Triple

Transforming Research through Innovative
Practices for Linked Interdisciplinary Exploration

30 SEPT. 2020 Advancing Open Scholarship

7.2 INTERMEDIATE REPORT ON EXPLOITATION AND SUSTAINABILITY STRATEGY

Version 1.0 – Final
PUBLIC

Intermediate Report on Exploitation and Sustainability Strategy

Project Acronym:	**TRIPLE**
Project Name:	**Transforming Research through Innovative Practices for Linked interdisciplinary Exploration**
Grant Agreement No:	**863420**
Start Date:	**1/10/2019**
End Date:	**31/03/2023**
Contributing WP	**WP7**
WP Leader:	**Know-Center**
Deliverable identifier	**7.2**
Contractual Delivery Date: 30/09/2020	**Actual Delivery Date: 30/09/2020**
Nature: Report	**Version: 1.0 Final**
Dissemination level	**PUBLIC**

Revision History

Version	Created/Modifier	Comments
0.0	Gert Breitfuss (KNOW)	General structure
0.1 (31 Aug)	Stefanie Pohle (MWS), Gert Breitfuss (KNOW), Emilie Blotiere (CNRS/HN), Yin Chen (EGI), Matti Heikkurinen (EGI)	First draft
0.2 (18 Sept)	Suzanne Dumouchel (CNRS/HN), Clara Petitfils (CNRS/HN), Maxime Bouillard (MEOH), Gert Breitfuss (KNOW), Yin Chen (EGI), Matti Heikkurinen (EGI), Eelco Ferwerda (OAPEN),	Second draft

	Arnaud Roi (DARIAH)	
0.4 (25 Sept)	Internal review: Stefanie Pohle (MWS), Laure Barbot (DARIAH)	Third draft
0.5 (29 Sept)	Proof-reading and formatting: Stefanie Pohle (MWS), Gert Breitfuss (KNOW)	Fourth draft
1.0 (30 Sept)	Gert Breitfuss (KNOW)	Final

Table of Contents

List of Figures

List of Tables

Acronyms

AISBL	Association internationale sans but lucratif (Association without lucrative purpose)
API	Application Programming Interface
BMC	Business Model Canvas
B2B	Business-to-Business
B2C	Business-to-Consumer
CESSDA	Consortium of European Social Science Data Archives
CFO	Chief Financial Officer
CLARIN	Common Language Resources and Technology Infrastructure
CNR	Italian National Research Council
CNRS	French National Centre for Scientific Research
DARIAH	Digital Research Infrastructure for the Arts and Humanities
DESCA	Development of a Simplified Consortium Agreement
DTC	Data & Tool Committee
EC	European Commission
EGI	European Grid Infrastructure
EKT	National Documentation Centre
EOSC	European Open Science Cloud
ERIC	European Research Infrastructure Consortium
EU	European Union
FAIR principles	Findable, Accessible, Interoperable, Reusable
GA	Grant Agreement
GDPR	General Data Protection Regulation
GOTRIPLE	The discovery platform developed by the TRIPLE project
IBL PAN	Institute of Literary Research of the Polish Academy of Sciences
ICT	Information and Communications Technology
IP	Intellectual Property

IPR	Intellectual Property Rights
KNOW/KC	Know-Center GmbH
LC	Lexical Computing
MEOH	Many Embers One Heat
MoU	Memorandum of Understanding
MWS	Max Weber Foundation - Foundation German Humanities Institutes Abroad
NGO	Non-Governmental Organisation
NPO	Non-Profit Organisation
NURO	Nuromedia GmbH
OAPEN	Online Library and Publication Platform
OK Maps	Open Knowledge Maps
OPERAS	Open Scholarly Communication in the European Research Area for Social Sciences and Humanities
OPERAS RI	OPERAS Research Infrastructure
OS	Open Source
PEDR	Plan for Exploitation and Dissemination of Results
R&D	Research and Development
RI	Research Infrastructure
SAC	Scientific Advisory Board
SC	Strategic Committee
SLA	Service Level Agreement
SME	Small and Medium sized Enterprise
SSH	Social Sciences and Humanities
SSHOC	Social Sciences and Humanities Open Cloud Project
TBS	Trust Building System
UEC	User Empowerment Committee
UNIZD	University of Zadar

Publishable Summary

Within the present report, we provide an intermediate status of TRIPLE's exploitation and sustainability strategy. Our main focus is to create a valuable and viable business model for TRIPLE platform that is sustainable beyond the project end. We give an update on our general exploitation strategy (individual and joint exploitation) including intellectual property rights (IPR) management, as well as a detailed insight into our sustainable business model considerations.

Besides the research exploitation (re-utilisation of the research know-how) and the technological exploitation (re-utilisation of the technological know-how) we put our main focus on the exploitation of the discovery platform, which is called "GOTRIPLE". A survey among the project partners shows that there is a high willingness to contribute to any kind of business operation activities for GOTRIPLE after the project ends. Many partners are also prepared to participate in various roles in a future operating organisation for GOTRIPLE.

Within the sustainable business model section, we first analysed the suitability of the business model pattern "Platform Business Model" for GOTRIPLE. The analysis shows that the (multi-sided) platform characteristics can act as a blueprint for a sustainable GOTRIPLE business model. From an in-depth competition analysis on organisational and financial aspects, we gained important insights regarding the future TRIPLE organisation/governance model and potential revenue sources.

Since GOTRIPLE will be one of three OPERAS Research Infrastructure (RI) services, we started our governance model reflections with a close look at TRIPLE in the context of OPERAS. Besides basic considerations regarding needs and expectations for a suitable governance model, we proposed three different bodies, a Strategic Committee (SC) which is dedicated to business sustainability, a Data & Tool Committee (DTC) which is dedicated to the technical and editorial maintenance of GOTRIPLE and a User Engagement Committee (UEC) which embodies external and social challenges by representing the GOTRIPLE's community.

Finally, we developed three business model scenarios (minimum, medium and best case scenario) to show a possible realisation framework in terms of business scope and implementation time frame.

1| INTRODUCTION

Within the TRIPLE project, we follow the approach promoted by the European Commission (EC) that publicly-funded research should lead to the exploitation of results, which goes one step further than the mere production and dissemination of new scientific knowledge[1]. With our project activities we want to overcome the "European paradox" and show that a translation of scientific advances into marketable innovations is possible. Our understanding of innovation is not only the promotion of dissemination but especially the subsequent exploitation of the project results. Besides the research exploitation (re-utilisation of the research know-how) and the technological exploitation (re-utilisation of the technological know-how) we put our main focus on the exploitation of the discovery platform, which is called "GOTRIPLE". Since GOTRIPLE will be one of three OPERAS Research Infrastructure (RI) services, the exploitation activities must be well coordinated with OPERAS project.

The present report is the second outcome from work package (WP) 7 (Innovation, Exploitation and Sustainability) which aims at creating a valuable and viable business model for GOTRIPLE that is sustainable beyond project end. Within WP7 and their assigned tasks, we are continuously detailing exploitation plans and innovation and commercialisation activities. These include:

- [ ] observation of the business environment and competitors

- [ ] developing suitable governance models

- [ ] identifying potential partners and sources of finance for commercialisation for next steps

- [ ] identifying and collaborating with potential users

- [ ] designing business scenarios

- [ ] testing of business model

1.1 Exploitation and Sustainability

As already outlined in deliverable D7.1 "Report on Stakeholder and Opportunity Analysis", within the TRIPLE project we are primarily guided by Alan Cooper's interaction design principle: "A successful digital product needs to be desirable, viable and feasible."[2] In our exploitation considerations, we are also applying this principle to business models. The TRIPLE business model needs to be feasible, desirable and viable in order to be sustainable after the project ends. The main responsibility for "desirability" lies with work package (WP) 3 (Co-design and

---

[1] European Commission (2013): How to convert Research into Commercial Success Story
https://era.gv.at/object/document/751
[2] Cooper, Alan, Reimann, Robert, & Cronin, David (2007). About face 3: the essentials of interaction design. New York: John Wiley & Sons.

User Research), which ensures that the offered TRIPLE platform services are in line with user requirements. WP4 (Integration and Building of TRIPLE platform) and WP5 (Development and Integration of Innovative Services) take care of "feasibility" and are responsible for the development and integration of the TRIPLE platform (core) and its innovative services. Last but not least, WP7 (Innovation, Exploitation and Sustainability) is accountable for "viability" and takes care of a sustainable business.

FIGURE 1. The Innovation Trinity[3]

1.2 Objectives and Structure of the Report

The present report outlines the first version of the Exploitation and Sustainability Strategy for the TRIPLE project. The results are, on the one hand, a joint work of the WP7 team with the support from the whole consortium and, on the other hand, a further development of the exploitation part outlined the Plan for Exploitation and Dissemination of Results (PEDR) DRAFT (D8.6) of WP8 (Communication and Dissemination). The main objectives of the Report on Exploitation and Sustainability Strategy report are:

☐ to further develop the exploitation strategy (individual and joint exploitation)
☐ to provide an update on the current IPR management
☐ to explore relevant business model pattern for the future TRIPLE platform
☐ to discover suitable governance models
☐ to develop first business model scenarios

---

[3] Source: https://blog.leanstack.com/what-is-the-right-fill-order-for-a-lean-canvas-f8071d0c6c8c

The current report is an intermediate version; the final version is due at the end of the project in 2023 (D7.4).

