OPERAS

open access in the european research
area through scholarly communication

OPERAS
White Paper

Platforms and
Services

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This White Paper has been prepared by the **OPERAS Platforms and Services Working Group**

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EXECUTIVE SUMMARY

OPERAS as an infrastructure supporting open scholarly communication will provide a catalogue of services to the academic community. Despite their diversity, the services should follow common rules and principles to establish a common framework where they can be included and managed. The principles concern governance, sustainability and insurance. It entails to set up contractual relationships between the infrastructure and the service providers that reflects the principles mentioned earlier. Finally, there is a need to achieve a fully functional web of services that prevents gaps and overlaps regarding the users' needs. The list and structure of OPERAS' future services has been elaborated as a part of the infrastructure design study.

1. BACKGROUND

This paper is based on the deliverable issued for the OPERAS-D project "Design plan for future services operated through OPERAS and roadmap for their development". The deliverable was one of the main outputs of the Work Package "Developing network and e-infrastructure strategy" of OPERAS-Design project.

The design plan for future services has been structured upon:

– answers to an online survey aiming at identifying missing services in the current landscape of open scholarly communication (OPERAS-D deliverable D2.3),

– the HIRMEOS project implementations,

– the results of an OPERAS focus group meeting dedicated to the validation of OPERAS' future platforms and services in January 2018,

– synthesis interviews about organisational and management issues with other Research Infrastructures (RIs),

– a compilation of documentations on the European Open Science Cloud (EOSC),

– contributions from several Working Groups within the OPERAS framework.

2. SERVICE PROVISION MODEL

2.1 PRINCIPLES

Even though each OPERAS service will follow its own path of development based on the availability of resources and its level of maturity, the aim of the OPERAS infrastructure is to set a framework that drives the development of services from common principles widely adopted throughout the community. Several recent reports and publications clearly established those principles.

2.2 FUNDAMENTAL PRINCIPLES

At a fundamental level, the paper named *Principles for Open Scholarly Infrastructure* by Lin and Cameron, widely recognized as a milestone in the collective conversation on the topic, provides OPERAS with a set of principles that can guide its plan for the development of future services: "Everything we have gained by opening content and data will be under threat if we allow the enclosure of scholarly infrastructures. We propose a set of principles by which Open Infrastructures to support the research community could be run and sustained."[1]

In particular, the following principles should be ensured:

– Governance: a system to ensure that the central services serve the community, not themselves or certain interest groups, to ensure that they are responsive to changing needs, etc;

– Sustainability: central services will need to have sustainable resources to meet their obligations and create trust;

– Insurance: the central services need to be open to create confidence and allow the community to retain control.

At the level of OPERAS, the general model entails practical question:

– How will the relationship between services and the OPERAS legal entity be organised? How can we ensure that OPERAS and the central services remain aligned?

– How are the central services positioned? How do they relate to each other, in terms of their mission, purpose, target audience, value proposition, branding?

– How do we add new central services, or more generally, determine which services can be defined and managed as "central services"?

2.3 SERVICE STRUCTURE

Service provision to support open science policies is a critical domain that has not been properly addressed yet, as several recent reports have pointed out. Thus, the Knowledge Exchange Report published in 2016, *Putting down roots, Securing the future of open access policies*, commissioned by Knowledge Exchange, explores the relationship between Open-Access (OA) policies and services. Drawing on a consultation with funders, institutions and service providers across the five Knowledge Exchange countries and beyond, it identifies the key services needed to successfully implement OA policies, and suggests priorities for action in support of an open scholarly infrastructure. Interestingly, the report mentions that "the fundamental challenge for the implementation of OA policies is

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[1] Bilder G, Lin J, Neylon C (2015)

the need to develop a fully functioning OA infrastructure from the current disparate collection of services".[2] It identifies six categories of services that support potentially the implementation of OA policies across the Knowledge Exchange countries:

Table 1: Open Access Service Categories and Subcategories

Category	Function	Subcategories	Example services and activities
Underpinning services	Storage for scholarly outputs, unique identifiers, metadata and standards	Storage Identifiers Standards Metadata	ORCID FundREF NISO DOI
Abstracting/indexing (A&I) tools	To bring together, organise and systematise OA articles published from various platforms, allowing easy discovery and access from the public	N/A	DOAJ PubMED Directory of Open Access Books (DOAB) OpenAIRE Base
Support and dissemination services	To provide information on various aspects of OA, from the generic (its rationale and objective) to the specific (individual journal and funder policies), and assist with capacity building	News/current awareness services Information/enabling services Business and technical planning advice Policy advisory services	SHERPA (Juliet, RoMEO) OpenDOAR
Repository services	To allow the deposit and discoverability of publications in OA repositories, enabling compliance with OA archiving policy provisions	Subject/national/international repositories Repository software/builders/hosting services/registries Preservation services Repository infrastructure and interoperability	DSpace EPrints Europe PubMedCentral ArXiv Zenodo Fedora
OA publishing services	Services that support or facilitate OA publishing, and non-commercial facilitators of APC payments	Fees agents APC data collection OA publishing platforms	Open Journal System Quality Open Access Market (QOAM) ESAC
Monitoring services	To allow funders and institutions to monitor the effectiveness and impact of OA policies	Impact metrics (citations) Usage analysis tools	IRUS-UK ROBOT

The most important idea in this report is that the OA infrastructure is build as a "web of services" relying closely on each other and that the services cannot be considered independent of each other. That is the reason why the list of OPERAS' future services is more comprehensive than the one identified by the end users during the usage surveys. Some services, for example, underpin other OA communication services and are not well identified by the users. The KE report brings the profitable idea that future services of OPERAS will have to be interrelated and organized in a consistent catalogue. For this reason, the plan for future services includes a "service provision mechanism" that ensures consistency across the different services.

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[2] Rob Johnson and Mattia Fosci (2016)

2.4 SERVICES SUSTAINABILITY AND GOVERNANCE

A previous report published by Knowledge Exchange in 2013, *Sustainability of open access services - Phase 3: The Collective Provision of Open Access Resources*, provides a useful analytical framework to design sustainability models for future OPERAS services. The report states that "a sustainability model defines the economic logic of an infrastructure service and explains why the service should exist. A non-profit initiative seeking to maximize mission impact requires this logic as much as a commercial firm seeking to maximize profit. Sustainability planning should be treated as an integral element of a service's design and purpose. Providing infrastructure services as public goods has inherent challenges that differ from market-based approaches and that impose specific requirements on the design of a sustainability model".[3] In the case of OPERAS, OA services should be considered as public goods. Therefore, the business models that ensure their sustainability, even though they can vary, are limited by their particular nature and must be guided by a strong governance scheme that ensures a continuous control by the academic community over the service provision. Other parts of the OPERAS Design Study deal with the general governance and business model of the infrastructure. The general scheme is that services won't be operated by the infrastructure as a legal entity, but by different operators in the OPERAS consortium. A binding relationship between the infrastructure and the service operators has to be found, locking secured sustainability through funding with control. The legal study planned in the OPERAS-D project will give more details about that point.

