drafting of protocol for the study; including specification of objectives, RFO selection criteria, methodology for desk research and interviews, interview guide, informed consent forms, and reporting template	CSIC
Primo Mar 2020	Internal consortium QA and revisions to draft	CSIC, AU, all
Mar 26-27, 2020	CCN discussion and QA of study protocol	CSIC, AU
Apr 2020	User-group deliberation	CSIC
Apr 2020	Pilot test of interview guide and completion of study protocol	CSIC
Apr 2020	Ethical approval of study protocol	CSIC
May 2020 – Jun 2020	CCN carry out field work	AU, CSIC
Jun 30, 2020	Deadline for submission of CCN case reports, including one-page summary of interviews	CSIC, AU
Jul 2020 – Aug 2020	QA procedure for case reports	CSIC, AU
Aug 2020	Development of pre-set coding scheme	CSIC
Sep 2020	Transferring of study materials from CCN to Own Cloud	CSIC, AU
Sep 2020	Coding of case reports	CSIC
Oct 2020 – Nov 2020	Analyses and preparation of descriptives, potential indicators, and visualisations for inclusion in 1 <sup>st</sup> Annual monitoring report	CSIC, AU
Dec 2020	Presentation of provisional results in 1 <sup>st</sup> Annual monitoring report	CSIC, AU
Jan 2021	User-group deliberation	CSIC
Feb 2021 – May 2021	Final identification of ‘exemplary cases’, indicators, materials to be transferred to WP3 and WP6	CSIC

#### **4.2 Eurobarometer (planned for inclusion in 1st Annual Report)**

The overall aim of this component of the implementation of the monitoring framework is to examine values, perceptions, expectations, and knowledge of research and innovation among the European public. The Eurobarometer series has gauged issues relating to trust in scientists and scientific institutions, scientific literacy and efficacy, and patterns of engagement with science among the European public from 1989 onwards. During 2019, a new edition of the series has been prepared, and the fieldwork is scheduled for 1<sup>st</sup> quarter of 2020.

The Eurobarometer survey will be administered to approximately 28000 respondents from across EU28, and possibly additional countries. The survey instrument has been developed with an eye to the MoRRI indicators based on previous public understanding of science surveys, but more significantly based on an intention to allow for time-series indicators to be maintained. Hence, once data collection is completed, it would be possible to construct time-series on public engagement, trust, literacy, and other core indicators of the interaction of science and society. The development of the 2020 edition

of the Eurobarometer is led by the European Commission, and the field-work will be conducted by an external contractor.

Among the tasks relating to this component of the implementation of the SUPER MoRRI monitoring framework is the careful compilation of Eurobarometer time series data on public understanding of science. This task involves examining the surveys listed in the table below for relevant indicators, acquiring data, building a longitudinal database, and providing data fiches for each indicator to be included in the 1<sup>st</sup> Annual monitoring report. Data fiches should clearly convey missing data and countries as well as breaches to consistency in the item formulations.

**Table 2: Previous Eurobarometers on science and citizens**

Year	Title	Sample size
1977	<a href="#">Science and European Public Opinion (EB 9)</a>	9,044
1989	<a href="#">Europeans, Science and Technology (EB 31)</a>	11,678
1991	<a href="#">Opinions of Europeans on biotechnology (EBS 61)</a>	13,149
1992	<a href="#">Europeans, Science and Technology (EB38.1)</a>	13,024
1993	<a href="#">Biotechnology and Genetic Engineering: what Europeans think about it (EBS 80)</a>	13,032
1996	<a href="#">The Europeans and modern biotechnology (EBS 108)</a>	16,246
1999	<a href="#">Europeans and modern biotechnology (EB52.1)</a>	16,082
2001	<a href="#">Europeans, Science and Technology (EB55.2)</a>	16,029
2002	<a href="#">Europeans and biotechnology (EB 177)</a>	16,500
2005	<a href="#">Europeans, Science and Technology (EB 224)</a>	32,897
2005	<a href="#">Social values, Science and Technology (EB 225)</a>	32,897
2005	<a href="#">Europeans and Biotechnology (EB 64.3)</a>	30,000
2007	<a href="#">Scientific research in the media (EBS 282)</a>	26,717
2008	<a href="#">Young people and science (Flash EB 239)</a>	25,000
2010	<a href="#">Science and Technology (EBS 340)</a>	26,671
2010	<a href="#">Europeans and Biotechnology (EBS 341)</a>	26,671
2013	<a href="#">RRI, Science and Technology (EBS 401)</a>	27,563
2014	<a href="#">Public perceptions of science, research and innovation (EBS 419)</a>	27,910