Section 1 outlines basic information on exploitation and sustainability. The further development of the exploitation strategy based on the current PEDR is described in Section 2. Section 3 provides first insights into a sustainable business model for the TRIPLE platform. This includes ideas about platform business models, relevant information from competitors in terms of organisation and financing, basic information on governance, first ideas on TRIPLE governance models and different business model scenarios at the end. Finally, the report concludes with a summary and outlook (Section 4).

2| PLAN FOR EXPLOITATION OF RESULTS

Exploitation is recognised as one of the key enablers for the success of the TRIPLE project. Hence all partners within the project are aware of and committed to the exploitation of the project results, and the proposed focus of the project research and development (R&D) strongly adheres to their research and business strategies. The consortium, with their diverse and complementary research and business contexts and capabilities, provide all potential exploitation modalities and routes to bring TRIPLE results to all targeted user communities.

In general terms, the exploitation strategy depends on the actual exploitable assets. The exploitation strategy of the TRIPLE project will follow a stepwise approach and will be based on the combination of a bouquet of activities which will span throughout the project duration. It will vary in intensity based on the amount of information that can be made available and the results that will be produced during the project lifetime. In addition, different exploitable assets may be exploited by different stakeholders based on the management of the intellectual property rights (IPR).

Exploitation models: The TRIPLE consortium recognises three main exploitation models for the project results: 1) The **commercial exploitation model**, which implies the partly paid provision of the project results to specific customer segments, complying with a pricing scheme which will be defined in the TRIPLE business plan, 2) The **research exploitation model**, which implies the re-utilisation of the research know-how acquired in future research activities, and 3) The **technological exploitation model**, which implies the re-utilisation of the technological know-how acquired for the development of innovative products and the provision of advanced services built on top of them. However, not all project partners and interested stakeholders may exploit all project results using the three models defined above. The exploitation models of the TRIPLE project results will be dependent upon three main parameters: a) the nature and interests of the project partners and stakeholders in general, b) the distribution model (commercial or non-commercial) of the project results and c) the distribution of the IPRs amongst the project partners.

2.1 Exploitation Management

In general, TRIPLE exploitation will mainly rely on the OPERAS Research Infrastructure (RI), since GOTRIPLE will be one of its three principal platforms. This governance model will be elaborated in detail in task T7.5 "TRIPLE solution in the OPERAS landscape" and reported in deliverable D7.4 "Final Report on Exploitation and Sustainability Strategy".

Exploitation strategy: The strategy will be comprised of a range of exploitation activities which include:

1. the identification of the innovative exploitable assets, which the project will deliver through its results to its target users,
2. the conduction of a thorough market analysis (initial analysis is already reported in deliverable D7.1 "Report on Stakeholder and Opportunity Analysis") which will aim at the identification of the market towards which GOTRIPLE is targeted, its segmentation, the positioning of current competitors and all corresponding emerging trends,
3. the analytical definition of all possible commercial and non-commercial exploitation models, which have been preliminarily identified,
4. the analytical definition and evaluation of the sustainability and viability of possible business models and alternative solutions that may be followed for the provision of the project solution and services to the identified stakeholders, including licensing schemes, pricing, etc., and the corresponding tactical revisions as deemed necessary throughout the project lifecycle,
5. the establishment of relationships of trust with customers/users early within the project, who can facilitate the quicker adoption of the solution and provide valuable feedback which can be used in the commercialisation phase, and
6. the identification of financial support from diversified funds (including for example institutional funds or other private and/or public funds) that can be used to support direct and/or indirect commercial transformation, ranging from additional research activities to bug fixing and to technology integration in existing or future solutions.

Exploitation intensity: The exploitation activities will vary in intensity based on the delivery of the project results and the acquisition of research and development (R&D) know-how. Towards this end, the exploitation activities have started mildly with the identification of the innovative exploitable assets of the project and the conduction of a preliminary market analysis identifying potential stakeholders and competitors. Prior to the delivery of the intermediate project results, we will intensify our activities with the more analytical definition of all possible commercial and non-commercial exploitation models and definition and evaluation of the sustainability and viability of possible business models and alternative solutions. The peak of exploitation activities will be prior to the delivery of the project's final results, when the project dissemination activities will also be intense. The main task will be reaching and attracting

potential stakeholders and customers. Following the project end, the TRIPLE consortium will aim at creating appropriate business networks and at exploiting all project results.

Exploitation objectives: The exploitation strategy of TRIPLE will follow three main stages of expansion with specific short-term, medium-term and long-term objectives:

1. **Short-term objectives:** This first stage corresponds to a period beginning with the start of the project activities and ends in parallel with the project. During this period, the main objective is to develop a highly accepted platform (exceptional usability and user experience) in order to ensure a solid data inflow from the researchers. Furthermore, we verify and validate the TRIPLE results, concepts, models, tools and services.
2. **Medium-term objectives:** This second stage corresponds to a period beginning with the end of the project and ending after two or three years, depending on the maturity and completion of the project results. The main objective includes the commercialisation of the "to date" results and developments of semi-commercial products and services, while it further relates to potential fine-tuning, or expansion of the TRIPLE platform and services.
3. **Long-term objectives:** The last stage corresponds to the commercialisation of the TRIPLE platform and services derived from the first and second stage.

2.2 Individual Exploitation Strategies

The main purpose of the individual exploitation plan is to ensure, for each partner, the effective use of project results. The foundation for the individual exploitation are the diverse and complementary research and business contexts and capabilities of the consortium partners and their willingness to make TRIPLE's project results available to all targeted user communities. To concretise and update these ambitions we administered a survey with the following questions to all TRIPLE partners:

☐ How would you prioritise your exploitation ambitions (e.g. scientific, business, technical progress, knowledge gain, visibility, image/reputation etc.)? Please rank and start with the most important one.

☐ What concrete (if possible measurable) results do you expect for your organisation? What gains/benefits do you expect?

The results of the first question are presented in Figure 2. Universities and research institutions placed their main focus on scientific exploitation. Non-profit organisations (NPO) and small and medium enterprises (SME) plan to exploit the TRIPLE results to support their businesses. European Research Infrastructure Consortiums (ERICs) have a more balanced ratio between business and scientific exploitation ambitions.
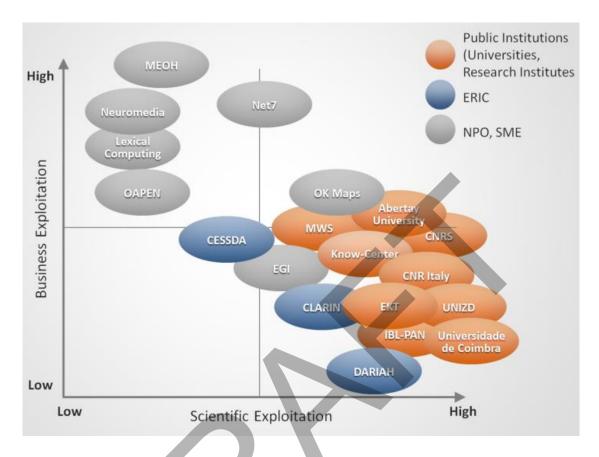
FIGURE 2. Individual exploitation ambitions of project partners

TRIPLE partners are well balanced with *public institutions* (7), *ERICs* (3), *Foundations* (2), *Research Institutions* (1), *SMEs* (3), and *non-profit organisations* (4). This means that the exploitation interests of the consortium members represent a mix of revenue and knowledge generation (as shown in figure 2). In addition to this complementarity of business models, different exploitation strategies (for example, in terms of volume of use and degree of adaptation of the project outputs in the exploitation phase) of the beneficiaries further increase the potential impact of the project. In short, as a group the consortium provides the preconditions for the emergence of an ecosystem with diverse, synergistic drivers of future innovation activities (a conceptual model of some of these potential synergies is presented in Figure 3).
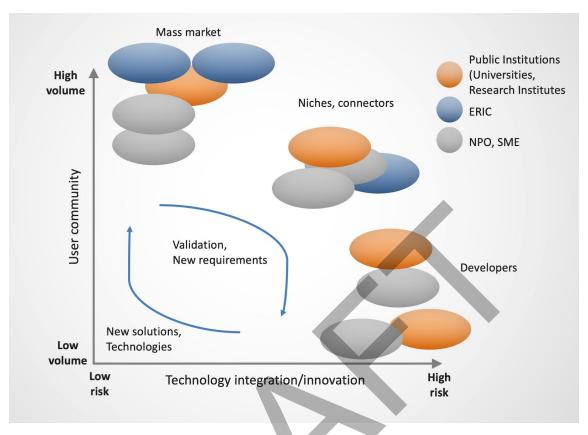
FIGURE 3. Conceptual model of synergies between different exploitation drivers

It should be noted that an individual partner can simultaneously provide services based on the TRIPLE results exploited "as is" and have a parallel project that complements the existing functionality with additional features (through in-house development activities or integration with other suites). The key to capitalising these different roles is awareness of the consortium members of these exploitation models and the ability to communicate the key areas of interests in a coherent manner.

The complete survey results (current status/plan of the individual exploitation ambitions of each consortium partner) are presented in Annex 1. In a nutshell, it can be said that the wide range of expected benefits and results form a solid basis for effective exploitation of TRIPLE's project results.

Summary of analysis of Individual Exploitation Survey Results

☐ The top 3 priorities for exploitation ambitions are Scientific research, Technology progress, and Knowledge gain. The TRIPLE partners are also interested in Visibility, Reputation/image, and Business opportunities that TRIPLE can bring to them (see Annex 1 for further information on TRIPLE partners' preferences; Table 1 gives the details how the TRIPLE community preference is calculated using a standard statistic algorithm for ranking analysis).

