Time Machine: Big Data of the Past for the Future of Europe

Deliverable D1.1
CSA PROJECT MANUAL

Abstract
The CSA Project Manual gives an overview of the project objectives and implementation, with emphasis on the interactions that exist in the different Work Packages and the plans to exploit them. Detailed descriptions are also provided for the CSA governance structure, management processes, communication, monitoring of work, approval of deliverables, administration, and data access policy.

The Project Manual is a living document and should be updated throughout the project.

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Disclaimer

List of abbreviations

AI	**Artificial Intelligence**
CA	**Consortium Agreement**
CH	**Cultural Heritage**
CSA	**Coordination and Support Action**
CU	**Coordinating Unit**
DoA	**Description of Action**
EC	**European Commission**
ICT	**Information and Communication Technologies**
GA	**Grant Agreement**
GAs	**General Assembly**
LSRI	**Large Scale Research Initiative**
M	**Month(s)**
PL	**Project Leader**
PMBOK®	**Project Management Body of Knowledge**
RI	**Research and Innovation**
SSH	**Social Sciences and Humanities**
TL	**Task Leader**
TM	**Time Machine**
WG	**Working Group**
WP	**Work Package**
WPL	**Work Package Leader**

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1 Introduction

Time Machine (TM) is a Large-Scale Research Initiative (LRSI), pushing the frontiers of scientific research in Information and Communication Technologies (ICT), Artificial Intelligence (AI) and the Social Sciences and Humanities (SSH).

TM is built around the vision to develop the big data of the past, a huge distributed digital information system mapping the European social, cultural and geographical evolution: this large-scale digitisation and computing infrastructure will enable Europe to turn its long history, as well as its multilingualism and multiculturalism, into a living social and economic resource for co-creating a common future. The proposed LRSI will use space and time as shared references across domains, disciplines and cultures, to understand and give value to constructions, artefacts, observations and data produced over centuries, enabling Europeans to better appropriate their heritage and strengthen the feeling of European belonging.

The key objective of the TM CSA project is to develop a full LSRI proposal around this TM vision. Detailed roadmaps will be prepared, organised around science and technology, operational principles and infrastructure, exploitation avenues and framework conditions. A dissemination programme aims to further strengthen and structure a rapidly growing ecosystem of researchers, innovators and other stakeholders of the public and private sector involved with the development and exploitation of the big data of the past.

This document is the formal deliverable D1.1 Project Manual, prepared under Task 1.1 of the CSA. The intended audience is all persons involved in the implementation of the CSA.

Following this short introduction, the deliverable is organised in the following sections:

- Section 2 gives an overview of the TM LSRI and then presents the CSA structure and implementation plan.
- Section 3 discusses the key aspects of the CSA dissemination strategy and communication.
- Section 4 focuses on the governance scheme of the CSA.
- Section 5 describes the CSA deliverables and milestones.
- Section 6 presents the project management processes that will be used in the course of the CSA implementation.
- Section 7 reviews the H2020 requirements for technical and financial reporting.
- Section 8 provided information on the rules for scientific publications under H2020.

The list of partners is provided in Annex A. Annex B groups the templates and forms that are to be used in the different management processes of the CSA.

2 TM CSA project organisation and implementation plan

2.1 The TM LRSI structure

The LSRI is structured in four pillars, serving the following objectives

- Addressing the scientific and technological challenges in AI, Robotics and ICT for social interaction, for developing the Big Data of the Past, while boosting these key enabling technologies in Europe (Pillar 1).
- Building the TM infrastructure for digitisation, processing and simulation, in order to develop a sustainable management and operational model ("TM franchise"), as well as to create the basis for and engagement with the TM communities participating in the development and use of TM (Pillar 2).
- Creating innovation platforms in promising application areas, by bringing together developers and users for the exploitation of scientific and technological achievements, and therefore leveraging the cultural, societal and economic impact of TM (Pillar 3).
- Developing favourable framework conditions for the outreach to all critical target groups, and for guiding and facilitating the uptake of research results produced in the course of the LRSI (Pillar 4).

Each pillar comprises thematic areas, as shown in Figure 2-1.

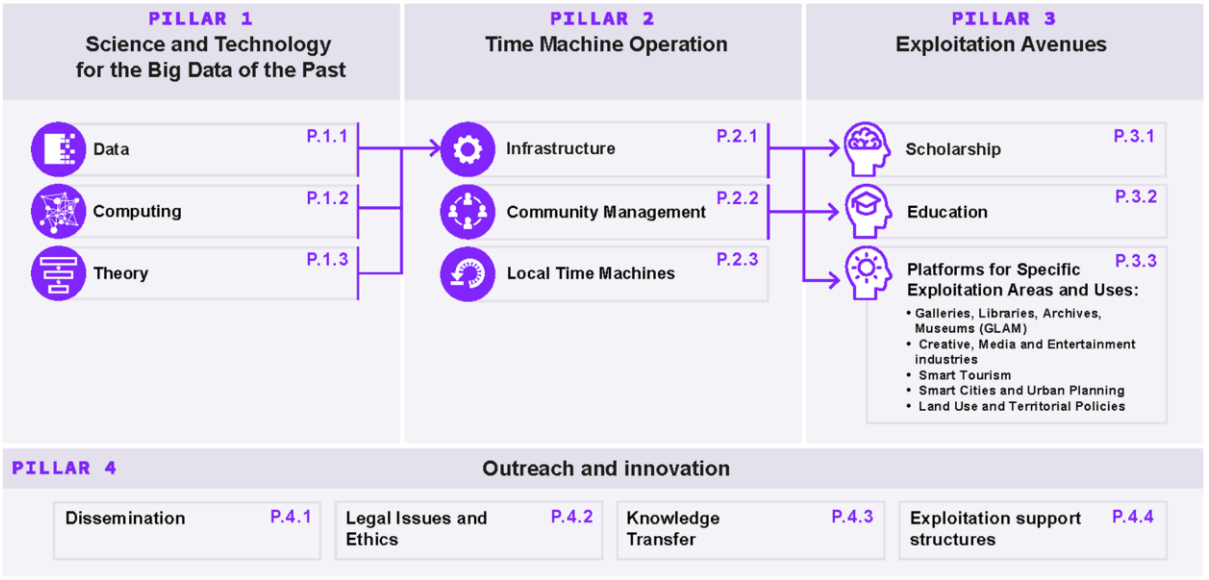


Figure 2-1: The TM Pillars and Thematic Areas

2.2 The CSA Structure

The CSA duration is 12 months. The project is organised in 8 Work Packages (WPs), as listed in Table 2-1.

Table 2-1: List and timing of Work Packages (WPs)

Work Package		Start Month	End Month
No	**Title**		
1	Project Management	1	12
2	Roadmap for Science and Technology	1	8
3	Roadmap for TM Operation	1	8
4	Roadmap for Exploitation Avenues	1	8
5	Roadmap for Innovation and Outreach	4	8
6	Governance Scheme	3	10
7	Dissemination and Promotion	1	12
8	Overall Strategy and Implementation Plan	3	12

The interrelations between the WPs are shown in Figure 2-2.

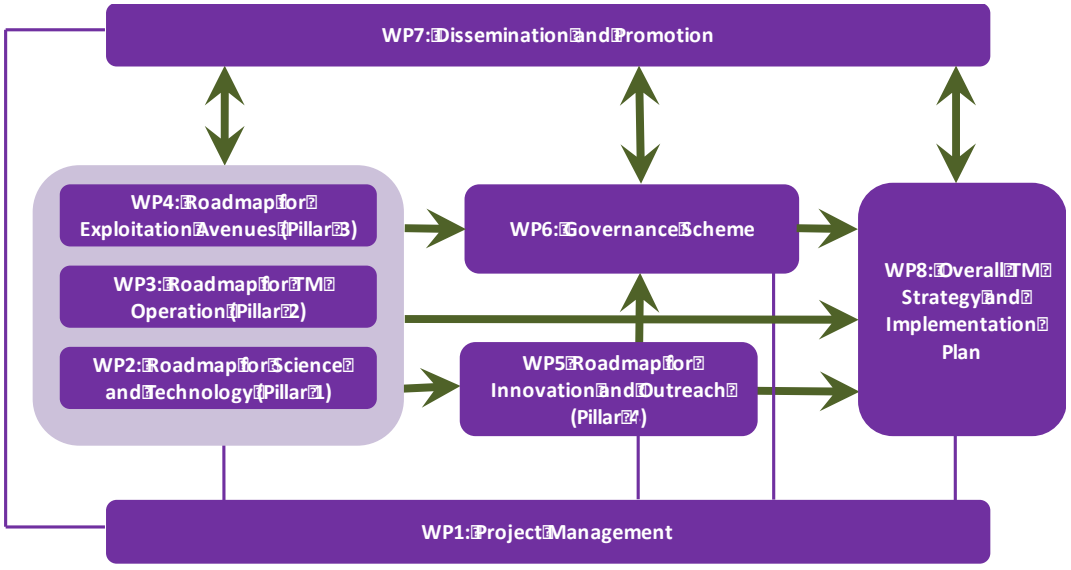


Figure 2-2: Pert chart of the CSA

There are four WPs for developing the TM pillars: WP2-5 for Pillars 1-4, respectively. The roadmaps for Pillars 1-3 will start in M1 and will be concluded by M8, after integrating feedback received from consultations with external stakeholders (section 3). WP5 will start in M5, building on specific needs specified in the draft roadmaps of Pillars 1-3 and finish by M8 as well.

A robust governance structure for the TM LSRI will be developed in WP6, using lessons from similar endeavours and responding to specific requirements for coordination, as well as those of potential funding organisations. The TM strategy and implementation plan are elaborated in WP8 that starts in M3. A draft strategy document will be available by M9.

The final TM LSRI proposal will take into account feedback from another round of stakeholder consultation. Project Management (WP1) and Dissemination and Promotion (WP7 run throughout the project). The latter is the implementation arm of the strategy presented in section 3.

The Gantt chart in Figure 2-3 presents the tasks in each WP and their timeframe. Figure 2-4 shows the timing of deliverables and milestones.

Work Package- Task	Lead / co-lead	Month											
		03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	01/2020	02/2020
WP1 Project Management	**EPFL**												
Task 1.1 Process set-up	EPFL												
Task 1.2 Everyday coordination and quality assurance	EPFL												
Task 1.3 Project reporting	EPFL												
WP2 Roadmap for Science and Technology (Pillar 1)	**FAU / UA**												
Task 2.0 Coordination	FAU												
Task 2.1 Data	UA												
Task 2.2 Computing	FAU												
Task 2.3 Theory	UA												
WP3 Roadmap for TM Operation (Pillar 2)	**ICARUS**												
Task 3.0 Coordination	ICARUS												
Task 3.1 Infrastructure	EPFL												
Task 3.2 Community Mangement	ICARUS												
Task 3.3 Local Time Machines	EPFL												
WP4 Roadmap for Exploitation Avenues (Pillar 3)	**EF / IGN, UNIVE**												
Task 4.0 Coordination	EF												
Task 4.1 Scholarship	UvA												
Task 4.2 Education	UvA												
Task 4.3 Specific areas and uses	IGN, UNIVE												
WP5 Roadmap for Innovation and Outreach (Pillar 4)	**TUDr**												
Task 5.0 Coordination	TUDr												
Task 5.1 Dissemination	TUDr												
Task 5.2 Policy & legal issues and ethics	UBO												
Task 5.3 Knowledge transfer	INDRA												
Task 5.4 Exploitation support structures	TUDr												
WP6 Governance Scheme	**UvA**												
Task 6.1 Analysis of previous related experience	UvA												
Task 6.2 Requirement analysis	UvA												
Task 6.3 Governance structure for the TM LSRI	UvA												
Task 6.4 High-level staffing plan	UvA												
WP7 Dissemination and Promotion	**ICARUS**												
Task 7.1 Dissemination and promotion strategy	ICARUS												
Task 7.2 Dissemination and promotion material	EPFL												
Task 7.3 Stakeholders engagement	ICARUS												
Task 7.4 Development of TM Citizens community	ICARUS												
Task 7.5 Securing funding sources	ICARUS												
Task 7.6 Presentation of the TM ecosystem	UvA												
WP8 Overall TM Strategy and Implementation Plan	**EPFL**												
Task 8.1 Progress monitoring, coordination and integration	EPFL												
Task 8.2 Draft Strategy and Implementation proposal	EPFL												
Task 8.3 Full proposal for the TM LSRI	EPfL												

