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

Deliverable D6.1
Time Machine Organisation and Governance Plan

Preamble:

This deliverable is part of a structured set of outputs produced and built upon during the 12-month TM CSA project. As such, the content contained within was further refined, synthesised and improved throughout the project and in particular when combined with material from other deliverables during the production of the full D8.5 TM LSRI Strategy and Implementation Proposal. Please be advised that the most up-to-date version of any information found in this document will be found in D8.5, where it can also be viewed in proper context as part of the entire TM LSRI proposal.

Abstract

A governance scheme is proposed for the Time Machine initiative, in which the central role in the governance scheme is given to the Time Machine Organisation (TMO), an association founded by the partners that is tasked with promoting and implementing the Time Machine agenda.

A two-stage approach is described, where the current management scheme of TMO evolves to a governance scheme adapted to the requirements of managing and coordinating a large-scale research initiative. The full organisational structure, management bodies, roles & responsibilities, decision-making processes and high-level position requirements are presented for the "current" or "set-up" governance scheme. The main changes are also presented that would need to be made for the "future" or "steady state" scheme.

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History of Changes

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27.12.2019	1.0	J. Noordegraaf	Document ready for submission
05.03.2020	1.1	K. Baumer	Replaced Figure 3-1, Table 3-1 and adjusted related text for consistency with D6.2 and D8.5.
05.06.2020	1.2	K. Baumer	Added preamble to title page which points to D8.5, per final review meeting.

Disclaimer

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Moreover, this document does not express the opinion of European Commission and does not in any case replace the European Commission documentation.

List of abbreviations

AI	Artificial Intelligence
CH	Cultural Heritage
CSA	Coordination and Support Action
EC	European Commission
ERIC	European Research Infrastructure Consortium (Legal entity for Research Infrastructures)
FAIR	Findable – Accessible – Interoperable – Reusable
GA	General Assembly
GLAM	Galleries, Libraries, Archives and Museums
HE	Horizon Europe (The 9th Framework Programme for Research and Innovation of the EC)
ICT	Information and Communication Technologies
KPI	Key Performance Indicator
LSRI	Large Scale Research Initiative
RFC	Requests for Comments
SSH	Social Sciences and Humanities
TM	Time Machine
WG	Working Group
WP	Work Package

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1 Introduction

Time Machine (TM) is a Large-Scale Research Initiative (LRSI) built around the vision of creating the big data of the past, a distributed digital information system mapping the European social, cultural and geographical evolution[1]. This huge 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.

The objective of the TM CSA project is to prepare a detailed proposal for the Time Machine LSRI defining a structuring research and innovation agenda of a European scale for the years to come. Time Machine has been endorsed by a large number of European researchers, innovators, decision makers and other stakeholders in the area of cultural heritage. In addition to the 33 partners of the TM CSA project, the Time Machine partnership network currently (December 2019) comprises close to 500 organisations from 34 countries. This broad network has been actively involved with the development of the Time Machine roadmaps and is fully committed to the strategic research and innovation agenda of the initiative.

A key component of the TM LSRI is the governance system that, in order to fulfil its critical role, should be fully adapted to the vision, mission and specific objectives of the proposed initiative. The aim of WP6 in the CSA project is to develop such a governance scheme. The present report is the formal deliverable D6.1, presenting the main findings and conclusions of Tasks 6.1, 6.2 and 6.3.

In order to ensure the long-term sustainability of the initiative, the TM consortium decided to create the Time Machine Organisation (TMO), an association under Austrian Law tasked with managing and coordinating Time Machine in the post-CSA period. TMO has received a wide acceptance by the Time Machine partnership network and presently counts 400 members, showing that the large majority (80%) of the TM network partners commit to support the TM LSRI.

TMO will make the transition from the organisation environment that the Time Machine has so far implemented with the governance scheme of the CSA project to one that covers the specific needs and work flows of a much broader ecosystem. The governance scheme should, therefore, be developed following a two-stage approach: the "future" or "steady state" stage, where TMO is an established organisation managing research and innovation actions related to the TM objectives, and the "current" or "set-up" stage that covers the period where the actual CSA scheme will grow to its fully established stage.

The report has the following structure:

- Section 2 outlines the methodology used to develop the governance scheme.
- Section 3 presents the current TMO and the roles & responsibilities and mechanisms that will enable it to evolve to a structure that can address the requirements of coordinating and managing a LSRI
- Section 4 describes the changes expected for this steady-state structure, in terms of the future governance bodies, roles & responsibilities and governance mechanisms.

The document is supported by Annex A that gives an overview of the proposed TM LSRI.

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[1] The expression Cultural Heritage in the document will often refer to every trace of European social, cultural and geographical evolution, which is wider than its current scope. A unique characteristic of this project is to design solutions respecting the cultural wealth of Europe as these developed for cultural heritage.

2 Methodology

2.1 Approach to the design of the governance scheme

The approach for the design of the TM governance scheme was based on the following steps:

- Assess best organisation practices and solutions adopted in previous and current LSRIs from available documentation, and where possible interviews with senior officials from these initiatives[2].
- Identify management and coordination challenges related to the characteristics of the proposed Time Machine LSRI (the future stage).
- Develop the governance system enabling to meet these challenges; the two-stage approach referred to in the introduction means that two schemes have to be designed: the one addressing the challenges of the LSRI (the future stage) and the one that covers the intermediate period from the CSA governance to the future one (the current stage).

As specified in the DoA, the design of the governance structure should comprise a full organisational scheme specifying the functions and mechanisms for strategic, operational and administrative management and the decision-making processes. For each management level, associated roles, responsibilities and position requirements up to the third level of management should be provided. This is done for the current stage structure, whereas for the future structure the focus is on the changes that should be made in these areas. In this process, particular attention is paid to interactions with the different funding organisations, as well as to the structures that will undertake the support functions of Pillar 4: Dissemination, Policy and Legal Issues, Knowledge Transfer, and Exploitation Structures.

2.2 Main findings

LSRI best governance practices

Following an initial review of different past and current LSRI schemes in the context of European Commission (EC) programmes, the investigation focused on two main cases:

- FET Flagships that, like Time Machine, strongly promote the cooperation of academic researchers with industrial actors and are expected to combine different sources of funding through the example set by the Partnering Projects[3].
- The research infrastructures, especially the ones in the field of SSH, for which the geographical coverage is crucial for the quality of the research they support and hence for their sustainability[4]. So, such infrastructures can propose efficient organisational models involving partners distributed across Europe for activities that are crucial to the Time Machine.

Time Machine has many common features with two new types of LSRI that will be implemented in Horizon Europe: missions and the new form of European partnerships. Specific features concerning their governance structure will be considered for Time Machine, when more detailed information on this topic becomes available in the coming months.

The main findings of the analysis on governance practices can be summarised as follows[5]:

Management Principles

- It is critical for the LSRI to have a balanced system of decision powers and accountability, ensuring a clear separation of powers between scientific steering, strategic and financial decision-making and the day-to-day implementation of research and innovation activities.

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[2] Relevance and applicability of the governance patterns to the Time Machine were used as criteria to select the cases to be assessed

[3] Partnering Projects in the FET Flagship terminology are projects funded by other sources whose objectives and outputs comply with and contribute to the ones of the core funding provided by the European Commission.

[4] European data collecting infrastructures only have European added value, if they are able to provide high quality data and associated services from all over Europe.