At a practical level, the report models the relations between sustainability and governance in a table that should be used in the future.

Table 2: Governance Continuum (Raym Crowe, 2017)

	Provider Sole Control	Shared Governance	Cooperative
Legal & Financial Control	Provider retains complete legal & financial responsibility.	Provider retains legal control & ultimate financial responsibility.	All contributors own & control the service on a collective basis.
Development Input	Provider responsible for service development decisions & strategic planning.	Contributors provide input into key service development options, operating policies & strategic direction.	Contributors provide input into all aspects of service development, operating policies & strategic direction.
Contributor Input	Contributor input similar to market-oriented services; i.e., participation or non-participation.	Contributor input guaranteed through formal participation policies & managed via contributor-selected advisory board. Includes open-source technical platform development federations.	Contributor input guaranteed through one-member/one- vote cooperative governance principles.
Other Characteristics	Easy to administer. High provider autonomy. Risk of service becoming insulated from client needs.	Requires bylaws articulating contributor roles & responsibilities. Trades provider autonomy for stable funding. Provides strong client demand feedback loop.	Requires clear demand from potential participants to launch & separate formal legal structure. No distinction between provider & contributors. Ensures service remains aligned with needs of users.

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[3] Raym Crowe (2013)

3. IDENTIFICATION OF OPERAS SERVICES

3.1 GENERAL METHOD

The design plan for future OPERAS services has identified a set of core services through a precise methodology applied during the OPERAS-D project; these services are listed below. In addition, a framework has been put in place to achieve further identification of future services with all partners, through working groups.

One of the main principles emerging from this design phase and in particular from the online survey launched to test the OPERAS proposal against users' needs, is to define future OPERAS services taking into account the different types of users. Six types of users has been identified and the different dimensions of OPERAS' work in relation with those types can be represented as follow.

Figure 1: OPERAS Users

The maturity and distribution for the different services are uneven: some services that might meet the needs of some users are not yet fully identified, or the infrastructure node from which they could be developed does not yet exist, or there is not yet consensus in the community on the direction their development should take. Nevertheless, some services already meet initial expectations: their development is already planned through specific projects.

The first meeting of the focus group, composed of the OPERAS Core Group members, has validated the first services mature enough to be supported by specific projects. Those services will be supported by existing platforms: a Certification Service based on the DOAB (Directory of Open Access Books) platform, a Discovery Service based on the Isidore platform, and a Research for Society Service based on the Hypotheses platform.

As shown in the following figures, the three services are:

1. not overlapping with publication platforms but rather complementing them at a level that could not be provided by them individually

2. not overlapping with other scholarly communication infrastructures, namely OpenAire, but rather complementing it with other types of services.

Figure 2: OPERAS Services
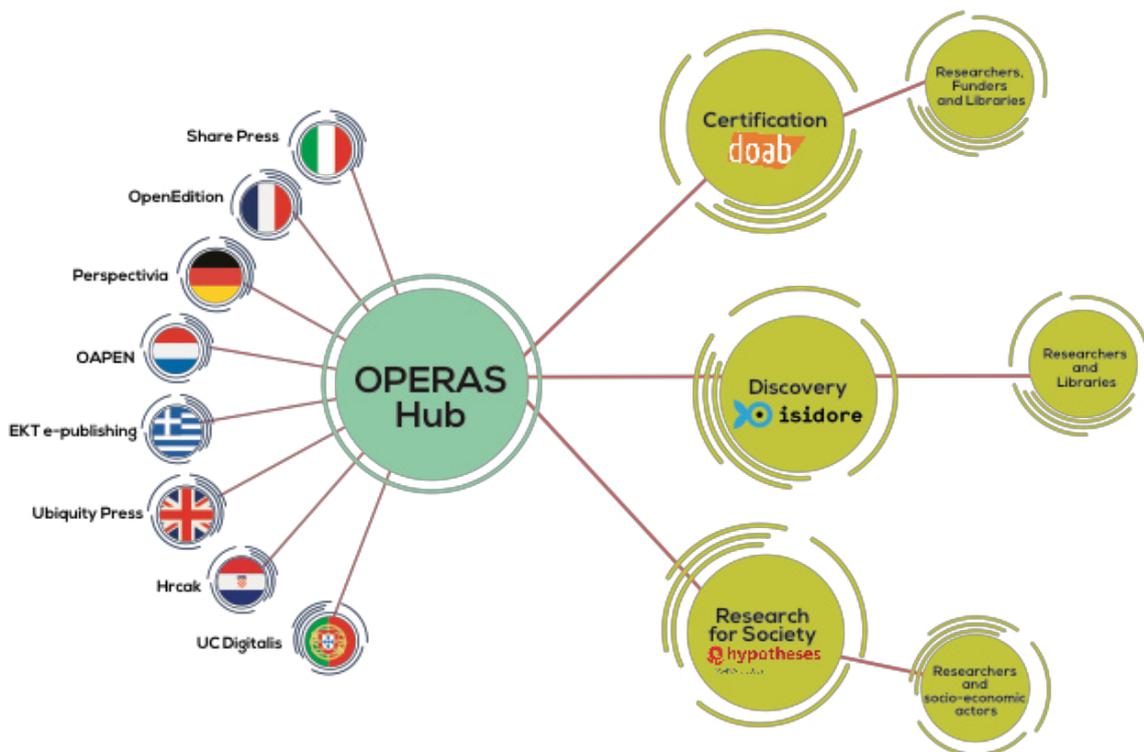
Figure 3: Why OPERAS Platforms?

The three identified platforms answer the needs of the stakeholders outside the consortium

Name	Area	Target	Identified needs	Service
OpenAIRE	All	Policy makers	Open Access monitoring + advocacy + training	**Harvesting**, indexing
OPERAS doab directory of open access books	SSH	Researchers Funders Libraries	Quality assurance Monitoring	**Certification** of scientific quality
OPERAS isidore	SSH	Researchers Readers	Finding resources	**Discovery** : Search engine through semantic tools
OPERAS hypotheses ACADEMIC BLOGS	SSH +	Researchers Socio-economic actors	Engagement	**Research for society** : New ways of communicating research

COMPLEMENTARITY

The three OPERAS platforms delivering services towards different types of stakeholders will be complemented by other services more directly addressing the consortium needs. In order to list these needs both at the consortium and the community level, Working Groups have been set up. Here is the list of the Working Groups:

– Advocacy (coordinated by Max Weber Stiftung)

– Best Practices (coordinated by OAPEN)

– Business Models (coordinated by UCL Press)

– Common Standards (coordinated by National Documentation Centre - EKT)

– Multilingualism (coordinated by University of Coimbra University)

– Platforms and Services (coordinated by OpenEdition)

– Tools (coordinated by OpenEdition)

The white papers identifying the state of art and the emerging trends are the first output of the Working Groups. In each topic, their work also aims to consider the developments needed by OPERAS partners to reach the state of the art or spearhead emerging trends. They prepare the ground for future projects to implement previously identified services.

