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Deliverable D2.4 – Updated Exploitation and Sustainability Plan

OPENing UP new methods, indicators and tools for peer review, impact measurement and dissemination of research results

Walker, M.; Sifacaki, E.; Ross-Hellauer, T.; Gorogh, E.; Vignoli, M.; Zendel, O.; Banelytė, V.; Luzi, D.; Ruggieri, R.; Pisacane, L.; Blümel, C.; Woutersen-Windhouver, S.

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Deliverable D2.4 – Updated Exploitation and Sustainability Plan

OPENing UP new methods, indicators and tools for peer review, impact measurement and dissemination of research results

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Abbreviations

COAR	- Confederation of Open Access Repositories
DG RTD	- Director General for Research and Innovation
DORA	- Declaration on Research Assessment
EC	- European Commission
ESP	- Exploitation and Sustainability Plan
FOSTER	- Facilitate Open Science Training for Europe Research
IT	- Information Technology
NGOs	- Non-Governmental Office
OA	- Open Access
OECD	- Organisation for Economic Co-operation and Development
OSF	- Open Science Framework
OOR	- Open Online Research
OPR	- Open Peer Review
PEERE	- New Frontiers of Peer Review
RDA	- Research Data Alliance
ROI	- Return on Investment
RRI	- Responsible Research Innovation
SME	- Small and Medium-sized Enterprises
SwafS	- Science with and for Society
SWOT	- Strengths, Weaknesses, Opportunities, Threats

Executive Summary

The goal of the project is to develop a cohesive framework for the review – disseminate - assess phases of the research life cycle. As part of this work, the consortium needs to present the activities it will undertake to develop, exploit and sustain the achievements and results after the project ends.

The study begins by analyzing the strengths, weaknesses, opportunities and threats in Open Science, Open Access Publishing, Open Peer Review, Innovative Dissemination and Open Metrics. The analysis shows that the drivers in Open Access Publishing are powerful enough to guarantee its future growth, there is no such movement for Open Peer Review, Innovative Dissemination and Open Metrics.

The methodology of the study focuses on key results and findings from the survey, interviews, workshops, pilot projects focusing on Open Peer Review, Innovative Dissemination and Impact Data. A preliminary list of activities for development, exploitation and sustainability were drafted. Results that had no opportunity for exploitation and sustainability were identified and removed from the list. Outreach activities to science stakeholders and possibilities for ongoing collaboration were also confirmed. In parallel target groups, beneficiaries were confirmed, the consortium also confirmed the commitment to sustain the dissemination of results, exploit the findings for further development and develop key results into an actual solution.

The OpenUP consortium agreed on three categories of activity. **Development** activities focus on:

- Developing the Open Online Research Tool and transferring the research lifecycle to the web.
- Developing the Impact Data Taxonomy and services on the cloud.

Exploitation activities focus on:

- Exploiting key results linking the role of science communication, to dissemination and research impact.
- Exploiting Open Peer Review for Research Data in Social Sciences, and in other disciplines.
- Constructing a search strategy for open data in the biomedical field, and in other disciplines.

Sustainability activities focus on:

- Contributing to the initiatives that foster the development of a programme of data-sharing on OPR and continue research into the efficacy of OPR with PEERE and TRANSPOSE.
- Sustaining the operation of the OpenUP Hub for 3-5 years and continued provision of new content. This period will be used to explore the different scenarios for longer term operation.
- Raising awareness and inform policy makers and other stakeholders about the OpenUP policy recommendations using established networks and various target audiences.
- Encouraging the DG RTD to continue hosting relevant policy workshops involving key stakeholders from the research field, including funding national research councils, Open Science community leaders and other prominent stakeholders.
- Collaborating with DARIAH to standardize workflow for data curation, sharing and publishing a data journal using their infrastructure.
- Sharing the tools we developed for Open Peer Review for Conferences in GitHub and the OpenUP Hub.

1. Project Background

The OpenUP project analyzes the current science landscape, addressing key aspects and challenges as it goes through rapid transformation. The goal of the project is to develop a cohesive framework for the review – disseminate - assess phases of the research life cycle.

To achieve this goal, the project has:

- Identified ground - breaking mechanisms, processes and tools for peer - review for all types of research results (publications, data, software) (Open Peer Review)
- Explored, identified and classified innovative dissemination mechanisms with an outreach aim towards businesses and industry, education, and society as a whole (Innovative Dissemination)
- Analyzed a set of novel indicators that assess the impact of research results and correlate them of channels of dissemination as measured by Alternative Metrics. This is complemented by metrics and a framework for use that are tailored to open science priorities (Open Metrics).

The consortium has followed a user-centered, evidence-based approach, engaging all stakeholders (researchers, publishers, funders, institutions, industry, public) in an open dialogue, in the form of workshops, conferences and training activities. Interim results are validated via a set of seven pilot projects involving communities from four research disciplines: life sciences, social sciences, arts & humanities, energy, as well as through surveys, interviews, case studies, workshops and focus groups. The final result is a set of validated policy recommendations and guidelines for national and European stakeholders, including EU institutions.

2. Scope of this document

This document presents the OpenUP consortium's plan to exploit and sustain achievements after the end of the project.

The study is divided into several sections.

- The first, *Open Science – positioning OpenUP*, discusses OpenUP Open Science focus areas. It includes a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of Open Science and four of its key components: Open Access, Open Peer Review, Innovative Dissemination and Open Metric. The analysis identifies areas of strengths and opportunities, as well as areas where further development and attention are required.
- The second, *OpenUP approach to Exploitation and Sustainability*, presents the approach the OpenUP consortium followed to achieve the Exploitation and Sustainability plan.
- The third, *Key Results*, presents the exploitation, sustainability and development activities of the consortium after project completion.

3. Analysis of Strengths, Weaknesses, Opportunities and Threats

3.1 Definitions

For the purpose of the analysis that follows we define the following key terms.

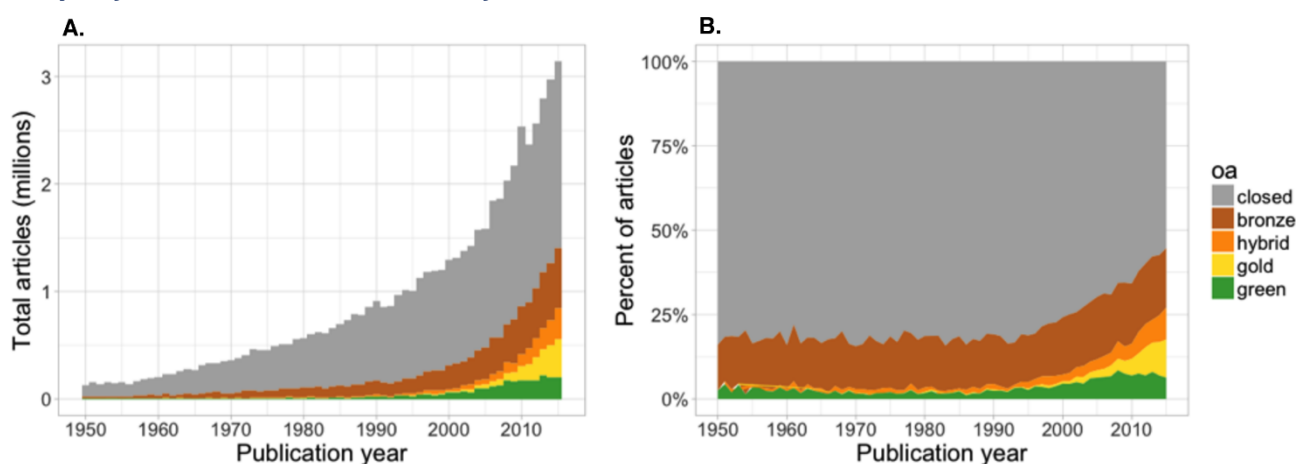
- **Open Science** is an umbrella term involving several movements to remove the barriers for sharing any kind of output, resources, methods or tools, at any stage of the research process. As such, open access to publications, open research data, open source software, open collaboration, open peer review, open notebooks, open educational resources, open monographs, citizen science, or research crowdfunding, fall into the definitions of Open Science. Even though, for the library and information domain, the focus is usually place on Open Research Data and Open Access to scientific publications. (Bueno de la Fuente, n.d.)
- **Open Access** means free of charge access to all forms of published research output, including peer-reviewed and non-peer reviewed academic journal articles, conference papers, theses, book chapters and monographs with a possible reference to Creative Commons license to promote reuse. (Chan, et al., 2002)
- **Open Peer Review** means transparent access to the information and process leading to the decision to publish. In 2017, Ross-Hellauer identified seven core traits of Open Peer Review: Open identities, Open reports, Open participation, Open interaction, Open pre-review manuscripts, Open final-version commenting and Open platforms or “decoupled review”. (Ross-Hellauer, 2017)
- **Innovative Dissemination** means dissemination that goes beyond traditional scholarly communication through journals, monographs, conferences and workshops. An activity is considered as innovative dissemination if and only if it furthers scientific understanding in the target audience. Under this definition, a citizen science project, where citizens are involved in data collection, but are not educated about the research, would not be considered innovative dissemination. (Kraker, et al., 2018)
- **Open Metrics** means free access to raw data and higher-level metrics allowing researchers, institutions, funders and policy makers to evaluate research for purposes of staff selection, funding, and policy-making. (Ulrich, 2016) further suggests that “open metrics” should meet the following criteria:
 - Logical selection of research products and data sources for metric development aligned with norms of the discipline
 - Open access to data that underlies metrics, indicators, and measurements preferably via automatic processes, like APIs;
 - Provision of software used for calculations;
 - Logical, scientific, and documented explanation on the method of metric calculation.