Figure 2-3: Gantt chart of the CSA

Deliverable	Lead	Month											
		M1 03/2019	M2 04/2019	M3 05/2019	M4 06/2019	M5 07/2019	M6 08/2019	M7 09/2019	M8 10/2019	M9 11/2019	M10 12/2019	M11 01/2020	M12 02/2020
D1.1 CSA project manual	EPFL	x											
D1.2 Interim Progress Report	EPFL						x						
D2.1 Science and Technology (Pillar 1) Draft roadmap	FAU				x								
D2.2 Science and Technology (Pillar 1) Roadmap	FAU								x				
D3.1 TM Operation (Pillar 2) Draft roadmap	ICARUS				x								
D3.2 TM Operation (Pillar 2) Roadmap	ICARUS								x				
D4.1 Exploitation Avenues (Pillar 3) Draft roadmap	EF				x								
D4.2 Exploitation Avenues (Pillar 3) Roadmap	EF								x				
D5.1 Outreach and Innovation (Pillar 4) Roadmap	TUDr								x				
D6.1 TM Organisation and Governance Plan	UvA										x		
D6.2 TM Staffing Plan	UvA											x	
D7.1 Dissemination and Promotion Strategy	ICARUS				x								
D7.2 Report on Dissemination Material	EPFL				x								
D7.3 TM Dissemination	UvA												x
D8.1 TM Preparation Report 1	EPFL			x									
D8.2 TM Preparation Report 2	EPFL						x						
D8.3 TM Preparation Report 3	EPFL									x			
D8.4 TM LSRI Strategic Guidelines	EPFL										x		
D8.5 TM LSRI Strategy and Implementation Proposal	EPFL												x
Milestone	**Means of verification**	**Month**											
		M1 03/2019	M2 04/2019	M3 05/2019	M4 06/2019	M5 07/2019	M6 08/2019	M7 09/2019	M8 10/2019	M9 11/2019	M10 12/2019	M11 01/2020	M12 02/2020
M1 TM community growth as planned	D7.1 and D7.3				x								x
M2 Science and Technology (Pillar 1) roadmap developed	Draft (D2.1, D3.1, D4.1) and roadmaps (D2.2, D3.2, D4.2, D5.1) approved by GA and stakeholders				x				x				
M3 TM Operation (Pillar 2) roadmap developed					x				x				
M4 Exploitation Avenues (Pillar 3) roadmap developed					x				x				
M5 Outreach and Innovation (Pillar 4) roadmap developed									x				
M6 Governance structure approved	D6.1										x		
M7 Staffing plan approved	D6.2											x	
M8 TM LSRI to be launched	D8.5												x

Figure 2-4: Timing of Deliverables and Milestones

2.3 The CSA Implementation Plan

The road-mapping process is initiated by focusing on the **Research and Innovation** (RI) plans in Pillars 1, 2 and 3. The pillar RI plans are elaborated from detailed plans at the level of each Thematic Area, undertaken by **working groups (WGs)** composed of subject matter experts from the Consortium.

The starting point is a **Scoping Document** for the pillar describing the objectives, the current situation, and the priorities to be addressed. The Scoping Document is prepared in M1, based on the driving ideas presented in the technical proposal and presented here as Annex A (overarching document) and Annexes B, C, D and E for each of the four TM pillars. **The purpose of the Scoping Document is to provide a common basis for the WGs to build upon.**

In the course of the roadmap development process (WPs 2-5), the WGs (describe and) assess the state of the art, define priorities and examine alternative development routes for each Thematic Area, through internal workshops, own expert judgements, consultations with external experts as required, and document/data analysis.

Their conclusions, as initial (M4) and, then, final (M8) drafts, are checked for coherence and compliance with the TM objectives and are integrated into the Pillar Roadmap.

The work also involves using the main conclusions from these drafts to organise:

- Stakeholder workshops with selected representatives of academia, business and policy making
- Stakeholder online consultations

These actions aim to invite comments, integrate alternative views, build consensus and ensure commitment to TM objectives and endorsement from a wide range of TM stakeholders. This is an important interaction of the WPs which develop the Pillar Roadmaps and the horizontal WP7 which deals with dissemination and promotion:

- The Pillar Roadmaps define the stakeholders to be involved (actors and funders).
- WP7 defines the overall dissemination strategy, part of which is to approach the stakeholders identified in WPs 2-5 and undertakes the promotion actions to raise interest and stimulate participation in TM.
- So, among other things, WP7 creates the favourable conditions for all stakeholders to participate in the road-mapping events organised in WPs 2-5.

In addition to the Research and Innovation Plans, the roadmaps for the three pillars identify and describe:

- The funding sources, as well as corresponding mechanisms and processes to be followed in the contractual relations with the different funders
- The large variety of stakeholders to be involved, their corresponding roles and, therefore, the needs in terms of management and coordination for the programme
- The framework conditions relating to policy, legal aspects and ethics that have to be taken into account
- The approaches and measures that address any barriers to market entry and/or facilitate the commercial exploitation of research results.

These aspects form the basis for the second stage of the design: the first two are used to shape a robust governance scheme (WP 6), while the last two will enable us to design the accompanying actions (WP5 - Pillar 4) supporting the dissemination and outreach of TM in the EU and internationally, as well as creating the supporting environment to maximise the societal and economic outcomes of Pillar 3.

In view of the above, the Pillar Road Maps should have the structure indicated in Box 2.1.

Box 2.1 Structure of Pillar Roadmaps

- Pillar Objective
- Research and Innovation Plans
- Funding sources
- Stakeholders to be involved
- Framework conditions
- Risk and barriers – measures to address them

In the final stage of the CSA (WP8), the findings of the previous stages are put together in a document presenting the TM strategic objectives, along with detailed methodologies and required resources, as well as the management and operational scheme that will drive the programme through its 10-year span.

The key actions in each WPs are presented in Box 2.2.

Box 2.2 Key Actions

Key steps for WPs 2, 3 and 4 (Pillars 1, 2 and 3)

These WPs start on day 1.

In each WP, there will be:

- An initial workshop setting out the objectives of the Pillar Working Group (M1-2)
- Two (virtual) workshops following delivery of draft and final Pillar Roadmaps (M4 and M8)
- One stakeholder workshop (M5-M7), where the Pillar roadmap is presented to selected stakeholders
- An online consultation process.

The WPL in cooperation with the Task Leaders (one for each Thematic Area) prepare:

- The Pillar Scoping Document (M1)
- The list of external stakeholders to be involved in the WP – please refer to Table F-1 in Annex F for a generic list to guide the search (M1)
- The detailed Work Plan for the Work Package (who does what by when)
- The internal workshops for the presentation discussion of the draft and final Pillar Roadmaps (M4 and M8)
- The stakeholder workshop (M5-M7)
- The stakeholder consultation (M5-M10).

The initial workshop is crucial for the success of the road-mapping exercise. Participants receive the scoping document and a list of topics to be discussed. Ideally the workshop is organised in break-out sessions and a concluding plenary session.

After the workshop, the participants begin to prepare their contributions under a specified timeframe. These contributions are collected in “Pillar Master Documents” that put together the work produced by the different members of the Pillar WG.

It should be stressed that the Pillar Roadmap will be the collaborative result of the joint work of the WP and Task Leaders, based on all feedback received. In this respect, the Pillar Document draws information for the Pillar Master Document, but, as the focus is on a high-level and strategic approach, it may considerably differ from the latter in style, form, content and volume.

Key steps for WP5 (Pillar 4)

WP5 starts on M4, based on input received from WPs 2 to 4 on:

- The framework conditions relating to policy, legal aspects and ethics that have to be taken into account
- The approaches and measures that address any barriers to market entry and/or facilitate the commercial exploitation of research results.

The WPL in cooperation with the Task Leaders (one for each Thematic Area) prepare:

- The Pillar Scoping Document (M4)
- The list of external stakeholders to be involved in the WP (M4)
- The detailed Work Plan for the Work Package (who does what by when)
- The internal workshop for the presentation discussion of the Pillar Roadmap (M8)

- The stakeholder workshop (M5-M7)
- The stakeholder consultation (M5-M10).

Key steps for WP 7

WP7 starts on day 1.

In WP7, the main activities concern:

- The development of the Dissemination and Promotion Strategy - DSP (Task 7.1)
- The development of dissemination and promotion material (Task 7.2)
- The Dissemination actions (Tasks 7.3, 7.4 and 7.5)
- The project final event (Task 7.6)

The WPL should prepare:

- Early drafts for the DSP, building on the Technical Proposal (M2-M3)
- Contact lists of stakeholders suggested by the WPLs 2-4
- Detailed plans for the Dissemination actions (by M3, especially for Tasks 7.4 and 7.5)

The material presented in Annex F should be used to organise this WP.

Key steps for WP 8

WP8 starts on M3.

The overall aim of WP8 is to prepare a full LSRI proposal for TM. In doing so, WP8 will specify the quality criteria for the LSRI proposal and use them to monitor progress in the different stages of the proposal maturing process.

At the end, WP8 will elaborate the proposal document, presenting firm evidence on the feasibility of fully costed research and innovation roadmaps, the efficiency of the governance scheme, as well as the significant benefits and impact for European society, scientific and technological competitiveness, and economy.

The WPL should prepare:

- The monitoring system to be used for following progress in the other WPs (M3)
- Discuss and agree this monitoring system with the other WPs, including the information to be provided for the monitoring assignment (M3-4)
- Discuss with the Commission on the form of the final LSRI to be submitted at the end of the project (M1-3)
- Plan the preparation of this document (M3).

The dissemination and communication approach that will support these actions is discussed next.

3 Dissemination and communication objectives

The CSA will develop a framework for structured and professional dissemination, through an ambitious strategy and a detailed communication and promotion plan. The plan presented below provides the guidelines for the in-depth dissemination strategy to be prepared in WP7, as formal deliverable D7.1 on M4.

3.1 Dissemination and exploitation strategy

The TM LSRI maturing process will deliver detailed roadmaps for the 10-year programme and its pillars, as well as a dense ecosystem of participating organisations and stakeholders. Exploitation of CSA results refers to actually proceeding with the implementation of the TM roadmaps and/or using the ideas discussed and elaborated by the TM Ecosystem in new research and innovation projects, including creating and marketing products, services or processes, as a result of interactions among project actors and stakeholders, initiated in the course of the CSA. The CSA dissemination is, therefore, designed to cover a time period including and extending well beyond the CSA project duration.

In view of the above, the specific objectives of the dissemination strategy are to:

- Raise understanding of TM and expected benefits to the European and international CH communities.
- Develop stakeholder networks comprising researchers, innovators, decision-makers and other members of civil society. These networks will participate in the road mapping process and produce substantial communication-multiplier effects across the EU and worldwide.
- Strengthen and expand the TM Ecosystem through commitments and engagements of the above stakeholders to TM objectives and planned actions.
- Promote the LSRI to the European Commission and other funding institutions, creating favourable conditions for its being financed through Horizon Europe, Digital Europe Program[1], European Structural and Investment Funds, and other regional, national, transnational and pan-European funding mechanisms and schemes for cross-border cooperation.

The CSA dissemination strategy is articulated in 3 directions, discussed next: (1) strengthening the TM Ecosystem, (2) obtaining strategic agreements with potential TM funders, and (3) engaging citizens in organised TM communities.

(1) The TM Ecosystem – Stakeholders' Forums

The target group consists of large numbers of researchers, innovators, professionals and decision-makers. This very broad and diversified audience will be segmented according to the specific objectives and needs of the TM pillars, which call for different profiles, roles and interventions of participants. We will, therefore, form and manage four Stakeholders' Forums, seeking to leverage synergies across these groups.

Particular attention will be given to the early identification of key players that complement the strengths of the existing Ecosystem in each forum, so a comprehensive list of institutional and sectoral stakeholders will be identified for each TM pillar at project start. Our primary focus will be on actors who, due to their influential position, can have a multiplier effect in their environment. A preliminary list of such actors is presented in Table 3-1. Invitations will be sent and participation will be facilitated through follow-up interactions, using the very large contact database and cooperation network of our Consortium.

The operation of the Stakeholders' Forums is based on a **continuous online** and a **formal consultation process** combined with the organisation of **thematic workshops**. In these actions, forum members will have the opportunity to provide comments on documents describing progress in the development of roadmaps. Formal consultations will be organised in M3-5 on the roadmap drafts

[1] as a specific application case for HPC or AI technologies

for each pillar, and on M10 on the overall draft of the TM proposal. In parallel, thematic workshops will be held where the roadmap drafts and the overall TM draft will be discussed with senior representatives of key stakeholder groups.