Notwithstanding the services have not been completely identified yet, their development is planned inside a general schedule defined accordingly to the ESFRI Roadmap for OPERAS (see the Service provision mechanism below).

3.2 SERVICE PROVISION MECHANISM

The **service provision mechanism** will be structured during the preparatory phase 2018-2021 with initially a State of the art (in 2018) and a study on governance for service provision (2018 and 2019). The provision mechanism is one of the main topic of the WG Platforms and services. The WG analyses the aim and function of these services, the relationship and positioning within OPERAS and at European level, the sustainability and governance model of the services, including the mechanism for how to include new central services.

The **legal framework** for the service provision has been determined within the legal study provided through OPERAS-D as Deliverable D4.2: "Legal study and documentation" which concerns the legal framework for OPERAS and the establishment of OPERAS as legal entity. This task included external legal expertise to draw up the necessary legal documentation. X-Officio from Sweden has been chosen to work on the topic.

As mentioned before, first general overview for the service provision mechanism has been provided with interviews about organisational and management issues in distributed RI. From the interview analyses with five RIs, it appears that the service provision depends also on the type of governances and the kind of relationships existing between the central hub and the national nodes.

The following schema established in an OECD report illustrates some structural models for distributed RI.

Figure 4: Structural Models for Distributed RIs[4]
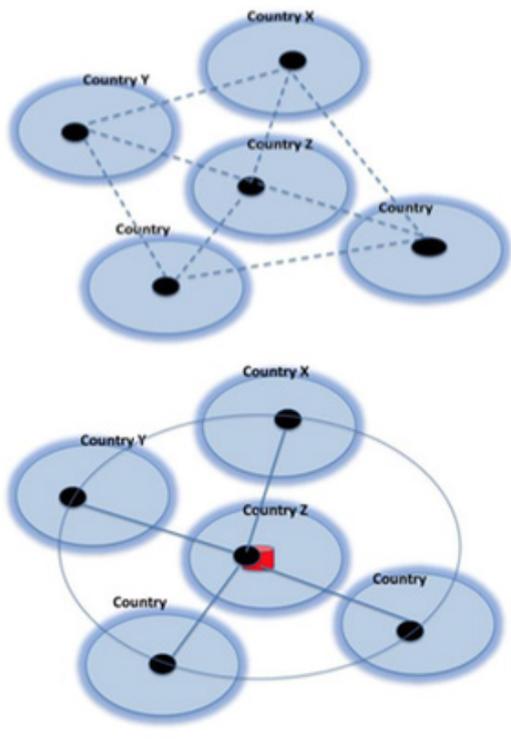
Loose connection between the distributed nodes. Common operations can be supported by one or few nodes.
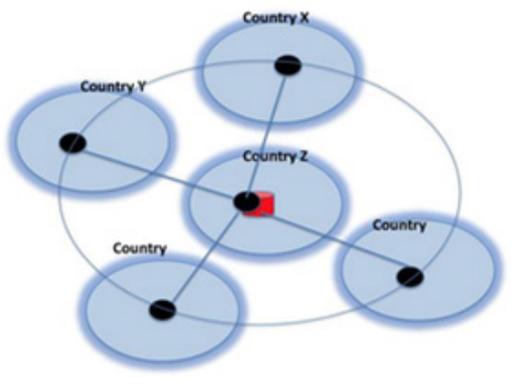
Central co-ordination

Different distributed nodes with a co-ordinating mechanism supported by one node
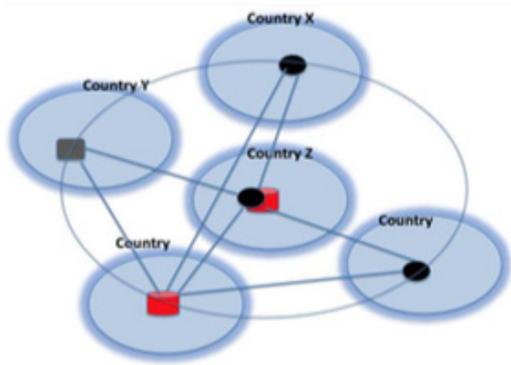
Central shared co-ordination

Different distributed nodes and operational nodes (with the same or specific activity) and a co-ordinating mechanism supported by one or several facilities or by an independent organisation
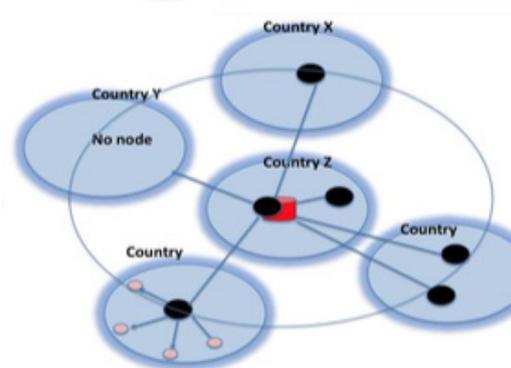
Combination

Multiple operational hubs, themselves being organised as network at the national level with a co-ordinating mechanism that can be supported by one (or several) nodes(s) or by an independent organisation. Countries can participate without operational node.

On this subject, M. Dovey (EGI/Jisc) explained that the difficulties lie in the differences between national structures and more particularly in their scale, their political environment, the organisation of research and the organisation of the research community itself. For example, single national nodes may or may not make sense, depending on the case.

Five RIs were interviewed. They are ERICs and have different relationships with national nodes.

– **BBMRI** (Biobanks and Biomolecular Resources Research Infrastructure) aims to establish, operate and develop a pan-European distributed RI of biobanks and biomolecular resources in order to facilitate the access to resources as well as facilities and to support high quality biomolecular and medical research. It is completely independent of any institution. There are 19 countries members and one international organisation. The national nodes are nominated by the government. National nodes have a national coordinator which leads the activities in the country. The situation can be very different from one country to another: in Malta, a single institution coordinates all national activities, while in Germany there are 150 biobanks.[5]

– **CERIC** (Central European Research Infrastructure Consortium) integrates and provides open access to facilities in Central and Eastern Europe, to help science and industry advance in all fields of materials, biomaterials and nanotechnology. It has a central site and one institution/country with contributes to open access facility. There are no nodes.[6]

– **DARIAH** (Digital Research Infrastructure for the Arts and Humanities) aims to enhance and support digitally-enabled research and teaching across the arts and humanities. DARIAH is related to national nodes through national coordination committees.[7]

– **EATRIS** (European Infrastructure for Translational Medicine) provides tailored access to technologies in translational research. It has 90 institutions, each country has a coordinating institution with a national scientific director and a main contact point for a country. A direct contact of the central hub with institutes are possible for a project implementation to avoid too many links and hierarchy.[8]

– **EGI** (European Grid Infrastructure) is a federated e-Infrastructure set up to provide advanced computing services for research and innovation. It has a membership at national level and single node in each country. The central hub is a legal organisation which hires the staff on facilitation side. The national nodes provide services.[9]

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[5] Source: http://www.bbmri-eric.eu/BBMRI-ERIC/about-us/ and interview.