3.2 Open Science – positioning OpenUP

The movement towards Open Science has built up momentum to maximize re-use of scientific knowledge, speed up development and reduce inequality, receiving wide support from government, funding agencies and scientists. But different aspects of Open Science have grown at different speeds.

In 2011, approximately 17% of the 1.66 million articles published and indexed in Scopus were available in open access through journal publishers. (Laakso & Björk, 2012). In 2018, at least 28% of the scholarly literature was Open Access, This proportion is growing, driven particularly by growth in Gold and Hybrid OA. (Piwowar, et al., 2018). This is evidence that Open Access publishing is developing by itself and may require very little intervention for continued development.

Figure 1: Number of articles (A) and proportion of articles (B) with OA copies, estimated based on a random sample of 100,000 articles with Crossref DOIs.



Plan S, the initiative for open-access science publishing launched by Science Europe in September may help to accelerate the transition. The plan states that “after 1 January 2020 scientific publications on the results from research funded by public grants provided by national and European research councils and funding bodies, must be published in compliant Open Access journals or on compliant Open Access Platforms”. It also provides ten additional principles on author’s copyright, robust criteria and requirements for the services of Open Access journals, and Open Access platforms, incentives, support for Open Access infrastructures, a cap on publication fees across Europe, open archives and repositories, and the ‘hybrid’ model of publishing. (Schiltz, 2018) Plan S is backed by cOAlition S, (Schiltz, 2018), which currently comprises 13 national funding organisations and two charitable foundations from 13 countries. Together with the European Commission and the ERC, the members of cOAlition S are committed to implementing Plan-S in a coordinated way.

While these drivers behind Open Access publishing may be powerful enough to guarantee its future growth, there is no equivalent movement for Open Peer Review, Innovative Dissemination and Open Metrics. In *Open Peer Review*, there is an ongoing debate about how to avoid bias and how to handle the trade-off between reviewer anonymity and the transparency of the review process. (Ross-Hellauer, What is open peer review? A systematic review, 2017) In *Innovative Dissemination*, technology has created new opportunities for the use of social media, big data and new media but critical mass is still missing and will not be achieved without continued promotion. In *Open Metrics*, there is little sign that commercial owners of valuable data on citations/views/downloads etc. are willing to release the data to the community.

The barriers and oppositions facing Open Peer Review, Innovative Dissemination and Open Metrics can only be overcome with support from Open Science proponents, including this consortium, and through intervention at the policy level.

3.3 SWOT Analysis

In D2.3 Exploitation and Sustainability Plan we presented an initial SWOT analysis based on informal literature review on Open Science, Open Access, Open Peer Review, Innovative Dissemination and Research Impact (Walker & Fenter, 2016). The analysis was further validated through the OpenUP survey on researcher’s current perceptions and practices in peer review, impact measurement and dissemination of research results (Stančiauskas & Banelytė, 2017). Finally, our outreach activities, workshops and Pilot projects in the previous 30 months with the Open Science stakeholders (researchers, academic institutions, funders, policy makers, and the publishers) confirmed the SWOT analysis discussed in this section.

Table 1: General features of Open Science

Strengths	Weaknesses
<ul style="list-style-type: none"> • Enjoys widespread support across scientific and technological communities • Maximises re-use of scientific knowledge • Speeds up science • Reduces inequality 	<ul style="list-style-type: none"> • Perceived lack of quality • Poor reward for open practices • Generation gap between old and new communications paradigms • Prestige gap – “social networks are for losers” • Rejection of consumer technology by some scientists • Unwillingness of some scientists to share data/tools/ideas which are “not ready for prime time”
Opportunities	Threats
<ul style="list-style-type: none"> • Influences policy for Responsible Research and Innovation • Contributes to the realisation of the European Research Area and the Innovation Union • Strong support for openness from governments/funding agencies/individual scientists • Strong support from replicability movement 	<ul style="list-style-type: none"> • Opposition from traditional publishers and industry • Opposition from industry scientists and some high-ranking scientists in academia • Misuse/abuse of openness (i.e. pseudo-science, predatory publishers) • Misuse of results

Table 2: Open Access Publishing

Strengths	Weaknesses
<ul style="list-style-type: none"> • Rapidly growing • Exploits technology • Already dominant in some disciplines 	<ul style="list-style-type: none"> • Real or perceived lack of quality • Less prestige for people who publish in OA • Weak rewards and incentives for open practices

<ul style="list-style-type: none"> • More widely cited than articles in subscription journals 	<ul style="list-style-type: none"> • Small percentage of published articles. • Unaffordable Article Processing Fees for authors
Opportunities	Threats
<ul style="list-style-type: none"> • Support from government and funding organizations (e.g. Plan-S and cOAlition-S) • Support from developing countries and NGOs • Support from funding agencies • Replicability movement • Support from individual scientists • Movement for Open Access Publishing Cooperatives 	<ul style="list-style-type: none"> • Opposition from subscription publishers • Opposition from some scientists • Industry opposition

Table 3: Open Peer Review

Strengths	Weaknesses
<ul style="list-style-type: none"> • Consistent with Open Science goals of greater transparency, flexibility, inclusivity and accountability. • Offers solutions to the drawbacks of established review systems. • Credits reviewers in the publication 	<ul style="list-style-type: none"> • Conflicting benefits and drawbacks for different flavours of OPR (open identity, open reports, open participation, etc.) • Very little evidence to support or refute benefits and drawbacks • No strong movement in its favour • Unclear impact on gender and diversity issues
Opportunities	Threats
<ul style="list-style-type: none"> • Failures of classical peer review • Scientist frustration with rejection cascade • Availability of new tools for peer review • High level of support for most traits of OPR, particularly open interaction, open reports and final-version commenting. • Interest among publishers and researchers to share data and scientifically explore the efficacy of OPR systems and frame an Open Peer Review Assessment framework 	<ul style="list-style-type: none"> • Opposition to opening reviewer identities to authors • Conservatism • Risks of a “one size that fits all” solution • Varying satisfaction with peer review system across disciplines.