Upon release of the 2020 data by the EC, the longitudinal database will be completed and basic descriptive statistics and graphics will be developed for inclusion in the 1<sup>st</sup> Annual monitoring report. Following publication of the 1<sup>st</sup> Annual monitoring report, a user-group will be invited to discuss the relevance and quality of the results and provisional indicators emerging from the Eurobarometer surveys. Deliberations will inform the selection of indicators to be transferred to the SUPER MoRRI dashboard (WP3) and self-assessment platform (WP6).

The Eurobarometer results are planned for inclusion in the 1<sup>st</sup> Annual monitoring report (due in Dec 2020). The table below specifies the implementation steps and division of responsibilities.

**Table 3: Implementation steps in the Eurobarometer study**

Period	Activity	Responsible
Jan 2020 – Jun 2020	Development of time-series database based on previous Eurobarometer surveys	AU
May 2020 – Sep 2020	Analyses of the 2020 and previous Eurobarometer surveys, development of provisional indicators	AU
Oct 2020 – Nov 2020	Preparation of descriptive statistics, potential indicators, and graphics for inclusion in the 1 <sup>st</sup> Annual monitoring report	AU
Dec 2020	Presentation of provisional results in 1 <sup>st</sup> Annual monitoring report	AU
Mar 2021	User-group deliberation	AU
Apr 2021 – May 2021	Final identification of indicators to be transferred to WP3 and WP6	AU

#### **4.3 Secondary data sources (planned for inclusion in 1st Annual Report with updates in 2nd and 3rd Annual Reports)**

The overall aim of this component of the implementation of the monitoring framework is to gather relevant secondary data sources that can provide information of national contexts of research and innovation and provide indicators of responsible research and innovation across the countries covered by the SUPER MoRRI monitoring framework. The secondary data will be useful in describing the current state of research and innovation in each country. Moreover, several of the secondary data streams offer time series indicators, which may contribute to analyses of developments in responsible research and innovation over time. The information will also be used to provide basis for comparison between countries or as contextual data used to understand and situate the primary data collection. As such, these indicators may contribute to credible contextualisation of indicators emerging in other parts of the SUPER MoRRI empirical programme.

The main sources of data have been identified. These include OECD science and technology indicators, Eurostat science, technology and innovation indicators, and She Figures. Furthermore, the European Tertiary Education Register (ETER) database provides indicators at the organisational level for a large sample of European research organisations. Finally, bibliometric databases such as Web of Science provide the possibility to design indicators of responsible research and innovation, including those developed in the context of the MoRRI project. A list of variables and indicators from each of the sources is provided below.