[5] The detailed analysis is presented in Internal Report R6.1: Governance schemes of large-scale research initiatives

- All partners, including research institutions, businesses and other stakeholders must be appropriately represented in the governance structure. The way to do so is to have a General Assembly as the highest decision making body, where all partners participate as voting members.
- The General Assembly votes for and controls an Executive Board that is tasked with decision making with regards to strategy and operational directions.
- Fewer stakeholders are represented in the Executive Board to ensure the required management efficiency and flexibility, but this has to be accompanied by rotating positions regularly among partners, so as to increase participation and acceptance of decisions, while ensuring that the rules for this process are clearly defined.

Operational efficiency

- The leadership of the initiative must be able to inspire individual researchers/engineers/other professionals in each of the working groups.
- The initiative should be able to have recourse to good external advice in critical decision-making moments, by setting up, for example, an external and independent high-level advisory body on issues related to science, technology and innovation.
- Ethical questions play an increasing role, both with respect to the inner functioning of the initiative and their relationship to society, so committees should be foreseen for these matters as well.
- Apart from the governance, an LSRI is also critically dependent on a professional management capacity led by an experienced and highly effective coordinator and an efficient administration team.
- Equally important is to find the right balance between centralised and decentralised efforts for implementing LSRI activities related to innovation, education and training, and communication, dissemination and outreach.
- Due attention should be given to communication, both internal and external. The large number of partners/direct stakeholders should be kept constantly informed about overall strategies, plans and achievements.
- The same applies for the larger environment to which the LSRI operates, as the initiative should have a strong focus on increasing its domain of intervention and maximise the economic and social benefits of its actions.

Performance Management

- Measuring the outputs, results and impact of the LSRIs during their lifetime and afterwards is a key management practice. Key Performance Indicators (KPIs) need to be built-in already in the design phase, and tools to monitor/measure them should be put in place from the start of the initiative.
- Special attention should be given to assessing performance with regards to the innovation potential, as this is closely related to the funding opportunities and the self-sustainability of advanced innovation activities.
- The process should be coupled to Technology Readiness Levels, so as to be able to show the overall progress of the initiative towards the ultimate objective of innovation in markets and society.

Relation with funding organisations

- LSRIs rely on a strategic cooperation with one or a group of funding organisations that defines that terms and conditions for the sustainable funding of a research and innovation agenda over a certain (typically 10-year long) period of time.
- LSRIs should put in place an open and collaborative interaction between their management and the funding organisations. In case of the EC this interaction goes well beyond what is done in other EC-funded research initiatives. A regular and close collaboration through joint strategy boards allows both sides to swiftly identify challenges and find solutions for a smooth implementation during the full duration of the initiatives.

- Member State support and contribution to the LSRIs is essential for their success. The same is true regarding the participation of other funding institutions, like the UNESCO, which presents a potential funding source for the Time Machine activities.
- The Board of Funders in the FET Flagships and similar bodies in the Research Infrastructures considered are best practice examples, that should be used to confirm the commitment of other funders and to give the opportunity to share information with funders on the overall state of progress, as well as programming future actions of the LSRI.

Challenges for TM governance scheme

Analysis of the key characteristics of Time Machine identified the following challenges related to governance[6]:

- The added value of Time Machine comes from simultaneous advances in many different fronts that asks for (a) substantial and sustained funding to implement a very high number of actions and (b) the tight coordination of very diversified contributions from a wide ecosystem of researchers, innovators, other professionals and authorities involved in cultural heritage, in a way to ensure that these actions serve the long-term objectives of the initiative with a high degree of coherence, efficiency and effectiveness.
- Time Machine was very successful in mobilising a critical mass of stakeholders around the concept of building and exploiting the big data of the past; this ecosystem should keep its motivation to participate in the detailed design of the different actions and take action for their accomplishment.
- Getting funding from different sources asks for developing successful strategic relations with the organisations that manage the corresponding funds; it, also, requires complying with different terms and conditions for the allocation, follow-up and evaluation of results coming from these funds.

2.3 The two-stage governance scheme

The transition from the CSA to the future governance scheme

At present, Time Machine benefits from an already existing governance structure, the Time Machine Organisation (TMO). The TMO idea started being developed already at the CSA preparation phase and matured over the following months, enabling to launch TMO as an Association under Austrian law in 2019.

In this governance scheme, a General Assembly is the highest decision making body, where all partners participate as voting members and an Executive Board is tasked with decision making with regards to strategy and operational directions. All consortium members and a large number of external stakeholders joined the TMO and the first General Assembly that voted for the first Executive Board was held in October 2019.

TMO will undertake to initiate the programme that was designed by the TM CSA project. The objective is to secure the resources for starting the implementation of the LSRI, so the key requirement at present is to have in place a governance scheme that is oriented towards obtaining funding and implementing projects that contribute to the broader objectives of the Time Machine.

The target is for this process to reach a stage where stable framework is reached, offering the conditions of uninterrupted long-term planning that may come from:

- A dedicated funding instrument, like the European Partnership scheme.
- Strategic agreements with different funders for sustained support over different programming cycles.
- A combination of the above.

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[6] The detailed analysis is presented in Internal Report R6.2: Specifications for the Time Machine Governance Scheme

In such a case, this future TMO should have the capacity to implement larger-scale sets of research and innovation actions, like the ones presented in the work programmes defined in the TM pillars (Annex A).

This transition from the current to the future governance scheme is schematically represented in Figure 2-1.

Therefore, the way the TMO governance structure will evolve depends largely on the funding sources and the conditions for long-term funding that can be secured. Three main cases can be considered at present:

I. Sufficient and sustained funding is secured: TMO assumes responsibility for implementing an LSRI; in addition to coordinating a large number of research and innovation actions, this may involve developing terms of reference as part of a strategic cooperation with a major research and innovation funder like the EC and establishing mechanisms for distributing funds to its members and, eventually, other entities.
II. Financial support has to be found in regular calls around dedicated sub-projects, which places a strong accent on securing funding, as in the current TMO stage.
III. A hybrid scenario, where part of the funding needed for the implementation of the TM agenda is secured, while some TMO sub-projects and corresponding consortium members have to obtain the necessary resources through EC or national calls.

For case I, an LSRI structure has to be developed as described above and in section 4 for the future TMO.

For case II, the current TMO structure may remain unchanged.

For case III, a combination of the current and future structures has to be elaborated at a time when TMO will be in position to make a close assessment of the long-term funding opportunities.
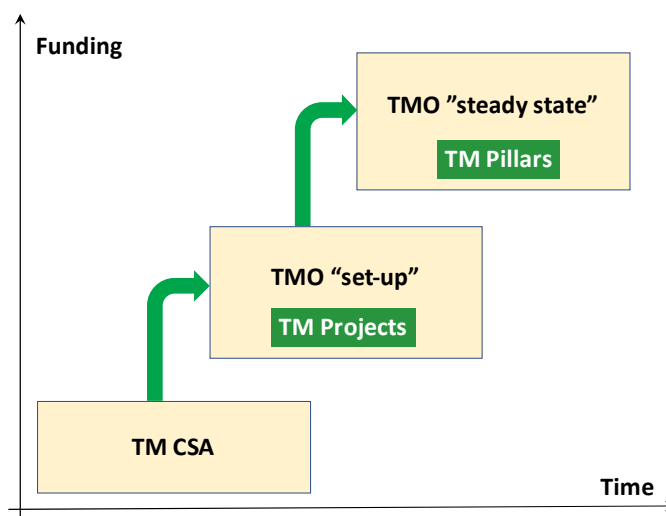

Figure 2-1: From the TM CSA to the future TMO governance scheme

A decision on the way to go should be taken when detailed plans are available for the implementation of HE and other programmes of the next programming period (2021-27) enabling the TMO to assess the degree to which these could support the Time Machine agenda. An appropriate time for such decision would then be the last half of the second semester of 2020.