Table 4: Innovative Dissemination

Strengths	Weaknesses
<ul style="list-style-type: none"> Increasingly participatory and multi-directional A wealth of approaches going beyond traditional academic publishing and good practices. Integral to Open Science Uses big data, state-of-the-art technology and communication channels “Wisdom of the crowd” 	<ul style="list-style-type: none"> Weak uptake despite perceived enthusiasm Low uptake due to lack of time, insufficient funding, lack of pressure and incentives to engage in Innovative Dissemination Lack of critical mass. No science equivalent of Facebook. May weaken traditional forms of collaboration (Facebook is not a substitute for a conversation) Weak link between dissemination and research impact on science
Opportunities	Threats
<ul style="list-style-type: none"> New science communication roles, trainings, support activities foster uptake Improves communication and impact to non-academic audiences Enables gender and diversity in research and innovation by ensuring the efficient contribution of all useful viewpoints A proliferation of channels available to disseminate research Rapid evolution of technological and social conditions for the dissemination Uplift of Citizen Science 	<ul style="list-style-type: none"> “Out of sight. Out of mind” in the radar of most scientists Risks of a “one size that fits all” solution Risks of misrepresenting the real impact of the research

Table 5: Open Metrics

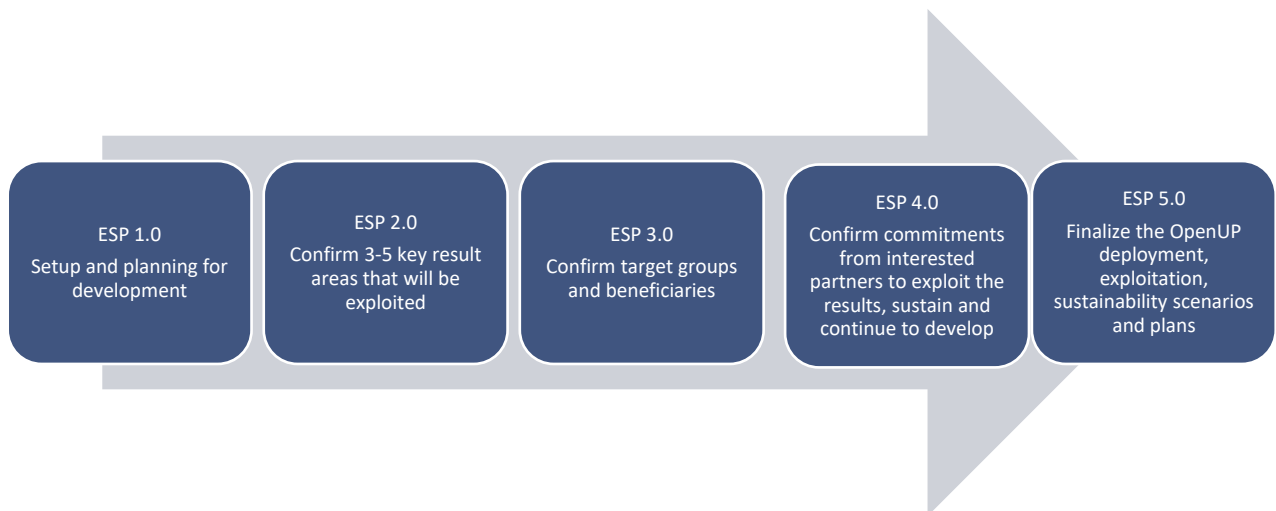
Strengths	Weaknesses
<ul style="list-style-type: none"> Evolving new methods in evaluating the impact of scholarly output Measures scholarly influence and impact on other audiences as well Measures different types of research objects (e.g. data, software tools and applications) Enable the same objects to be measured by multiple signals (e.g. comments, tweets, likes, views, downloads) 	<ul style="list-style-type: none"> Ease to game metric based evaluations Low uptake in sharing other types of research objects distorts results Lack of open metric standards Limited access to the raw data Underlying data mostly owned by commercial companies

<ul style="list-style-type: none"> Reflects measurements faster than conventional metric 	<ul style="list-style-type: none"> Impossible to scrutinize current alternative metrics Difficult to reproduce.
Opportunities	Threats
<ul style="list-style-type: none"> Availability of high-profile efforts to support alternative and open metrics (i.e. DORA, the Leiden Manifesto, The Metric Tide, Science in Transition, Next-Generation Metrics). Goes further than alternative metrics by logically selecting, openly documenting research products and data sources for metrics development in line with the disciplinary norms Ensures openness and accessibility of underlying data via automatic processes Use of open source for code ensures availability for reuse. Potentially enabled by the availability of data from repositories, willingness of commercial providers to collaborate, cloud computing and deep learning Willingness of the scientific communities to own the metrics production process. 	<ul style="list-style-type: none"> Data redistribution inhibited by the terms of use for social media and alternative platforms, and privacy regulations Can be meaningless if the underlying basis of alternative metrics (e.g. sharing, liking, sharing and use of alternative platforms) is not well understood No agreement in the scientific community on benefits compared to current metrics. Fear of a new form of measure not based on scientific quality “Not all that can be counted counts; not all that counts can be counted.”

4. OpenUP approach to Exploitation and Sustainability

The goals of OpenUP are to raise awareness on Open Science, new methods and tools for peer review, disseminating research outcomes and measuring impact. In the D2.3 Exploitation and Sustainability Plan (Walker & Fenter, D2.3 Exploitation and Sustainability Plan, 2016), we described the five steps through which we planned to develop a Exploitation and Sustainability Plan for the project (*Figure 2*). These steps have now been completed.

Figure 2: ESP - OpenUP Exploitation and Sustainability Plan Development Steps



ESP 1.0 Setup and Planning for development

Between July 2016 and June 2017, we discussed the criteria for exploitation, sustainability and development. We monitored ongoing activities, collaboration on sustainability platforms and development on key exploitation results. The monitoring focused on the needs of the research community, the opportunities and the solutions that were being developed. It also identified potential collaboration partners.

ESP 2.0 Confirmed key results that will be explored

Between March 2018 and June 2018, initial findings and key results from the survey, interviews, workshops, pilot projects focusing on Open Peer Review, Innovative Dissemination and Impact Data were reviewed and confirmed. A preliminary list of exploitable and sustainable activities was drafted, discussed and agreed upon by the partners. Results that had no opportunity for exploitation and sustainability were identified and removed from the list.

ESP 3.0 Confirmed target groups and beneficiaries

In parallel to ESP 2.0, between March 2018 to June 2018, we conducted outreach activities for Open Science stakeholders (researchers, academic institutions, funders, policy makers, and the publishers) and possibilities for ongoing collaboration were also confirmed.

In June 2018, OpenUP and FOSTER organized a joint event on Open Peer Review where participants discussed the steadily increasing role of Open Peer Review in scholarly publishing together with emerging methods and tools. During the workshop it was suggested that more research is needed and that this will require systematic analysis on the impact of various forms of OPR.

In the area of Innovative Dissemination, the Consortium implemented a range of training and awareness building activities, including a major full-day training event on “Increasing Visibility and Impact through

Innovative Dissemination” (June 2018.) The event included a presentation of OpenUP guidelines for communicating research to businesses and the general public. Participants suggested to re-examine the role of science communication, and its link to dissemination and research impact.

As far as concerns Research Impact, a series of outreach and training activities focused on “Scientific knowledge dissemination and altmetrics”, “Open Metrics on the Cloud”, “OpenUP Measuring research impact: concepts, methods, limitations and solutions”. Thanks to these events new collaborations were established with publishers, bibliometric providers, aggregators and repositories, in particular, Scopus, Clarivate Analytics, OpenAIRE, Crossref and CORE.

Finally, in June 2018, OpenUP organized a high level expert workshop on Policy Recommendations, the workshop discussed key policy findings and recommendations from the project, together with the way the project and could contribute to future EU framework programmes and related Open Science policy.

ESP 4.0 Confirmed commitments from interested partners to exploit the results, sustain, and continue to develop

As the OpenUP key results and findings were consolidated, target groups were confirmed, the consortium also confirmed its commitment to sustain the dissemination of results, exploit findings for further development and develop key results into an actual solution. The consortium agreed that for specific key results, we will continue dissemination and sustain the collaboration and relationships established with Open Science channels and networks.