**Table 4: Secondary sources and indicators related to responsible research and innovation**

Source	Variable/indicator	Years
OECD	GERD as a percentage of GDP	2011-2017(18)
OECD	Government financed GERD as a percentage of GDP	2011-2016/17
OECD	Percentage of GERD financed by the government sector	2011-2016/17
OECD	Basic research expenditure as a percentage of GDP	2011-2016
OECD	Total R&D personnel per thousand total employment	2011-2017(18)
Eurostat	Share of female researchers by sectors of performance (rd_p_femres)	2009-2017(18)
Eurostat	Intramural R&D expenditure (GERD) (per inhabitant) by sectors of performance (rd_e_gerdtot)	2009-2018
Eurostat	Patent applications to the EPO by priority year	2008-2017
She Figures	Proportions of male and female scientists and engineers among the total labour force, by sex	2012;2015;2018
She Figures	Dissimilarity index for researchers in the higher education sector and government sector	2012;2015;2018
She Figures	Gender pay gap (%) in the economic activity 'Scientific research & development' and in the total economy	2009;2015;2012;2018 (2014)
She Figures	Glass Ceiling Index	2013-2016
She Figures	Percentage of a country's publications with a sex or gender dimension in their research content, by field of R&D, 2008-2012 and 2013-2017	2018(2008-2017)
She Figures	Number of applicants and beneficiaries of research funding, by sex	2012;2015;2018
WoS-enhanced	PP_industry – Proportion of publications authored by researchers in an organization or country that are co-authored with industrial actors.	2000-2018
WoS-enhanced	PP_Gold & Green open access publications – Proportion of articles published in gold or green journals.	20??-2018

The core remaining tasks for this component include creating a database with all indicators organised by country and year and updating the database for the duration of the SUPER MoRRI project, so that each Annual Monitoring Report may include indicators based on up-to-date secondary data. In the development of the database, information on missing years and countries must be provided for each variable. OECD, Eurostat and She Figures data can be readily entered into such a database based on accessible documents. Bibliometric data from Web of Science has to be compiled as an independent task.

Based on the established database, a country report for each member state will be created and may be used as a starting point for the work of national correspondents and will be presented in the 1<sup>st</sup> Annual monitoring report. Following the release of the 1<sup>st</sup> Annual monitoring report, a user-group will be invited to discuss the relevance and quality of the selected indicators based on secondary data. Deliberations will inform the selection of indicators to be transferred to the SUPER MoRRI dashboard (WP3) and self-assessment platform (WP6).

Another task relates to organising ETER data and creating indicators at the organisational level. The data available in ETER may be used as supporting material for the analysis of issues of responsibility in organisations. ETER data will also be used to construct a sampling frame for the CCN Study of RPOs (see below). Finally, clustering of organisations based on ETER may contribute to appropriate benchmarking procedures for organisations wishing to employ the SUPER MoRRI self-assessment or dashboard opportunities developed in WP6 and WP7.

The secondary data sources are planned for inclusion in the 1<sup>st</sup> Annual monitoring report (due in Dec 2020) but also for inclusion in the 2<sup>nd</sup> and 3<sup>rd</sup> Annual monitoring reports on the basis of updated data. The table below specifies the implementation steps and division of responsibilities.

**Table 5: Implementation steps related to secondary data**

Period	Activity	Responsible
Nov 2019	Identify secondary data sources and indicators	AU
Dec 2019 – Feb 2020	Retrieve and organise easily accessible data from OECD, Eurostat, and She Figures	AU
Dec 2019 – Feb 2020	Create bibliometric database, WoS-enhanced; capturing MoRRI baseline data plus other RRI relevant indices	ULEI
Mar 2020	Prepare tables by country	AU
26-27 Mar, 2020	Discuss tables with CCN as part of contextualisation effort	AU
Apr 2020 – May 2020	Provide precise data fiches for all OECD, Eurostat, She Figures, and bibliometric indicators	AU
Jun 2020 – Jul 2020	Create final indicators, tables and visualisations of OECD, Eurostat, She Figures, and bibliometric data for inclusion in the 1 <sup>st</sup> Annual monitoring report	AU
Aug 2020 – Nov 2020	Organising ETER data and creating indicators at the organisational level	AU
Dec 2020	Presentation of indicators in 1 <sup>st</sup> Annual monitoring report	AU
Feb 2021	User-group deliberations	AU
Jan 2022 – Mar 2022	Update of database	AU
Apr 2022	Presentation of indicators in 2 <sup>nd</sup> Annual monitoring report	AU
May 2023 – Jul 2023	Update of database	AU
Aug 2023	Presentation of indicators in 3 <sup>rd</sup> Annual monitoring report	AU