The current TMO

During the current set-up phase, the TMO has to initiate the TM implementation, which defines as priority objectives the ones listed in Box 2-1.

Box 2-1: Priority objectives for TMO in the set-u phase
- Intensify the efforts for securing funding for short and longer term actions.

- Exploit funding opportunities for initiating priority actions in the TM roadmaps.
- Maintain contact with current partners and reach out to new ones.
- Develop and implement the communication strategy for all the above.
- Ensure efficient administrative management for the internal operation and relation with TMO members.

These priority objectives determine the way activities of the TMO should be organised: It is the Executive Board that sets out targets for each priority objective to be approved by the General Assembly. Specific management structures need to be defined to implement tasks and activities to reach these targets.

The future TMO

The future TMO will have to develop a balanced system of decision powers and accountability, ensuring a clear separation of powers between scientific steering, strategic and financial decision-making and the day-to-day implementation of large-scale research and innovation actions.

Based on main findings of work conducted so far discussed in section 2.2, the new governance scheme should evolve to include the following characteristics:

- The General Assembly should remain the highest decision-making body, where all partners participate as voting members.
- The Executive Board function for decision making with regards to strategy and operation should be redesigned to meet the increased needs in terms of coordination and management.
- In this respect, attention should be given to defining a system to assess organisational efficiency and effectiveness through a monitoring and evaluation system supported by appropriate Key Performance Indicators (KPIs).
- As funding may come from different sources, a Board of Funders should be created, following the example of the FET Flagships and similar bodies in the Research Infrastructures, to confirm the commitment of these funders and to give the opportunity to share information with them on overall state of progress, as well as programming future actions.
- The management functions will need to be upgraded to organisational units with specific operational objectives and an internal structure tailored to these objectives.
- Professional management capacity and a fully operational administration team will be needed, as well as an experienced communication team, all organised to cope with a considerably increased scope.

These aspects have been used to guide the design of the governance structure presented in section 4.

Design parameters for the governance scheme

The common denominators in the governance schemes discussed above are the functions for:

- Strategic Management, ensured by a General Assembly.
- Executive Management, ensured by an Executive Board, elected by and reporting to the General Assembly.

Other management functions have to be defined, depending on mission and specific objectives for:

- Implementation, referring to the execution of the research and innovation actions of the Time Machine roadmap.
- Management support, referring to planning, control and evaluation of implementation.
- Framework conditions, referring to actions that enable the Time Machine research and innovation actions to be initiated, as well as to maximise their socio-economic impact.
- Administration, referring to financial and administrative management, both for the TMO actions and relation with TMO members (e.g. obligations and benefits of membership).

Such functions are proposed in sections 3 and 4 for the current and future TMO, respectively.

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3 The current TMO organisation

3.1 Overview

The organisational scheme of TMO is schematically represented in figure 3-1 and discussed in more detail below.
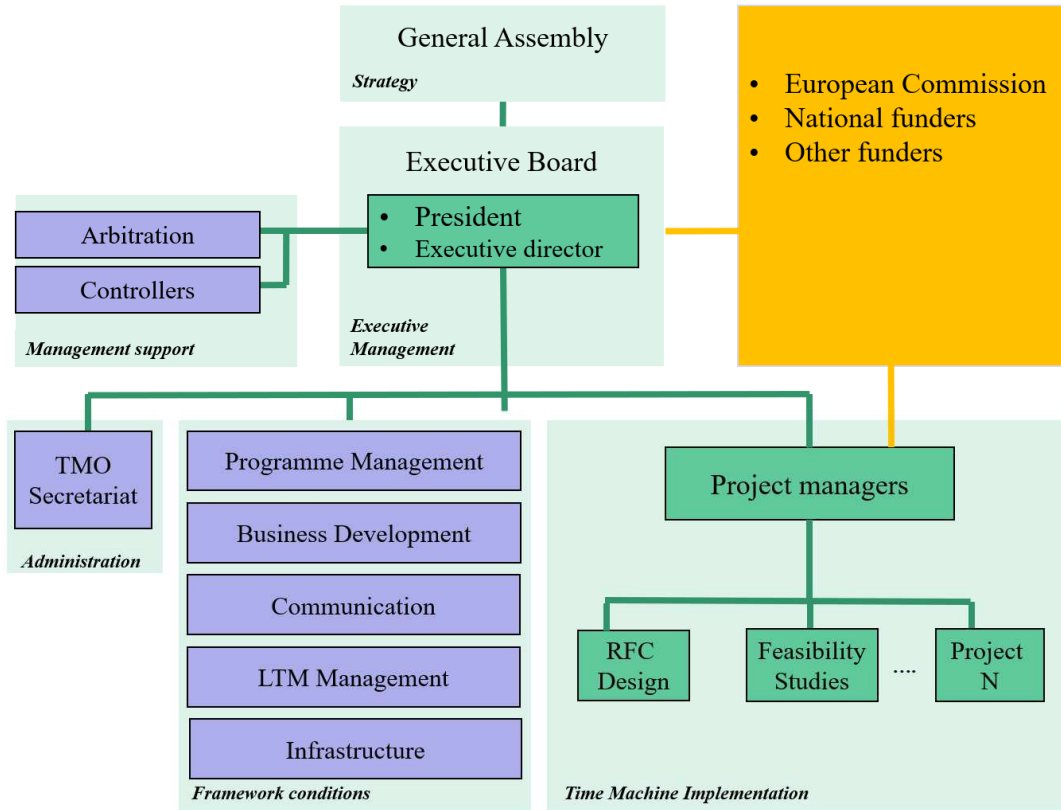

Figure 3-1: Organigram for current TMO

The General Assembly is in charge of overall strategy and governance. The Executive Board has responsibility for the implementation of the TMO strategy, while the TMO President undertakes overall management and interaction with external stakeholders, including the funding organisations. An Executive director is in charge of the day-to-day management and coordination of TMO actions.

The governance scheme also comprises:

- For implementation: management structures tasked with carrying out projects, following the hierarchy of project manager, work package leader and project team, with reporting levels and lines that are coherent with the complexity of each project. The project managers will be nominated based on profiles matching the specific project requirements.
- For management support: the Arbitration Panel functions as the highest level for resolving any issues that are escalated to the GA, and financial control functions for the audit of the TMO's financial activities.
- For framework conditions: the organisational units are (a) programme management, (b) business development, (c) communication, (d) LTM management and (e) infrastructure.
- For administration: the TMO Secretariat which deals with administrative and financial aspects of TMO operations, including the management of TMO memberships.

General Assembly

The General Assembly (GA) is the highest decision making body. It is the "member´s assembly" in the sense of the Austrian Union Statute of 20027. Previsions regarding its operation are given in Box 3-1.