ESP 5.0 Finalize the OpenUP deployment, exploitation, sustainability scenarios and plans

Between July to November 2018, results from ESP 1-4 were integrated in this report and reviewed by OpenUP partners. In parallel, Policy Recommendations were disseminated to policy makers, institution decision makers, members of association and learned societies, funders, publishers, librarians, members of expert groups, and related H2020 projects including OpenAIRE, FOSTER, DARIAH, TRANSPOSE, Open Knowledge Maps, RRI tools and Supera Project. A landscape scan of national and European funding opportunities was also undertaken, and ideas, scope, risks and next steps were discussed.

4.1 Results of OpenUP Exploitation and Sustainability Activities

From the discussions in ESP 2.0 through ESP 5.0, we agreed on the approach shown in *Figure 3*

Figure 3: Our post-project activities



OpenUP exploitation and sustainability activities can be grouped into four “pillars” (Open Peer Review, Innovative Dissemination, Research Impact, Policies) and three categories: Development, Exploitation and Sustainability.

The first category focuses on the **Development** of specific solutions in the Review, Disseminate and Assess cycle including support for RDA related policies. Applying the exploitation and sustainability categories in *Figure 3*, the OpenUP consortium will pursue the following **Development** activities:

- Developing the Open Online Research Tool and transferring the research lifecycle to the web. See Section 4.2.
- Developing the Impact Data Taxonomy and services on the cloud. See Section 4.3.

The second category focuses on the **Exploitation** of OpenUP key results to support RRI principles (e.g. to engage society more broadly in its research and innovation activities, increase access to scientific results, ensure gender equality, in both the research process and research content, take into account the ethical dimension, and promote formal and informal science education). The OpenUP consortium will look for opportunities to:

- Exploiting key results linking science communication, to dissemination and research impact. See Section 4.4.
- Exploiting Open Peer Review for Research Data in Social Sciences and in other disciplines. See Section 4.5.
- Constructing a search strategy for open data in the biomedical field and in other disciplines. See Section 4.6.

The main focus will be on submitting proposals to RRI calls on open science practices leading to an OpenUP Part 2. Specifically, we are evaluating several SwafS opportunities to expand the knowledge base and re-examine the role of science communication as a next phase to exploit our recommendations and close identified gaps. Key themes for these proposals will include results from our work on Open Peer Review, data sharing, and the evolving role of science communication

The third category focuses on the ***Sustainability*** of established collaborations and relationships with Open Science channels and networks (e.g. OpenAIRE, DARIAH-EU, FOSTER, TRANSPOSE, PEERE, Open Knowledge Maps, RRI Tools, RDA) allowing continued dissemination of OpenUP key results. This approach connects OpenUP results and post project progress with the ongoing activities of these channels and networks. Specific planned activities include:

- Contributing to the development of an Open Peer Review data sharing programme. See Section 4.7.
- Sustaining the OpenUP Hub. See Section 4.8.
- Promoting Policy Recommendations. See Section 4.9.
- Encouraging DG RTD to continue hosting relevant policy workshops involving key stakeholders from the research field, including funding national research councils, Open Science community leaders and other prominent stakeholders. See Section 4.9.
- Collaborating with DARIAH to standardize workflow for data curation, sharing and publishing a data journal using their infrastructure. See Section 4.10.
- Sharing the tools we developed for Open Peer Review for Conferences in GitHub and the OpenUP Hub. See Section 4.11.

4.2 Developing the Open Online Research Tool and transferring the research lifecycle to the web

Lead partner: University of Amsterdam

Goal

With the Open Online Research Tool, the immediate goal is to test the Open Online Research Tool on Zooniverse, a citizen science web portal owned and operated by the Citizen Science Alliance. The longer term goal is to strengthen OOR through an integration with Zooniverse or as a standalone web application.

Background

In Pilot 4 (Blümel, et al., 2018), we investigated whether qualitative research, in particular data analysis and data collection can be transferred online to open online groups.

The results of test rounds in Pilot 4 confirmed that online applications such as the OpenOnlineResearch (OOR) tool can enable citizens to gather and analyse data online and openly. By means of a model investing in social moderation, we demonstrated that open online interpretation of qualitative data is feasible and that yet unused parts of the research cycle can be opened to wider ranges of collaborators both within and outside academia. We learned that a simple tool such as OOR works without the need for detailed instructions. However, Input from scientists is essential for the formulation of sound research questions and instructions. Online collaboration needs moderation (either technically or by humans) to settle differences. However, we found that conflicts were rare and that participants were usually willing to collaborate.

For the Exploitation and Sustainability of the OpenOnlineResearch Tool, [Table 6](#) identifies the key users as the citizens, researchers and scientific communities interested to gather and analyse data online and openly.

Table 6: Users of Open Online Research Tool

Stakeholders	Area of Interest	Description of Exploitation and Sustainability Activity
Citizens, researchers and scientific communities	Tools and process improvements in data sharing	Continue the development of OpenOnlineResearch (OOR) leading to either an integration of OOR methodology in Zooniverse or to a strengthening of OOR.

Actions taken

Ongoing development is guaranteed by new funding approved by the University of Amsterdam. Based on the progress made within OpenUP, the UvA has confirmed its willingness to invest in the development of a service package for OOR. While OOR is designed to be open and freely available, certain users might have more elaborate needs when using the tool. The new funding will make it possible to assess these needs. In short, OOR is evolving beyond OpenUP

Actions planned

After OpenUP and without the use of OpenUP funding, we will perform a test in Zooniverse. The test will start late 2018 and run for 1 to 4 weeks, depending on participation. We expect early large-scale participation which would mean a test period of a week.

The Zooniverse test will focus on scaling up and the pitfalls we encounter. We have three methods to evaluate the final test.

- Back-end data analysis: What proportions of participants contribute observations, generate interpretations, stack interpretation, chat with each other, adjust interpretations etc?
- Analysis of quality: Researchers compare the contributions to existing research.

- Survey to participants: After their contribution has ended, participants receive an invitation for a survey about: user experience, learning outcomes, experience of collaboration, empowerment. In the analysis of the survey data, specific attention will be given to gender, class and regional differences.

The outcomes of the pilot will feed into future developments in open science in one of two ways. Either the collaboration with Zooniverse will lead to an integration of OOR methodology in Zooniverse or, OOR will develop into an independent service package.

4.3 Developing the Impact Data Taxonomy and services on the cloud

Lead partners: DZHW and Frontiers

Goals

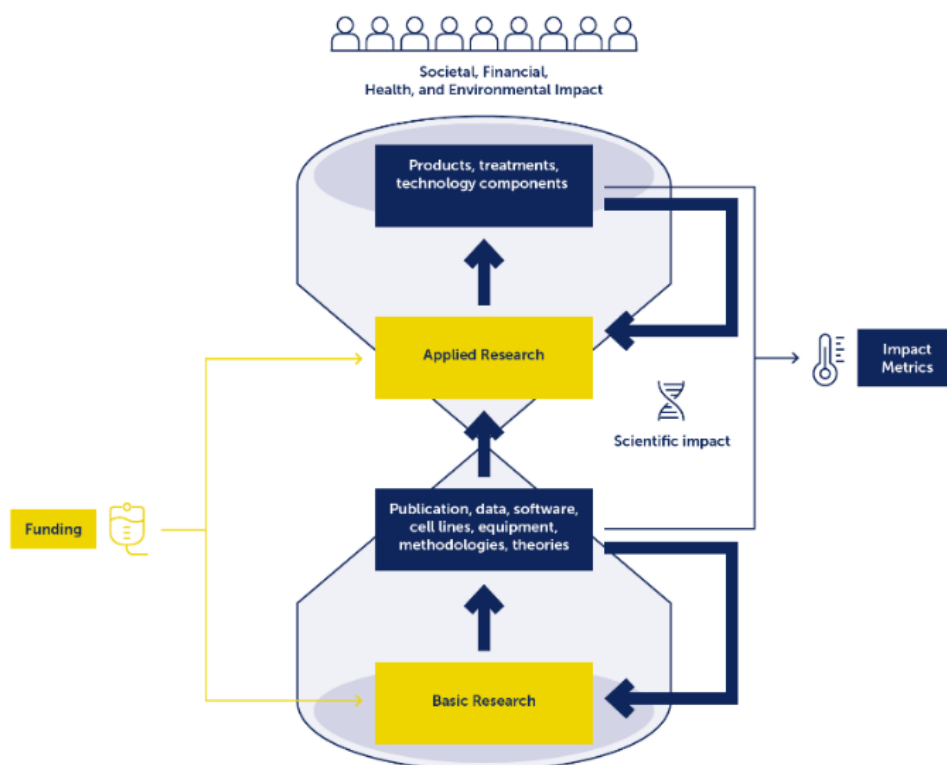
OpenUP will continue to disseminate its key findings on research impact measurement currently used and a new, open approach to research impact. OpenUP will also look for opportunities to develop an Impact Data Taxonomy and services on the European Open Science Cloud as a multi-phased plan.