#### **4.4 CCN study of Research Performing Organisations (planned for inclusion in 2nd Annual Report)**

The overall aim of this component of the implementation of the monitoring framework is to examine responsible research practices within research performing organisations (RPOs). Such practices may

emerge as concrete activities relating to specific key areas (e.g. outreach activities, inclusion of citizen in agenda setting or research activities, training activities related to science communication), or as general governance arrangements in support of responsible conduct of research (e.g. balanced assessment committees, responsible evaluation and promotion schemes, ethics and integrity bodies).

For each of the countries covered by the monitoring framework, a selected number of RPOs will be examined. Using the European Tertiary Education Register (ETER), a stratified random sample of European Higher Education Institutions will be drawn. Stratification will be based on country and a range of organisational properties (size, research/teaching balance, multi/mono orientation, and funding profile). For countries in which public or private non-profit research organisations (such as the Max Planck Institute or Centre Nationale de la Reserche Scientifique) play an important role in the research and innovation landscape, a procedure for enriching the ETER population will be applied, so that these organisations may be part of the sample. ETER currently contains micro-data for more than 3000 European higher education institutions, so while universities are covered extensively, non-university public/private research performing organisations are poorly covered in the ETER database. Hence, an appropriate procedure for sampling these organisations needs to be specified.

Depending on the size of each country covered by the SUPER MoRRI monitoring framework, either 2, 4, or 6 RPOs will be selected for inclusion in the study. For the Republic of Cyprus, Luxembourg, and Malta, 2 RPOs will be selected. For Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Latvia, Lithuania, Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, and Sweden, 4 RPOs will be selected. For Germany, France, Italy, Poland, Spain, and the UK, 6 RPOs will be selected. To the extent that the SUPER MoRRI international satellite partners are able to contribute to this study, a convenience sample of RPOs within their respective countries will be selected.

For each RPO included in the study, the national correspondent will 1) study publicly available strategic documents relating to the activities, policies and strategic priorities of the organisation, and 2) perform a limited number of interviews tapping into issues of responsibility in related to activities and governance arrangements within the organisation. The CCN will work from a shared study protocol specifying clearly the objectives and procedures for carrying out the document analyses and interviews. The protocol will include interview guide, informed consent form, and reporting template.

Ahead of finalisation of the study protocol, a small user-group consisting of representatives from RPOs will contribute to informing the final design of the study and interview guide. The study protocol will undergo pilot tests in Denmark (AU) and Spain (CSIC) with representatives from RFOs who meet the selection criteria. The study protocol will be submitted for ethical review by the SUPER MoRRI partner leading this study.

The national correspondent will not transcribe interviews, but will produce a one-page summary of each interview to be included in a finale case report, which will be submitted to the SUPER MoRRI partners responsible for conducting the CCN-RFO study. In addition, the national correspondent will provide a succinct list of the documents that were examined in used for analyses. The national correspondents will deliver a case report for each RPO examined. Following a quality assurance procedure (to be specified in the study protocol), the case reports will be coded using computer assisted qualitative data analyses software (e.g. NVivo), combining pre-set coding schemes and inductive coding. A provisional study synthesis, potential indicators emerging from the analyses, and

descriptive summative results (tables or visualisations) will be included in the 2<sup>nd</sup> Annual monitoring report and the individual case reports will be appended.

Upon completion of all tasks and delivery of a case report for each organisation, the national correspondent will transfer all on-page summaries of interviews and lists of analysed documents to a designated, encrypted space at the SUPER MoRRI Own Cloud. Following confirmation that the material is safely stored, the national correspondent will erase all locally stored versions of the study material.