☐ The expected benefit/results derived from exploitation activities vary from partner to partner, for example:

- o For many providers (non-profit and commercial) adoption and improvements of their services[4] are of interest; they also expect that new developments and features emerging from TRIPLE can be added to their own service catalogues/infrastructure. In addition, TRIPLE can help them to expand their user community[5].
- o Publications: For example, as an academic/research partner, Abertay University is interested in increasing the number and quality of its scientific publications, as well as reputation and visibility based on participation in a large European project. These are considered to improve chances of success when applying for research grants, especially in the areas of co-design and user research.
- o Ensure interoperability: For example, CESSDA is interested in metadata alignment; DARIAH aims to push a compatible and complementary of SSH Marketplace, LC aims to have an alignment of thesauri at European level
- o Collaboration opportunities: For example, MWS expects to grow commitment to OPERAS and other European research infrastructures, thus fostering the role of MWS as a national contact point.
- o Improving visibility through EOSC integration: The partners mentioning this aspect include CLARIN, CNR, OAPEN, Coimbra Uni, and UNIZD.

TABLE 1. TRIPLE project partner/dissemination measures matrix

Rank	scientific	technology	knowledge gain	visibility	reputation /image	business	Weights
1	9	2	1	3	1	2	6
2	1	7	6	1	1	1	5
3	1	2	3	5		1	4
4	1	1	2	3	3	1	3
5		1			4		2
6						2	1
Preference	3.47	3.16	2.84	2.74	1.47	1.37	

Using the survey data from Annex 1 (column: "Prioritisation of exploitation ambition"), to produce the preference of TRIPLE partners for exploitation priorities. Each number is the count of preference for that ranking, i.e. there are 9 partners ranking the 'scientific' aspect as the No. 1 priority for their exploration ambitions in

---

[4] Data, tool/software, technology, computing resources, etc.
[5] These aspects are mentioned by a number of partners including, CLARIN, CNR, CNRS, EGI, IBL-PAN, Know-Center, LC, MEOH, EKT, Net7, OAPEN, OK Maps, Coimbria Uni, UNIZD, Nuromedia.

TRIPLE; and there is 1 partner who ranks 'scientific' aspect as the No. 2 priority, so on and so forth. Weights are used so that individual preference is not lost in the aggregated calculation. The TRIPLE community preference (prior) is calculated as follows:

$$\text{Preference (n)} = \sum(\text{Rank(n)} * \text{Weight(n)}) / \text{Total Partner Number}$$

where TotalPartnerNumber = 19

From these analysis results, we can draw the following recommendations for TRIPLE:

☐ Monitor the individual exploitation activities, push for concrete actions and collaborations with natural synergies. For example, for each organisation, a Champion can be identified that tests TRIPLE service results, promotes TRIPLE results to their institute colleagues and collaboration partners that they can reach (using consistent, agreed terminology when describing the specifics of the activities, such as maturity and size of user community).

☐ In each exploitation dimension (science, technology, know-how, visibility, reputation), identify best practices and share them across the consortium. Develop business patterns that help partners to realise synergies between their post-project exploitation activities. These could include contract templates aimed at speeding up the negotiations related to access to background IP listed in the Consortium Agreement after the project has ended. The solutions aimed at facilitating the adoption of the best practices can also be more informal documents, e.g. outlining common approaches related to engagement with parties outside the consortium.

☐ Provide useful support, e.g. training, videos, events etc., helping TRIPLE partners to achieve their individual exploration goals. For example, for partners who want to have more visibility, TRIPLE can provide platforms (website, events, publications) allowing them to present their exploitation results. For partners who want to make technical progress through the development of the GOTRIPLE platform, TRIPLE can provide better documentation and training, or involve them to have pilots to test GOTRIPLE services with their datasets, plug-ins, etc.

2.3 Joint Exploitation Strategy

The exploitation strategy of TRIPLE is based upon the "Innovation Management for Practitioners – How to Convert Research into Commercial Success Story" report[6], issued by the European Commission aiming to tackle the European Paradox, namely a strong science base yet weak innovation performance, and has been tailored to the specificities, needs and results of

---

[6] European Commission (2013). Innovation-How to Convert Research into Commercial Success Story. https://ec.europa.eu/research/industrial_technologies/pdf/how-to-convert-research-into-commercial-story_en.pdf

the project. Throughout the tailoring process, the consortium paid special attention to the identified impact factors for market-oriented exploitation and integrated them in its overall strategy, from setting up the consortium to support future commercialisation, to performing a preliminary market scan to identify the market targeted and the strength of the market demand. Work package (WP) 7 is dedicated to the question of the business model and sustainability of the discovery platform. However, it will rely on the outputs of European Open Science Cloud (EOSC)-related projects about commercial services and governance and will depend on the Open Scholarly Communication in the European Research Area for Social Sciences and Humanities Research Infrastructure (OPERAS RI).

The general objective of the joint exploitation strategy is to ensure the sustainability of GOTRIPLE, the future TRIPLE platform. This is achieved through a viable business model which is essentially based on the interests of the project partners and their willingness to contribute after the project ends. To have an insight on the partners' contribution plans, the current interests and opinions have been collected in a survey by asking the following questions:

☐ Is your organisation willing to contribute actively to the maintenance of the future TRIPLE platform after the project ends? (yes / yes, if... / no)

☐ Specify what this contribution could look like (time, money, expertise, specific tasks like software updates, bug fixing, user support, etc.)?

☐ What costs (in Euro per year) do you estimate for these maintenance activities?

☐ What role could you imagine for the operation of the future TRIPLE platform (software development, support team, marketing, CFO, coordinator, other)

☐ Do you see your institution as an official (i.e. legal) part/partner of a future (legal) organisation of the TRIPLE platform?

The results of the survey show that there is a high willingness to contribute to different kinds of maintenance activities after the project ends. This contribution (mainly in-kind) amounts to a current rough estimate of about 40,000 Euro per year. Many partners are also prepared to participate in various roles in a future operating organisation for the TRIPLE platform. These insights are a valuable foundation for the business model considerations in Section 3.5. The detailed results of the survey are presented in Annex 2.

Summary of the analysis results out from the Joint Exploitation Survey

- Most (18 out of 19) of the partners are willing to contribute to TRIPLE after the end of the project.
- The contributions are mainly in areas of technical support, computing resources, service provision, user support, community engagement.

- Most of the partners have a clear idea of their role in TRIPLE, including but not limited to, service provider/operator, resource provider, technology provider, users, data provider.
- The majority (12 out of 19) of the partners are willing to have an official role for the operation of the future TRIPLE platform. 5 out of 19 organisations answered *NO* and 2 *UNCLEAR* (at this stage). Some *NO-answer* partners expressed their interest in becoming MoU-based collaborators or associated partners.

Based on these results, we have the following recommendations for TRIPLE to consider:

- Enhance community building and strive for long-term collaborations. There is a clear willingness of the TRIPLE partners to continue the collaboration after the project ends. TRIPLE should maintain the collaboration network and work towards a fully-branded community building up reputation and impacts, and becoming a strong voice for European SSH community. In practice, TRIPLE should maintain and promote its own brand/logo, community website/platform, social media accounts, and seek funding to sponsor community events and networking activities.
- Identify mechanisms to sustain the project results after the project ends. This toolbox should consider all of the models that have been deemed successful, for instance, in the competitor analysis stage, and gauge their suitability in the specific case of TRIPLE.
- Consider different governance models and organisational structures towards sustainability and exploitation. While the development has been done in a collaborative, federated fashion, there are parts of the sustainability challenges that are best addressed through a single legal entity, for example, the protection of the GOTRIPLE brand. Similarly, any kind of fee-based sustainability arrangements (e.g. collecting service or licensing fees) will require assigning the responsibility to a small subset of the organisations involved in the project. The trade-offs between establishing a new, dedicated legal entity and finding an existing organisation (within or outside the consortium) willing to act as a host should be carefully considered.

2.4 Target Audiences

Based on the available results from the stakeholder analysis conducted in task T7.1 (reported in deliverable D7.1 "Report on Stakeholder and Opportunity Analysis") and the results of the user requirements survey reported in deliverable D3.1 "Report on User Needs", the following main stakeholders were identified: social sciences and humanities (SSH) researchers (the main target group), researchers from other disciplines, service providers (esp. scientific publishers and libraries) and socio-economic actors, such as small and medium-sized enterprises (SMEs), public institutions, non-governmental organisations (NGOs) and journalists. The TRIPLE and OPERAS consortia will also be targeted. Actors may take multiple roles, e.g. they can be a researcher and at the same time a service provider or part of the OPERAS consortium.

2.5 Intellectual Property Rights Management

All IPR relevant topics are specified and defined in the Consortium Agreement (CA) which is currently in the final phase of elaboration. The purpose of the Consortium Agreement is to establish a legal framework for the project in order to provide clear regulations for issues within the consortium related to IP ownership, confidential information, Open Source issues, standard contributions, and access rights to background and foreground intellectual property (IP) for the duration of the project and any other matters of the consortium's interest.

Background

Background is defined as "any data, know-how or information", including any rights such as IPR, which is held by beneficiaries before the start of the action and is needed to implement it or to exploit the results.

Listing the background for each beneficiary is an obligation set forth by the European Commission - see the first sentence of article 24 of the Grant Agreement (GA). The idea behind this provision is to reach some degree of legal certainty amongst consortium members. Listing their background helps consortium partners have a clear view of what they can request access to.