[6] Source: https://www.ceric-eric.eu/about-us/who-we-are/ and interview.

[7] Source: https://www.dariah.eu/about/dariah-in-nutshell/ and interview.

[8] Source: https://eatris.eu/about/ and interview.

[9] Source: https://www.egi.eu/about/ and interview.

Regarding the service provision more precisely, it appears from the interviews that the service provision depends also on the type of relationships settled between the center and the national nodes or institutions. The service provision is organized differently for the five interviewed RIs according to their specificities and governance models. They all have an ERIC status. 3 of them are in implementation phase since 2014. CERIC was created mid-2014 after an EC decision.

- **BBMRI** has several hundreds of partners and a 3 levels of service provision: Headquarters, National nodes (which coordinate all the activities in the country) and individual partners. Services are provided also from the central hub for IT tools, legal and ethical services. The partners charter (quasi-legal document) is signed for every service provision.

- For **CERIC** the main service is to provide open access to facilities. The RI handles all the access activity, issue calls, and selection of the best proposal. The users can choose the facility. Normally more than one facility is required. The services provision is free for those who apply for calls and are selected.

- **DARIAH** is an ERIC since 2014 and in operational phase. Each Member State provide several services via VCC (Virtual Competence Center): the role of the RI is to federate, coordinate and to provide skills through services which exist at the international level.

- **EATRIS** is since 2014 in operational phase. It has 90 institutions, 5 platforms with a high variety of services. Each country has a coordinating institute with a national scientific director and a main contact point. Centralized service concerns project support, for industrial and European project, legal guidance, Intellectual Property etc. All institutions have a long-term framework agreement. For Industry project, a letter of engagement is signed and 5 - 8% of overheads are charged. If no contract is signed, the overheads are not charged. 2 FTE business developers are working on project support.

- **EGI** follows http://fitsm.itemo.org/ which manages all the services' life cycle, dealing also with support aspects. The services are free.

HIRMEOS project

Another step in the preparation of the service provision mechanism is the HIRMEOS project. The HIRMEOS governance framework and methodology constitutes a proof of concept for OPERAS. The project is described with more details in 4.2.1 section.

4. SERVICES CATALOGUE

The OPERAS catalogue is structured in five parts, based on the categories proposed by the Knowledge Exchange Report *Putting Down the Roots*, previously mentioned:

1. Underpinning services

2. Abstracting/indexing (A&I) tools

3. Support and dissemination services

4. Open Access publishing services

5. Monitoring services

4.1 ROADMAP

The draft roadmap for services development is described in the table below.

Table 3: Roadmap for Services Development

	2018	2019	2020	2021	2022	2023	2024	2025	206
0. Service provision mechanism									
0.1 State of the art	▓								
0.2 Study on governance for service provision	▓	▓							
0.3 HIRMEOS project	▓	▓							
0.4 Implementation			▓	▓	▓	▓	▓	▓	▓
1. Underpinning services									
1.1 HIRMEOS project: identifiers, metadata	▓	▓							
1.2 Research for society									
1.2.1 Project preparation	▓	▓							
1.2.2 Definition phase		▓							
1.2.3 Design phase			▓						
1.2.4 Implementation phase			▓	▓					
1.2.5 Follow up			▓	▓					
1.2.6 Production platform				▓	▓	▓	▓	▓	▓
2. Abstracting/indexing tools									
2.1 Certification service									
2.1.1 Certification service in HIRMEOS project	▓	▓							
2.1.2 DOAB development	▓	▓	▓	▓					
2.1.3 DOAB operation					▓	▓	▓	▓	▓
2.2 Discovery service									
2.2.1 Preparatory phase (structure, govern.)		▓							
2.2.2 Thesauri alignment			▓	▓	▓				
2.2.3 Discovery platform multilingual				▓	▓	▓	▓	▓	
2.3 Support for Web publishing									
2.3.1 Annotation libraries	▓	▓							
2.3.2 Other libraries	▓	▓	▓	▓	▓	▓	▓	▓	▓
3. Support and dissemination services									
3.1 Support for best practices adoption									
3.1.1 Guidelines	▓	▓	▓	▓					
3.1.2 Implementation					▓	▓	▓	▓	▓

3.2 Support for Standards implementation								
3.2.1 Standard list	▓	▓	▓	▓				
3.2.2 Standard implementation					▓	▓	▓	▓
3.3 Support for Open Access business models								
3.3.1 Journal flipping mechanism								
3.3.1.1 LingOA prototype	▓	▓	▓	▓				
3.3.1.2 Support to FairOA alliance					▓	▓	▓	▓
3.3.2 Library-based business model								
3.3.2.1 Prototype phase 1	▓	▓	▓	▓				
3.3.2.2 Prototype phase 2					▓	▓	▓	▓
3.3.3 OA market place								
3.3.3.1 Prototype	▓	▓	▓	▓				
3.3.3.2 Production platform					▓	▓	▓	▓
3.3.4 Other models	to be determined							
4. Open Access publishing services								
4.1 Publishing toolbox service								
4.1.1 Publishing tools catalogue	▓	▓	▓	▓				
4.1.2 Publishing toolbox	▓	▓	▓	▓				
4.1.3 Documents and trainings					▓	▓	▓	▓
5. Monitoring services								
5.1 Open Access books metrics								
5.1.1 Preparation framework agreement	▓	▓						
5.1.2 Development service prototype		▓	▓					
5.1.3 Service production					▓	▓	▓	▓

4.2 UNDERPINNING SERVICES

4.2.1 Storage, Identifiers, Standards, Metadata

In the HIRMEOS project it was decided to upgrade existing dissemination platforms in the OPERAS Consortium with rich metadata and machine-readable content allowing for efficient text and data mining from third parties. We started with a specific project within the H2020 framework programme, focusing on open access books platforms which required specific development, as books are the most difficult objects to integrate considering their specificities. The HIRMEOS project allows for the implementation of standard identifiers such as DOI, ORCID and Fundref for books, but also other more innovative types of metadata, such as reader's annotations and new usage metrics.

More importantly, HIRMEOS was used to test and deploy a common methodology that enables different partners' operating platforms based on different software and technologies to implement common standards. Based on a uniform definition of implementation levels, and a governance framework that commands distribution of work among partners, the HIRMEOS method will be used in the future development phase of OPERAS to extend standards implementation beyond the project, beyond the five dissemination platforms participating in it, and of course beyond the books themselves.

4.2.2 Research for Society Collaboration Service — Hypotheses Platform

Society and different types of socio-economic actors (media, citizen, administrations and SMEs) need more than just access to academic content. In the context of citizen science which is implied by the definition of Open Science, they need a common framework to collaborate with research teams to achieve research projects that tackle their specific concerns, namely societal challenges.