Following the release of the 2<sup>nd</sup> Annual monitoring report, a small user-group will be invited to discuss the relevance and quality of the results and provisional indicators, in order to inform selection of indicators, materials, examples etc. to be transferred to the SUPER MoRRI dashboard (WP3) and self-assessment platform (WP6).

The CCN study of Research Performing Organisations is planned for inclusion in the 2<sup>nd</sup> Annual monitoring report (due in April 2022). The table below specifies the implementation steps and division of responsibilities.

**Table 6: Implementation steps in the CCN study of RPOs**

Period	Activity	Responsible
Jan 2021 – Mar 2021	Drafting of protocol for the study; including specification of objectives, RFO selection criteria, methodology for desk research and interviews, interview guide, informed consent form, and reporting template	AU, CSIC
Mar 2021	Specification of sampling procedure and selection of RPOs for inclusion	AU
Apr 2021	Internal consortium QA and revisions to draft protocol for the study	AU, CSIC, all
May 2021	User-group discussion of the study protocol	AU
Jun 2021	Pilot test of interview guide and completion of study protocol	AU
Jun 2021	Ethical approval of study protocol	AU
Jul 2021 – Oct 2021	CCN carry out field work	AU
Oct 30, 2021	Deadline for submission of CCN case reports, including one-page summary of interviews	AU
Nov 2021	QA procedure for case reports	AU, CSIC
Nov 2021	Development of pre-set coding scheme	AU
Dec 2021	Transferring of study materials from CCN to Own Cloud	AU
Dec 2021 – Jan 2022	Coding of case reports	AU
Feb 2022 – Mar 2022	Analyses and preparation of descriptives, potential indicators, and visualisations for inclusion in 2 <sup>nd</sup> Annual monitoring report	AU, CSIC
Apr 2022	Presentation of provisional results in 2 <sup>nd</sup> Annual monitoring report	AU, CSIC
May 2022	User-group deliberation	AU
Jun 2022 – Oct 2022	Final identification of ‘exemplary cases’, indicators, materials to be transferred to WP3 and WP6	AU



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#### 4.5 Researcher Survey (planned for inclusion in 2nd and 3rd Annual Reports)

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The overall aim of this component of the implementation of the monitoring framework is to examine responsible research practices and perceptions of responsibility among European researchers. Mapping of perceptions may refer to researcher's role responsibilities towards colleagues, but also societal stakeholders, external collaborators, and citizens generally. It may include tapping into perceptions of virtues in the context of research, but it may also relate to how researchers assess the institutional structures and incentive schemes from the perspective of cultivating responsible conduct of research. Mapping of practices may cover actual behaviour of researchers in connection with key markers of responsibility (e.g. interaction with citizens and stakeholders, combatting gender inequalities, preregistration, open access publishing etc.).

The survey instrument will be partially informed by the MoRRI Researcher Survey, but will be developed based on a set of research questions consistent with the purposes of the SUPER MoRRI objectives. This includes exploring how organisational governance arrangements (as identified in the CCN study of RPOs) as well as funding arrangements (as identified in the CCN study of RFOs) interact with perceptions and practices of researchers. Moreover, the alignment of citizen perceptions of responsible research (as examined through the Eurobarometer) and researcher perspectives and practices will be considered. The instrument will be co-created with stakeholders, and will be pilot-tested across countries ahead of administration. The initial version of the instrument will be in English language. It needs to be decided whether it should be translated to other languages. All details of the Researcher Survey will be specified in a study protocol that will be submitted for ethical review by the SUPER MoRRI partner leading this study.

All active researchers from all of the RPOs included in the CCN study of RPOs will be included in the Researcher Survey. Alignment between these meso-level and micro-level interventions will enable multi-level analyses. Compilation of the Researcher Survey sample will be based on scraping institutional websites for contact details (email addresses specifically), but also departmental affiliation and position will be extracted. It needs to be decided whether PhD students will be included, but the sample will include at least Postdocs onwards. The web-version of the survey will be build using Qualtrics or a similar online survey software.

