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WP.4 Legal Framework, Financial model and Socio-Economic Impact

Antonio Falone / INFN-LNF / EuPRAXIA Annual Meeting
23/09/2024



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- Overview on the WP. 4
- Legal Framework
- Financial Model
- Socio-Economic Impact

WP.4 deals with three crucial aspects of any nascent research infrastructure.

The three main pillars are:

Legal Framework	Financial Model	Socio-economic Impact
<ul style="list-style-type: none">• How we want to organize ourselves.• What kind of RI we want to be.• Governance and rules (with WP.3)• Voting mechanisms• Liabilities	<ul style="list-style-type: none">• Assess the resources needed for the implementation and operation of the RI.• Evaluate funding strategies• Ensure long term sustainability	<ul style="list-style-type: none">• Assess the impact of our RI.• Identify clear KPI and relevant indicators.• Draft a strategy to monitor the impact over the RI lifecycle

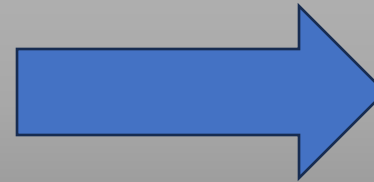
The primary objective of WP4 is to develop the financial and legal model of EuPRAXIA as a sustainable research infrastructure providing access to users. The most important secondary objective of WP4 is to assist WP1 in securing the **financial sustainability** of EuPRAXIA in the Operational Phase from all possible financial sponsors.

Those objectives require an evaluation of the **full costs of operating EuPRAXIA as a distributed facility**, under the conditions defined by WP3 (internal services, tasks, procedures) and WP5 (services, access policy). In addition, a **comprehensive legal framework for EuPRAXIA as a distributed facility** is developed for its Operational Phase. This involves developing the agreement and/or legal statuses necessary for a EuPRAXIA legal entity, to enter into force during the implementation phase. Agreements between the research-funding bodies and a EuPRAXIA legal entity and/or national research institutions or consortia should also be finalised.

LEGAL FRAMEWORK



FINANCIAL MODEL



SUSTAINABLE IMPLEMENTATION
AND OPERATION OF EuPRAXIA AS
DISTRIBUTED RESEARCH
INFRASTRUCTURE

Socio – Economic Impact

The WP4 is coordinated by INFN and supported by CERN and IASA. The workpackage will cover three main areas:

- **Financial** - Concerning financial aspects WP4 will evaluate the funding models of similar research infrastructure, identify sources of funds relevant for EuPRAXIA at local, national and European level, update the EuPRAXIA budget (cost of assets, human resources, services, data) and evaluate the cost of services to users and internal services. It will review revenues and funding sources and it will assist WP1 in the negotiations with the Board of Financial Sponsors. The socio-economic impact evaluation performed for ESFRI will be updated.
- **Legal** - Concerning legal and governing aspects WP4 will review the legal frameworks of comparable research infrastructures in Europe, determine legal requirements to establish EUPRAXIA RI governance and management, review legal aspects for procurement and recruitment, develop legal model statutes and agreements. It will also assist WP5 in drafting the EuPRAXIA Terms of Services and Service Level Agreements (or equivalent).
- **Impact** – Define a strategy to assess the socio-economic impact, using relevant indicators and metrics. Asses the potential outcome and define a strategy to maximize them. The socio-economic indicator should follow the best practices and tailored to the EuPRAXIA case.

Work package number	4	Lead beneficiary				INFN	
Work package title	Financial and legal model. Economic impact.						
Participant number	1	24	26				
Short name of participant	INFN	CERN	IASA				
Person months per part.:	48 (+6)	0 (+2)	0 (+8)				
Start month	1			End month	48		

INFN as Lead beneficiary with the support of **CERN & IASA**

Deliverables Expected

✓ D4.1 – Report on benchmark of financial and legal model of comparable RI - M12 **DONE**

D4.2 – Cost implementation and service preliminary assessment - M24 (postponed at M28)

D4.3– EuPRAXIA socio-economic impact assessment – M40

D4.4– Report on final EuPRAXIA financial and legal model, including RI governance and management – M48

Milestones to be accomplished

✓ M4.1 – Report on legal requirements from partner – M18 **DONE**

M4.2 – Approval by the collaboration board of drafts of legal and financial packages – M36