In this way, at the end of the CSA, a commonly agreed set of strategic priorities and associated action plan will be elaborated, and a critical mass of actors will be committed to the TM LSRI. **The TM Stakeholders' Forums will continue their operation after the CSA, taking the form of pan-European networks that shape integrated partnerships of researchers, professionals and decision-makers in areas related to CH for joint work to reach the objectives of the TM LSRI**.

Table 3-1: Indicative stakeholders list with multiplier effect

TM pillar	Targeted stakeholders
Pillar 1 S&T for the Big Data of the Past	• EIT Digital • European Open Science Cloud and SSHOC • Professional organisations for historians / archivists / libraries / museums • International umbrella institutions providing the necessary authoritativeness for the TM approach, such as ICOM for museums, IFLA for libraries, ICA for archives • Owners of legacy material and objects
Pillar 2 Time Machine Operation	• EuroHPC Joint Undertaking • City, local, regional authorities • Federated network of hardware and software providers • Open source developer communities • Scholarly workspaces and networks • Patrimonial institutions
Pillar 3 Exploitation avenues	• Research associations in SSH • DH Associations (European Association of DH; Alliance of DH Organisations) • Educators (e.g. via the European Association of History Educators, EUROCLIO) • Publishers (e.g. Brill, Elsevier, Pearson, Coursera) • Public and commercial broadcasters and news agencies • Design agencies • Tourism Associations • Creative industries branch organisations • Government bodies and associations dealing with land use
Pillar 4 Outreach and Innovation	• Standardisation bodies • Working groups on Open Data • Associations for the promotion of Cultural Heritage

(2) Interacting with policy-makers — research funders

Already at an early stage, the project will establish links with policy-makers and institutional funders of research and innovation at EU, national and regional level, in order to present the TM objectives and implementation plan and discuss how these can be integrated into European and national / regional research agendas. Expected key outcomes of these interactions will be commitments to support the LSRI at political level, as well as the identification of complementary sources of funding. This target group comprises Brussels-based EU decision-makers that need to know about TM as a potential future LSRI, as well as authorities in the Member States, ministries and research funding agencies, that need to learn about TM and collaborate in the future co-funding of the project. Another category is philanthropic organisations that make important contributions on works related to CH.

The most efficient way to approach policy and decision-makers is to explain how TM is linked to their areas of responsibility and the way it can contribute to objectives related to their function. The decision-makers will be initially reached through events, media and meetings, aiming to present project objectives and aspects of common interest. The successful outcome of such meetings will

be an agreement on common objectives and the co-development of research agendas, including commitments to funding support.

(3) Engaging with citizens' TM communities

TM will set the foundations for a continuously evolving group of citizen users who will participate in the transcription and interpretation of the machine-extracted information on the Big Data of the Past. This group will contribute knowledge, expertise and their personal heritage, online and at offline events, to strengthen personal, inter-generational and communal ties at local, regional, national and/or transnational levels. As part of the Pillar 2 roadmap (WP3), the methodology will be developed to form this TM citizen community and manage its operation, including initiating topics of discussion and organising events, as well as following-up and exploiting the feedback received. This methodology will be tested by pilot groups from the great number of Europeans interested in history and culture. This will initially be approached through the TM website and then by specific methodological tools (social media, dedicated electronic platforms available through the TM website, physical events).

3.2 Communication activities

The communication strategy has been designed to connect with stakeholders in the medium that works best for them, using a style that is adapted to their profile and needs. These aspects will be elaborated in detail in deliverable D7.1. Dissemination and promotion will be organised around operational goals shown in Table 3-2, together with corresponding target groups. The related communication actions are described next.

Table 3-2: Dissemination operational goals, target groups and communication actions

Operational goal	Target groups	Communication actions
Creating awareness of TM objectives and benefits	• Academic and research community • Businesses and industries • Professional associations, organisations and NGOs dealing with CH • Decision-makers (at national, regional and local level) • Citizens	• TM website, leaflet, e-newsletters, videos • Social media • Press releases • Presentations at scientific and business events
Strengthening the TM Ecosystem		• Thematic workshops • Consultation of TM stakeholders for the co-design of roadmaps • Briefings to relevant EU business and technology platforms
Aligning research agendas and securing funding	• Policy-makers • Institutional research funding organisations • Organisations in charge of national research and innovation programmes	• Briefings on TM research objectives, outcomes and impact • Workshops on the development of common research agendas
Presenting the TM Ecosystem	• All the above	• TM final conference • Press release • TM document

Creating awareness of TM objectives and benefits

Online communication will be based on an interactive and accessible ***CSA website*** made available as a powerful tool for boosting information flow, by upgrading the current TM site before M2.

The project will produce standard mass communication tools, including a ***leaflet***, ***e-newsletters*** and ***press releases***, as well as ***videos***. ***Social media*** channels such as Facebook, LinkedIn, Twitter, Instagram and blogs will help add more personal and business dimensions as well as stimulate

further interest from relevant groups. These efforts will build upon the social media campaign already launched during the CSA preparation phase.

We foresee the participation of the project in up to ten relevant European or international ***high-profile events*** (workshops, conferences and exhibitions) taking place within the EU, to promote TM, exploiting thought leadership opportunities as speakers and/or panel members. Such events will be chosen taking into account their relevance to the objectives of the dissemination strategy and expected communication impact (audience to be reached, alliances to be formed). An indicative list of such events is presented below:

- European Cultural Forum 2019: a flagship event hosted by the European Commission for the cultural sectors' key players debating EU culture policy, where digital innovation is a topic of increasing relevance.
- European Big Data Value Forum 2019: a key European event for industry professionals, business developers, researchers and policy makers to discuss data economy and data-driven innovation.
- European Tourism Day 2019: an event where stakeholders discuss specific themes selected on the basis of current policy priorities, with strong focus on Smart Tourism.

The CSA will also jointly organise, with other candidate LSRIs, and participate in an event addressing a broader stakeholders' community for the dissemination of main objectives and findings of the CSA actions.

Strengthening the TM Ecosystem – TM Stakeholders' Forums

In order to ensure the widest possible outreach to and involvement of organisations in the Stakeholders' Forums presented above, a comprehensive contact database will be compiled at project start. The database will be classified according to the thematic areas of the pillars and stakeholder characteristics (type of organisation, country, degree of involvement in TM).

The Stakeholders' Forums will be engaged in a continuous ***consultation process*** supported by the project website, through which members of the Stakeholders' Forums will:

- Participate in online discussions on selected topics
- Comment on specific aspects of roadmap development
- Subscribe to communication events
- Take part in the consultation processes organised for the approval of the draft Pillar Roadmaps (M3-5) and the LSRI proposal (M9)

There will be five ***thematic workshops*** where selected senior representatives of the Stakeholders' Forums give feedback on the draft pillar roadmaps (four workshops in M5-7), and for the draft TM LSRI proposal (one workshop in M10). The workshops will be organised in the form of focus groups, whereby:

- Prior to the workshop, participants receive a brief or scoping paper on the central theme in the form of a report prepared by the project, showing the main arguments on which proposals are based
- Separate sessions are organised with facilitators and rapporteurs to examine and debate specific items of the agenda
- A plenary session follows to present the main findings
- Main conclusions are validated by participants and used in the elaboration of agreed documents

Strengthening the TM Ecosystem – TM Citizen Communities

The initial awareness raising campaign will enable the project team to identify and form a contact database of EU citizens with a strong interest in history and culture. This group will be invited to closely follow the progress of the Pillar 2 roadmap's development, and to participate in pilot actions that test methodologies for transcription and interpretation of the machine extracted information on the Big Data of the Past.

Aligning research agendas and securing funding

Work starts with an extensive screening process in three areas:

- Identification of EU funding schemes that could be used for the different TM pillars.
- Identification of national authorities that are responsible for funding research and innovation programmes related to CH in the Member States and Associated Countries.
- Identification of philanthropic organisations that make significant contributions to CH.

The screening phase is followed by contacting key persons in the corresponding organisations, using the Consortium contact database for introductions. Initial contacts are followed by targeted ***briefs*** on TM research objectives, outcomes and impact, and ***workshops*** aiming to discuss and agree on common strategic objectives, volumes of support and funding procedures. This operational goal involves the production of extensive documentation to support initial contacts and follow-up actions. These will be accompanied by:

- An awareness raising event at the European Parliament with MEPs and National Representatives
- Workshops in at least 20 Member States and Associated Countries
- Workshops with at least ten philanthropic organisations.

Presenting the TM Ecosystem

The CSA will be concluded with a ***TM final conference*** organised in Brussels, aiming to present the TM LSRI proposal. The conference will last one day and will involve *circa* 150 participants, including senior decision-makers at EU and national level, senior representatives from research funding organisations, key names and reference organisations in CH, EU and national players in the relevant sectors from all over Europe, including business multipliers, and representatives from the academic community and civil society.

The conference will include an official ceremony, where a memorandum of understanding, or an equivalent measure among the TM stakeholders, will be announced for the pursuit of efforts to develop the TM vision.

Evaluation of dissemination and promotion

During the CSA, the action plan will be evaluated and reviewed every three months. An account of communication activities produced along with their evaluation, as well as proposals for changes and improvements for the forthcoming communication activities, will be formulated in quarterly internal reports for tasks 7.3, 7.4 and 7.5.

The effectiveness of the dissemination strategy will be followed up throughout the project in a quantifiable manner. A preliminary list of specific KPIs to monitor the impact progress of communication and promotion activities has been identified at the proposal stage and is presented in Table 3-2. The final list of KPIs will be included in the Dissemination Strategy (D7.1).

Table 3-2: List of KPIs for the dissemination and promotion strategy

KPI	Target value and date of control
Number of stakeholders identified – contacted – engaged	Target number specified in D7.1 Dissemination Strategy – control values per target group collected on a monthly basis
Number of followers on social media	Target number specified in D7.1 – control values collected on a monthly basis
TM events realised versus planned – target groups attending	Target number specified in D7.1 – control values collected on a monthly basis
Number of TM presentations to high-profile events	Target number specified in D7.1 – control values collected on a monthly basis

KPI	Target value and date of control
Number of organisations committed to TM per stakeholder type	Target number specified in D7.1 – collected on quarterly basis (Months 3, 6, 9)
Number of national funding agencies committed to TM	At least 70% of EU Member States and Associated Countries – control values collected on a quarterly basis (Months 3, 6, 9)
Number of citizens engaged in TM communities	Target number specified in D7.1 – control values collected on a quarterly basis (Months 3, 6, 9)

4 The TM CSA governance

The CSA organisation scheme is represented in Figure 4-1**.**

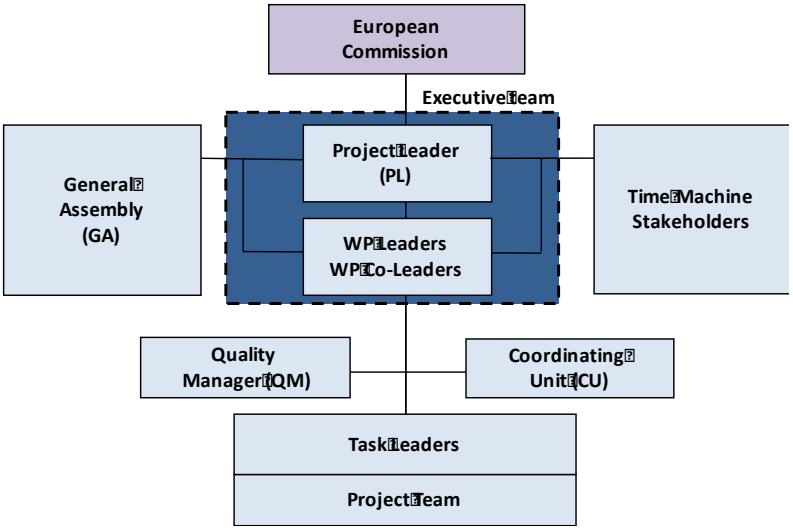


Figure 4-1: Organisational scheme for the CSA

4.1 Governance

The **General Assembly (GAs)** comprises CSA partner representatives and has full control over the project, being the prime responsible body for all scientific, research, technical, administrative and financial issues. At three-month intervals – or more frequently, as needed – the GAs reviews overall CSA progress against the Description of Work (related technical annex to the Grant Agreement) and the realistic and achievable milestones shown in section 5, Table 5-2.

GAs meetings involve formal presentations from the executive team and project team experts. The GAs is chaired by the Coordinator. Each member has one vote. In case of a split vote, the Coordinator holds the deciding vote.