Senior management at the included organisations will be contacted to 1) inform about the upcoming survey, and 2) solicit support for the survey, which may include email-endorsement of the study internally at the organisation before the survey is administered. Based on a consolidated distribution list, the survey will be administered by the SUPER MoRRI partner leading this study. Block-wise implementation to avoid capture by organisational spam-filters or firewalls will be pursued. The email invitation will inform clearly about the purpose of the study and provide opt-in and opt-out paths. The first page of the web-survey will invite consent before turning to the survey items. Non-responding individuals (who have not explicitly opted out) will be re-approached twice with 2-week intervals.

Upon completion of data collection, basic descriptive statistics will be developed for inclusion in the 2<sup>nd</sup> Annual monitoring report. Following the release of the 2<sup>nd</sup> Annual monitoring report, a user-group consisting of researchers and other stakeholders from a range of disciplines, organisations, and countries, will be invited to discuss the relevance and quality of the results and provisional indicators emerging from the survey. Deliberations will inform the selection of indicators to be transferred to the



SUPER MoRRI dashboard (WP3) and self-assessment platform (WP6). Deliberations will also inform further analyses of data for potential inclusion in the 3<sup>rd</sup> Annual monitoring report.

Depending on the research questions of the SUPER MoRRI consortium and particular needs related to studies planned for WP5, the survey-based researcher data may be combined with bibliometric data to support analyses. If this option is chosen, it needs to be explicated in the study protocol and communicated clearly to respondents in the context of the informed consent form.

The Researcher Survey is planned for inclusion in the 2<sup>nd</sup> and 3<sup>rd</sup> Annual monitoring reports (due in April 2022 and August 2023). The table below specifies the implementation steps and division of responsibilities.

**Table 7: Implementation steps in the Researcher Survey**

Period	Activity	Responsible
Mar 2021 – Apr 2021	Drafting of protocol for the study; including specification of objectives, study population, scraping procedure, and development of survey instrument	Fraunhofer, ULEI
May 2021	Internal consortium QA and revisions to draft protocol for the study	Fraunhofer, ULEI, CSIC, AU, all
Jun 2021	User-group discussion of the study protocol including draft survey instrument	Fraunhofer
Aug 2021	Ethical approval of study protocol including survey instrument	Fraunhofer
Sep 2021	Development of web-version of the survey instrument	Fraunhofer, ULEI
Oct 2021	Substantive and technical pilot test of survey instrument	Fraunhofer, ULEI
Nov 2021 – Jan 2021	Survey administration with reminders	Fraunhofer
Feb 2022 – Mar 2022	Analyses and preparation of descriptive statistics, potential indicators, and visualisations for inclusion in 3 <sup>rd</sup> Annual monitoring report	Fraunhofer, ULEI, CSIC, AU
Apr 2022	Presentation of provisional results in 2 <sup>nd</sup> Annual monitoring report	Fraunhofer, ULEI, CSIC, AU
May 2022 – Jun 2022	User-group deliberation	Fraunhofer, ULEI
Sep 2022 – Dec 2022	Further analyses and results for inclusion in 3 <sup>rd</sup> Annual monitoring report	Fraunhofer, ULEI, CSIC, AU
Sep 2022 – Oct 2023	Final identification of indicators to be transferred to WP3 and WP6	Fraunhofer

## 4.6 SwafS Ecosystem

The SUPER MoRRI project aims to bridge between a number of projects funded under the Science with and for Society (SwafS) 2018-20 programme explicitly holding objectives related to the original set of indicators provided by MoRRI. The overall aim of the SwafS ecosystem is to serve as an environment for exchange between actors working within the SwafS research environment. To develop an understanding of what needs exist within the SwafS research community from an ecosystem, virtual skype meetings are organised monthly for the active discussion and co-creation of the ecosystem. These meetings will also function as a test-bed for resources and tools developed within the SUPER MoRRI project. For example, when developing questions for the researcher survey, it will be useful to first co-construct these questionnaires with members participating in the monthly meetings.