M4.3 – Approval by the Board of Financial Sponsors of the legal and financial packages – M40

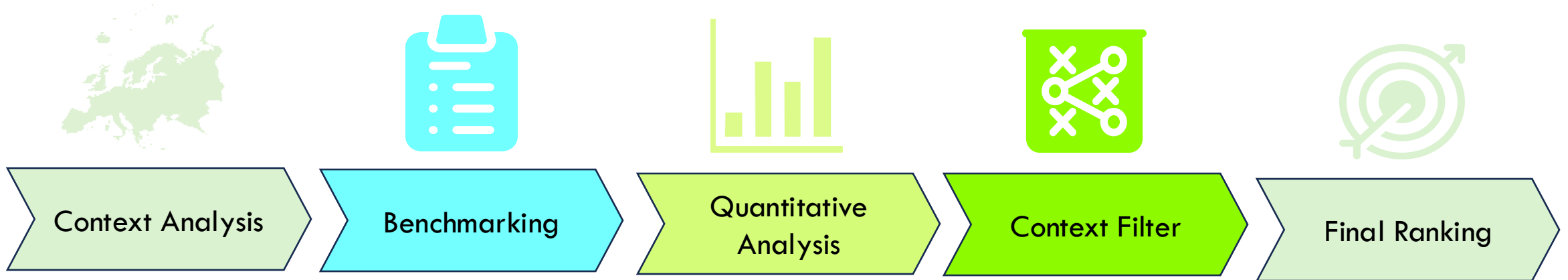
WP.4 is strongly correlated with essentially the whole project and collaboration. In particular there is a set of WPs which are more involved in the WP4 activities:

- WP.1 – Management.
- WP.3 – Organization & Rules
- WP.5 – User strategy & Services
- WP.6 – Membership extension Strategy
- WP.7 – E-needs and data policy
- WP.15 – TDR site 1
- WP.16 – TDR site 2

LEGAL FRAMEWORK

The identification of the most appropriate legal framework in a novel research infrastructure is always a complex issue. It is usually addressed at the early stage of the project and it usually takes years before a final definition and approval of the final legal statute. The process involves negotiations with multiple stakeholders also at political level.

A common methodology to identify the most appropriate legal framework is the following.



Benchmarking

There's a variety of legal models that has been adopted by similar RI (In size and domain).

Infrastructure	Legal Model
CERN	IGO
ESRF, European Synchrotron Radiation Facility	Société civile
CTAO, Cherenkov Telescope Array Observatory	GmbH (ERIC to be?)
ELI, Extreme Light Infrastructure	ERIC
KM3NET	AISBL – in process
EUXFEL, European X-FEL	GmbH

There's no «one size fits all». The choice of an appropriate legal framework always emerges from contextual factors, stakeholder requirements and follows the general architecture of the RI and its governance scheme to be adopted.

Issues to be taken into account:

- Political landscape and institute preferences
- Financial model adopted
- Pre-investment and assets ownership
- Operational issues and responsibilities
- EuPRAXIA as distributed RI and its asymmetries.
- User access policy