Therefore, OPERAS will prepare and deploy a Research for Society platform that addresses those needs, that will be open to be used across all disciplines, including both SSH and STM, in a multidisciplinary perspective.

The research for society collaboration service primary objectives are to promote citizen science and enhancing the research impact on society. Going beyond the current linear and vertical scholarly communication model, it will ensure and increase societal impact of research results, particularly in the humanities and social sciences.

This collaborative environment will provide a concrete technical support for citizen science by facilitating the implementation of research jointly conducted by teams of researchers and other socio-economic actors as previously defined. It will respond to three basic needs for the constitution and success of intersectoral and interdisciplinary teams: linking professionals that didn't know each other yet; access to funding sources (with an international database of calls for projects, an international network of funders, a crowdfunding tool); collaborative project management (management of rights and user profiles, connection to databases and data repositories, interoperability with other working environments, collaborative tools - in particular discussion and sharing - on textual and multimedia data).

This collaborative environment will also benefit from connections and interoperability with discovery tools in a digital document context, particularly for sharing documentary files created during collaborative research.

The research for society collaboration service will be built upon already existing tools, working on enhancing their usability and interoperability, and will be built, as a starting point, on the Hypotheses. org research community.

The Research for Society platform will be developed within a SWAFS-15: Exploring and supporting citizen science in April 2019. Others submissions for funding are already been made, in particular for realising a landscape study on open tools and for prototyping the common framework.

4.2.3 Support for Web Publishing (CDN)

During the development of HIRMEOS project, it appeared necessary and useful to offer a Content Delivery Network (CDN) service to partners, to support the implementation of the annotation service on the platforms. The CDN would be offered first by Ubiquity Press to deliver to display and annotation javascript libraries: epub.js and pdf.js. The service could be extended to other libraries that OPERAS partners could use in the future to add extended features in their web publishing platforms. The service will be proposed from the second semester of 2018 for the two annotation libraries and could be extended after the end of the project in June 2019.

4.3 ABSTRACTING/INDEXING (A&I) TOOLS

4.3.1 Certification Service

Research funders and libraries need a certification service to implement their open access policies for the former and to deliver good quality content to their users for the latter. This service has to be delivered globally because certification needs to be independent from local constraints and free from local interests; in all cases, certification must come from external authorities.

The certification platform will be implemented through the development phase of the DOAB platform during the preparation phase (2018-2021), to be fully operational in construction and implementation phase (2022-2026).

More in particular during the preparatory phase the certification service will be developed in the framework of the Hirmeos project in 2018 and half 2019. The aim is to create and implement a certification system for peer review procedures and open licences for publishing platforms at the level of publishers, books, and book chapters. The WP has the following tasks: T.4.1 Governance and quality assurance of certification service (M2-M12), T4.2 Service development (M3-M12), T.4.3 Coordination, support and validation (M13-M17).

T.4.4-4.8 Implementation on the 5 platforms (M13-M16) which are Openedition, OAPEN, UP, EKT and OBP. For more information consult the Hirmeos website.

4.3.2 Discovery Service

Researchers need an open and efficient Discovery platform to find content relevant to their research topics. Since SSH researchers read if not write in several languages, the platform should be able to support multilingual content, which is a sufficient reason to set it up globally, and index different types of content: publications of course, but also primary data and other grey literature content. The Discovery Platform will also serve as the main interface with the EOSC.

1. General roadmap

– 2019 - preparatory phase: building the governance and adapting the technical infrastructure.

– 2020/2022 - development phase: Scaling up Isidore, mapping the vocabularies in several languages using EOSC e-infra calls.

– 2021/2024 - production phase: Discovery Platform in production, users feedback, additional services, interoperability with existing services (DARIAH-CLARIN marketplace, links with Research for Society platform).

The Discovery platform needs to be both implemented and governed. During the first phase, different workshops will be organized about the governance and the distribution of responsibilities (technical, scientific, financial) between Huma-Num (coordinator, main tool provider), OPERAS (the infrastructure which will then benefit from the platform) and the other partners. This work will be started earlier in order to make it easy to organize the legal structure during the development and the production phase.

2. Strategy

The Discovery Platform is an end-user service answering the needs of the whole SSH community. It aims to gather different research projects around a same service in order to facilitate sharing, exchange, reuse. It aims also to offer a service accessible to other types of stakeholders: citizens, institutions and companies. The Discovery Platform is meant both to allow the researchers to find data and be able to reuse them and to allow other stakeholders to benefit from research results.

To build such a platform, three types of networks need to be activated or developed:

– SSH RIs, like DARIAH and CLARIN, and even more so with OPERAS;

– e-infrastructures to organize the integration in the EOSC;

– EASSH: an association for SSH in Europe linked with civil society.

The implementation phases will be achieved thanks to two H2020 calls, more precisely, the development and the production phases.

The Discovery Platform is built on ISIDORE, a search engine developed by Huma-Num (CNRS). It has already reached at least a TRL6 level. The technology of ISIDORE will be duplicated thanks to an API which will be integrated with the platform. All the data currently harvested by ISIDORE will also be available but most of the content will come from OPERAS consortium. It implies first to align the thesauri in each field in each language and then to help the providers to organize their content for the harvest. The alignment of thesauri represents a huge task and will be the main part of the work.

However, the platform implies also to work on the harvesting methodology. It will be discussed and evaluated whether OAI-PMH is the best way or if another technology has to be used and how to prepare for this shift. The Handle identifiers will also be a part of this reflexion. Indeed, each data must have, on one hand, rich metadata (this is one of the main added-value of ISIDORE) and, on the other hand, be identified through persistent identifiers.

In the end, the platform will not be limited to the ISIDORE API but will offer a wider range of services: annotation, citation tool, authentication and profile management features, recommendations, social networking.

3. Possible funding

– INFRAEOSC-4 "Connecting ESFRI infrastructures through Cluster projects" with ERICs in SSH: multilingualism; integration into EOSC

– INFRAEOSC-2 "Prototyping new innovative services" : additional services and implementation

4.4 SUPPORT AND DISSEMINATION SERVICES

4.4.1 Support for Best Practices and Adoption

This service deals with the definition and adoption of best practices that allow for a common level of quality and compliance with Open Science principles. The partners will be supported to implement the standards listed during the Preparation phase (2018-2021) and in their adoption of best practices.

Publishing is a composite activity that includes several components. Therefore, the adoption of best practices in academic publishing should address all aspects: service provision to authors, publishers agreements, peer-reviewing, editing, usage of open access licenses, dissemination, metrics and digital preservation. On each of these topics, best practices charts and lists have been elaborated by different academic and professional networks and already exist, gaining enough consensus in the community to be adopted by OPERAS consortium without the need for reinvention from the start. What has to be done is to identify the most accepted best practices for each case and plan for concrete and specific actions for their implementation by OPERAS partners.