Each beneficiary has to list:
- the background that it brings to the project - even if it is not subject to limitations
- if relevant, any pre-existing limitations
- if relevant and strictly necessary, any restrictions

This list should in principle reflect the reality of what is "needed" in the project. Indeed failing or refusing to list necessary background may lead to blockages in the project's implementation, which could constitute a breach of Article 7 of our GA ("General obligation to properly implement the action").

The TRIPLE consortium uses the Development of a Simplified Consortium Agreement (DESCA) 2020 model. Although the Consortium Agreement (CA) is a basic and stable document, it may be modified in the course of the project duration to take into account any updated consensus on the project results. The TRIPLE project plans to contribute to the debates and evolutions that are currently taking place in the crucial domain of intellectual property rights and to propose new solutions and help standardise norms and rules on Open Access and Open Data at a European level.

The consortium has agreed to add a paragraph to Section 4.1 of the CA "General Principles" related to the aim of becoming an open infrastructure and thus meeting the Good Practice Principles for Scholarly Communication Services. This is nevertheless subject to accessible technical solutions still under discussion. Making GOTRIPLE an open infrastructure means, firstly, that the software and platform are reusable, it also includes that the software will be open source conditioned to technical feasibility and IPR conditions specified under Section 8

"Results", 9 "Access Rights" and Attachment 1 "Background included" of the Consortium Agreement. It also implies that the data and content (e.g. metadata, metrics, user contributions) created by the infrastructure are published under an open license and made available via open interfaces (Open APIs), unless this would constitute a privacy infringement. Depending on the type of output, the consortium undertakes to choose an Open Source licence, such as:

- Software: MIT License (http://opensource.org/licenses/MIT) or a license covered by the definition of "Open Source" on https://opensource.org/licenses/
- Compilations of data ("databases"): CC0 1.0 Universal (https://creativecommons.org/publicdomain/zero/1.0/)
- All other types of works: Creative Commons Attribution 4.0 International (https://creativecommons.org/licenses/by/4.0/)

Secondly, TRIPLE follows Open Standards, which facilitate simple migration from one infrastructure to another and prevent lock-in effects.

Thirdly, the governance of TRIPLE provides for an explicit say of the community. This includes appropriate opportunities for community input as well as inclusion in decision-making processes.

GDPR (General Data Protection Regulation)

TRIPLE will deposit its aggregated data, in respect of GDPR, in a specific research data repository, taking measures to make it openly available for access, analysis, exploitation and dissemination freely (especially by publishing it under Creative Commons licenses) and to provide information about tools and equipment of significance for the validation of the results. However, the question of harvested metadata cannot be considered as a simple declaration of intention: TRIPLE has no right to add a license on objects it did not create. It requires an agreement between repositories and their data providers. One of our challenges is to deal with each repository's distinct policies and create a direct link with them. Licensing policy requires legal expertise and is a long process.

Except for the provisions mentioned in the Consortium Agreement, partners agree that any background, results, confidential information and/or any data and/or information that is provided, disclosed or otherwise made available between the parties during the implementation of the project and/or for any exploitation activities ("Shared Information"), shall not include personal data as defined by Article 4(1) of the GDPR. Accordingly, each party agrees that it will take all necessary steps to ensure that all personal data is removed from the Shared Information, made illegible, or otherwise made inaccessible to the other parties (i.e. de-identify the data) prior to providing the Shared Information to such other parties. For the avoidance of doubt, partners are entitled to exchange and process personal data pertaining to the individuals directly involved in the implementation of the project and/or exploitation activities, for the purpose of such implementation or activities.

In case partners need to exchange personal data among themselves, an agreement must be signed regarding the controlling and processing of personal data, in compliance with the requirements of the GDPR and any regulations made pursuant to it; any other laws and regulations relating to the processing of personal data and privacy which apply to a party; and, if applicable, the guidance and codes of practice issued by any competent data protection supervisory authority.

3| SUSTAINABLE BUSINESS MODELS

In general, a well designed and well tested business model is the key success factor for sustainable exploitation of the TRIPLE platform. The TRIPLE business model must be thought in relation to the global business model of the European Open Science Cloud (EOSC). To do that, the TRIPLE project will carefully follow the work done in the EOSC governance project (answer to 5a of the H2020 call INFRAEOSC-5 "Support to the EOSC Governance"), where the TRIPLE consortium has strong links (through the GO FAIR Implementation Networks, especially CO-OPERAS), and the work done in the project led by GEANT which answers to the H2020 call INFRA EOSC-01 "Access to commercial services through the EOSC hub" about public procurements and access to commercial services. We consider the GOTRIPLE as a specific service provided and sustained by OPERAS Research Infrastructure (RI). Its business model will also consider this interlink.

A business model describes how organisations create, communicate and capture values. The description of the TRIPLE platform in the form of a business model is intended to help understand, analyse and communicate the key factors of the organisation. In the TRIPLE project, we use the Business Model Canvas (BMC) from Osterwalder & Pigneur[7] to visualise our business model considerations. As a basis for our business model scenarios (outlined in section 3.5), we must first address a few topics that are explained in the following Sections: "Platform Business Models" (3.1), "Competition Analysis" (3.2), "TRIPLE Within OPERAS Landscape" (3.3) and "Governance Models" (3.4).

3.1 Platform Business Models

Which model do Airbnb and Booking.com, Ebay, Amazon etc. use? All have developed their disruptive power through a common strategic approach to their business model: they are digital platform companies or multi-sided platforms. In other words, the aim is to become a central mediator for various stakeholders (customers, suppliers, partners) - in the best case, so that all partners in "Value Creation Networks" benefit from it together. In the following, we would like to compare this business model pattern with the TRIPLE specifics and check its applicability.

---

[7] Osterwalder, Alexander & Pigneur, Yves (2010). Business Model Generation. A Handbook for Visionaries, Game Changers, and Challengers. Hoboken, New Jersey: John Wiley & Sons.

Characteristics of (multi-sided) platform organisation according Osterwalder & Pigneur are:

☐ They bring together two or more different but interdependent customer groups.

Relevance to TRIPLE platform: TRIPLE also tries to bring together different interest groups. We have on the one side data providers (publications from repositories, user-generated data like research projects, research data and user profiles) and on the other side a variety of different user groups like researchers, institutions, science journalists, citizens, public authorities, organisations, policy makers etc.

☐ Such platforms are only of value for one customer group if the other customer group is also present.

Relevance to TRIPLE platform: We have to pay equal attention to all sides of the platform data providers, users, partners, third party providers etc.

☐ The platform creates value by enabling interactions between different groups.

Relevance to TRIPLE platform: One of the main objectives of the TRIPLE platform is to connect and foster collaboration with other researchers and projects across disciplinary and language boundaries. Furthermore, TRIPLE aims to link SSH research with other stakeholders: citizens, policy makers, companies, enabling them to take part in joint research projects and to address some of their issues.

☐ A "multi-sided" platform gains in value to the extent that it can attract more users, a phenomenon known as the "network effect"[8].

Relevance to TRIPLE platform: We are aware that the growth and size of a platform depends on its attractiveness to users. For this reason we attach great importance to usability and user experience.

Success factors of platform business models:[9]

1) **Efficiency:** Reduce search efforts and offer better prices, convenience and selection options.

Except for the "offer better prices" factor, all efficiency factors apply to the TRIPLE platform. Our intended platform aims at reducing search efforts and wants to provide an extraordinary convenience through our innovative functions and features set (recommendation, annotation, visual discovery, trust building system etc.). Furthermore, we offer an interface for the integration of third party applications and services such as crowdfunding services for research projects.

---

[8] Definition of "network effect" https://www.investopedia.com/terms/n/network-effect.asp
[9] Source: https://blog.unymira.com/de/platform-business-models

2) **Access:** The platform gives producers and service providers access to a broad and relevant target group.

The main objective of the TRIPLE platform is to facilitate the discovery and reuse of open scholarly SSH resources, i.e. research data and publications, which are currently scattered across local repositories. TRIPLE also fosters the coupling of third party services through an open API.

3) **Win Win**: The strategic partners of the platform receive, along with the platform, a better and broader market access, and they participate in the growth of the transaction volume of the platform.

All considerations regarding design, development and evaluation of the TRIPLE platform functions and features aim at a win-win situation for all stakeholders. Only if all stakeholders recognise an added value, the platform will be successful.

4) **Exponential Growth:** Exponential growth scales cost structures positively which results in better prices and attracts more customers to use the platform.

Continuous growth is an important prerequisite for the success of the platform and is coordinated and driven by the activities in WP8 "Communication and Dissemination". Beyond that, the planned integration of TRIPLE into OPERAS and the EOSC marketplace will play a decisive positive role in the growth path of the platform.
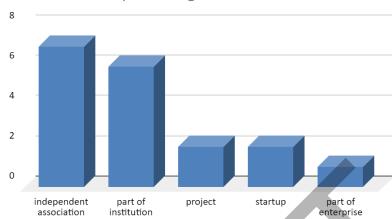
The comparison of the (multi-sided) platform characteristics and success factors with the planned GOTRIPLE platform show that this business model pattern can act as a blueprint for a sustainable GOTRIPLE business model.

3.2 Competition Analysis

To get a broad overview of the competitive environment, 26 scholarly communication platforms were evaluated through web-based research. The analysis, conducted in task T7.1 and reported in deliverable D7.1 "Report on Stakeholder and Opportunity Analysis") covers an overview of offered features and functions, organisational insights, strengths and weaknesses as well as impressions on usability and user experience. Based on the available results from the analysis, we subsequently took a closer look on organisational and financial aspects. Our main aim is to get inspiration and learnings for the future TRIPLE organisation/governance model and potential revenue sources.