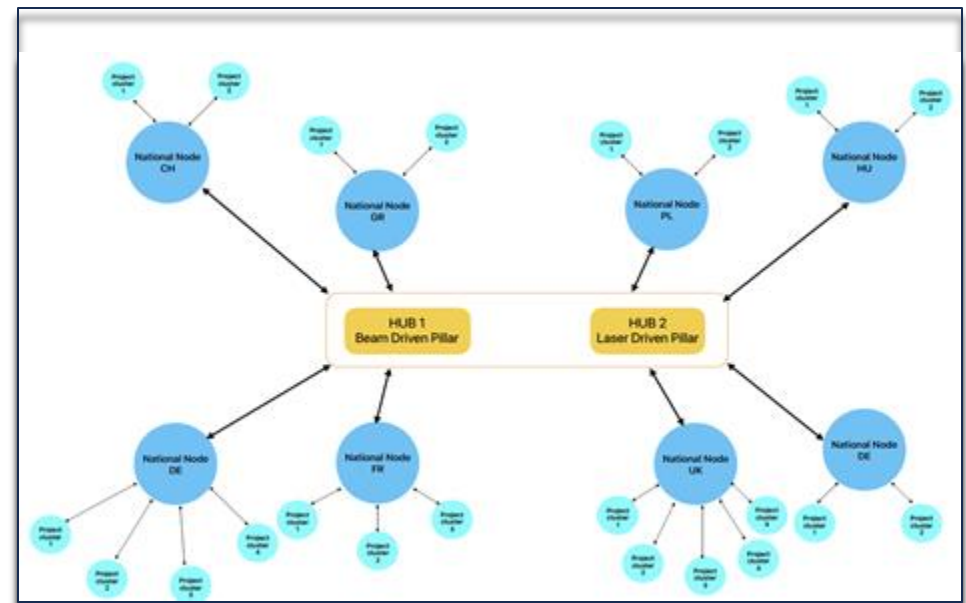
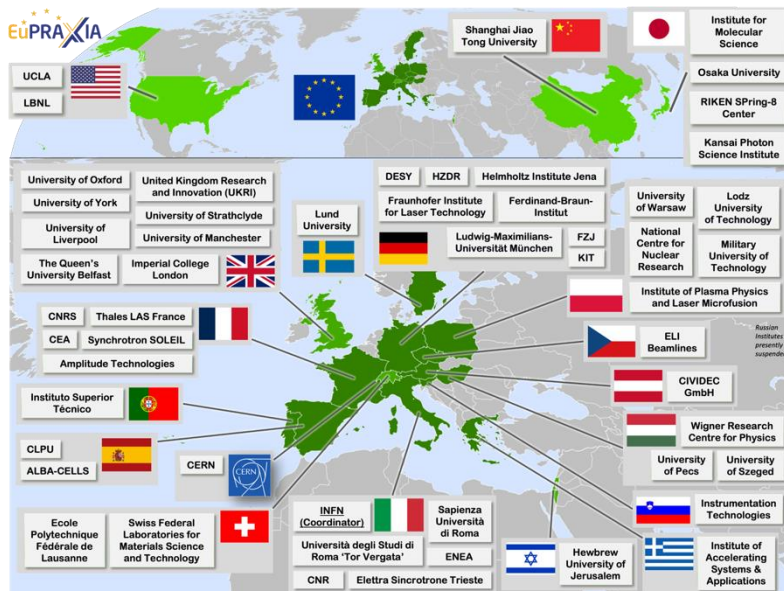
Some preliminary requirements and expected features of the legal framework

- LF should ensure a lean and effective governance.
- All the collaboration members must be fairly represented
- Pre-investment and assett will remain in the host institute property (unless specifically agreed with a MoU or other agreements).
- Host institutions should guarantee the operation of the facilities under their ownership (running cost, personnell, maintenance, upgrade etc.).
- EuPRAXIA needs a solid agreement within members to enhance visibility, funding attractiveness, ensure long term sustainaibility and provide a strong scientific added value to the whole community
- Open access and open science approach need to be adopted.

As distributed RI EuPRAXIA is emerging as a pan-european initiatives. The EuPRAXIA collaboration is remarkable large (and it's growing) showing a great interest of the community in our initiative.

The foreseen architecture is structured in two main implementation pillars (so-called *Laser Driven* and *Beam Driven*) plus a set of National Nodes (a.k.a. Excellence Centers) and Project clusters.

The asymmetry between implementation hubs and national nodes (R&D and IK - contributors) has to be taken into consideration while considering the legal framework.



Implementation Pillars (HUBS) – Host plasma accelerator facilities, beam lines and end-users instrumentation and provide access to users.

National Nodes (a.k.a. *excellence centers*): Coordinate the R&D effort and eventual In-Kind Contribution at National level. Acts as reference institute for the overall effort at National Level for EuPRAXIA.

Project Clusters: Coordinate the R&D effort and eventual In-Kind Contribution at National level. Acts as reference institute for the overall effort at National Level for EuPRAXIA.

The final milestone and deliverable for the Preparatory Phase are the actual commitment we have towards the funding agency:

D4.4– Report on final EuPRAXIA financial and legal model, including RI governance and management – M48

M4.3 – Approval by the Board of Financial Sponsors of the legal and financial packages – M40

This means that we promised to have an agreement to rule the preparatory phase, without committing to any specific legal framework. However ESFRI explicitly recommended to set up a new legal entity in the ESFRI roadmap process context.