4.2 Management

The CSA Executive team is in charge of daily project management and is composed of the ***Project Leader*** **(PL)** and the ***WP Leaders and co-Leaders*** **(WPLs)**. For large WPs with high degree of complexity, co-leaders are nominated, to further facilitate coordination. This is the case of WP2, where two major scientific fields are involved, ICT and SSH, and WP4, where different application areas are considered. The PL and WPLs are nominated by and report to the GAs. The nominations for the CSA Executive team are shown in Table 4-2.

Table 4-2: The TM CSA Executive Team

Position	Name - affiliation
Project Coordinator; WP1 and WP8 Leader	Professor Frederic Kaplan - EPFL
WP2 Leader	Dr. Andreas Maier - FAU
WP2 Co-Leader	Dr. Mike Kestemont - UA
WP3 and WP7 Leader	Dr. Thomas Aigner - ICARUS
WP4 Leader:	Harry Verwayen - EF
WP4 Co-Leader	Professor Dorit Raines - UNIVE
WP4 Co-Leader	Dr. Valerie Gouet-Brunet - IGN
WP5 Leader	Dr. Sander Münster - TUDr
WP6 Leader	Professor Julia Noordegraaf - UoA

The PL has overall responsibility for the organisation, planning and management control of the CSA. The PL is the sole direct interface with the EC for contractual, administrative or financial issues, and has the authority to run the project according to the specifications set out in the EC Grant and

Consortium Agreement. The WPLs are responsible for the planning and timely implementation of all tasks as well as the timely delivery of all contractual deliverables of their WPs. They chair WP Technical Meetings and represent the WP on the GAs and Executive Team. As mentioned, coordination and leadership in WP2 and WP4 are facilitated by Co-Leaders.

Each task is coordinated by a ***Task Leader***, who is responsible for the timely delivery of their tasks. The nominations for the Task Leader positions are shown in Table 4-2.

Table 4-1: The Task Leaders

Task	Name - affiliation
Task 1.1 Process set-up	Kevin Baumer - EPFL
Task 1.2 Everyday coordination and quality assurance	Kevin Baumer - EPFL
Task 1.3 Project reporting	Kevin Baumer - EPFL
Task 2.0 Coordination	Andreas Maier - FAU
Task 2.1 Data	Mike Kestemont - UA
Task 2.2 Computing	Andreas Maier- FAU
Task 2.3 Theory	Mike Kestemont - UA
Task 3.0 Coordination	Daniel Jeller - ICARUS
Task 3.1 Infrastructure	Frédéric Kaplan - EPFL
Task 3.2 Community Management	Daniel Jeller - ICARUS
Task 3.3 Local Time Machines	Isabella di Lenardo - EPFL
Task 4.0 Coordination	Julia Fallon - EF
Task 4.1 Scholarship	Julia Noordegraaf - UvA
Task 4.2 Education	Julia Noordegraaf - UvA
Task 4.3 Specific areas and uses	Bénédicte Bucher – IGN and Dorit Raines - UNIVE
Task 5.0 Coordination	Sander Münster - TUDr
Task 5.1 Dissemination	Sander Münster - TUDr
Task 5.2 Policy & legal issues and ethics	Fabio Vitali - UBO
Task 5.3 Knowledge transfer	Jesús Angel García Sánchez - INDRA
Task 5.4 Exploitation support structures	Sander Münster - TUDr
Task 6.1 Analysis of previous related experience	Julia Noordegraaf - UvA
Task 6.2 Requirement analysis	Julia Noordegraaf - UvA
Task 6.3 Governance structure for the TM LSRI	Julia Noordegraaf - UvA
Task 6.4 High-level staffing plan	Julia Noordegraaf - UvA
Task 7.1 Dissemination and promotion strategy	Kerstin Muff - ICARUS
Task 7.2 Dissemination and promotion material	Frederic Kaplan - EPFL
Task 7.3 Stakeholders engagement	Kerstin Muff - ICARUS
Task 7.4 Development of TM Citizens community	Kerstin Muff - ICARUS
Task 7.5 Securing funding sources	Kerstin Muff - ICARUS
Task 7.6 Presentation of the TM ecosystem	Julia Noordegraaf - UvA
Task 8.1 Progress monitoring, coordination, integration	Kevin Baumer - EPFL
Task 8.2 Draft Strategy and Implementation proposal	Frederic Kaplan - EPFL
Task 8.3 Full proposal for the TM LSRI	Frederic Kaplan - EPFL

The ***Project Team*** is composed of experts chosen by their scientific and technical background fitting the specific needs of each task. The vast pool of expertise of the Consortium ensures that each task will dispose of the appropriate skills and qualifications.

The Task Leaders together with WPLs oversee the drafts of papers and reports. The Executive Team follows progress on a bi-weekly basis. Through the Executive Team, PL ensures that sound problem-solving techniques are, while appropriate and effective corrective actions are taken as necessary.

A ***Coordinating Unit*** (CU) will be set up for the administrative and financial management of the CSA. It will report to the PL and be composed of:

- François Ballaud – EPFL
- Kevin Baumer - EPFL
- Isabella di Lenardo - EPFL
- Alicia Foucart – EPFL

4.3 Coordination with external stakeholders

The ***TM Stakeholders Group*** and related initiatives are crucial multipliers for the development of the TM Ecosystem.[2] The WP Leaders, together with the Task Leaders, are in charge of developing these networks in each TM pillar. This involves identification of all actors, invitation to join the respective network(s), providing regular briefs on project developments, giving clear guidelines on how feedback can be received, and active communication to ensure engagement with the TM LSRI.

4.4 Innovation management

Innovation management is fully integrated into the TM design: Pillar 3's objective is to ensure that TM developments, including scientific and technical outputs, methodologies, data, processes, pilots and new infrastructure, are captured and transferred to the appropriate exploitation channels. Moreover, Pillar 4 aims to create favourable framework conditions for developing innovations. In this context, innovation management during the CSA is the responsibility of WP4 Leader, with support from the WP5 Leader.

4.5 Management and coordination support

The LSRI maturing process undertaken under this contract calls for special attention to quality assurance. A senior expert is nominated as ***Quality Manager***, who will support the PL, WPLs and Task Leaders in following up progress, assessing risk and developing contingency plans. The role of the Quality Manager will be undertaken by Kevin Baumer.

[2] The TM Stakeholder Group is describKPIed in section 3, with the CSA dissemination and promotion strategy.

5 The TM CSA deliverables and milestones

The CSA deliverables and milestones are shown in Tables 5-1 and 5-2, respectively.

***Table 5-1: Deliverables* and targeted audience**

Deliverables (Delivery month, partner in charge) and description	Targeted Audience
D1.1 CSA project manual (M1; EPFL): Output of T1.1, specifying the management processes for communication, monitoring of work, approval of deliverables, administration, and data access policy.	• Commission • Consortium • TM Ecosystem
D1.2 Periodic technical report (M6; EPFL): Content and format of the report as per the CSA Grant Agreement.	• Commission
D2.1 Science and Technology (Pillar 1) Roadmap-draft (M4; FAU) specifying objectives, state of the art, priorities, required resources, timing and funding sources, based on input from each thematic area of Pillar 1.	• Commission • Consortium • TM Ecosystem
D2.2 Science and Technology (Pillar 1) Roadmap (M8; FAU) based on D2.1 and feedback from stakeholders.	• Commission • Consortium • TM Ecosystem
D3.1 TM Operation (Pillar 2) Roadmap-draft (M4; ICARUS) specifying objectives, state of the art, priorities, required resources, timing and funding sources, based on input from each thematic area of Pillar 2.	• Commission • Consortium • TM Ecosystem
D3.2 TM Operation (Pillar 2) Roadmap (M8; ICARUS) based on D3.1 and feedback from stakeholders.	• Commission • Consortium • TM Ecosystem
D4.1 Exploitation Avenues (Pillar 3) Roadmap-draft (M4; EF/IGN/UNIVE) specifying objectives, state of the art, priorities, required resources, timing and funding sources, based on input from each thematic area of Pillar 3.	• Commission • Consortium • TM Ecosystem
D4.2 Exploitation Avenues (Pillar 3) Roadmap (M8; EF/IGN/UNIVE) based on D4.1 and feedback from stakeholders.	• Commission • Consortium • TM Ecosystem
D5.1 Innovation and Outreach (Pillar 4) Roadmap (M8; TUDr) specifying objectives, state of the art, priorities, resources, timing and funding sources, based on input from Pillar 4 thematic areas and feedback from stakeholders.	• Commission • Consortium • TM Ecosystem
D6.1 TM Organisation and Governance Plan (M10; UvA): Output of Tasks 6.1-6.3, full organisational structure, management bodies, decision-making processes, roles, responsibilities and high-level position requirements.	• Commission • Consortium • TM Ecosystem
D6.2 TM Staffing Plan (M11; UvA): Output of Task 6.4, presenting the organisations and persons that will be proposed to assume the positions of the TM Governance Scheme.	• Commission • Consortium • TM Ecosystem
D7.1 Dissemination and Promotion Strategy (M4; ICARUS): Output of Task 7.1, presenting the dissemination objectives, target groups, measures and activities, monitoring and KPIs.	• Commission • Consortium • TM Ecosystem
D7.2 Dissemination Material (M4; EPFL): Output of Task 7.2, describing the dissemination material (visual identity, organisation and	• Commission • Consortium • TM Ecosystem

Deliverables (Delivery month, partner in charge) and description	Targeted Audience
functionalities of TM website) and including as Annex the TM Manifesto[3].	
D7.3 TM Dissemination (M12, EPFL): Output of Tasks 7.3, 7.4 and 7.5: Results achieved in WP7 and recommendations for the organisation of the TM dissemination. Proceedings of Final Event included as Annex.	• Commission • Consortium • TM Ecosystem
D8.1 Interim Progress Report 1 (M3; EPFL): Output of Task 8.1, presenting the quality criteria and monitoring system of the LSRI maturing process and assessing progress against the quality criteria in the first 3 months and setting out recommendations for the next 3 month planning	• Commission • Consortium • TM Ecosystem
D8.2 Interim Progress Report 2 (M6; EPFL): Output of Task 8.1, assessing progress against the quality criteria of the LSRI maturing process in the first 6 months and setting out recommendations for the next 3 month planning	• Commission • Consortium • TM Ecosystem
D8.3 Interim Progress Report 3 (M9; EPFL): Output of Task 8.1, assessing progress against the quality criteria of the LSRI maturing process in the first 6 months and setting out recommendations for the next 3 month planning	• Commission • Consortium • TM Ecosystem
D8.4 TM LSRI strategic guidelines (M10; EPFL) giving high level descriptions of S&T objectives, action plans, governance scheme, impact pathways, enabling environment. The report describes the landscape of existing initiatives in the field of Cultural Heritage and shows the synergies that will be created/developed with TM. An executive summary for policy makers is also included.	• Commission • Consortium • TM Ecosystem
D8.5 TM LSRI strategy and implementation proposal (M12; EPFL) based on D8.2 and interactions and endorsement by TM stakeholders and potential funding institutions.	• Commission • Consortium

Internal reports will support the preparation of project deliverables.

- For deliverable D6.1, UvA will prepare the following internal reports:
  - Governance schemes for LSRIs: Output of Task 6.1, presenting conclusions on trends, patterns and problems encountered; applicability to TM (M5 – also annex in D1.2.
  - Specifications for the TM: Output of Task 6.2, based on requirements analysis for the governance scheme of TM
- For deliverables D1.2, D8.1, D8.2 and D8.3, ICARUS will prepare the following internal reports:
  - Report on TM Ecosystem development (M3, 6, 9; R; CO): Output of Task 7.3: overview of dissemination activities, results achieved, plans for the next reporting period.
  - Report on TM Citizen Communities (M3, 6, 9; R; CO): Output of Task 7.4: overview of contacts with institutions funding research and innovation, results achieved, plans for the next reporting period.
  - Report on TM funding sources (M3, 6, 9; R; CO): Output of Task 7.5: overview of contacts with institutions funding research and innovation, results achieved, plans for the next reporting period.

[3] The TM Manifesto is a text describing the objectives, expected achievements and impact of the LSRI. It is written having in mind the targeted stakeholders of the TM Ecosystem and potential funders, It gives information on how to join / participate in the different actions of the CSA. The manifesto is produced on M1 and discussed with the Commission, before released.