Regarding forms of organisation, our analysed sample shows a very broad spectrum of opportunities. In our analysis we distinguish basically between "non-profit" and "for-profit" organisations. As shown in Figure 4, most of the non-profit ones are structured as independent associations or are a part of institutions (mostly linked to universities or research institutions). Organisations in form of projects and start-ups are more rare.
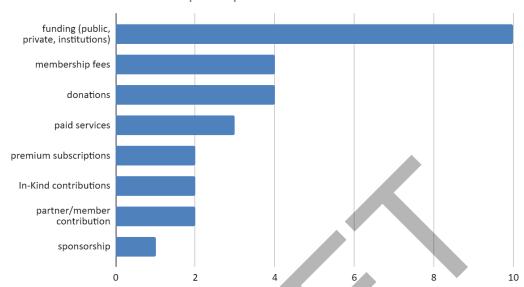
Breakdown "non-profit" organisations

FIGURE 4. Breakdown of non-profit organisations

For a future GOTRIPLE business organisation, the two most common ones (independent association or a part of an institution) are most likely. Since the GOTRIPLE core search function is based on the Isidore search engine, which is developed by CNRS, it is advisable that TRIPLE, too, be affiliated to CNRS for the time being. Another possibility would be to tie TRIPLE organizationally to OPERAS. If and how this organisational connection is possible and reasonable will be worked out in the further course of the project. More information on this topic can be found in chapter 3.4, and there is also a separate task in the project dedicated to this topic: T7.5 "TRIPLE solution in the OPERAS landscape".

Since the future GOTRIPLE organisation will most likely be non-profit oriented, we have analysed the revenue opportunities only for the non-profit organisations (17 platforms). Similar to the forms of organisation, the picture in terms of revenue sources is also diverse (see Figure 5). Different forms of funding (public, private, institutions) are the dominant income stream for the analysed non-profit platforms, followed by revenues out of membership fees, donations and paid services. Further less common revenue sources are premium subscriptions, in-kind contributions, partner/membership contributions and sponsorships.

Revenue sources of non-profit platforms

FIGURE 5. Overview on revenue sources

To get a more detailed view on organisational and financial aspects we selected four organisations (two independent associations, two as part of an institution) for further investigations. The results are presented in Table 2.

TABLE 2. Extract from the competitor analysis regarding organisation and revenues

Platform Name	Humanities Commons	HuNI	arXiv.org	CORE
URL	https://hcommons.org/	https://huni.net.au/#/search	https://arxiv.org/	https://core.ac.uk/
Origin/Start	USA / 2013	AUS / 2013	USA / 1991	UK / 2011
Organisation Type	non profit (organisation)	non profit (organisation)	non profit (part of institution)	non profit (part of institution)
Organisation Information	Humanities Commons is a trusted, nonprofit network based on the open-source Commons-in-a-Box project of the City University of New York and the CUNY Graduate Center and is an expansion of the MLA's MLA Commons,	The Humanities Networked Infrastructure (HuNI) is governed by a Steering Committee consisting of members from a diverse range of Australian Universities and backgrounds in the Humanities	arXiv is maintained and operated by Cornell University. Governance of arXiv is led by the Leadership Team with guidance from the arXiv Scientific Advisory Board and the arXiv Member Advisory Board.	CORE is a not-for-profit service delivered by The Open University and Jisc Founder & Head of CORE Petr Knoth (The Open University) Team: according to website approx. 16+ employees
Financial Information	The platform was developed through a fund granted from the Andrew W. Mellon Foundation. The	As of 2013, HuNI received an investment from Nectar (National eResearch Collaboration Tools and	arXiv is funded by Cornell University, the Simons Foundation, member institutions, and donors.	In-kind contribution from University (office infrastructure etc.), financial support from

				partner JISC, Funding
	platform also received funding from the National Endowment for the Humanities. Users and institutions can make a donation, but it's not clear how much costs this budget item can actually cover.	Resources project) of 1,33 Australian million dollars. Partner contributions were up to 480 000 $ and more than 1 million of in-kind contributions. The platform is free of charge for users.	Total revenue for 2020 is estimated as approx 2M$,	partner JISC, Funding (projets), paid services (API) for companies
Revenue Types	public funding, donations	public funding, partner contribution, in-kind contribution	Institutional funding, member contributions, donations, in-kind contributions	paid services, in-kind contributions, institutional funding

Considering the current project organisation (including roles and responsibilities), the results of the joint exploitation survey (see chapter 2.3) and the insights from the competitor analysis, the following conclusions in terms of organisation and financing can be drawn.

The future GOTRIPLE platform could be managed and operated as a (non-profit) part of an institution (e.g. CNRS) and, depending on the further evolution of the project, as an independent organisation. Depending on the number of stakeholders involved and on the complexity of the business model, the establishment of a steering and advisory board need to be considered. The composition and tasks of the committee partners must be clearly defined.

If we assume that the GOTRIPLE platform will continue as "part of an institution" after the end of the project, financial support in the form of institutional funds and (in-kind) contributions from project partners (see Section 2.3) plays a central role. Also, contributions in the form of sponsorships (from institutions), paid services (provision from crowd-funding services, premium features, etc.) and donations seem realistic.

When considering the fee-based components of the sustainability model, the specifics of the cross-border VAT need to be taken into account. At the time of writing, the "place of supply" (and the country where the VAT should be paid in) requires determining the place of residence of the end-user. Minimising overheads related to this issue need to be considered (e.g. by assigning SMEs roles of "TRIPLE resellers" for the countries they have operations in).

The detailed arrangements will be progressed in the course of the project parallel to the implementation of the functions and features of the platform.

3.3 TRIPLE within OPERAS landscape

In this paragraph, we look at TRIPLE in the context of the OPERAS Research Infrastructure (RI), which provides an additional perspective for the governance model development outlined in section 3.4. TRIPLE is defined as one of the core services of the OPERAS Research Infrastructure ('Discovery'). As such, it is an integral part of OPERAS' overall coordination, and the relationship between OPERAS and TRIPLE is shaped by the OPERAS strategic plan and governance structure.

The OPERAS white paper "Platforms and Services"[10] written in the OPERAS-D project provided some of the groundwork for the governance model for TRIPLE.

The aim of task T7.5 "TRIPLE solution in the OPERAS Landscape" is to come up with a framework outlining how TRIPLE will operate in the context of OPERAS. It will most likely be a preparation for the Service Level Agreement between OPERAS and TRIPLE (as part of Huma-Num/CNRS, or as a separate collaborative including other partners involved in TRIPLE).

The framework should have a number of levels:

- OPERAS values: TRIPLE will share core values, such as fostering quality, putting the community at the heart of the infrastructure, engaging in the co-creation of the services.
- OPERAS principles: TRIPLE will follow common principles that are adopted by the community, such as outlined in the "Principles for Open Scholarly Infrastructure"[11], regarding governance, sustainability and insurance.
- OPERAS service integration: TRIPLE will integrate into overarching services, in particular into OPERAS Portal (transnational access and single sign-on access), into the catalogue of training of OPERAS Services and into EOSC.
- OPERAS business plan: As one of the central services within OPERAS, TRIPLE will be part of the OPERAS business plan, which may include a funding arrangement through OPERAS RI.

The framework should result in a Service Level Agreement (SLA) with OPERAS. The SLA should outline how TRIPLE operates within OPERAS, in terms of governance, funding, maintenance and service provision.

3.4 Governance Models

Before we take a closer look at TRIPLE relevant governance models, a common understanding of governance is required. Indeed, there are many different definitions and forms of governance, from corporate to public governance.

Definition(s) of TRIPLE's governance

For instance, according to Wikipedia's definition, governance "is the way the rules, norms and actions are structured, sustained, regulated and held accountable. The degree of formality depends on the internal rules of a given organization and, externally, with its business

---

[10] Pierre Mounier, Eelco Ferwerda, Suzanne Dumouchel, Rupert Gatti, Arnaud Gingold, Dasa Radovic, … Leo Waaijers. (2018). OPERAS Platforms and Services White Paper. Zenodo. http://doi.org/10.5281/zenodo.1324059.

[11] Bilder G, Lin J, Neylon C (2015) Principles for Open Scholarly Infrastructure-v1, retrieved 21092020, http://dx.doi.org/10.6084/m9.figshare.1314859

partners."[12] This first definition conveys a structural vision of governance: one built on "rules, norms and actions" with adjustable formality, necessary to ensure a viable organisation.

Another definition of "governance" is "[t]he system by which entities are directed and controlled. It is concerned with structure and processes for decision making, accountability, control and behaviour at the top of an entity. Governance influences how an organisation's objectives are set and achieved, how risk is monitored and addressed and how performance is optimised."[13] This second one also relates to the structural nature of governance but adds something else: the internal processes of decision-making, and, above all, the goal behind it - namely achieving objectives, monitoring risks and realising performance.

Those definitions are two sides of the same coin. Governance, as we intend it for the TRIPLE endeavour, will build on these two aspects: based on a solid organisational structure, we expect to reach our objectives.

In addition, we must consider that the common understanding of governance may differ, based on the governed entity, i.e. whether it is a service or an organisation. Indeed the governance of a service and the governance of an organisation will not have the same strategies and structures. For instance, the governance of a digital service will imply a deeper look into technical requirements, maintenance and long-term sustainability. The TRIPLE project needs to bear this in mind, as its original and sole nature is to provide a discovery service, intended for the SSH research community. Through the lead coordination of CNRS/Huma-Num, 19 partners are involved, with six partners contributing to its technical improvement through the Technical Board (Net7, OKMAPS, Know-Center, MEOH, Nuromedia and OKMAPS).