- Phase 1 would define an Impact Taxonomy that enables the collection of impact metrics by mapping current research citation metadata and citation styles.
- Phase 2 would develop Impact Data Services on the cloud.

Rationale

In D5.5 Final Report on Researcher Impact (Walker, Oeben, & Walker, 2018) , we argued that the immediate Return on Investment (ROI) for basic scientific research is *scientific impact* – improvements in knowledge of our physical, biological and social world. The Return on Investment (ROI) for applied research and the long-term Return on Investment for basic research is *societal impact* (i.e. impact on health, environment, the economy, etc.).

Figure 4: The role of metrics in measuring output at different stages in the research process from basic research to applied research to societal impact



However, we emphasized that many of these impacts are hard to measure and may only be apparent decades after the original investment. This creates demand from funders and policy makers for metrics that predict impacts *before* they can be measured. We defined a preliminary conceptual framework describing the chain of events leading from the outputs of basic research (publications, data, software, cell lines, equipment, methodologies, theories etc.) to the outputs of applied research (products, treatments, technology components etc.) to societal, financial, health and environmental impact. We discussed how these impacts are currently measured in the short term (days and weeks), the medium term (years) and the long term (decades) and identified the main providers of impact metrics. We highlighted the different ways in which research metrics are used by different categories of user (researchers, institutions, national and European policymakers). Finally, we discussed the limitations of current metrics and possible solutions.

OpenUP proposes a new, open approach to impact metrics in a new platform offering a series of new impact data services. Details of the organizational and technical implementation details (e.g. hosting, performance) will be defined as the proposal wins acceptance. The main requirements of the services platform would include:

- Increased coverage

The service will include data that is not widely used in current metrics (e.g. citations of data, code, animals, laboratory equipment, experimental protocols, products, technology components, treatments, medicines). Once the relevant data become available in source systems and repositories (i.e. ORCID, Scopus, ResearchGate, OpenAIRE, publishers), the platform will also be able to consolidate and aggregate gender information

- New citation standards, and methods to link data

The service will introduce new citation standards, and new ways of counting citations for data, code, animals, laboratory equipment, experimental protocols, products, technology components, treatments and medicine. These will be based on universal or global persistent identifiers (i.e. DOI, handles, ORCID). This means that researchers will need to share their results, and publishers, bibliometric providers, aggregators and repositories will need to adopt the new citation standards. In principle the use of universal or global persistent identifiers would make it possible to link research that lead to the discovery of new physical principles (e.g. quantum physics) to the design and manufacture of devices based on such principles (e.g. transistors) to the design of systems using such devices (e.g. modern electronics).

- Collection of impact data

The service will collect the data required to calculate impact metrics (henceforward “impact data”). These will include article meta-data, links to data and code, reference lists, data for downloads, views etc.) and other data provided by publishers (social and media mentions, patents, etc.). Key to this service is collaboration with bibliometric providers (i.e. Clarivate, Scopus, Crossref) and aggregators and repositories which already collect articles and article meta-data (e.g. OpenAIRE, CORE).

The service will offer web interfaces and appropriate APIs offering users access to the data they require to reproduce current metrics (e.g. to calculate citation counts, and impact factors), to calculate metrics for specific subsets of data (e.g. all citations by a specific class of user), to produce novel metrics, and to share these metrics with the community. The service will also allow users to develop new metrics in a collaborative public manner and to share them with other users

Based on the stakeholder and user community engagements, and requirements gathered in the previous steps, the project has validated the High-Level Technical Design described in [Figure 5](#). The architecture of the system consists of the User Interface Layer, the Services Layer, the Data Access Layer, the System Enabling Layer, and the API Services.

Figure 5: OpenUP Impact Data High-Level Technical Design

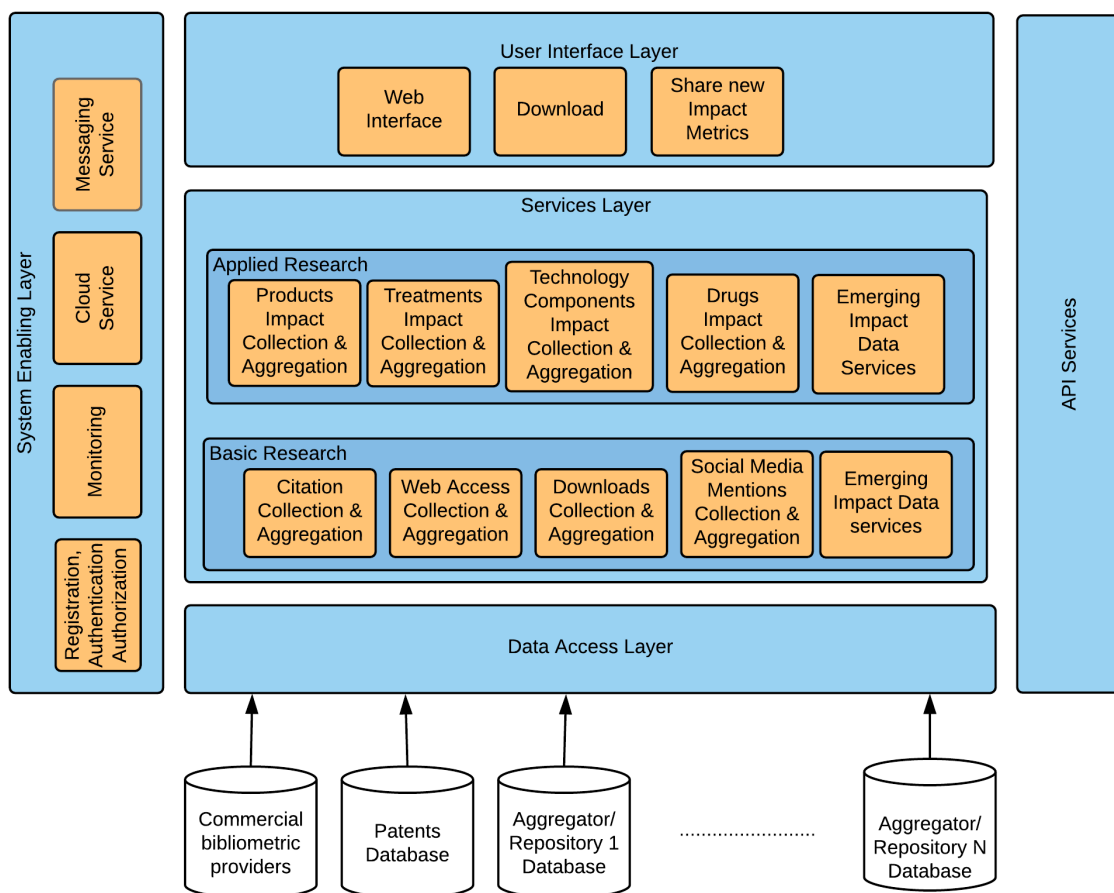


Table 7: Impact Data Services key users

Users	Area of Interest	Impact Data Services benefits
Researchers	Impact of their article, data, software	Researchers use impact metrics to guide their research and careers.
Academia, and Educators	Education, Research	Institutions use impact metrics to manage and develop their strategies for research, to compete with other institutions for prestige and to manage their students, staff and resources
Local, national and EU policy makers & funders	Policy-making	National and European policymakers use impact metrics to evaluate public spending on higher education and research
Publishers	Journal, article impact	Publishers can assess article performance
Commercial companies and research institutions	Research, Commercial	Companies and institutions analyze the impact of their research

Users	Area of Interest	Impact Data Services benefits
Industry (IT providers, start-ups and SMEs)	Commercial Education Training	IT solutions providers and new tech startups can develop next generation metrics products, tools and applications.