Table 5-2: List of Milestones

Milestone (Ml)		Related WP(s)	Due date (month)	Means of verification
No	**Name**			
1	TM community growth as planned	7	3 and 12	D7.1 and D7.3
2	Science and Technology (Pillar 1) roadmap developed	2	4 and 8	Draft (D2.1, D3.1, D4.1) and final roadmaps (D2.2, D3.2, D4.2, D5.1) approved by GAs and TM stakeholders
3	TM Operation (Pillar 2) roadmap developed	3	4 and 8	
4	Exploitation Avenues (Pillar 3) roadmap developed	4	4 and 8	
5	Outreach and Innovation (Pillar 4) roadmap developed	5	8	
6	Governance structure approved	6	10	D6.1
7	Staffing plan approved	6	11	D6.2
8	TM LSRI to be launched	8	12	D8.5

6 The TM CSA project management processes

The Time Machine CSA has chosen to style its project management approach based on the knowledge areas and processes contained in the PMBOK® Guide – Sixth Edition (2017) published by the Project Management Institute.

The use of the PMBOK® Guide as a reference provides a standard on which to base the processes that are crucial to project success, namely:

- Scope Management — to ensure work packages and tasks remain within defined scope
- Cost Management — to enable production of financial and technical reporting that is timely and accurate.
- Change Management — to manage and record any deviations from the project plan
- Risk Management — to identify, assess, plan for and control threats and/or opportunities
- Schedule Management — to ensure coherence deliverables and milestones with commitments and to manage dependencies between tasks/work packages
- Quality Management — to manage the accordance of deliverables with project goals and Horizon 2020 requirements.
- Communications Management — to enable effective internal and external communication.
- Stakeholder Management — to identify all stakeholders and manage engagement

This manual is intended for the use of Time Machine consortium members, and it is to be considered a living document which can be updated as needed throughout the life cycle of the project.

The TM LSRI Structure

6.1 Scope management

The Time Machine CSA's scope was defined in the proposal phase of the project and agreed upon by all consortium members in the Consortium Plan. The project scope refers to tasks and deliverables outlined in detail in the proposal.

Scope Management Process

The CSA governance and management structure is discussed in section 4 The TM CSA governance, along with brief outlines of the key roles.

Overall, the Executive Team is responsible for ensuring that the project resources are well utilized towards and within the defined scope of the CSA and that issues such as missed deliverables and scope creep are avoided. Scope creep can easily become a problem in any project when small changes, seemingly of little significance by themselves, accumulate over time.

Scope Creep Example

Situation:
A Task Leader is working to produce the two videos necessary to complete a deliverable outlined in the CSA proposal. During the task, it becomes apparent with the supplier that we could produce three videos at the same price. However, the CSA team would need to dedicate an extra 30 hours to prepare the content for a third video.

Action:
As the scope of the deliverable is defined at two videos, this would be an example of scope creep and should be avoided. While pricing from the supplier seems and attractive option, project budget and resource commitments were planned for only two videos, and expanding scope beyond this could have negative impacts. Any decision on potential opportunities of this nature should only be taken by a WPL or the PL, taking into account impact to the project overall.

6.2 Cost management

The financial management of the Time Machine CSA must adhere to Horizon 2020 guidelines, and a detailed budget was defined during the previous proposal phase. The budget reflects all cost estimations provided by members towards completing the entire scope of tasks and deliverables outlined in the proposal.

The Consortium Agreement (CA) and Grant Agreement (GA) outline the overall terms of the grant and the rights and responsibilities of each member of the Consortium Body vis-à-vis the Funding Authority.

In accordance with its own usual accounting and management principles and practices, each member shall be solely responsible for justifying its costs with respect to the Time Machine CSA towards the Funding Authority.

For complete details see section 7 Technical and financial reporting under H2020.

6.3 Change management

Change management is the process of managing modifications to the agreed upon project baselines, namely the deliverables approved by consortium members as part of the proposal. This is of particular importance as it pertains to scope and schedule related to deliverables.

Change Management Process

To simplify the change control process, we have created a procedure that anyone can follow to determine how/when to escalate a change request:

- The Task Manager is responsible for deciding on any changes with no impact on scope, cost or schedule and do not pose any threat to the work package or task.
- Changes with marginal impact on scope, cost or schedule must be escalated to the relevant Work Package Leader and/or Project Leader
- The Executive Team will decide on any changes resulting in significant modifications to scope, cost or schedule and those which would result in additional project risk. If necessary, the proposed changes will be taken to the General Assembly.

All approved changes must be recorded in the Change Log by the Work Package Leader and/or Project Leader.

Change Management Example

Situation:
A Work Package Leader finds that one aspect of a deliverable, establishing a presence on LinkedIn, would not in fact be of any benefit to the project. They would like to just remove it and re-focus resources on what they view as more critical parts of the task.

Action:
As the establishment of a presence on LinkedIn was defined as part of the official deliverable, this cannot just be removed. It must go through the change control process to ensure that a modification to the deliverable, if approved by the Executive Team, would be reported correctly to the EC and not pose any additional threat to the project.

6.4 Risk management

Thorough risk management practices are essential to project success. Using the concepts illustrated in The PMBOK® Guide – Sixth Edition, the Time Machine CSA will strive to identify and analyse potential risks before planning appropriate responses and performing regular monitoring and

controlling. This section will also touch on how to deal with potential conflict during the course of the CSA.

Risk Management Process

The main aspects of the Time Machine CSA risk management process are the monitoring and controlling of identified risks, taking planned actions and evaluating the results, and always looking to identify potential new risks.

The following risks (Table 6-1) have been analysed thoroughly using the probability and impact matrix and shown in the table below. Most of the risks are of minor impact to the overall success of the project, or can be mitigated well, e.g. by alternative options, as mentioned below. Our planning is based on the extensive operational experience of the Consortium partners.

Table 6-1: List of identified risks and proposed mitigation measures

Description of risk	WP	P	I	R	Proposed risk-mitigation measures
Incoherencies in the Pillar Roadmaps due to the large number of parties involved	all	1	3	3	The proposed methodology for the roadmap development has already been successfully tested. The approach is based on a responsibility tree with clear coordination and reporting lines.
Key stakeholders are not involved in the preparation of roadmaps	2, 3, 4, 5	1	3	3	Key stakeholders have been identified in each TM Pillar. TM Consortium partners have working relations with most of them. The promotion plan specifically targets on bringing multiplier organisations on-board.
Citizens platform receiving limited attention and/or lower participation than expected	2, 7	1	3	3	The Citizens platform is designed by TM partners that have operated such collaborative platforms. The related experience will be used to promote the platform, starting with history “amateurs” and progressively moving to other target groups
Licencing obstacles in the use of TM data	all	3	1	3	TM Franchise offers to licence holders (e.g. GLAM) the opportunity of working with innovating academic and private sector actors, leading to joint developments that enable license holders to raise their profile, exploiting innovative services and business models
Goals of AI algorithms are too ambitious in terms of: a) system output, b) computing power c) document understanding	2	2	2	4	a) Reduce automated data processing and fall back on crowdsourced/outsourced annotations. b) Resort to state of the art in non-neural computing, even with conventionally engineered features. c) Focus on the lower layers in the end-to-end system, those that must realize the transcription of documents, instead of understanding.
The TM fails to convince traditional SSH researchers of the TM added value	3, 4	1	3	3	This will require even more scientific lobbying and open debate as to the theoretical disruption that the TM is able to yield. Mitigation is based on opinion pieces, workshops and proof of concept papers.

Description of risk	WP	P	I	R	Proposed risk-mitigation measures
Failing to find sufficient funding places for this LSRI under Horizon Europe	all	1	3	3	The CSA is still used to enlarge and strengthen the TM Ecosystem around a commonly agreed agenda. The Consortium directs its attention to other large-scale funding schemes, including Horizon Missions and/or other strategic initiatives, such as ESFRI.

Further risks identified during the project will be analysed as such by the PL, WPLs and Quality Manager, using the probability and impact matrix shown in Figure 6-1.

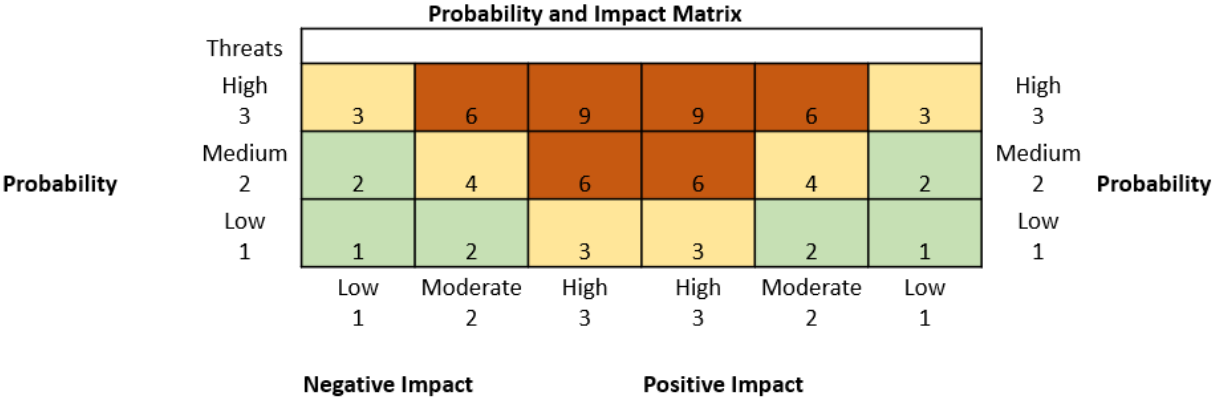


Figure 6-1: Probability and Impact Matrix

Conflict Management Process

The Time Machine CSA is very well defined and has been approved by all consortium members, so we do not foresee misunderstandings or other types of conflicts to be a significant issue. That being said, it is imperative that all conflict resolution takes place on the basis of mutual respect and with the optimal outcome for the Time Machine LSRI as the overarching goal.

The resolution of any conflicts should ideally be solved internally and among those stakeholders impacted. For example, at task level when the issue involves only one or more tasks in a defined area or at work package level when the issue is larger but only among those stakeholders concerned.

The following steps should be followed when addressing conflicts:

- The stakeholders involved will attempt to come to a resolution locally.
- If a solution cannot be agreed upon, the issue should be escalated to either the relevant Task Leader or, should the conflict already be at CSA Task level, to the appropriate Work Package Leader.
- If a solution still cannot be agreed upon, the issue should be escalated to the Project Leader to be mediated.
- Any issue rising above this level and unable to be solved amicably between the Project Leader, Work Package Leader, Task Leader and other Project Team members, the issue will be brought to the Executive Team and/or General Assembly.

6.5 Schedule management

The overall schedule management for the Time Machine CSA will be performed by the PL, WPLs and CU. The schedule baseline will be maintained on the Project Management platform Hive.

The schedule on Hive contains Work Packages, Tasks, Deliverables and Milestones has been created, and uses the following assets from this manual as its baselines:

- Figures 2.3 and 2.4
- Tables 5.1 & 5.2

The schedule will be updated as needed due to change requests, to add sub-deliverables with any dependencies and deadlines and at regular monthly intervals.

Further information on Hive can be found in section 6.9 Tools

6.6 Quality management

The required reports and documents will be provided in accordance with the essential requirements set out in the Terms of Reference and further discussed in section 2 TM CSA project organisation and implementation plan. Peer reviewers will be assigned for every deliverable, chosen on the basis of their academic credentials related experience.

Before the project team starts preparing a specific deliverable, the structure and content are agreed upon with the PL and the WPL based on a draft outline prepared by the WPL. The WPL prepares a checklist of issues crucial for the quality of the deliverable and agrees upon it with the corresponding Task Leaders and the Quality Manager. The Quality Manager proceeds with the quality assessment based on an agreed checklist. An example of a checklist is provided in the box below.

Checklist for the Quality Assurance of Deliverables

- Synopsis: Is the summary accurate and balanced? Is there a coherent story? Is it accessible and available to the non-technical reader?
- Logical reasoning, analytical focus, hypotheses, conclusions, etc. Is the report credible and professional in appearance? Is it clear what is empirical and what is our analysis? Were specialised concepts used only when absolutely necessary and were clearly defined? Were the limits of the research, in terms of scope, methods and conclusions, clearly shown? Are the conclusions and recommendations well researched and balanced?
- Quantitative data: Are quantitative data and their analysis presented effectively? Are the conclusions we draw warranted given the data? Note that we will always treat quantitative data so that they can withstand critical scrutiny?
- Language: Is the language grammatically correct? Is the report easy to read? Were all the acronyms explained? Is the language and terminology consistent? Has MS Word's spelling and grammar checking been used? In the case of English, we write in British English (set Word spelling and grammar checker to this setting and not American English).
- Figure and table references: Identified all figures and tables in the body? Noting that all figures and tables should be mentioned in the body and that they be referenced by number ("Figure 4", not "figure below"). We should (given the streamlining of work) further make use of Word's cross-reference, at least in exports with many illustrations, preferably also with regard to references to specific sections.
- Appearance: Is formatting made according to agreed template and consistent? Are figures and tables neat, easy to interpret and consistent appearance?
- Resubmission: Is the report responding to comments received after delivery of the inception report and draft final version?