OVERALL CONCLUSIONS & RECOMMENDATIONS	
OVERALL FINDINGS	<input type="checkbox"/> LOW <input type="checkbox"/> MEDIUM <input checked="" type="checkbox"/> HIGH <input type="checkbox"/> VERY HIGH
<p>The general recommendation to EB will be to include EuPRAXIA in the ESFRI RoadMap 2021 with the following considerations:</p> <ul style="list-style-type: none"> Economic and financial sustainability is the most critical issue, pay attention to keep the balance between costs and available financial resources. Keep up efforts to establish an ERIC or other legal entity and find a strategy to broaden the membership with countries that are interested although not always having facilities themselves. It is recommended in the future to further develop and strengthen the open user strategy. EuPRAXIA will be competing for beam users with synchrotron and free electron laser facilities, which are numerous in Europe. Users from the fields of industry, biology, health & food, or cultural heritage will probably access the infrastructure later than the developer community, but it would be useful already early on to plan in more detail the strategy for their active participation and determine their specific needs. 	

- Explore legal entity options.
- Membership extension strategy (WP.6, see Friday’s workshop)

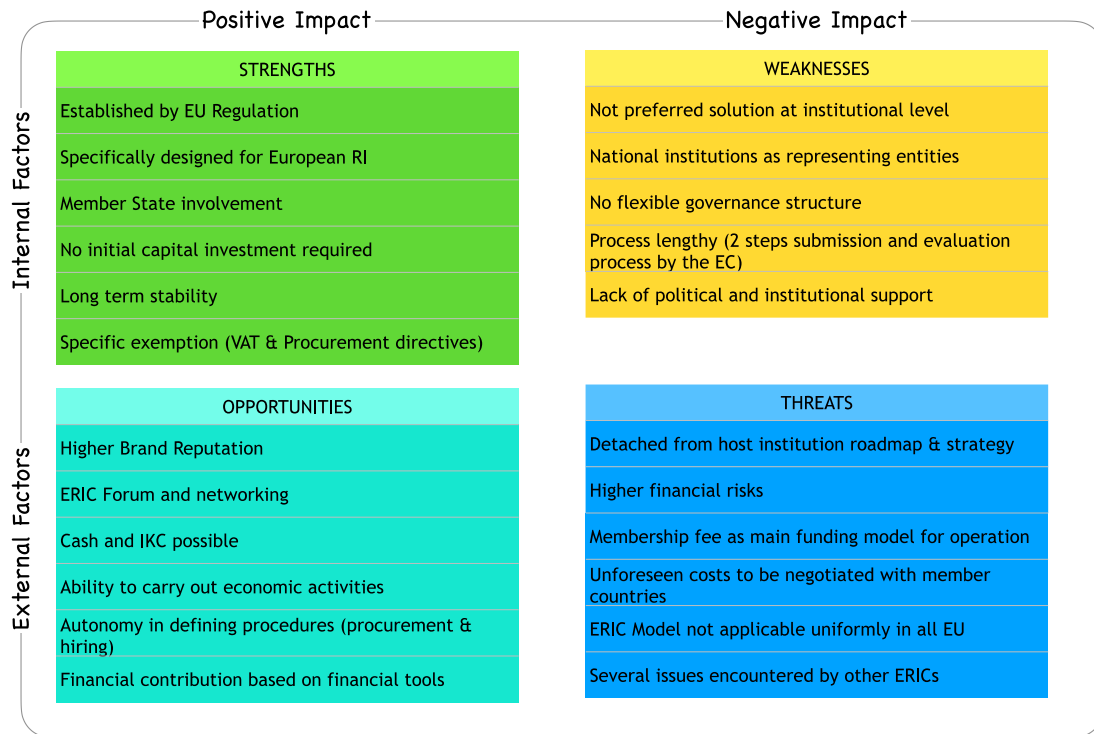
A first ranking of possible legal frameworks has been done in the first deliverable. It takes into account the actual choice at European Level and a swot analysis for some of them has been performed.