Based on a similarly scoped project on text and data mining, the estimated cost to implement Phase 1 and Phase II is EUR6.5M for 36 months.

Actions taken

In the interviews, development and dissemination of D5.5 Final Report on Researcher Impact, collaborations have been established with the research community, publishers, bibliometric providers, aggregators, and repositories (i.e. OpenAIRE, CORE, OpenMinTED, Crossref, Scopus, Clarivate Analytics). At the Munin Conference on Scholarly Communication, November 2018, OpenUP will present its results concerning concepts, methods, limitations and solutions for measuring research impact.

Actions planned

Post-project, developments in research impact (i.e. providers, methodologies, standards) will be monitored to establish disseminate, compare results and to collaborate.

The design concept on the Impact Taxonomy and link to the Impact Data Services will be developed, and disseminated. H2020 Framework Programmes on Enhancing the EOSC portal and connecting thematic clouds and related programmes will be monitored for opportunities to develop Phase 1 and Phase 2.

4.4 Exploiting key results linking the role of science communication to dissemination and research impact.

Lead partner: Austria Institute of Technology

Goal

The exploitation goal is to integrate the key recommendations and guidelines into a bigger and wider knowledge base on the role of science communication, and its links to dissemination and research impact.

Rationale

In Pilot 5 (Blümel, et al., 2018), we created guidelines and recommendations for researchers who want to communicate their research to target audiences beyond academia. The guidelines were tested by a European research project and improved according to their feedback and lessons learned. The guidelines have proven to be useful for shaping/defining a communication strategy for a research project targeting these two large audiences. The final version of the guidelines is available on the OpenUP Hub.

The guidelines, however, do not give enough information and guidance for composing the final communication message. The guidelines could be expanded to cover this aspect as well. Another element that could be re-evaluated and expanded is the chosen terminology and the defined scope and target groups (e.g. to include trans-disciplinary questions or guidance for addressing ulterior target groups). For future research it would be relevant to explore other ways to structure the guidelines and their content to provide additional guidance for the points that our guidelines fail to provide substantial support.

Another output of the Pilot 5 evaluation consisted of a quantitative analysis of the achieved impact metrics of the project's Twitter channel and a qualitative analysis of the reached target groups. The goal was to explore if Altmetrics can be used as a meaningful indicator for assessing impact in specific stakeholder groups. We wanted to test whether Altmetrics can provide additional information on the usage of specific groups of stakeholders. We also wanted to confirm if innovative dissemination makes research outputs more interesting, appealing, and re-usable outside academia.

Table 8: Beneficiaries

Beneficiaries	Area of Interest	Description of Exploitation and Sustainability Activity
Researchers	Disseminating research	Improve the guidelines and identify gaps to enable researchers to communicate their research to target audiences beyond academia.
Academia, and Educators	Trainings on effective dissemination	Improve the courses and programs to enable researchers to communicate their research to target audiences beyond academia.
National and EU policy makers and funders	Policy-making	Improve the support and incentives for dissemination outside academia

Actions planned

Further exploitation can be pursued by integrating these recommendations into a wider knowledge base on the role of science communication, the links to dissemination and research impact. For example, using Twitter as a platform, and using a larger dataset, further research and analysis can be conducted to produce the link between likes and re-tweets on the impact to the targeted audience.

4.5 Exploiting Open Peer Review for Research Data in Social Sciences

Lead partner: CNR

Goal

The immediate goal is to continue the analysis and development of best practices on research data management and dissemination in the Social Sciences. The longer-term goal is to verify the usefulness and transferability of these analyses to research communities in other disciplines.

Rationale

Pilot 2 (Blümel, et al., 2018) showed that data peer review is process performed by experts in the field. Data quality assessment is a complex process starting from the development of a data management plan to the publication of its results.

In Pilot 2, important drivers emerged to increase the adoption of data quality assessment, as well as some principles to incentivize scientific communities to share research data.

The guiding principles were comparability, flexibility, accessibility and reproducibility.

- Comparability means use of a uniform, scientific methodology to calculate the various statistics included in the database.
- Flexibility means analysis of results using a uniform set of procedures for the given data set, giving a significant attention to relevant characteristics (i.e. history and socio-political development).
- Accessibility means free of charge access to the data, and provision of the data in an open, no-proprietary format.
- Reproducibility means the ability to reconstruct the lifecycle by providing the raw data, the method applied, the related results as well as the explanatory documentation

For exploitation, these guiding principles should be disseminated further. It is useful at a larger scale and the transferable to research communities outside Social Sciences. The creation of data citation standards, and new tools to track data re-use should also be pursued.

Table 9: Open Peer Review for Research Data in Social Sciences

Stakeholders	Area of Interest	Description of Exploitation and Sustainability Activity
Researchers and scientific communities	Tools and process improvements in data sharing	Continue dissemination of Pilot 2 results to the Social Science communities to encourage adoption

Actions taken

The CNR team is continuing its research activities to analyse and develop best practices on research data management and dissemination. The team is scanning a number of potential target communities to identify those that respond to our goals. After which, events, workshops, focus groups will be organized to share OpenUP results and identify special features and needs in data management as well as the suitable tools to increase open participation by end-users. Structured collaboration could be established with interested communities.

Actions planned

The CNR team will explore further research collaborations at national level (both within the CNR and other research/academic communities) within Italian funding opportunities. H2020 calls for proposal in SwafS are being monitored and possible partners to build research consortium will be contacted.

4.6 Constructing a search strategy for open data in the biomedical field and in other disciplines

Lead partner: DZHW

Goals

The immediate exploitation goal is for the Berlin Institute of Health to implement the recommendations from the pilot. Longer term, we are looking at opportunities to construct a search strategy for open data.

Rationale

In Pilot 6 (Blümel, et al., 2018), we explored how biomedical research communities deal with opening up their research enterprise and how reflexive engagement (Suvi Pihkala, 2016) with research practices at their facilities might help to develop metrics and incentives for research organizations. The main findings are:

- Providing incentives for Open Data provision is difficult. Different regulations, and conflicting guidelines need to be addressed.
- Incentives for providing Open Data need to be field specific. Even in the biomedical realm, there is an enormous variety of different data cultures, that is, different stances, ways of reflecting, handling and valuing data which make a unified framework difficult. Thus, metrics for incentives should be field specific and reflect the respective epistemic practices.
- Lack of regulation exists regarding the governance of data usage. Particularly in the realm of clinical research, there is a need to define who can access, who can use and alter the data, for what purpose, and at what point in time.
- Lack of institutional and organizational support exists for Open Data and its principles. Guidance and mentorship on common practices, available tools and technologies could improve adoption.

Table 10: Reflexivity of metrics and open data target users

Target users	Area of Interest	Description of Exploitation and Sustainability Activity
Biomedical researchers and Open Science communities	Tools and process improvements in data sharing	Construction of a search strategy for open data

Actions taken

Discussions with the Berlin Institute of Health are ongoing for the continued development and uptake on the following recommendations:

- Improve training and technical expertise among their researchers for making data open (i.e. machine readable as the FAIR principles indicate).
- Improve the way data are disseminated and made visible.
- Create a strategy for promoting data sets allowing for the creation of incentives

Actions planned

In exploiting the results, we found that the construction of a search strategy for open data might be of greater relevance also to other subjects, and for the Open Science community as a whole. DZHW is currently in discussions with other organizations to develop a solution including additional funding for development. This ongoing work will continue after the end of the OpenUP project.