The quality check of the deliverables starts at an early stage, approximately in the middle of their preparation phase. This process is supported by the Peer Reviewers who provide comments and clear instructions for the improvement of the deliverable.

In order to have time for the necessary corrections, the draft deliverable is submitted for a final Peer Review 10 to 15 working days before the date of submission to the Commission. However, the above deadlines could change based on a prior agreement between the PL, the WPLs and the Task Leaders, so as to effectively submit the deliverable on time.

The quality assurance of deliverables will particularly address the issue of **intellectual property**. We are fully aware that accessibility to large amounts of information has become much easier, but the downturn to this very positive development is the problem of plagiarism, the direct copying of texts of others into own work without any or improper referencing. We have a strong position on this aspect: we do not accept plagiarism, so we will pay particular attention to filtering out the data and information that we will use, by identifying and analysing the implications of the sources used and guarantee originality (or proper referencing) of the arguments that we will use in our work. This is a task that will be given to the Peer Reviewers. The experts involved in the project team will be instructed of the importance of the issue and will be committed to address any plagiarism issue immediately and to the satisfaction of the Peer Reviewers and of the Project Manager.

All deliverables to be submitted will undergo a thorough **editorial review**. To facilitate the editorial quality, standard Word templates, (with automatic headings and paragraph styles) will be provided to the team members from the beginning, following the specified template rules.

The editorial work includes two further stages:

- Editing of the text to check the linguistic style, but also logical inconsistencies in argumentation and the flow of the text and incomplete referencing
- Final proofreading to check for errors in spelling and punctuation (typos, etc.).

The first level editorial check will be provided by the Peer Reviewers and issues identified and comments to be addressed will be noted by the reviewer and sent to the WPLs. The author(s) of the reviewed documents will receive the editorial comments and will undertake any required revisions. Once the final version of a given deliverable has been agreed, the deliverable will be subject to a final, detailed proofreading before submission to the Commission.

Document Guidelines:

Please use the following guidelines and the deliverables template when creating deliverables. This will ensure consistency and that the different parts will integrate well with each other for the final deliverable:

- Program: Word
- Language: English (UK)
- Font: Arial
- Font Size: 11

Versioning:

Once the deliverable enters the formal quality management process, please note all changes in the ‘History of Changes’ section of the document. In addition to this, please save separate copies of each version to ensure we are able to revert and to compare in case of any issues.

6.7 Communications management

Timely and accurate communication is a critical factor for project success and in particular for managing the expectations of the European Commission and all consortium members. This purpose of this section is to define core communication responsibilities and methods. Communication and information needs will be monitored throughout the CSA by the CU and as part of WP7.

Internal Communications

The assignation of tasks and other roles for all individual CSA contributors by the WPLs will take place M1. This will be followed promptly by a complete communication and information needs assessment and review of tools. Main responsibilities as follows:

- The ***Project Leader (PL)*** is responsible for communication between the project and the European Commission
- ***Work Package Leaders and Co-Leaders (WPLs)*** are responsible for communication within their work packages, specifically with Task Leaders and the Project Team. They are also responsible for communicating with the Project Leader as needed, including regular update meetings and reporting.

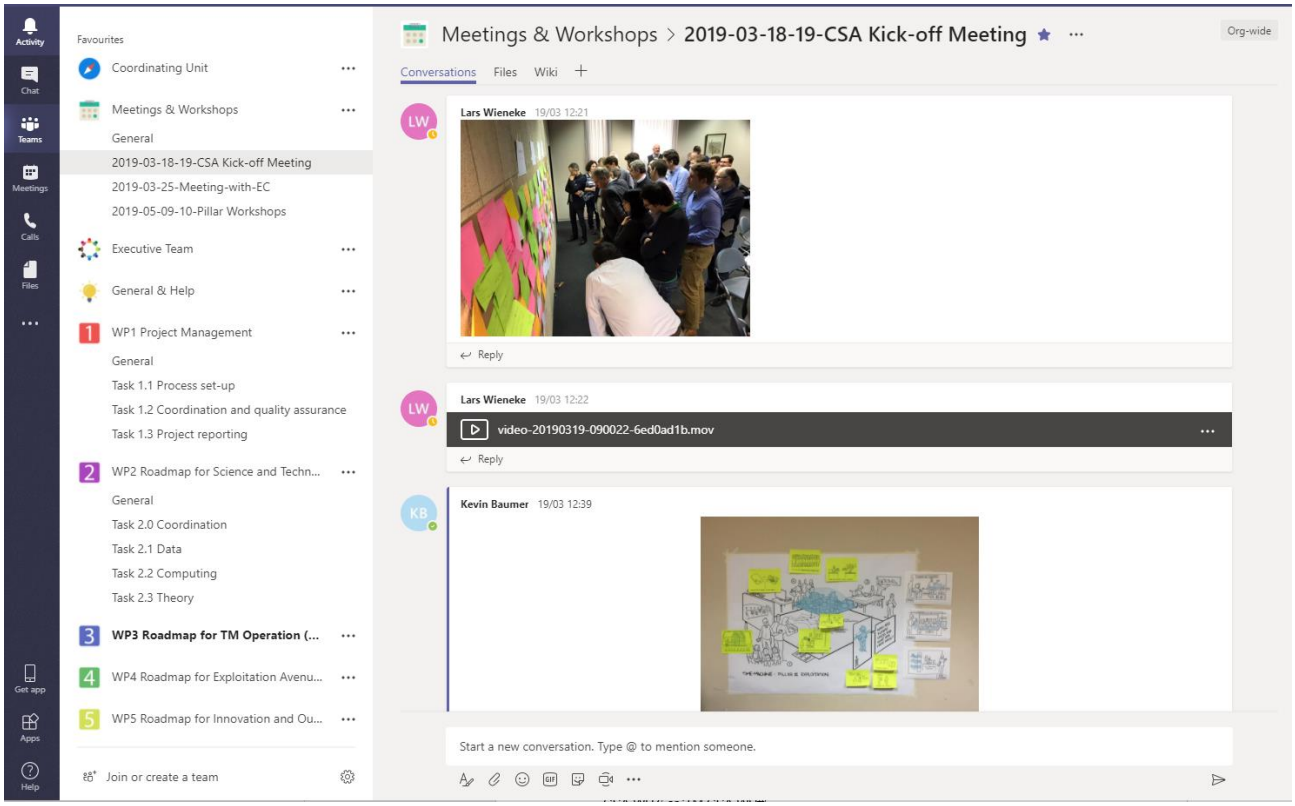
Full organisational structure for the CSA

Microsoft Teams

Microsoft Teams is the primary day-to-day communication method to be used by all contributors to the Time Machine CSA. The tool was chosen primarily to enhance collaboration, ensure consistancy in the format of deliverables — all being in Microsoft Word — and to increase efficiency by having all internal communications and documents integrated in one place.

All CSA contibutors will have an Office 365 Non-Profit account created for them, which will in turn grant them access to the Time Machine's Microsoft Teams platform. From there they will be able to send messages in context by using the teams created for each WP and/or specific channels for each task. The platform will also be used for all file storage, file sharing/collaboration and virtual calls.

Further information on Microsoft Teams can be found in section 6.9 Tools



Electronic Mail (Email)

Email is the secondary method used by the Time Machine Project, as it is already adopted and in regular use by all CSA stakeholders. This should only be used when direct chat or messaging to groups in the proper Microsoft Teams channels is not possible.

The Stakeholder Register should be used to ensure emails are sent to the correct individual(s) as it relates to work packages and/or tasks. The Stakeholder Register contains up-to-date contact information, including all email addresses, and is sortable by both work package and task number.

The following guidelines should be adhered to when communicating via email:

- Use explicit subject lines and in particular avoid ambiguous subject lines like 'Time Machine CSA WP7' or 'TM CSA WP#'
    - Subject Line Guidelines/Best Practice:
        - TM WP# Task# (if applicable) – SUBJECT
        - Example 1: TM WP1 Task1.1 – Project manual draft for review
        - Example 2: TM WP6 – Monthly review meeting minutes
- Only address email communication/information to necessary parties and do not 'reply all' or copy in collaborators unnecessarily.
- Be mindful of attachment size and share large files and folders via SharePoint in Microsoft Teams / Office 365 when sensible.

Virtual Meetings / Conference Calls

Microsoft Teams is the preferred solution for all virtual meetings and conference calls.

In general, virtual meetings/conference calls should be scheduled at least one week in advance, have a set agenda and produce meeting notes which will allow tracking of action items. The meeting notes should be stored in Microsoft Teams in the folder linked to the correct channel. An official meeting minutes template is also available in Microsoft Teams 'General & Help' team.

Ad hoc virtual meetings/conference calls should be organized regularly at WP and task levels to:

- Define and refine action plans, discuss progress and assign responsibilities
- Share ideas, address areas of concern and clarify any questions / doubts

Best practice for virtual meetings/conference calls is as follows:

- Send a meeting invitation with agenda (or survey in advance to determine the best time)
- List any preparatory activities to be undertaken by each participant
- Nominate the moderator and minute taker
- After the meeting, the minute taker posts a link in the appropriate Microsoft Teams channel to enable the participants to evaluate the content. Once validated, the meeting minutes are considered final.

Direct telephone calls can be used for faster response to urgent matters, but it is recommended to follow-up with an email for confirmation of agreed upon actions.

Workshops / Face-to-Face Meetings

The Time Machine LSRI kick-off meeting will be held in Brussels, Belgium on March 18-19, 2019.

Formal workshops will be organised in M3-5 on the roadmap drafts for each pillar and on M10 on the overall draft of the TM proposal. In parallel, thematic workshops will be held where the roadmap drafts and the overall TM draft will be discussed with senior representatives of key stakeholder groups.

Additional workshops, face-to-face meetings and events may be organized on an ad hoc basis by the Work Package Leaders and/or Task Leaders.

Conferences / Events

The annual Time Machine Conference will be held in Dresden in October 2019, with another large event to be held in M12 in Brussels.

External Communications

External communications falls under the scope of WP7. This includes the Time Machine website, social media accounts and press relations. Please see section 3 Dissemination and communication objectives.

All communication related to the project (including electronic communication, using social media, etc.) and all major results funded under the grant must:

- Display the E emblem
  - https://europa.eu/european-union/about-eu/symbols/flag_en

- Include the following text:
  - This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 820323.

6.8 Stakeholder management

Overview

Stakeholder engagement, both internal and external, is essential to the success of the Time Machine LSRI. As such, processes have been developed to manage both instances:

Internal Stakeholder Management Process

The internal Stakeholder Register is managed by the Coordinating Unit (CU), and it is the central source for contact information on all stakeholders working directly on the Time Machine CSA. It will be replaced by Salesforce CRM as part of Task 1.2 by M3.

The Stakeholder Register is managed by the Coordinating Unit (CU), and it is the WPL's responsibility to communicate any additions, removals or updates as soon as possible via Microsoft Teams.