While it is agreed that TRIPLE is a service, one must also consider its broader context of integration: the OPERAS AISBL and the EOSC. As mentioned before, the GOTRIPLE platform will be one of the dedicated services of OPERAS. The success of this integration and sustainability depends on the joint efforts of the 19 partners - whether ERICs, service or tools providers, etc. In the light of the EOSC landscape, TRIPLE intends to liaise with the Horizon 2020 SSHOC (Social Sciences & Humanities Open Cloud) project. This project embodies the SSH branch of the EOSC through the creation - among other services - of the SSH Open Marketplace: a discovery portal intended to support the researcher through every step of the research and data life cycle, especially by showcasing SSH resources such as digital tools, services and training materials. More concretely, the SSH Open Marketplace will offer its users high-quality content through contextualised solutions: a tool may be suggested and linked to a tutorial or an academic publication on the same topic. We believe the GOTRIPLE platform will complete this tool portal by providing a discovery service for data, profiles and research projects. For instance, we could envision that the TRIPLE core and innovative services would be referenced as potential contextualized solutions. Higher levels of integration could also be investigated, especially

---

[12] Governance definition 1: https://en.wikipedia.org/wiki/Governance#Nonprofit_governance
[13] Governance definition 2:
https://www.governancetoday.com/GT/Material/Governance__what_is_it_and_why_is_it_important_.aspx?WebsiteKey=0cf4306a-f91b-45d7-9ced-a97b5d6f6966

regarding governance and business models and to facilitate the use of both platforms for the researchers (via an API for instance).

TRIPLE's governance needs and expectations

Good governance practises are essential for sustained business success. First, to preserve and strengthen stakeholders' confidence: a stakeholder base can only provide benefits for the organisation through social and emotional support. Secondly, we deem essential to create a solid foundation to be able to run a high-performing organisation - as it was previously expressed in the first definition of governance above. The achievements of goals and long-term success thus require input and support from all levels of an organisation and therefore strong support management and staff. Apart from those internal requirements, we believe that a strong governance model also depends on its external environment.

Following those considerations, the Nonprofit Governance Codex[14] was chosen to define core governing characteristics for TRIPLE:

1. Clear separation of management and control personnel backed up by reporting obligations and approval requirements.

2. Competent staffing of the committees and management and explicit assignment of strategic planning to a committee.

3. Transparency with regard to internal constitution and committee membership, avoidance of accumulation of offices, detection and compensation of conflicting interests, exclusion of self-dealing.

4. Proactive information policy towards committees and the public, including prompt publication of the annual financial statements including the annual report and explanations of the origin and use of funds.

5. Securing the ideational character of the organisation.

6. Gender balance in the composition of the institutions.

TRIPLE Governance scheme(s)

Following the end of the TRIPLE project, the following governance approach is currently being scrutinised to ensure that TRIPLE consortium will be involved in the strategic, scientific and technical decisions related to GOTRIPLE platform and at the same time to ensure that the platform is one of the OPERAS services. For doing so, it is planned to have a Collaboration Agreement (based on the DESCA model but in a simplified version) to establish the governance of GOTRIPLE platform with the different bodies and their responsibilities. This Collaboration Agreement will be for the partners who are willing to take part in the future platform after the end of the project with one coordinating institution, most probably CNRS. In a second step, a

---

[14] Christian Koch: Nonprofit Governance Codex. published on 03.03.2008 in socialnet.de materials http://www.socialnet.de/materialien/4.php retrieved on 21.09.2020.

Service Level Agreement (SLA) will be signed between the coordinator of the Collaboration Agreement (on behalf of all the partners) and OPERAS AISBL.

The SLA is prepared in the OPERAS Special Interest Group "Platforms and Services" coordinated by OPERAS technical coordinator, and the Collaboration Agreement will be prepared through the collaboration of TRIPLE WP7 with the aforementioned OPERAS Special Interest Group .

The future governance of the GOTRIPLE platform is composed of different bodies. At the moment, the following bodies are suggested. The suggestions are aligned with the Non-profit Governance Codex's criteria and the TRIPLE project's expectations stated above:

- Strategic Committee (SC): This entity is dedicated to TRIPLE's sustainability.
  - *Missions:*
    - The SC will define TRIPLE's strategic orientation. This orientation feeds upon the recommendations provided by the Data & Tool Committee (DTC) with regards to technical and editorial challenges and, as the strategic orientation also originates from external challenges, of the Users Engagement Committee (UEC) concerning external and societal challenges.
    - The SC strategic orientation includes administrative, financial and communication policies.
    - As TRIPLE counts as one of OPERAS services, members of the OPERAS Executive Assembly can be invited to discuss specific topics.
  - *Composition:*
    - The SC is composed of one representative per partner engaged in the financial sustainability of TRIPLE, plus respective heads of the Data & Tool Committee (DTC) and the Users Engagement Committee (UEC).
    - The SC embodies the decision-making body: a strategic decision/recommendation requires a unanimous vote.

- Data & Tool committee (DTC): this committee is dedicated to the technical and editorial maintenance of TRIPLE.
  - *Missions:*
    - The DTC leads the decision regarding data - whether to add/remove data, update services, add new services, etc.
    - The DTC feeds upon the strategic orientation of the SC and the recommendations of the UEC.
  - *Composition:*
    - The DTC is composed of experts appointed by the SC based on the UEC recommendations.
    - The DTC appoints its Head Committee by absolute majority voting.

- Users engagement committee (UEC): the UEC embodies external and social challenges by representing the TRIPLE's community.
  - *Missions:*
    - The UEC carries the voice of external challenges to the two other bodies, the SC and the DTC.
  - *Composition:*
    - The UEC is composed of experts appointed by the SC based on the DTC recommendations.
    - The UEC appoints its Head Committee by absolute majority voting.

Based on the above, the following governance scheme blueprint is suggested (Figure 6):

FIGURE 6. TRIPLE Governance Scheme Blueprint

The work on the governance of the future GOTRIPLE platform is still ongoing, and the related documents will be provided in the future TRIPLE Exploitation Plan. This is why the bodies presented above may change depending on the service itself and the input by the current project partners.

The OPERAS Scientific Advisory Committee (SAC) will have the GOTRIPLE platform in its portfolio in order to avoid multiplication of advisory bodies for each of OPERAS services. However, it is planned to have representatives of TRIPLE partners in the OPERAS SAC.

Another aspect which is currently under discussion and which has to be considered to ensure sustainability of the SSH resources in the EOSC is the possible connection between the SSH

Open Marketplace governance and/or other outputs of the SSHOC project. As both projects develop services for SSH researchers in the EOSC context, it might be interesting to consider synergies even at the level of governance.

3.5 TRIPLE Business Model Scenarios

The TRIPLE business development follows the iterative process of business concept design according to Bland & Osterwalder[15]. The first design activity is to transform our GOTRIPLE business ideas into a unique value proposition and develop it further into a complete business model. At this point, the initially designed business model in the TRIPLE Plan for Exploitation and Dissemination of Results (PEDR) (D8.6) still contains many assumptions, e.g.

☐ Do GOTRIPLE services solve high-value customer/user problems?

☐ Do we have the right value proposition for the user groups we are targeting?

☐ Can we perform all promised GOTRIPLE functions and features (at scale) at the right quality?

☐ Are customers/partners willing to pay for a dedicated service GOTRIPLE offer?

☐ Can we generate revenues that at least cover the costs?

These questions cover three types of risk. First, that users/customers show a low interest in our GOTRIPLE services (desirability). Second, we have problems to build and deliver our services at the right quality level (feasibility). Third, we cannot generate enough revenues to cover the incurred costs (viability). To reduce uncertainty and risk, we need to test the most important hypothesis with appropriate experiments. Each experiment generates evidence and insights that allow us to learn and decide. Based on these pieces of evidence and insights, we either get confirmation that our direction is sound, or we need adapt/change our business ideas.

In the next development step, we describe three business model scenarios in order to be able to best adapt to different implementation possibilities after the project end. Apart from the different business scopes of the 3 scenarios, these are also considered from a temporal implementation perspective (start with a minimum scenario, then medium and final best case scenario). In the following, all scenarios are briefly described and presented in a Business Model Canvas (BMC)[16]. The BMC consists of nine building blocks:

☐ **Customer Segments (CS):** describes the different customer/user groups we want to reach and serve with the TRIPLE platform

---

[15] Bland, David J. & Osterwalder, Alexander (2020). Testing business ideas. Hoboken, New Jersey: John Wiley & Sons,

[16] Osterwalder, Alexander & Pigneur, Yves (2010). Business Model Generation. A Handbook for Visionaries, Game Changers, and Challengers. Hoboken, New Jersey: John Wiley & Sons.

☐ **Value Proposition (VP):** describes the TRIPLE services that create value for a specific customer/user group

☐ **Channels (CH):** describes how the TRIPLE platform communicates with and reaches its customer/user groups.

☐ **Customer Relationships (CR):** describes the types of relationships TRIPLE establishes with specific customer segments/user groups or stakeholder.

☐ **Revenue Streams (RS):** describes the possible monetary/non-monetary income streams.

☐ **Cost Structure (CS):** describes all costs recurred to operate GOTRIPLE.

☐ **Key Resources (KR):** describes the most important assets required to make the TRIPLE platform work.