> **Box 3-1: GA procedures**
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> The president of the Executive Board acts as the chairperson at the General Assembly; in his or her incapacitation, the vice president of the longest standing among those present shall preside. Should all the vice president also be incapable, the member of the executive board with the longest standing shall act as chair.
>
> A regular assembly takes place annually. A special assembly may occur within four weeks of a decision of the Executive Board or the General Assembly, or with the written petition of at least one tenth of the members, or at the request of the controllers.
>
> For all regular or special assemblies, all members shall be invited at least two weeks prior to the date in writing. The place of the assembly shall be announced in the agenda. The summons shall go through the Executive Board. Petitions to the general assembly must be submitted to the executive board at least three days prior to the General Assembly in writing, by fax or email. Valid resolutions can only be conceived in the agenda, excepting a petition for the summoning of a special assembly.
>
> All members have the right to attend the General Assembly. Only regular or honorary members have suffrage. All members have the right to speak. It is permissible to confer the right to vote on another member through written authorization. The General Assembly shall constitute at valid quorum regardless of the number of absent members.

The General Assembly has the power to accept and approve of the reports from the Executive Board about the activities and financial policy of the association. It accepts and approves the annual financial statements of the collected annual financial statements from the Executive Board and the controller's audit report.

Voting and decisions of the General Assembly take effect by the ruling of a simple majority of delivered valid votes. Decisions dealing with altering the association constitution or dissolving the association must be passed by a qualified vote of two thirds of the delivered valid votes.

The General Assembly also decides upon the discharge of the Executive Board, as well as the election, appointment, and dismissal of its members, the treasurer, and the control institutions. It adopts the resolution for the expulsion of an association member, can grant and withdraw honorary memberships, and decide on the category and amount of a membership fee on the suggestion of the Board.

Executive Board

The Executive Board is charged with informing the General Assembly about the association's activities and financial situation. It is responsible for preparing the association's annual account and assets of the past fiscal year within five months of the current fiscal year. These, as well as a record of all necessary information, must be provided to the controller for the audit.

The Executive Board is responsible for making decisions in all service and finance related business. These decisions can only become effective with the accordance of the financial plans. The Executive Board oversees various other management duties, in particular the determination of internal rules of procedure for the management. The Executive Board is also charged with preparing the General Assembly, as well as summoning of the regular and special meetings of the general committee.

The Executive Board is composed of:

- the president
- three vice presidents

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7 http://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=61357&p_country=AUT&p_count=1168

- the treasurer and his/her deputy
- the secretary and his/her deputy
- co-opted members, and
- the executive director.

The Executive Board has a quorum when all members have been invited and at least half are present. It passes resolutions with a simple majority; in the case of a tie, the president's vote shall decide the matter. The president acts as chairperson; in the event of his/her incapacitation, the president's proxy shall preside. Pressing rulings for individual affairs can be decided upon in writing in the form of a separate resolution.

All members of the board are obliged to actively support the intentions and objective targets of the association, defined in the purpose of the association, in particular to enlarge the partner's network and to initiate and support concrete projects due to the purpose of the association.

The conditions for election and the responsibilities of these positions are presented in Box 3-2.

Box 3-2: Members of the Executive Board

The Executive Board is elected by the General Assembly. Only representatives of founding members are entitled to be candidates for membership in the Executive Board. With the release of one member, the board has the right to co-opt another member into his place. The subsequent approval from the General Assembly shall be secured at the next following General Assembly. Should the board fail to appoint a new member, or take an unforeseen length of time, the controller is obligated to call for a special meeting for the purpose of appointing a new member.

The term of the Executive Board is three years. In any case, the board shall last until the election of a new board. Former members of the board may be re-elected. Should the president be incapable of fulfilling his duties, the board shall appoint another a proxy either verbally or in writing. Should any other member of the board be incapable of fulfilling his duties, he may appoint another member of the board as his proxy.

President

The president conducts all the current business of the association, supported by the vice presidents. Together with the vice president, the president represents the association to the public. Official copies for the association need the signatures of the president or one of the vice presidents and the secretary or his/her deputy in order to be valid. In financial matters (disposition of assets), the signatures of the president or one of the vice presidents and the treasurer or his/her deputy are needed.

Legal agreement between the board members and the association require the consent of other board members. Legally binding agreements between the association and outside parties may only be entered into by the members of the Executive Board.

The president is empowered to make arrangements on his or her own authority to avert the danger of the association falling into arrears. This includes business that would normally fall within the scope of the General Assembly`s or the Executive Board's authority. However, in internal affairs, these arrangements are subject approval from the appropriate association authorities.

The president also acts as the chairperson of meetings of the General Assembly or the Executive Board.

Vice presidents

The vice presidents are charged with supporting the president in all business matters of the association.

Treasurer

The treasurer is responsible for the orderly financial conduct of the association. He supervises the financial conduct of the Association in cooperation with the president and prepares the Associations' annual account and assets of the past fiscal year, overseeing: budget calculations; controlling of budget spending; communication with accounting agency; preparation of annual account and estimated budget; and signing of documents with financial relevance. In the case of incapacitation, the president, the secretary, and the treasurer may appoint a proxy.

A deputy treasurer is responsible for supporting the treasurer in his/her duties.

> Secretary
>
> The secretary is responsible for overseeing legal transactions with third parties, taking minutes of General Assembly and Executive Board, convocation of the General Assembly and summoning of the regular and extraordinary assemblies of the General Assembly and Executive Board in cooperation with the executive director.
>
> A deputy secretary supports the secretary in his/her duties.
>
> Executive director
>
> The executive director is appointed by the executive board and is responsible for the everyday operation of TMO. He/she coordinates all TMO actions and supervises TMO staff, administration and finance.

Implementation management structures

The Time Machine is implemented through projects aiming to produce concrete outputs that serve the specific objectives of the TM pillars and the broader objectives of the LSRI.

Project implementation is conducted along a project plan developed during a proposal phase. The proposal can be either addressed to an external funding organisation, or to the TMO Executive Board, if the project is to be supported by TMO resources. In both cases the proposals have to describe the rational, the intervention logic, the project team and the budget according to a predefined format, either the one of the funding organisation or the one developed by the TMO. Proposals can be submitted by consortia of TMO members. Such consortia can be open to non-TMO members, if such partners bring additional expertise that increases the overall capacity of the consortium and its chances of meeting the project objectives. The involvement of non-TMO partners is subject to approval of the Executive Board if the project is to receive TMO endorsement.

The daily management of projects is assigned to a Project Manager (PM) that is nominated by the project consortium leader. The PM is responsible for all operational matters related to project activities and guidance of the project team, in close cooperation with the Executive Director. This includes in particular the assessment of the quality of the work carried taking into account the objectives and the required standards. One or more Peer Reviewers - depending on the complexity of the assignment - may assist the PM on quality issues.

Bi-annual reporting periods are foreseen for progress assessment and work reprogramming by the Executive Board. As a result, a rolling work programme is formed, enabling to initiate the implementation of the LSRI and plan its implementation according to available funds. The key priorities of the TMO in the post CSA period will be aligned with priority actions identified in the Time Machine roadmap (Deliverable D8.5).

The action plan at the start of the post CSA period is described in section 3.4.

Management support

Controllers

There are two controllers in the TMO structure. Both are elected by the General Assembly for the duration of the term of the Executive Board, and their re-election is possible. If the appointment of a new controller becomes necessary before the next General Assembly, the Executive Board may appoint one by a vote. Controllers must naturally not be personnel or members of the Association. They must be truly independent and unbiased and may not at the same time be members of the Executive Board.

The controllers are specifically responsible for the auditing of the Association's financial activities with a view on the orderliness of the financial statements and the allocation of means for every fiscal year in accordance with the Constitution, as well as the compilation of the auditor's report with the record of profits and losses to be presented to the Executive Board within four months. They must also overlook the undistorted transmission of the auditor's report to the Executive Board, as well as to cooperate with the Executive Board to report to the General Assembly.