Resource Commitments

For reference, the resource commitments of each consortium member in person-months can be found in Table 6-8 below. This information is critical for WPLs when assigning tasks and/or actions to individual contributors:

Table 6-8: Summary of staff effort (in person-months)

Partner	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total / partner
1 EPFL	5.00	0.75	4.00	0.50		0.375	2.75	4.00	**17.375**
2 TUW		0.50	0.50						**1.00**
3 ICARUS	0.25		5.50			0.375	4.25	0.5	**10.875**
4 KNAW		0.50	0.50				0.5		**1.50**
5 NAVER		0.25	0.50		0.50				**1.25**
6 UU		0.25	0.5	0.5					**1.25**
7 FAU	0.25	4.50				0.375	0.25	0.50	**5.875**
8 ENC		0.50	0.50						**1.00**

Partner	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total / partner
9 UniBo		0.50	0.50	0.50	1.00				**2.50**
10 IGN	0.25	1.50	1.50	4.50	0.50	0.375	1.25	0.50	**9.375**
11UvA	0.25	0.50	0.50	6.50		4.00	1.50	0.50	**13.75**
12 UW		0.50					1.00		**1.50**
13 UL		0.50		0.50			1.00		**2.00**
14 BU		0.50	0.50				0.50		**1.50**
15 UNIVE	0.25	0.50		4.50		0.375	0.75	0.50	**6.875**
16 UA	0.25	2.50		0.50		0.375	0.75	0.50	**4.875**
17 QG		0.50	0.50						**1.00**
18 TUD		0.50					0.50		**1.00**
19 CNRS		0.50					0.50		**1.00**
20 NISV		0.25	1.00	2.00	1.00				**4.25**
21 FIZ		0.50	0.50				0.50		**1.50**
22 FRG		0.50	0.50						**1.00**
23 UGent		0.50		0.50					**1.00**
24 TUDr	0.25	0.50			4.00	0.375	0.75	0.50	**6.875**
25 TUDo		0.50					0.50		**1.00**
26 ONB		0.25		2.00			1.00		**3.25**
27 ICO		0.25	1.00	0.50			2.00		**3.75**
28 PSNC		0.50	1.00						**1.50**
29 PICT		0.25	1.00	0.50			0.50		**2.25**
30 CVC		0.50	0.50				0.50		**1.50**
31 EF	0.25	0.25	0.50	3.50	0.50	0.375	1.75	0.50	**7.625**
32 INDRA		0.25	1.00		1.50		1.00		**3.75**
33 UBI		0.25		0.50	0.50		2.00		**3.25**
Total	**7.00**	**20.00**	**22.50**	**28.00**	**9.50**	**7.00**	**26.00**	**8.00**	**128.00**

External Stakeholder Management Process

The development on new external stakeholder lists for each pillar and the subsequent communication and dissemination activities will be managed by ICARUS as part of Work Package 7. More details on the process and criteria for identification and engagement will be provided by ICARUS directly to those involved.

Table 3-1: Indicative stakeholders list with multiplier effect indicates the target external stakeholder categories for each pillar, and identifying stakeholders within these categories is a critical early task of the Time Machine CSA.

6.9 Tools

Background

An ambitious one-year project with an expected team of ~150 individuals from 33 institutions, the Time Machine CSA's requires a number of low-cost, secure, transparant and scalable tools to enable effective collaboration. The categories and tools selected are as follows:

- Internal communications/collaboration: Microsoft Teams (Office 365 Non-Profit)

- Document sharing/management: SharePoint/OneDrive (Office 365 Non-Profit)
- Stakeholder management (CRM): Salesforce.org
- Mass emailing (newsletters): MailChimp
- Project Management: Hive

Microsoft Word, SharePoint and Teams, as core parts of Office 365 Non-Profit, have been chosen as the central tools for all Time Machine CSA project team members. Office 365 accounts will be created for each team member to facilitiate access these apps.

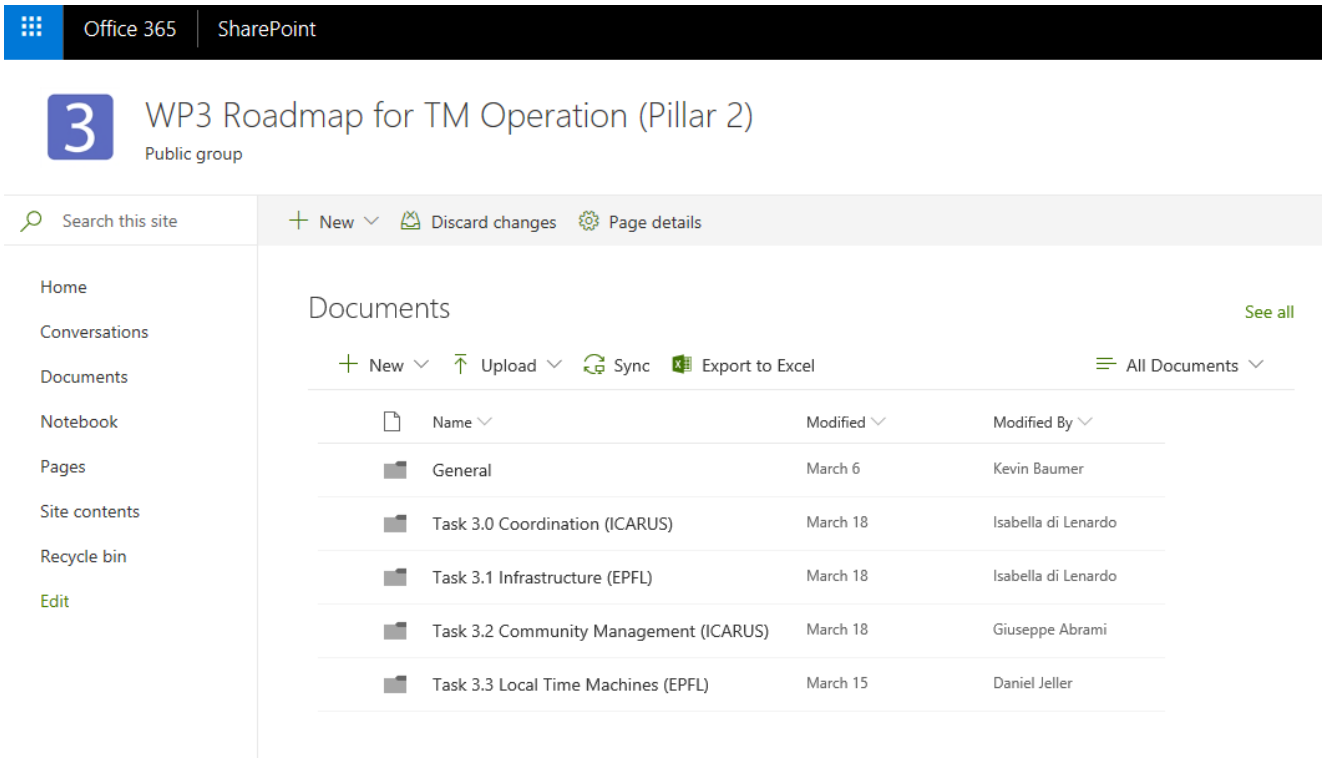
MailChimp, Hive and Salesforce.org will be used by specific project team members as needed for their roles in various tasks related to project management, communicaitons and dissemination.

Document Creation/Management Tool

Document creation, along with file storage and sharing, is the key factor which will enable the work package teams develop the deliverables in a collaborative and efficient manner.

To ensure consistency of documentation produced throughout the project, and most importantly consolidation and integration with the final deliverable, the Microsoft Word must be used. Please see the section 6.6 Quality Management for additional requirements on deliverables.

A SharePoint site has been set-up for each work package, with file folders created automatically for each team in Microsoft Teams. Each channel within a team also has a file folder automatically created within this structure. An example folder structure can be found on the image below:



Internal Communications/Collaboration Tool

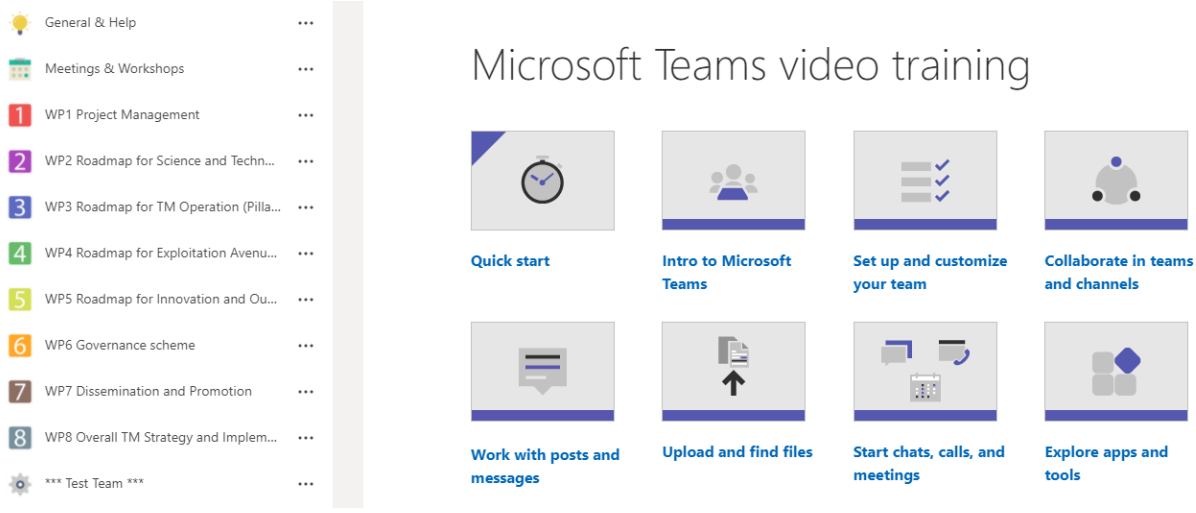
Microsoft Teams will allow all project team members to communicate and collaborate on all Time Machine CSA tasks via teams (Work Packages) and channels (tasks). The following resources

should help each member to get accustomed to the platform and to answer any questions they may have on general use:

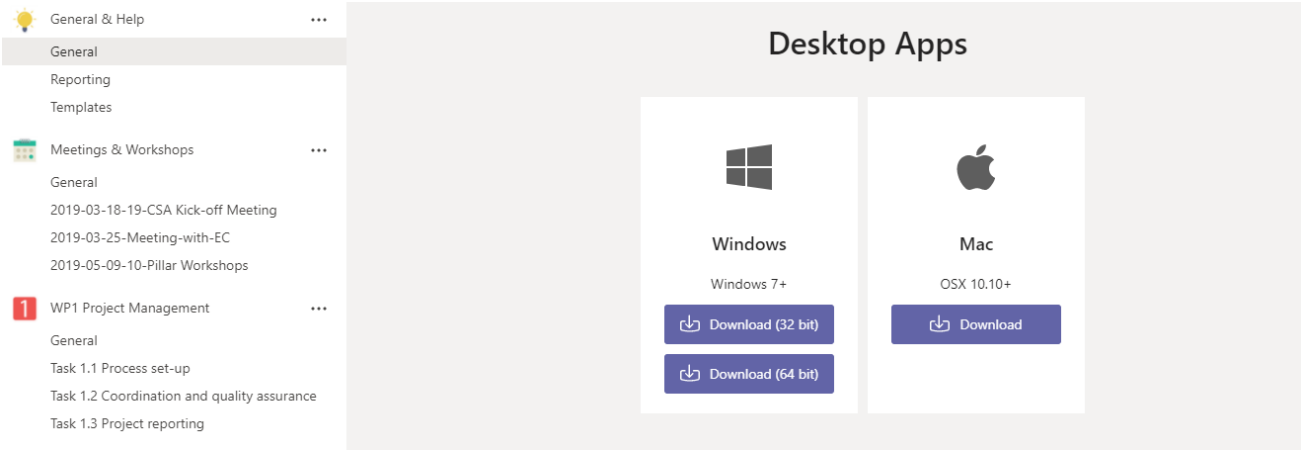
- Microsoft Teams help center
- Microsoft Teams video training
- Microsoft Teams desktop and mobile apps

The guidelines below relate to the Time Machine CSA's customized set-up in Microsoft Teams:

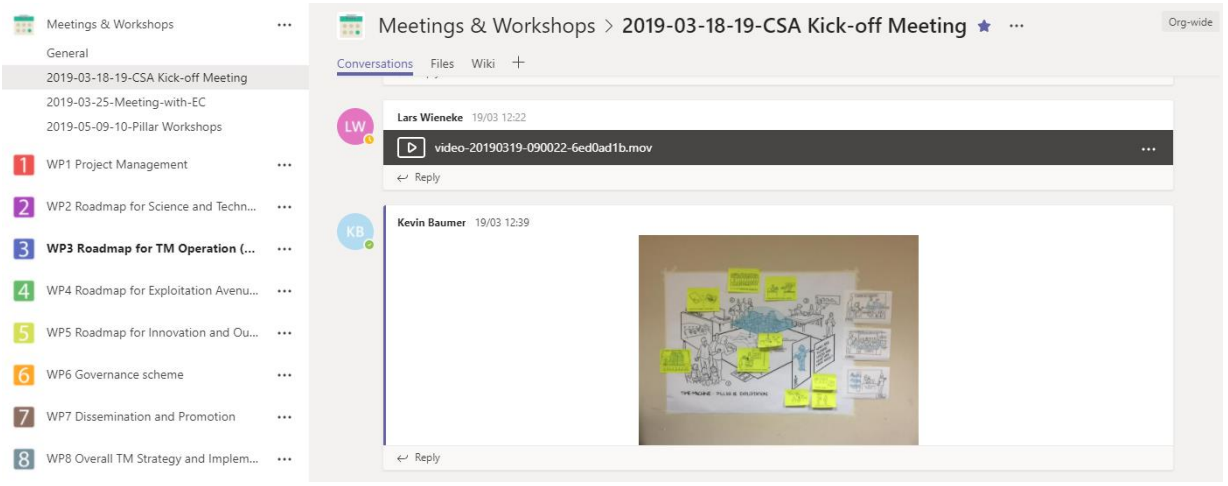
1. Teams have been created for each WP and other relevant categories such as Help, Meetings & Workshops and Test. Each project team member should be join the team(s) on which they will be working and will automatically be added to the teams relevant to the entire consortium.