☐ **Key Activities (KA):** describes the most important (business) processes to make the TRIPLE platform work.

☐ **Key Partners (KP):** describes the network of partners (stakeholders) that is necessary to make the TRIPLE platform work.

Minimum Scenario: The main objective of this scenario is to keep the platform up and running after the end of the project. With minimal (in-kind) contributions from certain partners, maintenance (for search functions and innovative features) and hosting should be guaranteed. Additional income could be generated via funding or provisions from the crowdfunding service. The services offered are limited to the functions and features realised during the duration of the TRIPLE project. The main users will rather be limited to researchers. This scenario is definitely not aimed at by the consortium.

KP
- 19 TRIPLE project partner
- OPERAS
- EOSC

KA
- Maintenance
- User Support

KR
- TRIPLE Platform
- Accumulated Knowledge in TRIPLE project

VP
A new discovery service allowing customers to find SSH research output, people and new ways of funding research.
- Search (publications & data, projects)
- Recommendations
- Trust Building System
- Visualisation (Knowledge Maps ect.)
- Annotation Service
- Crowd Funding Service

CR
- Support Team
- Online Application

CH
- Website/Platform
- Word of mouth
- Organic search (SEO)
- Social Media
- Network

CS
- Researchers (SSH and other discipline researchers)
- Science Journalists

CS
- Platform hosting
- Personnel costs for operational activities (bug fixing)
- License costs in case of using proprietary data and/or software

RS
- In-Kind contributions from partners and organisations
- Funding (institutions, projects)
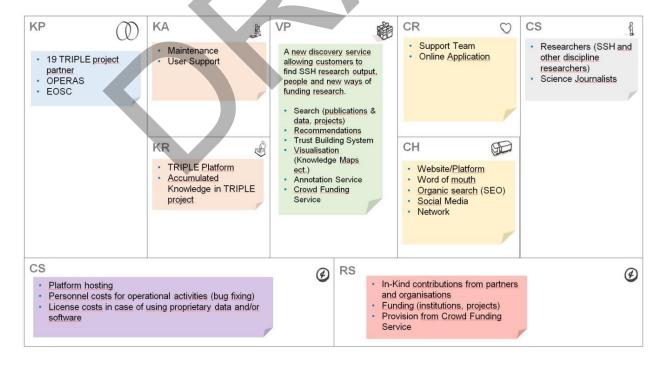- Provision from Crowd Funding Service

FIGURE 7. Business Model Canvas representation of minimum scenario

Medium Scenario: In this scenario, the focus is on providing advanced maintenance including periodic updates on the core and innovative services and extended user support. With these improved services, we would like to increase our user numbers and reach other user groups (e.g. science journalists, science citizens and public authorities) besides the main user group, i.e. researchers. The resulting higher expenses will be compensated by additional income in the area of sponsoring/donations and funding sources (public, institutional, project-based).
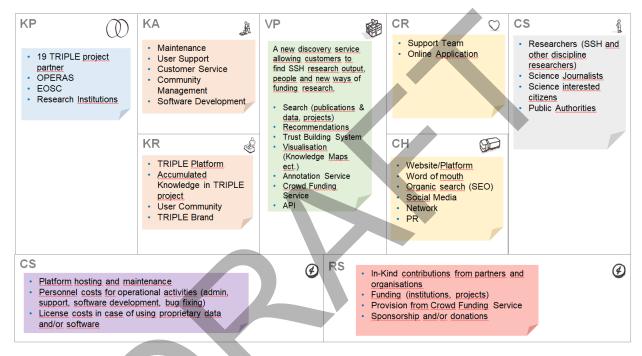

FIGURE 8. Business Model Canvas representation of medium scenario

Best Case Scenario: To make optimal use of the "network effect", we strive for strong growth in terms of platform size and user numbers in this scenario. We want to achieve this growth through attractive additional offerings (new features and functions) for new user groups, through active marketing and community management. The resulting additional expenses are compensated by new revenue streams, e.g. a membership fee for accessing premium features, selling of add on-services or data selling (API).
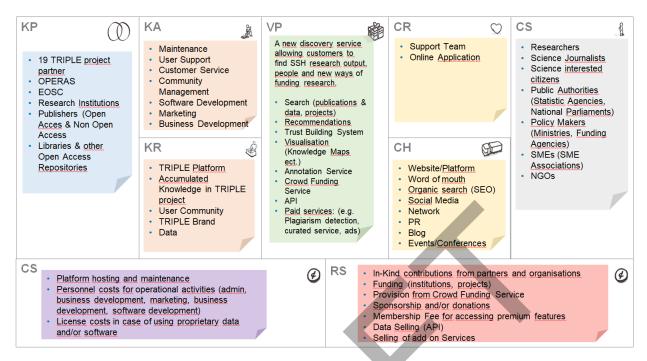
FIGURE 9. Business Model Canvas representation of best case scenario

4| CONCLUSION AND OUTLOOK

Within the present report, we provide an intermediate status of TRIPLE's exploitation and sustainability strategy. Our main focus is to create a valuable and viable business model for GOTRIPLE platform that is sustainable beyond the project end. In this summary, we provide an update on our general exploitation strategy (individual and joint exploitation) including intellectual property rights (IPR) management, as well as a detailed insight into our sustainable business model considerations.

Concerning individual exploitation, it can be said that the wide range of expected benefits and results (derived from a survey among the project partners) form a solid basis for effective exploitation of TRIPLE's project results. In terms of (joint) exploitation of the GOTRIPLE discovery platform, the partner survey shows that there is a high willingness to contribute to any kind of maintenance activities after the project ends. Many partners are also prepared to participate in various roles in a future operating organisation for the TRIPLE platform.

In the course of our business model considerations, the business model pattern "Platform Business Model" was first analysed for suitability for GOTRIPLE. The comparison of the platform characteristics and success factors with the planned GOTRIPLE platform shows that this business model pattern can act as a blueprint for a sustainable GOTRIPLE business model. From an in-depth competition analysis on organisational and financial aspects we gained important insights regarding the future GOTRIPLE organisation/governance model and potential revenue sources.

A close look at TRIPLE in the context of OPERAS provided a solid foundation for the first governance model suggestion. Besides basic considerations regarding needs and expectations for a suitable model, the following bodies are proposed.

- Strategic Committee (SC) which is dedicated to GOTRIPLE's sustainability.
- Data & Tool Committee (DTC) which is dedicated to the technical and editorial maintenance of GOTRIPLE.
- Users Engagement Committee (UEC) which embodies external and social challenges by representing the GOTRIPLE's community.

Finally, three business model scenarios (minimum, medium and best case scenario) were developed to show a possible realisation framework in terms of business scope and implementation time frame.

Within WP7 and their assigned tasks, we are continuously detailing exploitation plans and preparing our innovation and commercialisation activities. This includes continuous observation of the business environment and competitors, further elaboration on suitable governance models, identifying potential partners and revenue sources, refining business scenarios and testing of business model assumptions.

ANNEX

ANNEX 1: INDIVIDUAL EXPLOITATION SURVEY RESULTS

Partner	Partner Type	Prioritisation of exploitation ambition	Concrete expected benefits/results
Abertay University	Public Institution	1. Scientific 2. Reputation 3. Knowledge gain 4. Visibility	As an academic/research partner Abertay sees the main exploitation of the project results in terms of scientific publications and in the increased research reputation that derives from participation in a large European project. Publications obtained from the research will facilitate the University's future successful applications toward research grants in the areas of co-design and user research.
CESSDA	ERIC	1. Visibility 2. Technical compatibility	CESSDA and its national Service Providers will benefit from the alignment on metadata and the inclusion of CESSDA in the future. The TRIPLE platform will increase the re-use of its data holdings.
CLARIN	ERIC	1. Scientific 2. Technical progress 3. Visibility 4. Knowledge gain	TRIPLE's discovery services that link together research data, documents, people and projects will be of benefit to the CLARIN infrastructure, as the outcome of the project will create an additional layer of interaction and collaboration with the broader community. Moreover, the integration of TRIPLE in EOSC will increase the visibility of the CLARIN infrastructure in the wider European ecosystem of SSH and Open Science.
CNR (Italy)	Public Institution	1. Scientific 2. Technical progress 3. Knowledge gain 4. Visibility 5. Image 6. Business	CNR will exploit the TRIPLE discovery platform to complement its features with the features and services offered by the CLARIN-IT national node and the CLARIN infrastructure, at large. TRIPLE, indeed, will allow not only to discover research data but also to connect projects and people, thus allowing people to engage and interact. TRIPLE is also expected to facilitate integration into the EOSC and implementation of services in the EOSC marketplace.
CNRS	Public Institution	1. Scientific 2. Knowledge gain 3. Technical progress 4. Business 5. Image/ reputation	CNRS will exploit TRIPLE platform at two levels: 1. As a pilot to implement new features to the French national platform ISIDORE, 2. To extend the OPERAS services portfolio as planned in the OPERAS-D project. TRIPLE will then be one of the core services OPERAS will offer to the research community at European level which, in return, will engage more stakeholders with the OPERAS infrastructure.
DARIAH	ERIC	1. Scientific 2. Knowledge gain 3. Visibility 4. Reputation	Deepen and expand relations with the other partners involved in the project. Draw inspiration from the deliverables to continue building DARIAH's tools & services. Make sure that the currently developed SSH Open Marketplace and TRIPLE are compatible and complementary. Promote further Open Science in SSH