4.7 Contributing to the development of an Open Peer Review data sharing programme

Lead partner – Know Center

Goals

OpenUP's Exploitation and Sustainability Plan for open peer review contributes to initiatives which are working to foster the development of a programme of data-sharing and research into the efficacy of OPR. OpenUP (represented by Tony Ross-Hellauer) has entered active liaison with the PEERE and TRANSPOSE initiatives. PEERE is a COST action on data-sharing and research into peer review research; TRANSPOSE a grassroots initiative to foster greater transparency in journal policies surrounding peer review and preprints. Via these ongoing initiatives, the OpenUP OPR Exploitation and Sustainability Plan identified key stakeholders in *Table 11*.

Table 11: Open Peer Review Stakeholders

Stakeholders	Area of Interest	Description of Exploitation and Sustainability Activity
Publishers	Owner of data	Formalize data-sharing practices in peer review
Local, national and EU policy makers & funders	Policy-making	Influence to support findings and future projects

Rationale

In D3.4 Open Peer Review: Good practices and lessons learned (Görögh, et al., 2018), OpenUP identified the need for further research into peer review as a whole. Today, there is a lack of knowledge on the contribution of Open Peer Review to the scientific process. Among the key reasons given for the need for more research into OPR was to enable data-driven decision-making for this essential aspect of scientific quality assurance. There is also a lack of systematic analysis on the impact of various forms of OPR on the quality of peer review processes. The arguments for or against OPR are often based on political or philosophical preconceptions rather than on data about its efficacy. According to OpenUP workshop participants this situation is due to the limited availability of datasets, restricted to only a few publishers.

Actions taken

A recent PEERE meeting saw members (including all major publishers) agree to continue their work on a roadmap to address barriers to data-sharing and a framework to analyse the efficacy of peer review (including OPR). TRANSPOSE is currently collating a database of peer review policies with the aim of eventually incorporating this information as Crossref metadata for journals.

Action planned

OpenUP partners will pursue funding opportunities to pilot different models and study the results in collaboration with initiatives like PEERE.

4.8 Sustaining the OpenUP Hub

Lead partner – University of Athens

Goal

The sustainability goal is continued dissemination, update and availability of the OpenUP Hub’s information, tools, and guidelines.

Rationale

The OpenUP hub is a dynamic and collaborative Knowledge Base collecting information and results on the aspects of review – assess – disseminate. It is an open knowledge hub with a moderated blog and a directory/catalogue of available tools, best practices, policies and guidelines and offers a single access point for the community in all topics relevant to the triptych review-dissemination-assessment. Compliant with the Confederation of Open Access Repositories (COAR) five prerequisites for sustainable knowledge commons (Shearer, 2018), for sustainability, it is vital to works towards the integration of the OpenUP Hub into the global knowledge network and to include the community aspect right from the beginning.

The sustainability of the hub is ensured through a dual model:

- Community-driven sustainability

The hub has been designed right from the beginning as an end-to-end tool from researchers to researchers that shifts from one-way to multi-way communication opening multiple channels and giving the opportunity to all users (see [Table 12](#)) to interact with the hosted material and connect with other users. The community aspect is enhanced through the *Suggestion Box*, the *Q&A forum Ask Open Science*, and the moderated *Blog*.

- Technical-driven sustainability

By design, the hub was developed using standard open software. This guarantees its long-term usage and reduce sustainability issues such as technology lock-in, costs for software / CMS update and maintenance, associated with proprietary software solutions (It also allows easier integration of new features or updates, especially if combined with the community approach above.

Table 12: OpenUP Hub Users

Users	Area of Interest	Description of Sustainability Activities
Researchers and Young academics	Educational training and research	Post relevant materials on alternative reviewing methods, innovative dissemination techniques and research impact
Librarians	Emerging library services	Post relevant discussions on Open Peer Review, Innovative Dissemination, Alternative metrics and influences on library services
Open Science advocate	Open Science trends and topics	Post relevant Open Science materials and related discussions on emerging library services
Local, national and EU policy makers & funders	Policy-making	Post materials to support and influence future funding and projects
Publishers	Scholarly communication life cycle and publishing	Post materials to help identify emerging ideas and trends in Open Access, Open Peer Review, Innovative Dissemination and research impact

Actions taken

The University of Athens has committed to providing the following for the next 3-5 years:

- One systems administrator to review and approve new users, new blogs posts and materials for uploading
- One Content administrator
- One social media administrator to communicate and promote new material and interact and engage with the community.
- One developer (for performing updates, security, front and backend, integration of plugins etc.
- Local hosting cost

All the partners have committed to finding new materials and uploading content.

Actions planned

For the longer term operation of the OpenUP Hub three scenarios will be pursued:

- Integration as a distinct service into a major Open Science player. We estimate the following cost items:
 - Integration cost: making the necessary decisions what to include, what and how to adapt, etc.
 - Content and service updates
- Operation as an open science community based stand-alone tool. We estimate the following cost items:
 - One systems administrator to review and approve new users, new blog posts and materials for uploading
 - One developer (for performing updates, security, front and backend, integration of plugins etc.
 - One social media administrator to communicate and promote new material and interact and engage with the community.
 - One content administrator
 - Local hosting cost
- Inclusion as a service offer in another EC funded research. We estimate the following cost items:
 - One systems administrator to review and approve new users, new blogs posts and materials for uploading
 - One developer (front and backend, integration of additional functions etc.)
 - One social media administrator to communicate and promote new material and interact and engage with the community.
 - One content curator
 - Local hosting cost

Scenarios 1 and 3 ensure funding of the Hub through collaborations and discussions with Open Science projects and actors (a joint project proposal, or internal funding by the OS initiative).

Scenario 2 positions the OpenUP Hub as a separate and independent tool. A business model is required to cover the cost of operations. In this case, digital advertising revenue models are an option (e.g. charging advertisers on the basis of "Cost Per Click" and/or offer sponsorship of site sections), to avoid charging users who would like to access the content.

4.9 Promoting the Policy Recommendations

Lead partner – PPMI

Goal

The OpenUP policy recommendations are one of the key outcomes of the project. Open partners aim to continue their dissemination and promotion to inform policy makers and other stakeholders.

Rationale

OpenUP's key goal was to produce a set of concrete, practical and validated policy recommendations and actions for Open Science that promote a more open and gender-sensitive science system, and encourage the uptake of novel practices in peer review of publications, research dissemination and research impact measurement. Key stakeholder groups that the OpenUP recommendations target include national and EU-level policy makers, institutional decision makers, research funders, publishers, libraries and alternative metrics providers. If taken up, the actions would have a significant impact on practices of researchers and research institutions.

Actions taken

During the project, dissemination and communication activities were conducted with research communities, experts, and policy makers interviews, workshops, trainings and conferences. These established channels and contacts were used to disseminate the OpenUP recommendations (see table below for a detailed list of audiences and methods of dissemination).

Table 13: OpenUP's policy recommendation key audience

Key audiences targeted	Method	Dissemination and sustainability activities
Policy makers, institutional decision makers, members of associations and learned societies, funders, publishers, librarians and infrastructure providers	Written dissemination and leaflets Social media OpenUP newsletter	OpenUP partners reached out to these established contacts to disseminate OpenUP policy recommendations.
Members of expert groups and associations (Open Science Policy Platform, High level expert group on Altmetrics, Young European Associated Researchers Network, etc.)	Written dissemination and leaflets Presentations Social media	These networks of OpenUP partners received a copy of the policy recommendations.
Related H2020 projects (including OpenAIRE, FOSTER, DARIAH-EU, TRANSPOSE, Open Knowledge Maps, RRI Tools, Supera Project, etc)	Written dissemination and leaflets Social media Presentations OpenUP newsletter	The consortium partners will continue to participate in various initiatives and events organised by related projects and present key results of OpenUP. In addition, written dissemination, a dedicated newsletter and social media campaign will be employed to disseminate the OpenUP policy recommendations.