Arbitration Panel

Possible disagreements over affairs of the Association shall firstly be brought before the Arbitration Panel. The Arbitration Panel is a 'conciliation body' (Schlichtungseinrichtung), following the Austrian Association Act 2002. The Arbitration Panel is elected by the General Assembly for the duration of the term of the Executive Board. It is composed of a chairperson and two members, each of whom may appoint a proxy.

The goal of the Arbitration Panel is an in-Association, out-of-court settlement of Association disagreements under the observation of fair and efficient proceedings, specifically to ensure that both sides are heard. To this end, the disagreeing parties are invited to an oral hearing. If legal disputes have not been settled by the mediation system after six months from the date of the beginning of mediation, a standard legal process remains open. Mediation can be ended either by the agreement of both parties or through the recommendation of the mediators. Association disputes that are not legal disputes shall ultimately be decided by the mediation process.

Framework conditions

Programme management

The target of the Programme management function if to maintain and continue to build upon the Working Groups built during the CSA. Coordination refers to actions related with:

- Preparing policy/position papers in relation to funding opportunities or incorporating the Time Machine agenda in different initiatives.
- Updating research and innovation roadmaps of Time Machine.
- Obtaining feedback on results / other developments during the implementation of projects
- Promoting the exploitation of such project outcomes.

Coordination structures are foreseen in the following thematic areas of Time Machine:

- Science and technology
- Time Machine Infrastructure
- Local Time Machines
- Scholarship and education
- Exploitation areas: GLAM, Creative Industries, Smart Tourism, Smart Specialisation, Spatial Components
- Policy, legal aspects and ethical issues, open data

TMO will nominate the members in the Executive Board, including co-opted ones that will be tasked with supervising actions in these areas. The nominated members undertaking coordination responsibilities may act as or collaborate with a nominated manager with responsibility for the daily management of coordination actions.

The main responsibilities of the managers in charge of coordinating the Time Machine expert groups are to:

- Define in cooperation with the Executive Board an annual action plan with targeted achievements.
- Ensure commitment and availability of members of the partner network under their responsibility.
- Implement the action plan by mobilising experts of the network.

Business development

Business development involves:

- Setting out business development targets and associated plans to attain them.
- Continuously following-up and assessing funding opportunities.
- For positively assessed opportunities, proposing the actions to exploit them.
- Supporting the preparation of funding proposals undertaken by TMO and/or its partners.

The business development targets are defined on an annual basis, taking into account the funding needs and overall growth plans of TMO. The corresponding plans are elaborated, following an

analysis of potential funding sources, as well as cooperation opportunities with other initiatives. A Business Development Manager, nominated by the Executive Board, presents proposals for these annual targets, in close cooperation with the Executive Board.

The Business Development Manager coordinates a business development panel formed by representatives of TMO members, with support from the executive director. The main task is to collect calls and other opportunities from and for all partner institutions. Crucial activities are those involved with following-up the development of the European Partnership ideas and continuous dialogue and interactions with related initiatives.

The process of identifying and preparing for funding opportunities is organised with clear rules, accepted and followed by the TMO members. The Business Development Manager coordinates with its member organisations the continuous follow-up of opportunities. Assessment is based on criteria of:

- Relevance to the Time Machine Agenda
- Strengths of TMO and its members compared to competition
- Availability of means to respond to the opportunity.

Specific procedures will, also, be used for creating consortia around these opportunities. It is the responsibility of the Business Development Manager to propose to the Executive Board the optimum structure of the schemes to be set-up for the exploitation of the opportunity. The choice of participants in these schemes should be made on the basis of the following:

- Relevant experience in relation to the requirements
- Strategic importance of the partner in the chances of success and the successful implementation
- Availability to participate in the preparation of the tendering process

Communication

Communication has a crucial role in establishing TMO as a key player in the area of cultural heritage and supporting the development of the Time Machine LSRI. In this framework, the communication objectives are to:

- Strengthen and expand the TMO membership, by raising understanding of Time Machine and expected benefits to the European and international CH communities.
- Further develop the existing Working Groups (WGs) in stakeholder networks comprising researchers, innovators, decision-makers and other members of civil society. While taking active part in the implementation of the Time Machine agenda, these networks will produce substantial communication-multiplier effects across the EU and worldwide.
- Promote Time Machine to the European Commission and other funding institutions, creating favourable conditions for its being financed through Horizon Europe, Digital Europe Programme, European Structural and Investment Funds, and other regional, national, transnational and pan-European funding mechanisms and schemes for cross-border cooperation.

The communication target groups, therefore, comprise:

- The existing network of members
- The potential new members and partners
- The institutional players in the field of cultural heritage and other existing or futures LSRIs in this area
- The funders of research and innovation programmes at the EU and national/regional levels
- The wider public.

To ensure smooth and coherent communication with stakeholders and target groups, the professional Communication Hub established during the CSA will continue its operation in close cooperation with the Executive Board.

The Communication Manager is in charge of developing the communication strategy, so that all communication activities, products and dissemination materials work harmoniously to reach the TMO

annual objectives. The resulting variety of communication channels to be used may require to organise high-level contacts for different target groups, and in particular the research and innovation funders, the institutional players, such as existing research infrastructures in SSH and cultural heritage, as well as representatives of economic sectors of particular relevance, such as GLAM and the Creative Industries. These high-level contacts will be undertaken at the level of TMO vice presidents that will be involved in the implementation and follow-up of the communication strategy.

The Communication Team acts on various levels: (1) on behalf of the TMO on a pan-European level, (2) with the help of the TMO partners on a national level in the Member States and (3) on the level of various stakeholder groups.

In this respect, the Communication Team interacts with the networks of National and pan-European TM Ambassadors that have been formed during the TM CSA project. These TM Ambassadors serve as points of contact for specific national or pan-European requests and inquiries by audiences/policy makers. Vice versa the national and pan-European representatives of the TM disseminate the project on national/regional as well as European level.

LTM management

The LTM management function is responsible for relations between the TMO and LTMs, ensuring strong collaboration with coordinators and communication flow between key stakeholders. Duties include:

- Further developing the typology of LTMs based on level of maturity
- Inventory state of the art of all existing/planned LTMs, assign Level of maturity
- Identify coordinators, manage the network
- Coordinate the organization of the Local Time Machine Academy events

This role will require close interaction with the communication and business development functions to ensure continued growth and broad dissemination of results.

Infrastructure

This management function is in charge of developing the infrastructure that facilitates the implementation of the TMO actions, including:

- Administrative infrastructure, including resources management platforms and related hardware.
- Communication infrastructure related to platforms for the internal on-line cooperation of TMO teams (e.g. MS Teams).
- Communication infrastructure related to platforms for external actions: managing development of existing websites and the creation new sites for sub-projects / conferences and similar areas.
- Infrastructure for supporting management of projects by TMO and external partners that provide resources.
- Infrastructure facilitating coordination, for example developing common approaches for LTM specific needs, cooperation and promotion.
- Infrastructure supporting business development, including operation of the business development panel, opportunities follow-up and matching partners in projects.

The Executive Director will be in charge of developing this management function in cooperation with the Executive Board and managers that will use the platforms and tools to be developed

Administration

The whole TMO governance is supported by the TMO office, which consists of a Coordinator and a Secretary, complemented by one or more assistants. The primary responsibility is to ensure technical cohesion and coordinator among the different organisational units and the TMO members.