			communities. Offer visibility for DARIAH's projects and communities.
EGI	Foundation/ Non-profit organisation	1. Technical progress 2. Science 3. Business 4. Visibility	TRIPLE services will be integrated with the EGI Check-in. EGI will support to make the TRIPLE services optimally visible in the EOSC portal and marketplace, providing access to a marketplace for data intensive research services that aim at reaching tens of millions of data analysis experts in Europe in the near to medium term future.
IBL PAN	Public Institution	1. Scientific 2. Technical progress 3. Knowledge gain	Increasing discoverability and usage of Polish language resources (mapping providers from PL); IBL PAN will have an easier and faster access to materials and information in their fields of expertise in different languages.
Know-Center	Research Institution	1. Scientific 2.Knowledge gain 3. Visibility 4. Reputation	KC will leverage the work from TRIPLE in order to further develop its recommendation framework ScaR. Furthermore, KC will strengthen its knowledge base in the area of data-driven business models.
Lexical Computing	SME	1. Business 2. Technical progress	LC will benefit from the alignments between the different thesauri at a European level and from other language data sets created within the project. LC will use the data for further research, to strengthen its Sketch Engine machine and to increase its offers.
MEOH	Non-profit organisation	1. Reputation 2. Business 3. Visibility 4. Knowledge gain 5. Technical progress	MEOH will further exploit the results of the trust building system for B2B and B2C applications. The trust model being general-purpose, it can be applied to build trusted relationships within any type of multi-stakeholder environments such as between multiple organisations, between businesses and customers, and between the public sector and citizens. Second, additional layers and plug-ins will be developed to support B2C solutions such as scouting for reliable partners and talents beyond the known trusted horizon, disseminating products and ideas within social clusters of high value, and enabling collective decision making at scale.
MWS	Public Institution/ Foundation	1. Visibility 2. Knowledge gain 3. Scientific	Growing commitment of MWS institutes to OPERAS and other European research infrastructures, thus fostering the role of MWS as national contact point
National Documentat ion Centre (EKT)	Public Institution	1. Knowledge gain 2. Scientific 3. Business 4. Technical progress 5. Image/visibility	The main benefits for EKT will be the following: improvement of the portal OpenArchives.gr which is the main provider of Greek content for the TRIPLE platform. Increased discoverability and usage of Greek Open Access content (EKT is the main provider of such content).
Net7	SME	1. Business 2. Knowledge gain 3. Technical progress 4. Reputation 5. Visibility	Net7 will develop a business plan and deploy its service Pundit into the EOSC marketplace as well as into external markets. Pundit has been released as Open Source (under AGPL 3.0) to foster use and customisation in distinct domains and settings. In terms of segmentation, we plan to address the following main classes of target users: 1) Scholars/researchers, 2) Students/teachers

Nuromedia	SME	1. Business 2. Technical progress	Nuromedia plans to exploit the results of the TRIPLE project and the applications and methodologies. Key NURO personnel are doing a lot of sales activities participating in lots of matchmaking events, conferences, workshops and trade shows, where they will promote and disseminate the project and the results with the aim to also generate interest in the further exploitation of TRIPLE, starting with the very beginning of the project. NURO will extend its client base using the knowledge gained during the project.
OAPEN	Non-profit organisation / Foundation	1. Visibility 2 Technical compatibility	OAPEN will leverage the TRIPLE discovery platform to increase discovery and usage of its Open Access monographs collection, thereby increasing the impact of OA models for monographs. In addition, TRIPLE will improve integration with EOSC.
OK Maps	Non-profit organisation	1. Technical progress 2. Visibility 3. Knowledge gain 4. Scientific 5. Business 6. Image	OKMAPS will use the results from TRIPLE to further develop its visualisation framework Head Start. OKMAPS will also enhance its discovery services with innovative technologies developed in TRIPLE and deploy these services on the Open Knowledge Maps platform and the EOSC marketplace. In addition, OKMAPS will refine its own business model based on the outcomes of TRIPLE.
Universidade de Coimbra	Public Institution	1. scientific 2. knowledge gain 3. technical progress 4. visibility 5. reputation 6. business	Coimbra University (through the digital ecosystem UC Digitalis) will exploit the TRIPLE discovery platform to enhance the visibility of its contents and the compliance with FAIR principles. It will as well strongly facilitate the integration in the EOSC and the market place, particularly in the area of SSH.
UNIZD	Public Institution	1. Scientific 2. Knowledge gain 3. Visibility 4.Image/reputation 5. Technical progress	UNIZD will leverage the TRIPLE platform to increase discovery and usage of Croatian Open Access publications (journals, monographs and others) and research data promoting higher publishing standards and integration with EOSC. Furthermore, sharing different practices and knowledge of TRIPLE partners could foster improvements of the services provided by UNIZD (e.g. MorePress publishing platform) and national OS infrastructure (HRČAK, DABAR).

ANNEX 2: JOINT EXPLOITATION SURVEY RESULTS

Partner	Contribution after project end?	Concrete contribution?	Cost estimation for contribution?	Role within future TRIPLE platform?	Official/ legal role in future TRIPLE organisation?
Abertay University	Yes, if contribution leads to scientific	Continue with the user research/evaluation of the use of the platform; study better how the users use	Circa 3,000 Euro/year, as a low end estimation	Continuous research with intent of improving the service	Needs to be discussed at a more advanced time in the

	output	the platform in their work, once this is fully operational			project
CESSDA	No	Expertise; continue to provide compatible metadata endpoints and be involved in future metadata developments, particularly with respect to Controlled Vocabularies.	-	Consultancy; data provider	No, but a formal collaboration with OPERAS as the future service provider would be desirable
CLARIN	Yes	Expertise; user support	Hard to specify, probably all contributions will be in-kind	Collaboration on interoperability issues and user engagement	Unclear at this stage; interested in a MoU specifying the models of collaboration rather than becoming part of something else
CNR (Italy)	Yes	Time and expertise for platform maintenance	For these maintenance activities CNR estimates a cost equal to 4,000 Euro/year.	Support team for the operation of the future TRIPLE platform	Yes
CNRS	Yes	Time; money; software updates; bug fixing etc. This has to be discussed in the context of OPERAS as Huma-Num is a Core Member.	10,000 Euro/year (for hosting) + at least 1 FTE	Coordinator; support team; host	Yes
DARIAH	yes, depending on the governance structure	Expertise; eventually user support when relevant; community engagement if applicable; possible involvement in content participation	Hard to specify, probably all contributions will be in-kind	DARIAH would like to play a role but it is difficult to say which one. This will depend on many factors (needs, governance, etc.).	No, a MoU between both RIs would maybe make more sense than becoming a partner
EGI	Yes	Continue technical support for EGI Check-in. Provide EGI Cloud resources for hosting TRIPLE services	5,000 Euro/year via EGI funded projects e.g. INFRAEOSC-07/EGI-ACE	Cloud resource provider; technical support	Yes
IBL PAN	Yes, in terms of work with local	Adding and mapping other providers	Approximately 2,000 Euro/year (in-kind)	Providers' support coordinator	Yes

	providers				
Know-Center	Yes	Since the implemented recommender framework ScaR will be constantly further developed at KNOW, updates and bug fixes will be provided for the TRIPLE platform.	Approximately 5,000 Euro/year (in-kind)	Provider of software component (ScaR Recommender)	In principle yes, but it depends on the general conditions
Lexical Computing	Yes	Expertise	-	Consultancy regarding language technology and data	No
MEOH	Yes	Trust Building System bug fixing; user support; software updates (if minor); overall advice on the business management of the platform; in-kind contribution unless contribution becomes systematic and/or frequent	For the TBS management, bug fixing, development incl. back-end and front-end, security issues fixing: 5,000 Euro/month and for project management 2,000 Euro/month	Trust Building System manager and support team; marketing of the TBS	Yes
MWS	Yes	Time; if possible parts of FTE for data export from perspectivia.net; contination of outreach activities etc.	Difficult to specify, probably more likely parts of FTE than money	Communication support	Yes, in the context of the AISBL OPERAS
National Documentation Centre (EKT)	Yes	User support; data provider; time; software updates	-	Data provider; support team	Yes
Net7	Yes	In-kind contribution for minor technical adjustments, e.g. bug fixing, user support, software updates	4,000 Euro/year	Technical support for the current platform; technical partner for the platform software evolution	Yes
Nuromedia	Yes	Maintenance of the front-end part we developed and the TBS; bug fixing; user support in case of technical questions	-	Software developer	Yes
OAPEN	Yes	Time; expertise	In-kind support	-	No
OK Maps	Yes, if the	Maintenance: software	Heavily depends on	Maintainer of	No, not as this

	tasks are well-defined and the work is fully funded	updates, bug fixing, adaptation to API/framework changes	the extent of the maintenance tasks (frequency of updates, extent of API/framework changes etc.)	platform services developed by OKMaps	point, maybe as associate partner
Universidade de Coimbra	Yes, in particular by its direct involvement in the keeping of the catalogue of services provided	In-kind support and expertise, in particular the keeping of a Multilingual Translation Platform, based at the University of Coimbra	10,000 Euro/year in-kind	Coimbra is ready to play a role, depending on the needs and future governance of the TRIPLE platform.	Yes, in the context of the AISBL OPERAS
UNIZD	Yes	UNIZD contribution could consist in time, expertise and data provision. Also, there is a possibility to involve our students in user support and website maintenance if applicable.	5,000 Euro/year (in-kind)	Data provider; continuous research; member of support team; coordinator of different activities related to the development and maintenance	Yes, although it needs to be discussed with the university management