An additional use of the SwafS ecosystem is as a collection point for data and other resources that have been developed throughout SwafS projects. We are aware that a similar collection effort has already been completed within the RRI Tools project, however the information is difficult to navigate, and we wish to make a more easily navigable resource within the ecosystem.

A further goal of the SwafS ecosystem may be the creation of a theoretically and empirically informed RRI thesaurus for users within the SwafS community to be able to input and retrieve information regarding useful terms and definition which are prominent within RRI work. It has been made apparent that the language used by RRI practitioners is hardly translatable across disciplinary, sectoral, and linguistic contexts. The task then, is to create a thesaurus of RRI terminology which allows for clarity to be established between different actors within the RRI environment, while also preventing the preclusion of meaning remaining deeply context-specific and amenable to contextual flexibility. This highly reflexive thesaurus would require the active co-creation and maintenance by a diversity of actors within the RRI environment.

In terms of the implementation of the SUPER MoRRI empirical programme in WP2, the SwafS Ecosystem serves three functions:

1. SwafS projects funded within H2020 calls 5, 14, 15, 19 and 20 (2018, 2019 and 2020) are expected to align their efforts with SUPER MoRRI and contribute to data collection for RRI indicators. (Direction SwafS -> SUPER MoRRI). The table below specifies the implementation steps and division of responsibilities in this regard.

**Table 8: Implementation steps in relation to SwafS Ecosystem (I)**

Period	Activity	Responsible
Feb 2020	Providing names and contact details of partners participating in the SwafS ecosystem to WP2 leader for data collection	ULEI
Mar 26-27, 2020	Informing country correspondents on the participants in the SwafS ecosystem	ULEI
Ap 2020 onwards	Collecting research proposals, deliverables and data collection of SwafS Ecosystem project partners	ULEI

Actors within the ecosystem can contribute to identifying institutions which are relevant for the collection of data within WP2 and WP5. More importantly, the participants contributing to the discussions within the ecosystem will be asked to provide contact details of relevant institutional actors for data collection by country correspondents. Additionally, partners will be asked to provide the proposals for their SwafS projects, and an updated list of their project deliverables / expected outputs.

2. Communicating developments within SUPER MoRRI with regard to indicators (new and existing), data vehicles and research projects to the SwafS projects within the H2020 calls and beyond (Direction SUPER MoRRI -> Swafs)

**Table 9: Implementation steps in relation to SwafS Ecosystem (II)**

Period	Activity	Responsible
Jan 2020, 2021, 2022, 2023	Annual events initiated by SUPER MoRRI WP7 and organised by local partners on specific topics to inform the Swafs projects in the ecosystem on changes in indicators, data collection, results research etc.	ULEI & partners that host annual events
Monthly	Communication through monthly virtual meetings (see 3.)	ULEI

The ecosystem is also a platform to communicate updates with regards to the indicators which are being developed within SUPER MoRRI, since SwafS ecosystem members are tasked with providing data on these indicators throughout the duration of their projects. This will be done through the Annual Events, and also through communicating deliverables on the data collection to the partners in the Swafs Ecosystem.

3. To serve as an environment for exchange between actors working within the Swafs research environment to deepen understanding

**Table 10: Implementation steps in relation to SwafS Ecosystem (III)**

Period	Activity	Responsible
Oct 2019 onwards	Holding meetings with interested parties to discuss the developments of RRI and composition of future ecosystem	ULEI
Feb 2020 – Aug 2023	Testing tools and resources developed within WP2 and more with members of ecosystem meetings	ULEI & partners producing the data collection tools
Jan 2020 onwards	Further disclosure and navigating opportunities through alignment with RRI-Tools	ULEI, IHS
Jun 2020 onwards	Thesaurus RRI terminology	ULEI, IHS

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