This is a crucial domain however where best practices are not clearly established: management of the transition to Open Access. Although several "flipping mechanisms" are proposed, none is widely considered as "best practice" over others. In that domain, the debate in the academic community clearly lacks maturity.

4.4.2 Support for Standards Implementation

Establishing a minimal common set of standards within the OPERAS consortium. Based on identification of basic requirements for high quality publishing process. Listing of main actors of standards adoption and possible mediations between them and OPERAS partners.

The OPERAS Working Group for Common Standards has explored the workflows, mediums and technical standards that have recently emerged as a result of the changes brought about by the transition to Open Science. The WG has placed focus on the importance of common standards, and traces the improvements required to ensure content quality and interconnectivity for scholarly output in the SSH and beyond. See: OPERAS Common Standards White Paper

4.4.3 Support for Open Access Business Models

Support for innovative open access business models by developing shared components such as a common market place, a journal flipping mechanism and a funding model that involves libraries in supporting open access. The three components rely on existing successful services provided by FairOA, Knowledge Unlatched and Open Library of Humanities. The development of the support service will increase awareness, transparency and quality in that domain and provide funding to open the availability of the three services to more publishers.

The roadmap of development for the three components is based on the same pattern: prototyping during preparation phase and service in production during implementation phase.

During the first semester of 2018 the Open Access Business models has been discussed within the Working Groups Business Models. See: OPERAS Open Access Business Models White Paper

4.5 OPEN ACCESS PUBLISHING SERVICES

Publishing toolbox service

Research and development activities aimed at developing publishing tools and technologies that partners can use from a shared toolbox in their adoption of common best practices and to support the improvement of their workflows.

During the preparation phase (2018-2021) publishing tool boxes and publishing catalogue will be set up, followed by shared training services documentation and guidelines during construction and implementation phase (2022-2026).

During the first semester of 2018 the publishing toolbox service has been discussed within the Working Groups Tools. See: OPERAS Tools Research and Development White Paper

4.6 MONITORING SERVICES

Open Access Books Metrics

The development of HIRMEOS project enables OPERAS to consider offering a permanent metrics service in the future and after the end of the project. The service will be composed of two components: a usage metrics service, operated by Open Book Publishers, that aggregates usage metrics (views, downloads) from a set of different publishing platforms and an alternative metrics service operated by Ubiquity Press that aggregates citation metrics from different data sources, particularly social media. The services will be offered freely to HIRMEOS partners until June 2019. No further technical development is required to provide the service but a legal framework must be provided to support the cost of the services and allow their provision to all OPERAS partners. The preparation of the framework will be done from march 2018 to June 2019.

5. SOME EXAMPLES OF KPIS

In the framework of the ESFRI submission, KPIs have been developed, among others, for Certification, Discovery and research for society service. The KPI have been quantified for design, preparation and construction phase.

Table 4: KPIs

KPIs

Area	Activity	KPI	Metrics	Design	Preparation	Construction
Consortium						
	LoS	partners	number (no.)	23	30	40
	MoU	core group partners	no.	9	11	13
	EoS	supporting countries	no.	3	5	7
	National nodes	partners	no.	9	12	20
Cooperation						
	Associated partners	Global partners	no.	1	4	8
	Research infrastructures		no.	2	3	4
Central platforms						
	Certification	platforms	no.	5	8	15
		publishers	no.	100	150	200
		publications	no.	5000	10 000	15 000
	Discovery	unique visits	GA/year	1 000 000	1 200 000	1 600 000
		searches	GA/year (sessions with search)	580 000	870 000	1 740 000
		downloads/views	GA/year	1 400 000	2 100 000	4 200 000
		impact	GA/year (direct links)	50 000	750 000	150 000
	Research for Society	research projects	no.	--	3	10
		blogs	no.	2 500	3 750	7500
		Engagement	posts and comments	337 849	500 000	1 000 000
		unique visits	PW/year	12 861 523	20 000 000	40 000 000
		impact	PW/year (direct links)	3 000 000	4 500 000	9 000 000

LIST OF ACRONYMS AND ABBREVIATIONS

API: Application Programming Interface

BBMRI: Biobanking and BioMolecular resources Research Infrastructure

CERIC: Central European Research Infrastructure Consortium

CLARIN: Common Language Resources and Technology Infrastructure

DARIAH: Digital Research Infrastructure for the Arts and Humanities

DOI: Digital Object Identifier

EASSH: European Alliance for Social Sciences and Humanities

EATRIS: European infrastructure for translational medicine

EC: European Commission

EGI: European Grid Initiative

EOSC: European Open Science Cloud

ERIC: European Research Infrastructure Consortium

JISC: Joint Information Systems Committee

KPI: Key Performance Indicator

OA: Open Access

OAI-PMH: Open Archive Initiative - Protocol Metadata Harvesting

ORCID: Open Researcher and Contributor ID

RI: Research Infrastructure

SME: Small Medium Enterprise

SSH: Social Sciences and Humanities

STM: Science, Technical, Medical

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ANNEXES

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Annex 3: Poster of the Platforms and Services Working Group presented at the OPERAS Conference "Open Scholarly Communication in Europe. Addressing the Coordination Challenge", 31 May - 1 June 2018, Athens

http://operas-eu.org/files/2018/05/operas_platforms_services_wg_poster.jpg

ANNEX 1: USE CASES DISCOVERY TOOL

1. GENERAL CONTEXT

The Discovery Tool will be built on the ISIDORE tool (developed by Huma-Num, CNRS). But it will involve several other partners and especially other services providers. The platform will be a part of the RI OPERAS. It is necessary to decide who will be the owner, who will be responsible for it, etc.

2. LEGAL CONTEXT (EC AND H2020)

"Beneficiaries" means the legal entities who have signed the grant agreement (GA) with the Commission/Agency (i.e. participate in a project supported by an EU grant).

The **"Coordinator"** is the beneficiary who is the central contact point for the Commission/Agency and represents the consortium (towards the Commission/Agency).

Applicants who accept the grant (by signing the GA) become beneficiaries of the grant and are **bound by the entirety** of its terms and conditions.

This means that the beneficiaries must:

– carry out the action (and especially the research work) as detailed in Annex 1 (technical implementation) and

– comply with all the other provisions of the GA and all the applicable provisions of EU, international and national law.

Other entities which participate in the action but do not sign the GA (including **linked third parties**, subcontractors, third parties giving in-kind contributions, etc.) are considered as third parties involved in the action (see Articles 8 and 9-14).

They are formally speaking not bound by the terms and conditions of the GA, although it implies certain obligations for them; conversely, the Commission/Agency has no formal contractual link with them.

H2020 > Chapter 4 > Section 1 > Article 14 151

This optional Article (together with the corresponding options in Article 6 and other provisions) will be inserted into the GA if the action is implemented with linked third parties.