Administration, therefore, refers to the following functions:

- Internal administration and finance
- Member management

3.2 Operational procedures

Decision Making Processes

TMO has decision-making mechanisms at different levels.

Strategic and development-focused decisions are taken at the level of the General Assembly. Such decisions may involve:

- Appoint, suspend or dismiss the Executive Board
- Decide on strategies for the construction and exploitation of Time Machine results
- Approve the TMO work programme and annual budget
- Accession/termination of new members
- Decisions on changes of TMO status, including winding-up of TMO.

The implementation of the TMO strategy is undertaken by the Executive Board that has responsibility for:

- Formulating policies and plans, internal procedures, the global plan and budget, the annual budgets and reports, and for confirming that these are adequately executed.
- Making decisions on all operational matters

The Management structures are responsible for the daily management of the activities in their field of action, in cooperation with the Executive director, as described for each management function in section 3.1.

Monitoring and evaluation mechanisms

Measuring the outputs, results and impact of the TMO is recognised as a crucial management practice. Key Performance Indicators (KPIs) will be elaborated by the Executive Board to measure the technical progress of each work stream, the outcomes of actions initiated with the involvement of the TMO, and the longer-term impact. Also, tools to monitor/measure these KPIs will be put in place.

The monitoring and evaluation framework will be defined by the Executive Board. The KPI monitoring and follow/up will be done at the level of managers and regular bi-annual meetings will be conducted to assess progress. On an annual basis, the Executive Board will prepare an overall assessment of progress made in relation to fixed objectives and targets for the period and present a report with main findings, as well as lessons learned and recommendation for the following reporting period.

3.3 Roles and responsibilities

The table below presents the roles and responsibilities, as well as corresponding profiles needed for the governance structure to fulfil its mission and operational objectives.

Table 3-1: TMO roles and responsibilities

Position	Job Description	Profile
President	• Acts as the chairperson at the GA and in the Executive Board • Conducts all the current business of the Association • Represents the Association to the public • Develops strategic partnerships • Maintains high-level contacts with major funding bodies	• Recognised academic background in fields related to Digital Humanities and Cultural Heritage (CH)[8] • Experience in leading large-scale projects • High level contacts with CH stakeholders
Vice president	• Supports president in all current business	
Treasurer	• Financial conduct of the Association in cooperation with the Executive Director • Prepares the Association's annual accounts and assets of the past fiscal year	• Background in financial management • Experience with international research initiatives
Deputy Treasurer	• Supports the Treasurer in his/her duties	
Secretary	• Legal transactions with third parties • Preparing the minutes of GA and Executive Board • Convocation of the GA and summoning of the regular and extraordinary assemblies of the GA and Executive Board in cooperation with the president	• Strong academic background in fields related to Digital Humanities and CH • Experience with international research initiatives
Deputy Secretary	• Supports the Secretary in his/her duties	
Co-opted	• Strategic coordination of activities related to his/her domain of expertise	• Strong academic background in fields related to Digital Humanities and CH
Arbitration Panel	• Examination of arbitration cases escalated to the General Assembly • Recommendations for addressing arbitration cases	• In-depth knowledge of fields related to CH • Strong management background
Executive Director	• In charge of overall coordination • In charge of TMO infrastructure • Supervision of TMO staff, administration and finance	• Strong managerial background in scientific/professional associations
Programme Manager	• Defines action plan in cooperation with the Executive Board • Ensures commitment and availability of members of the partner network under his/her responsibility • Implements the action plan by mobilising experts of the network	• Recognised background in fields related to Digital Humanities and CH • Management and coordination experience with international research initiatives in specific field • Strong communication skills
Business Development Manager	• Defines business development targets in cooperation with the Executive Board • Prepares and implements business development plan • Follows-up funding opportunities	• Track record of business development in the area of CH • In-depth knowledge of the research funding landscape

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[8] President, vice president, other members of the Executive Board including co-opted members, collectively cover the key thematic areas of the Time Machine roadmap. Members of the Executive Board coordinate networks of experts in their thematic areas.

	• Assesses / proposes actions to pursue funding opportunities • Supports the preparation of funding proposals	
Communication Manager	• Defines communication strategy in cooperation with the Executive Board • Prepares and implements communication action plan • Is responsible for the availability of communication tools • Develops relations with stakeholders in his/her sector of intervention	• Academic background in fields related to CH • High level contacts with CH stakeholders • Experience in managing / implementing communication action plans related to research and innovation initiatives
Manager for technical infrastructure	• Plans, acquires, maintains and further develops technical infrastructure • Setting up and maintaining all communications infrastructure • Supports external partners that use TM infrastructure • Scientific management of setting up new infrastructures for projects • Managing further development of existing websites and the creation new sites for sub-projects / conferences and similar areas	• Strong academic background and experiences in fields related to Digital Humanities and CH • Experience in Designing and carrying out digitisation and cultural-heritage-preservation projects • Experience in IT / Project management
Manager for Local Time Machines	• Further develop typology of LTMs based on level of maturity • Inventory state of the art of all existing/planned LTMs, assign Level of maturity • Identify coordinators, manage the network • Coordinates the organization of the Local Time Machine Academy events	• Recognised academic background in fields related to Digital Humanities and CH • Management and coordination experience in the field of cultural heritage • Strong communication skills

3.4 Action plan

The current TMO will use funding from different sources to cover the expenses, as indicated in Table 3-2.

Table 3-2: Sources of funding for the current TMO

Management function	Sources for covering costs		
	TMO members own costs	Members subscriptions / public subsidies[9]	Projects with public/private sector funding
General Assembly	x		
Executive board	x (1)		
Implementation		x	x
Business Development	x (2)	x	
Communication	x (3)	x	x
Coordination	x (3)		x
Infrastructure	x (3)	x	x
Financial controllers (1)	x (1)		
Arbitration (1)	x (1)		
TMO Secretariat		x	x (4)

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[9] Currently the TMO consists of 400 members (50 founding, 150 regular and 200 associated members) raising an annual budget of about 250.000 EUR that is augmented by public subsidies of the republic of Austria as host of TMO based in Vienna of 150.000 EUR, total approximately 400.000 EUR.

Management function	Sources for covering costs		
	TMO members own costs	Members subscriptions / public subsidies[9]	Projects with public/private sector funding

(1) The nominees are fully committed to the achievement of TMO objectives and offer their service on a voluntary basis.
(2) Refers to in-kind contribution (person time) for proposal development
(3) Refers to in-kind contribution for actions serving also TMO members objectives (e.g. promotion, increased scientific/technology assets)
(4) Refers to coverage of administrative management related to project work.