Key audiences targeted	Method	Dissemination and sustainability activities
General public	Social media	Conducted a dedicated twitter campaign and dissemination of OpenUP policy recommendations.
Researchers and research communities	Written dissemination and leaflets Social media OpenUP newsletter	OpenUP policy recommendations was disseminated to biomedical researchers, social scientists, researchers in humanities, engineering and energy involved in the pilot projects.

Actions planned

The OpenUP themes, Open Peer Review, Innovative Dissemination and Research Impact are at different level of development and acceptance among researchers. The OpenUP survey (Görögh, Schmidt, Banelyte, Stanciasukas, & Woutersen-Windhower, 2017) and country profiles (Banelytė, Stančiauskas, & Nakrošis, 2017) both indicate poor uptake of policies and initiatives in open peer review, innovative dissemination and research metrics. Nonetheless, there are important developments taking place in the broader policies at EU level as well as nationally, including 'Plan S'. Hence, as a consortium we see a window-of-opportunity for promotion of OpenUP topics and recommendations.

An important and relevant avenue for promotion of policy discussions on open peer review, innovative dissemination and research metrics was the high-level expert workshop held in Brussels in June 2018 involving close to 60 high-level stakeholders in Open Science.¹ The event was by invitation only, and OpenUP consortium managed to attract an impressive list of experts, which indicates a strong demand for this kind of events among national funders, agencies and similar types of stakeholders. We believe that a similar high-level expert workshop could be organized by the European Commission. Such workshops could serve as forum for further discussions on various Open Science topics that are at more nascent stages of acceptance and uptake among researchers. Similar to the OpenUP-organised workshop, various Open Science stakeholders at the national-level and EU-level could be invited to participate and contribute.

PPMI has approached the European Commission (DG RTD) and suggested that such events could be continued. They would no longer be tied to the OpenUP project but could still serve as a framework for policy-relevant discussion involving key stakeholders, including funders, national research councils, OS community leaders and other prominent stakeholders. DG RTD could potentially use the workshops as an avenue to discuss ongoing key policy developments at the unit or Commission level. We have also invited delegates from DG RTD to participate in the OpenUP review meeting where this suggestion could be further discussed.

¹ <http://openup-h2020.eu/news/project-conferences/openup-high-level-expert-workshop/>

4.10 Exploiting the design study on a journal for Arts and Humanities

Lead partner – University of Göttingen

Goal

In the sustain phase, OpenUP will continue collaboration to implement a data journal using the DARIAH infrastructure. The DARIAH Communication Director confirmed that this initiative is a key agenda in upcoming developments.

Rationale

In Pilot 3 (Blümel, et al., 2018), we described data sharing practices in Humanities research, and evaluated how quality assessment and (open) peer review can be applied to research data. Based on existing e-Infrastructures and the practices of Humanities research groups the pilot analysed and demonstrated the feasibility of a basic workflow that will combine the publication of data with commenting and reviewing systems. The research setting was provided by DARIAH-EU and DARIAH-DE, their extended network of Humanities research groups and by research groups related to Campus Labor at the University of Göttingen. The pilot focused on publishing data (i.e. open data, data reuse, data sharing among researchers, support of FAIR principles and Data Citation principles) rather than data management services.

The pilot demonstrates the lack of standardized workflows for data curation, sharing and publishing. Humanities data management practices at the University of Göttingen demonstrate various degrees of openness in archiving and sharing data within the research groups and with external researchers. Humanities projects and departments can take advantage of the institutional repository infrastructure or the developing DARIAH data repository services where standardized data templates, workflows and added quality assurances tools could provide a more consistent view on data publishing across the different disciplines in the Humanities. In many cases the tools are given for data publishing. As an example, psycholinguists are using a platform for data analysis which allows the publishing of the description of the data set, and a data paper in a push of a button. However, the awareness on the benefits and value of sharing data is not part of their research workflow.

Implementation of standards and guidelines for managing research data improves data sharing and data availability within Humanities projects. Increasing awareness among Humanities researchers on data management and data discoverability issues, ensures a higher data publishing adoption.

Table 14: Users impacted

Stakeholders	Area of Interest	Description Sustainability Activity
Researchers in Humanities and Open Science communities	Tools and process improvements on Open data, data reuse and data sharing	Implement the results in the development of a data journal using the DARIAH infrastructure

Actions taken

A pilot to publish data papers within a small research community using DARIAH connected infrastructure was confirmed by the DARIAH Communication Director as a key agenda in upcoming developments.

Furthermore, a data repository is already being set up at the Göttingen University Library.

Actions planned

We will continue to look at opportunities to address the following key challenges and barriers that hinder data sharing and data publishing:

- Lack of willingness to share materials found in some disciplines
- Unclear intellectual property rules and licensing
- Issues with data ownership
- Lack of clarity on the technical aspects of linking research outputs
- Lack of incentive to do the extra work (reformatting, anonymizing, making datasets platform ready)

We will also look for solutions to the following recommendations:

- Raise awareness of licensing options, data ownership issues, intellectual property issues
- Develop and implement data documentation processes
- Include steps on data curation in the regular research workflow.

4.11 Sharing our results on Open Peer Review for Conferences

Lead partner: Austria Institute of Technology

Goal

The immediate sustainability goal is to build awareness of the multiple ways in which it is possible to open up the review process. Longer term, the goal is adoption of the OPR workflow in a Conference Management System.

Rationale

In Pilot 1 (Blümel, et al., 2018), we highlighted the importance of peer review in science as an important tool for quality assurance. We also emphasized that despite its relevance, traditional peer reviewing has three major drawbacks:

- It does not scale well. The number of papers submitted at to journals and conferences is steadily rising while the number of expert reviewers is not increasing proportionally.
- Double-blindness is often compromised as reviewers have a very good overview of the participating research groups and can often infer authorship by language and topics.
- Compromised double-blindness or single-blindness can introduce bias in the evaluation of research. Additionally, unfair evaluation can strengthen the currently dominant and hinder progress.

Open peer review (OPR) is an alternative, transparent approach, which can contribute to addressing these challenges. There are multiple ways to open up the review process:

- Open Identity: Authors and reviewers are aware of each other's identity
- Open Participation: A larger community is involved in the reviews
- Open pre-review: early versions of material are public before the review
- Open Report: Review report is published alongside the publication
- Open final-version comments: commenting online possible after the verdict

In Pilot 1, we tested the practicability and impact of OPR at conferences. The first venue was the Second European Machine Vision Forum 2017 (EMVA 2017); the second venue was the eHealth2018 Master Student Competition.

We found that the features needed to conduct the proposed OPR process were not available in existing conference management software at the project start. Thus, a dedicated CMS version with OPR workflow support was created based on the popular HotCRP CMS code base.

For further exploitation, we see the following users:

Table 15: CMS users

Stakeholders	Area of Interest	Description of Exploitation and Sustainability Activity
Researchers	Open Peer Review practices and tools	Reuse of open source from Github. The link will also be provided in the OpenUP Hub
Conference organizers	Open Peer Review of conference materials	Reuse the tools and approach for the next conference
Industry (IT providers, start-ups and SMEs)	Commercial	Integrate the logic to commercially available CMS like Conference Management System COMS, EasyChair

Action taken

The resulting source code has been released to the public under an open source license at <https://github.com/mthz/hotcrp>. We are integrating the tool in the OpenUP Hub as an OPR tool. We are presenting “Testing Open Peer Review for Conferences” at the Munin Conference on Scholarly Communication, November 2018.

Actions planned

After the project, we will continue disseminating the OPR principles, the changes required to the traditional peer review workflow, and the test results with the Open Peer Review for Conferences.

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