Characteristics of implementation by linked third parties:

"Linked third party":

– Linked third party does not charge a price, but declares its own costs for implementing the action tasks

– Linked third party itself performs certain action tasks directly and is responsible for them towards the beneficiary. Linked third parties do NOT sign the GA (and are therefore not beneficiaries).

– The beneficiary remains responsible towards the Commission/Agency for the work carried out by the linked third party.

– Moreover, the beneficiaries are financially responsible for any undue amount paid by the Commission/Agency as reimbursement of costs for their linked third parties — unless the GA foresees joint and several liability (see Article 44.1).

- Work is attributed to the linked third party (in Annex 1) and is usually carried out on its premises
- Work is under the full and direct control, instructions and management of the linked third party, who carries out this part of the action (with its employees).

Results:

Results are owned by the beneficiary that generates them.

"Results" means any (tangible or intangible) output of the action such as data, knowledge or information — whatever its form or nature, whether it can be protected or not — that is generated in the action, as well as any rights attached to it, including intellectual property rights.

Two or more beneficiaries own results jointly if:

1. they have jointly generated them and

2. it is not possible to:

3. establish the respective contribution of each beneficiary, or

4. separate them for the purpose of applying for, obtaining or maintaining their protection (see Article 27).

The joint owners must agree (in writing) on the allocation and terms of exercise of their joint ownership (**"joint ownership agreement"**), to ensure compliance with their obligations under this Agreement.

Unless otherwise agreed in the joint ownership agreement, each joint owner may grant non-exclusive licences to third parties to exploit jointly-owned results (without any right to sub-license), if the other joint owners are given:

1. at least 45 days advance notice and

2. fair and reasonable compensation.

Once the results have been generated, joint owners may agree (in writing) to apply another regime than joint ownership (such as, for instance, transfer to a single owner (see Article 30) with access rights for the others).

If third parties (including personnel) may claim rights to the results, the beneficiary concerned must ensure that it complies with its obligations under the Agreement.

If a third party generates results, the beneficiary concerned must obtain all necessary rights (transfer, licences or other) from the third party, in order to be able to respect its obligations as if those results were generated by the beneficiary itself.

If obtaining the rights is impossible, the beneficiary must refrain from using the third party to generate the results.

3. USE CASES

3.1 Use case 1: Huma-Num + public partner or private partner

Huma-Num (HN), responsible of the platform and relationships/engagement with a public Partner.

Legal viewpoint: Huma-Num is the coordinator of the H2020 project. Other organisations part of the project are beneficiaries.

On a legal viewpoint, all the stakeholders have to comply with the Grant Agreement, which will define the objectives and the responsibilities related to the development of the service.

Concerning the ownership of the platform, "*results are owned by the beneficiary who generates them*". It means the platform won't belong exclusively to one party, but the partners which will have developed it. A joint ownership agreement could be written clarifying the respective work of each stakeholder during the development of the platform, and who will manage it after the end of the project.

If the partner (public or private) is not part of the project, a contract will be negotiated between the partner and HN.

Governance viewpoint:

– The executive assembly of OPERAS is appointed to ensure the strategic aspects of the platform: positioning it in OPERAS global strategy, usefulness for the community, consistency with the other services.

– A project coordinator is appointed at HN, to coordinate the development with OPERAS and to work with the partner. Another person (a developer) can be designated to ensure the maintenance of the platform after the end of the project.

– The partner ensures the development and maintenance of the service. A project coordinator is designated.

Business Model viewpoint: the platform will be developed with the resources of the project. After the project, several solutions can be considered:

– The service is financed by HN: work on the platform (amount of time dedicated to the coordination/maintenance) is offered as a contribution to OPERAS. If the partner is private, HN ensures payments.

– Other sources of funding: selling the added value of the service via a freemium access. On an administrative viewpoint, it would necessitate to create a PME.

3.1 Use case 2: OPERAS (owner of the platform) + partners involved in OPERAS is the owner of the platform and relationships with the services providers

Legal viewpoint:

AISBL Belge: https://www.google.fr/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwi75 67axZbZAhXIuRQKHS55BRsQFgguMAE&url=http%3A%2F%2Fcms.horus.be%2Ffiles%2F99907%2FMedi aArchive%2FCapacity_Building%2FADMIN%2Faisbl.doc&usg=AOvVaw1ayqtzHtg5-QtbS256YfaT

Governance/viewpoint:

The executive assembly of OPERAS is appointed to ensure the strategic aspects of the platform: positioning it in OPERAS global strategy, usefulness for the community, consistency with the other services.

In this case, the executive assembly would also manage the service by leading the coordination of the work with the different partners (HN and other partners).

Figure 1 (Annex 1): OPERAS Organigram
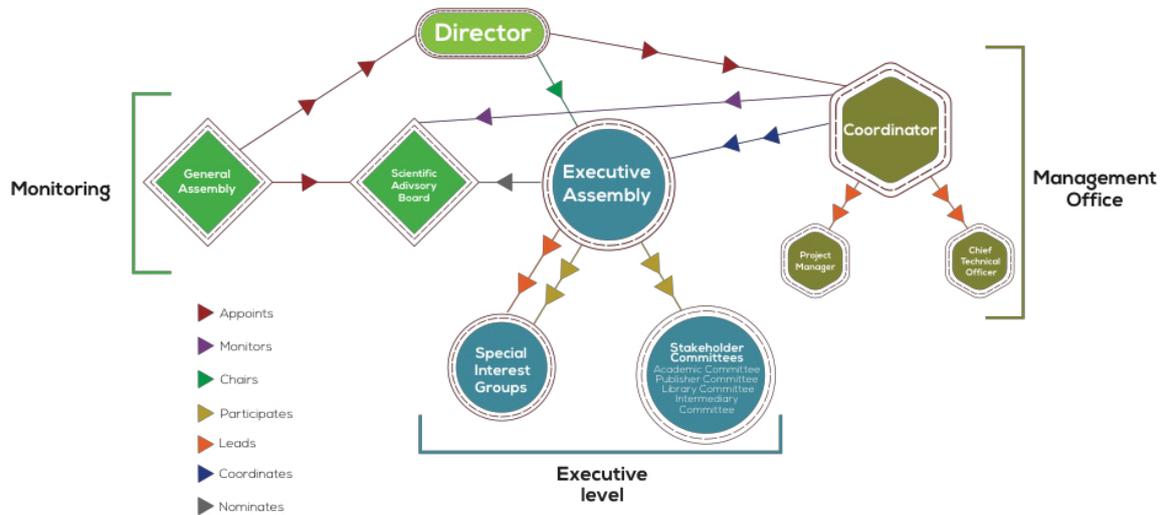
BM viewpoint:

– The service is financed by OPERAS: maintenance hours and extra developments are paid. A service level agreement can be negotiated between OPERAS and the service provider to define the conditions of running and maintenance of the service (number of hours a month, conditions for extra-development, etc.). It can be defined yearly.

– Development of a freemium model. In which extent a European infrastructure can develop this kind of model? On which features would the model be developed?