The implementation of the LSRI is based on a rolling programming process that depends on available funding resources. The process is illustrated in Figure 3-2.
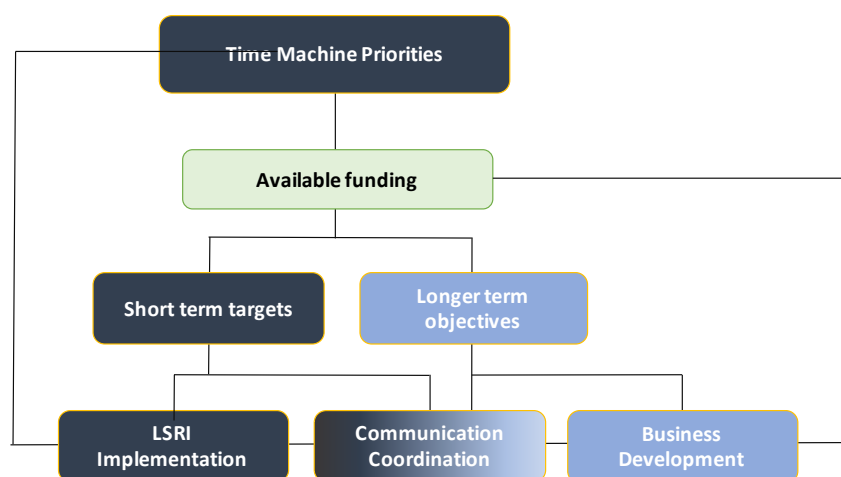

Figure 3-2: Planning process for the current TMO

The starting point for the programming cycle is the Time Machine roadmap that defines the priority objectives to be achieved at a given period of time. Based on available funding, the Executive Board prepares a proposal to be approved by the General Assembly, defining:

- The short-term targets and the associated implementation plans for the current programming period
- The longer-term objectives that should receive attention for following programming periods
- The Communication and Coordination actions that support implementation in the current period, as well as objectives to be reached in following programming periods
- The Business Development objectives, specifying resources to be secured for the following programming periods.

Bi-annual reporting periods are foreseen for progress assessment and work reprogramming by the Executive Board.

The key priorities of the TMO in the post CSA period are aligned with priority actions identified in the Time Machine roadmap. These can initially include[10]:

- Rules and modalities for the development of RFCs
- Rules for LTM management and coordination
- Designing the use cases with which work on the Scholarship would start
- Feasibility studies for other exploitation areas

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[10] Decision of the Executive Board, within a framework programme to be agreed by the General Assembly

- Start of specific beacon projects

This priority list defines the actions / internal projects that can start being implemented. It also specifies the targets for the other Management Functions:

- the Business Development Manager has a clear focus for the search for and exploitation of opportunities, concentrating on the ones that fit with the above priorities.
- The Communication manager designs and implements tasks for supporting the above priority actions, by targeted actions for relevant funding institutions and key stakeholders. In parallel, the target is also to promote TMO broader objectives, in particular, planning the TM conference 2021.
- The Coordination managers direct the cooperation across the expert networks in a way to support these objectives.
- The Administration manager ensures that TMO provides adequate administrative support to the above, along with the other TMO administrative tasks.

4 The future TMO organisation and governance scheme

4.1 Overview

The governance scheme of the future TMO represented in figure 4-1 is designed for the case where sufficient funding has been secured, through a strategic partnership framework with the EC and/or other national / international funding organisations. Such strategic framework cooperation is based on the implementation of a Strategic Research and Innovation Agenda (SRIA) that may include all or (important) parts of the Time Machine proposal developed during the CSA (D8.5).
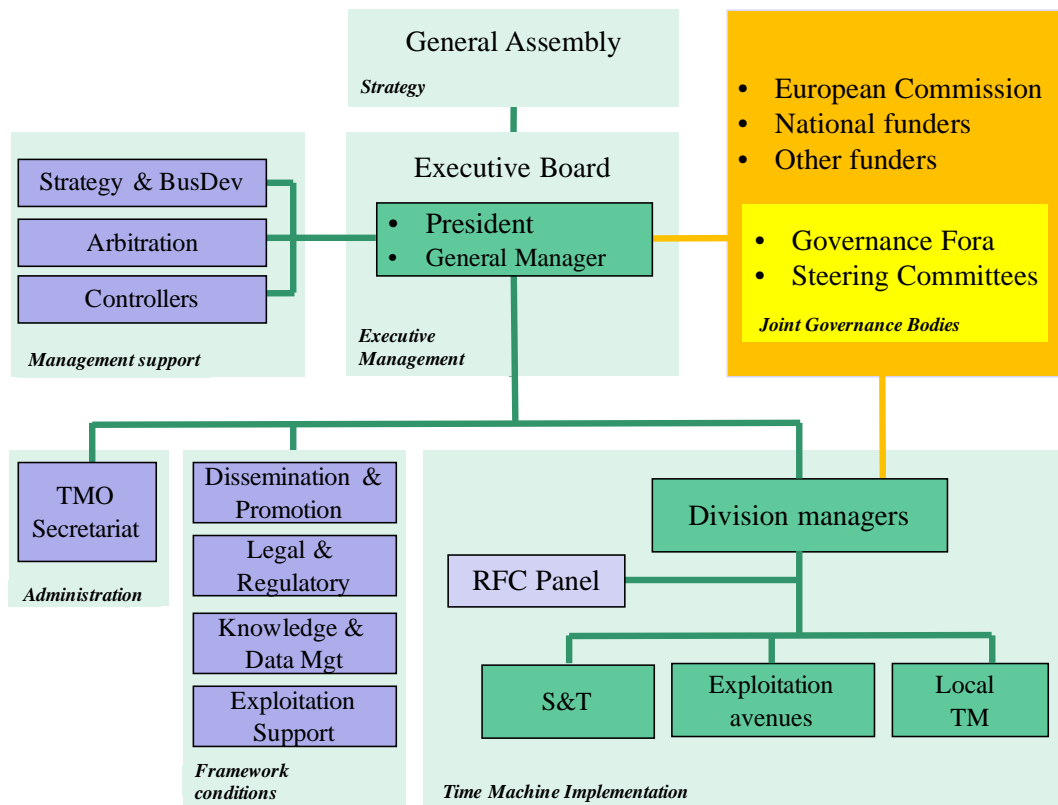

Figure 4-1: Organigram for future TMO

The implementation of the SRIA is supervised by joint governance bodies that take the form of:

- Governance fora, where senior representatives of the funding institutions and the TMO have strategic discussions aiming to best synchronise activities funded by different entities enabling to maximise synergetic effects for the benefit of the LSR
- Steering Committees involving senior management of the parties involved, focusing on progress in the implementation of the Time Machin agenda, forward planning and operational matters to be addressed at this level.

The future TMO has the following organisational units:

- The General Assembly for the strategy and overall governance.
- The Executive Board for the implementation of the TM SRIA.
- Research and innovation divisions for the implementation of the Time Machine Pillars.

The TMO operation is facilitated by the support functions described below:

- At the level of management support:
  - A Strategy and Business Development Unit (SBDU), in charge of elaborating strategic directions and evaluating progress
  - The Controllers, acting as auditors of the TMO financial activities

- The Arbitration panel to resolve any issues that are escalated to the level of the General Assembly.
- At the level of framework conditions:
  - Dissemination and promotion
  - Legal and regulatory matters
  - Knowledge and data management, and
  - Exploitation support
- The TMO Secretariat deals with administration and finance of the TMO operation.

4.2 The transition from the current to the future TMO stage

General Assembly

The General Assembly is the supreme governing body for Time Machine LSRI, which includes representatives of all partners. The GA follows the mode of operation described in section 3.2.

Executive Board

The Executive Board has responsibility for the strategic management of Time Machine. Its constitution and operation follows the lines defined in section 3.2.

Implementation

Divisions are formed based on the pillars defined in the SRIA, organised around the broad topics of:

- Science and technology
- Exploitation Avenues
- Local Time Machines

The specific objectives to be attained by each division are presented in the SRIA.

Division managers coordinate the implementation of projects under their responsibility, ensuring that broader objectives defined at Division level are achieved. The Division managers are also responsible to organise the work of the project teams under their responsibility in a way that maximises synergies across divisions.

Since the development of RFCs is an integral part in the implementation of Time Machine, an RFC panel continuously supports the work programming in each division.