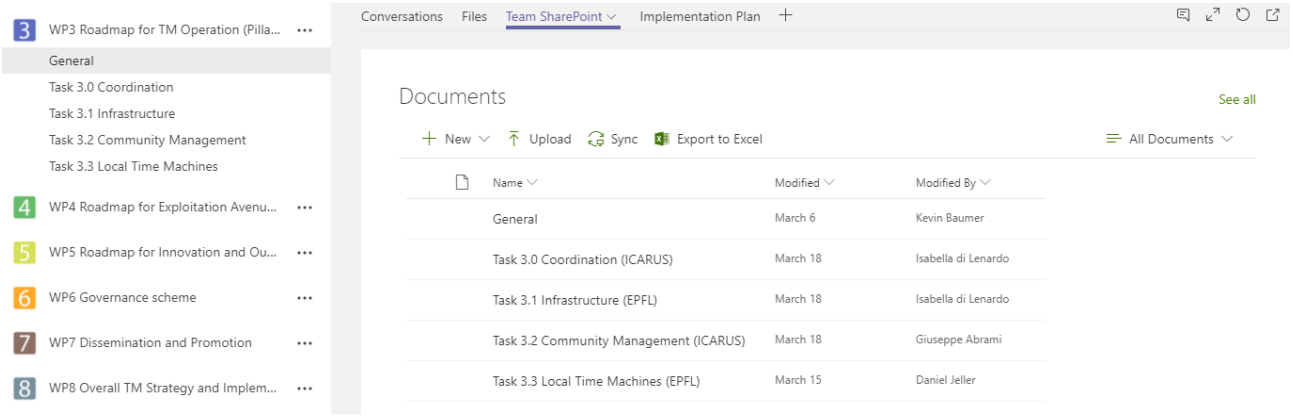
2. Channels have been created for each task within a WP and critical items within other categories, such as Templates and Reporting:



3. Each channel contains the tabs Conversations and Files, and new channels may be created for additional topics within a team.
    - Conversations should be used for communication related to the channel's topic.
    - Files gives you access to the SharePoint folder (and sub-folders) connected to that individual channel.



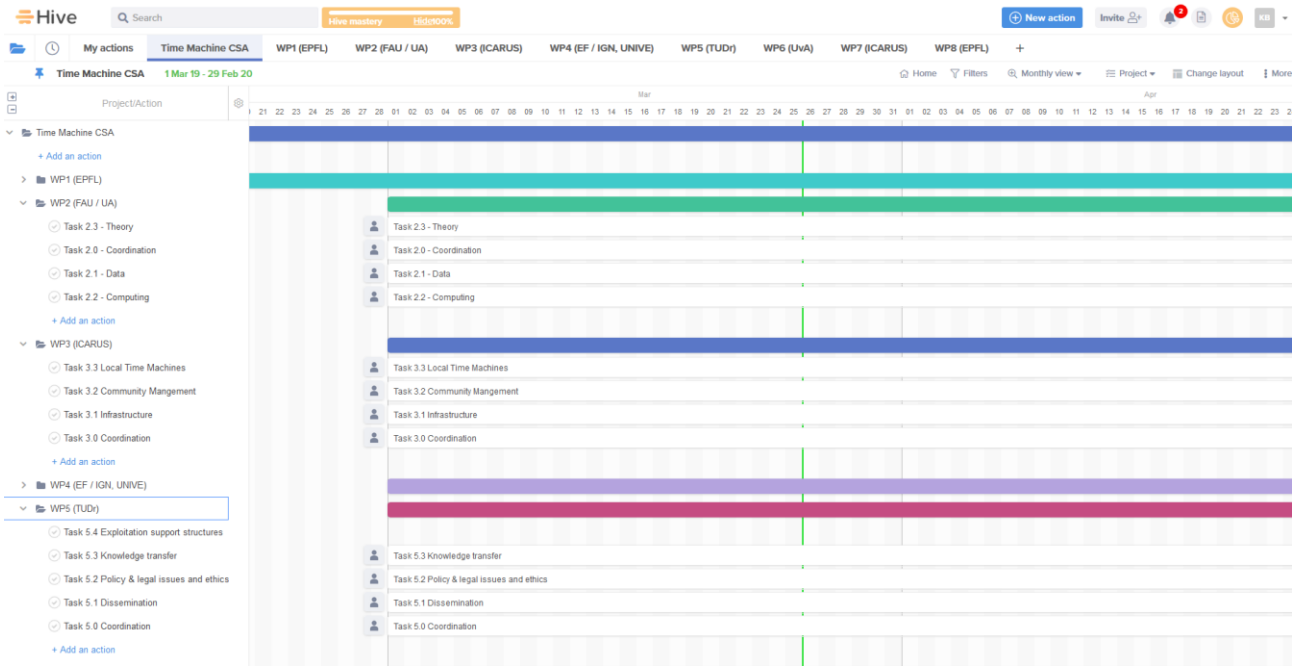
4. The General channel in each team contains a Team SharePoint tab, which provides access to the SharePoint folder for the entire team (all channels).



Project Management Tool

After a thorough analysis of various tools for project management, Hive has been selected as the overall project management platform for the PL, WPLs, Quality Manger and the CU. Hive is an intuitive, powerful and scalable platform which will enable centralized management and tracking of all work packages.

This solution will provide a level of flexibility while at the same time giving critical structure and transparency to the overall project deliverables, tasks, milestones, deadlines and dependencies. The master schedule baseline will the managed using Hive.



Stakeholder Management Tool

Salesforce.org will be used as the CRM system for managing both internal and external stakeholder records, by selected members of the CU and WP7. All update requests should be sent to the CU.

Email Marketing Tool

MailChimp will be used for the creation and sending of email campaigns, including newsletters. Integration with the Salesforce database is a critical factor.

7 Technical and financial reporting under H2020

Formal technical and financial reports must be submitted to the European Commission at certain points during the CSA. The key dates for these deliverables are as follows:

- M6 — Periodic Technical and Financial Reports
- M12 — Final Technical and Financial Reports

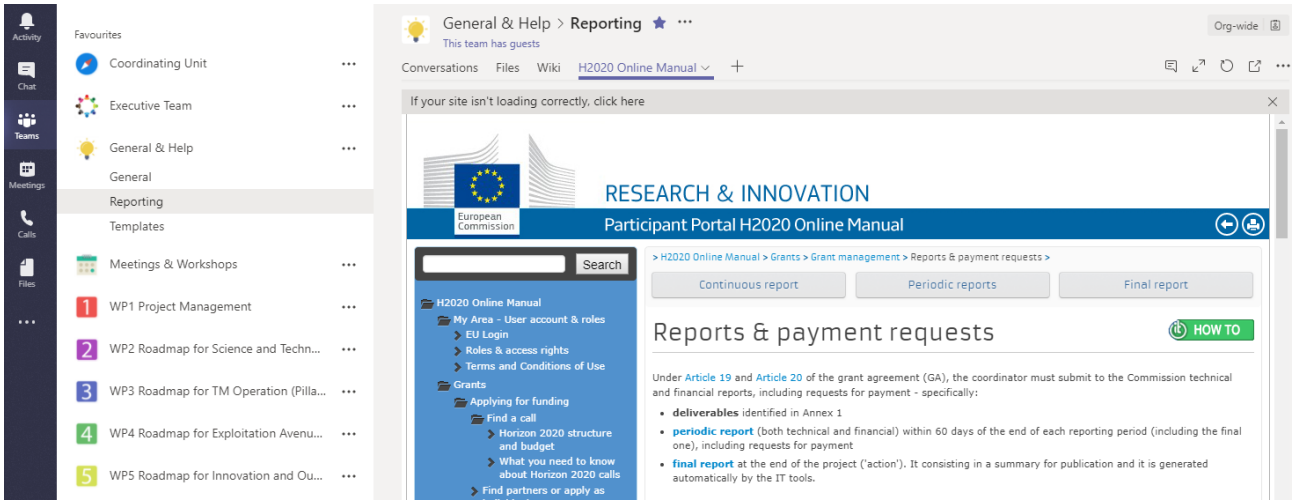
Full details for reporting under H2020 can be found in the online manual:

http://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management/reports_en.htm

A general guide to the reporting process can also be accessed by all CSA members (LOGIN ONLY) via the European Commission portal.

https://webgate.ec.europa.eu/fpfis/wikis/display/ECResearchGMS/Reporting+process+-+general

A 'Reporting' channel has also been created in Microsoft Teams. All project team members are encouraged to post feedback and questions there. This resource will be developed throughout the project based on feedback and questions encountered.



Eligible and Ineligible Costs

The Grant Agreement is the official resource for all budget and cost related items, as it covers in details all eligible and ineligible costs for the Time Machine CSA. It is strongly advised that all project team members in charge of reporting for their institution become familiar with this and ensure other project team members from their institution are aware of the relevant details in their case. The Grant Agreement is available on the European Commission Participant Portal.

Any questions or concerns should be addressed to the CU and/or the Coordinator.

8 Rules for scientific publications under H2020

The Horizon 2020 online manual contains full details and rules for publishing under H2020:

http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination_en.htm

Any questions or concerns should be addressed to the CU and/or the Coordinator.

Annex A: Overview of the TM Consortium

Partici-pant No	Participant organisation name	Short name	Country
1 (Coord.)	ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE	EPFL	CH
2	TECHNISCHE UNIVERSITAET WIEN	TUW	AT
3	INTERNATIONAL CENTRE FOR ARCHIVAL RESEARCH	ICARUS	AT
4	KONINKLIJKE NEDERLANDSE AKADEMIE VAN WETENSCHAPPEN	KNAW	NL
5	NAVER FRANCE	NAVER	FR
6	UNIVERSITEIT UTRECHT	UU	NL
7	FRIEDRICH-ALEXANDER-UNIVERSITAET ERLANGEN NUERNBERG	FAU	DE
8	ECOLE NATIONALE DES CHARTES	ENC	FR
9	ALMA MATER STUDIORUM - UNIVERSITA DI BOLOGNA	UniBo	IT
10	INSTITUT NATIONAL DE L'INFORMATION GEOGRAPHIQUE ET FORESTIERE	IGN	FR
11	UNIVERSITEIT VAN AMSTERDAM	UvA	NL
12	UNIWERSYTET WARSZAWSKI	UW	PL
13	UNIVERSITE DU LUXEMBOURG	UL	LU
14	BAR-ILAN UNIVERSITY	BU	IL
15	UNIVERSITA CA' FOSCARI VENEZIA	UNIVE	IT
16	UNIVERSITEIT ANTWERPEN	UA	BE
17	QIDENUS GROUP GmbH	QG	DE
18	TECHNISCHE UNIVERSITEIT DELFT	TUD	NL
19	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	CNRS	FR
20	STICHTING NEDERLANDS INSTITUUT VOOR BEELD EN GELUID	NISV	NL
21	FIZ KARLSRUHE- LEIBNIZ-INSTITUT FUR INFORMATIONS INFRASTRUKTUR GMBH	FIZ	DE
22	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	FRG	DE
23	UNIVERSITEIT GENT	UGent	BE
24	TECHNISCHE UNIVERSITAT DRESDEN	TUDr	DE
25	TECHNISCHE UNIVERSITAT DORTMUND	TUDo	DE
26	OSTERREICHISCHE NATIONALBIBLIOTHEK	ONB	AT
27	ICONEM	ICO	FR
28	INSTYTUT CHEMII BIOORGANICZNEJ POLSKIEJ AKADEMII NAUK	PSNC	PL
29	PICTURAE BV	PICT	NL
30	COMPUTER VISION CENTER	CVC	ES
31	EUROPEANA FOUNDATION	EF	NL
32	INDRA	INDRA	ES
33	UBISOFT ENTERTAINMENT SA	UBI	FR

Annex B: Templates and Resources

The following templates/resources have been created and can be found on Microsoft Teams:

- Meeting minutes (Word)
- Project deliverables (Word)
- Change log (Excel)
- Risk register (Excel)
- Stakeholder register (Excel)
- Presentations (PowerPoint)
- Letterhead (Word)