Example of Service Level Agreement

Parties

<INSTITUTION NAME>, throughout this Agreement, and <CUSTOMER>.

Contact

<SERVICE PROVIDER CONTACT DETAILS> and

<CUSTOMER CONTACT DETAILS>

Purpose and Applicability

This agreement defines the responsibilities of <INSTITUTION NAME> in the delivering of <SERVICE NAME> within DARIAH-EU from <DATE> to <DATE>.

Service Components

The service covered by this SLA is made up of the following (technical and logical) service components:

<List and description of relevant service components>

Service Level Objectives

Service Availability

1) <INSTITUTION NAME> will provide service availability based on <SERVICE HOURS>

2) This availability will be calculated with :

<description of monitoring system and tools>

<description of the system of calculation>

3) Service Downtime is measured as:

<system of calculation>

Incident Handling

Disruptions to the agreed service functionality or quality will be handled according to an appropriate priority based on the impact and urgency of the incident. In this context, the following priority guidelines apply:

[Specific prioritization guidelines]

Service Maintenance

<SERVICE PROVIDER> shall provide Service Maintenance, including:

<specify tasks to perform>

If Service Maintenance is performed regularly :

<specify the hours of maintenance>

Service Maintenance may cause errors or unavailability of Services.

In this case :

<SERVICE PROVIDER> shall notify <SERVICE CUSTOMER> prior to performing any maintenance which would cause the unavailability of the service.

Customer responsibilities

[List and specification of any specific customer responsibilities]

Information security & data protection

The following rules for information security and data protection apply:

[Rules for information security and data protection]

Additional responsibilities of the service provider

[List and specification of any additional responsibilities or liabilities of the service provider]

Closing provisions

Specify in which conditions the agreement can be terminated.

Links:

– http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf

– https://ec.europa.eu/research/infrastructures/pdf/council_regulation_eric.pdf

– http://ec.europa.eu/invest-in-research/pdf/ip_recommendation_en.pdf

– http://cache.media.education.gouv.fr/file/Fiches-2016/01/1/Maj-Les_regles_de_propriete_intellectuelle_560011.pdf

ANNEX 2: COMPARISON TABLE FOR ANNOTATION TOOLS

Comparison table for annotation tools (established by Heather Staines for hypothes.is). The table is being used in the Working Group Tools as a model for a comparison table about publishing tools.

Table 1 (Annex 2): Comparison of Annotation Tools

	Hypothesis	Colwitz	Paperhive	Remarq	Pundit	Bibsonomy
Social annotation	Yes	No	Yes	Yes	Yes	Yes?
Works everywhere	Yes	No	No	Only for personal notes	Yes	No
Open source	Yes	No	partially (front end)	No	Yes	?
Non-profit	Yes	No	No	No	No	Yes?
W3C standard - data model	Yes	No	In progress	Claimed	Yes	?
W3C standard - protocol	In progress	No	In progress	No	No	?
Groups	Yes	Yes (Open, Closed, or Secret)	Channels	Yes (but unclear how this could work with annotator vetting)	No	
Highlighting	Yes	Yes	No	Yes	Yes	?
Personal annotation	Yes	Yes	Yes	Yes	Yes	?
Public discussion	Yes	Claimed?	Yes	Yes	Yes	no?
Share an annotation	Yes	No	Yes	Share seems to be for articles only	No	?
Replies	Yes	Not on annotations	Yes	Yes	Yes	?
Direct links	Yes	Not on annotations	Yes	No	No	No?
Tagging	Yes	No	No	No	Yes (semantic)	Yes
HTML support	Yes	No	No	Yes	Yes	?
PDF support	Yes	Yes	Yes	Yes	No	Yes
EPUB support		No	No	No	No	No
Annotate over publisher content	Yes	No	No (widget)	Yes	Yes	No
Publisher Moderation	Yes	No	In progress	No	No	No
API	Yes	No	Yes	No	Yes	?
Search	Yes	Yes (but doesn't seem to be limited to annotations)	Yes (but only own annotations)	No (only people)	Yes	Yes: across articles
Advanced search		No	yes (publisher article/full text)			

HTML<>PDF cross format	Yes	No	No	Claimed, not verified	No	No
DOI support	Yes	?	Yes	?	No	?
Markdown	Yes	No	Yes	No	No	?
Math support	Yes	Yes	Yes	No	No	?
Rich media	Yes	No	Images	No	No	?
Self-hosting	Yes	No	No	No	No	No
Runs the industry conference	Yes	No	No	No	No	No
Member of AAK coalition	Yes	No	Yes	Yes	Yes	No
Customization to fit publisher platform	Yes	N/A	Yes (widget)	No	Yes	No
Annotation License (Public)			CC-BY-2.0			
Versioning			Yes			
Indexed (Crossref Event Data)			No			
Activity Feed/ Page			Yes			
Different highlight colors	No- planned	No	no	No?	No	?
Follow	No- planned	No	articles (not people)	Yes (person)	No	Yes: Friends
Social Login	No- planned	No	Yes	Yes, LinkedIn	Yes: Facebook and Google	Yes: Yahoo and OpenID
Image Annotation	No- planned	No	No	No	No	

OPERAS-D

Working group Platforms and services

A web of services for Open Access

Principles:

o **Governance**: a system to ensure that the central services serve the community, not themselves or certain interest groups, to ensure that they are responsive to changing needs, etc.;

o **Sustainability**: central services will need to have sustainable resources to meet their obligations and create trust;

o **Insurance**: the central services need to be open to create confidence and allow the community to retain control.

(Bilder G, Lin J, Neylon C, 2015)

Method:

"The fundamental challenge for the implementation of OA policies is the need to develop a fully functioning OA infrastructure from the current disparate collection of services"
(Rob Johnson and Mattia Fosci, 2016)

➢ OA infrastructure should be based on a **web of services** relying closely on each other and that can't be considered independently from each other

➢ 6 categories of services that support potentially the implementation of OA policies

Services catalog:

1. UNDERPINNING SERVICES
1.1 HIRMEOS project : identifiers, metadatas
1.2 Research for society platform
2. ABSTRACTING/INDEXING TOOLS
2.1 Certification service
Certification service in Hirmeos project
DOAB development
2.2 Discovery service
2.3 Support for Web publishing
3. SUPPORT AND DISSEMINATION SERVICES
3.1 Support for best practices adoption
3.2 Support for Standards implementation
3.3 Support for Open Access Business models
3.3.1 Journal Flipping Mechanism
• Lingoa prototype
• Support to FairOA alliance
3.3.2 Library Based Business Model
3.3.3 OA Market place
4.OPEN ACCESS PUBLISHING SERVICES
4.1 Publishing toolbox service
4.1.1 Publishing tools catalogue
4.1.2 Publishing toolbox
4.1.3 Documents and trainings
5.MONITORING SERVICES
5.1 Open access Books Metrics

www. operas-eu. org