Support functions

The functions of arbitration and financial control are maintained and adapted to the more complex operational environment of the future TMO.

The new element is a "Strategy and Business Development" Unit (SBDU) that will be in charge of advising the Executive Board in the different cycles of strategy development, as described below.

Strategy and Business Development

The SBDU is in charge of the annual evaluation. Conclusions of this exercise together with an assessment of the changes in the broader environment of Cultural Heritage are used to re-examine the Time Machine Strategic Agenda and propose changes in the annual strategic plans.

Part of this strategy document is dedicated to actions related to business development, including assessments of:

- New funding opportunities at all levels
- New exploitation platforms / use cases

Implementation of the business development actions (e.g. applications for funding) is coordinated with the Division Managers, who identify the resources that can more efficiently contribute in the preparation of detailed proposals for the new areas of action.

Advisory panels

Executive Board can also benefit from advisory panels composed of senior representatives of partners that are not represented in the Executive Board and/or external parties that have leading position in a certain scientific or business field that is particularly relevant to Time Machine. The council may have a term of same or shorter duration as the Executive Board and is nominated by the GA following a proposal by the Executive Board to work under specified terms of reference. The council's key tasks are to advise on strategic aspects related to important scientific and business options to be examined / adopted by the Time Machine.

Framework conditions

Dissemination

A TM Central Communication Hub will be in charge of developing and implementing the overall communication strategies, action plans and associated material. The TM Hub will be also responsible for initiating, coordinating and supervising this network of national and stakeholder/domain level subsidiaries. A Dissemination Helpdesk will be established and operated to support practical implementation of dissemination actions.

Two further structures are being envisaged:

- TM Stakeholder Forums that will be engaged in a continuous consultation process on specific topics, roadmaps, several practices of TM, etc. supported by the website of the initiative. One type of such forums, the TM Citizen Communities, will be developed around LTMs where pilot actions such as data sprints will actively engage specific communities interested in TM.
- An Advisory board of European and international level organizations/associations will aim to inform and enable international and European associations about technologies available to support their requirements for digital transformation and organizational change as well as to incorporating their perspectives and competencies in the TM development process and to leverage synergies in the fields tackled by TM.

Policy Legal Issues and Ethics

The following structures are envisaged:

- A de-centralized first level support helpdesk, co-operated with extant service providers as libraries / associations etc. (First level support)
- Central legal hub who operates and coordinates the first level support, and assigns tasks to 3rd level of support and commissions. (Second level support)
- Network of legal experts / consultants on a national, domain-specific level to answer, investigate specific issues (Third level support)
- Commission for Law and Ethics: Frequently meeting commissions for strategic decisions and supervision

Knowledge Transfer

An IP Management Hub will be settled and principles and workflows will be handled in the IP Management Plan. This Plan will be developed to set guidelines and principles for the process from IP creation to exploitation. It will deal with IP Management in three strands as IP Commercialization, IP Asset Management and IP Protection Plan. This Plan will aim at assessing the innovation potential and capacity of IP.

Exploitation

An Exploitation Advisory Board will coordinate and align exploitation strategy and efforts of the TMO including LTMs. The Board will ensure proper implementation of the strategy and its continuous adaption to changing needs of TMO and its target markets/sectors/avenues for exploitation.

The Exploitation Hub of TMO will serve as the executive arm of the Exploitation Advisory Board and will be responsible for the operation of the exploitation structures, services and mechanisms of TMO. The main objective around which this Hub will be designed is supporting all forms of exploitation of Time Machine outputs and outcomes with sound advice and hands-on assistance as required by experienced professionals engaged to cover the different thematic areas of Time Machine.

Annex A: Overview of the Time Machine LSRI

Time Machine is designed as a LSRI whose strategic research and innovation agenda aims to create substantial socio-economic impact by developing/drawing value from the big data of the past. This initiative is articulated around four pillars shown in Figure A-1, together with their corresponding thematic areas:

- Pillar 1 addresses 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 2 intends to develop the overall management framework, build the Time Machine infrastructure for digitisation, processing and simulation and create the basis for and engagement with the communities participating in the development and use of Time Machine across Europe and worldwide.
- Pillar 3 will create 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 Time Machine.
- Pillar 4 will look at creating favourable framework conditions for the outreach to all critical target groups, as well as guiding and facilitating the uptake of research results produced in the course of the LRSI.
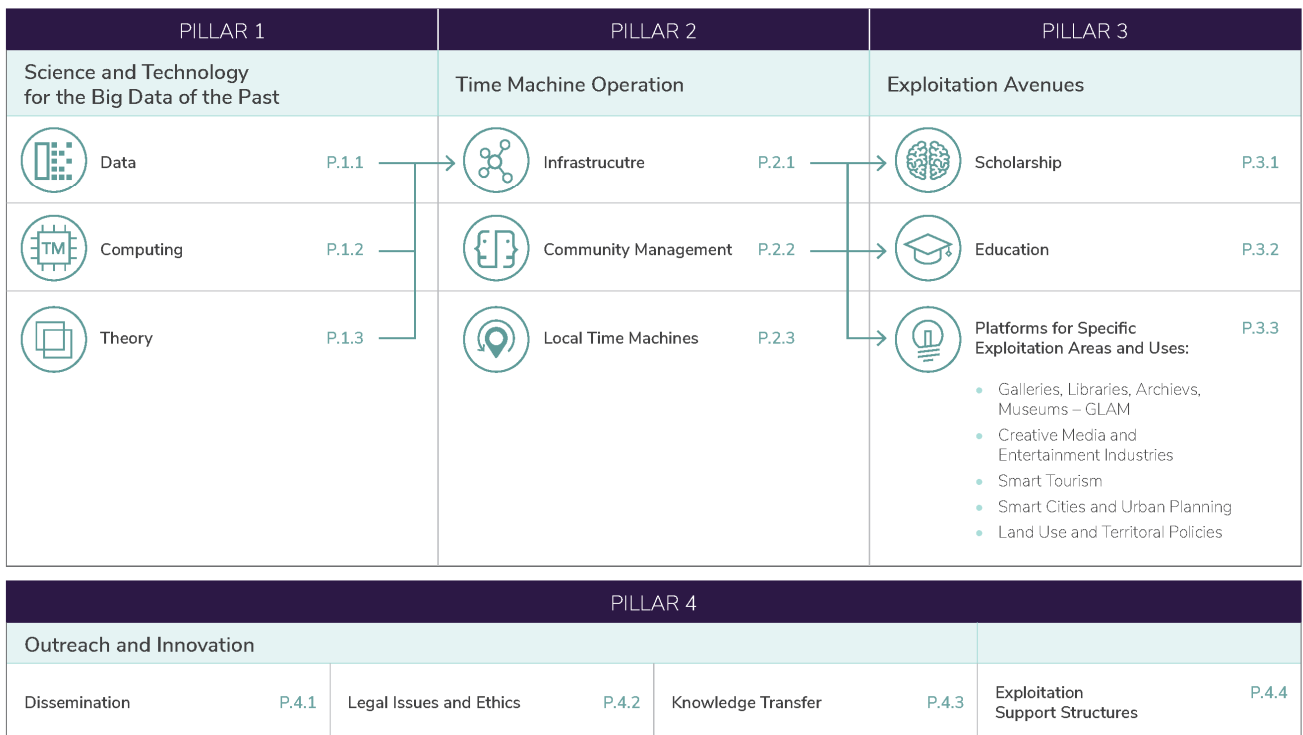

Figure A-1: The Time Machine pillars and thematic areas