The first main issue is to choose between a Legal Personality Framework vs. Collaboration agreement.

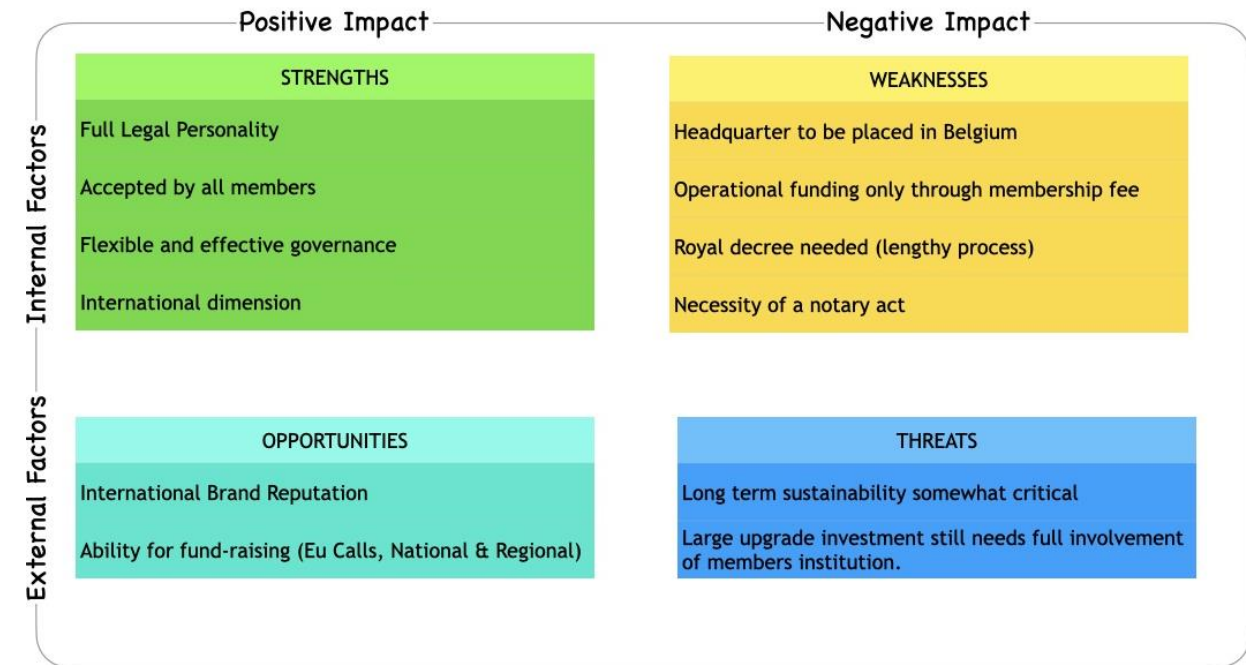
Legal Personality models	Collaboration Agreement
ERIC	MoU
AISBL	Binding CA
Others... (LLC, GmbH)	

New Legal Entity Options – Comparison ERIC vs AISBL

European Research Infrastructure Consortium - ERIC



Association International sans but lucratif - AISBL



ERIC Model although is somehow “endorsed” at EU level it seems that does not fit with the size, cost and operational issues of EuPRAXIA.

Some additional problems are for example “can an ERIC be part of another ERIC?” according to ERIC regulation the answer is NO but there are some interpretation in any case this might lead to a long process (see CTAO case).

Rather long establishment procedure (2-3 years on average).

AISBL might be a good solution. Relatively easy to implement, rather free in the governance model (only 2 bodies are mandatory) so it can be customized but always following Belgian law, no restriction in term of membership (Any individual or legal person can be a member). Statutory seat must be in Belgium, but operation can be everywhere. Possible VAT exemption to be further investigated.

Other hybrid solutions (e.g. GmbH, LLC and others) are at the moment rather obscure.

In any case a “legal personality model” must be design considering the following requirements:

- No transfer of ownership of pre-invested assets.
- Operational cost and responsibility is still in the host institution side
- The legal framework should act as “umbrella” to coordinate the user access, training, upgrade and to coordinate the scientific program and grant application.
- Specific SLA (Service Level Agreement) has to be agreed
- Cash and In-Kind Contribution

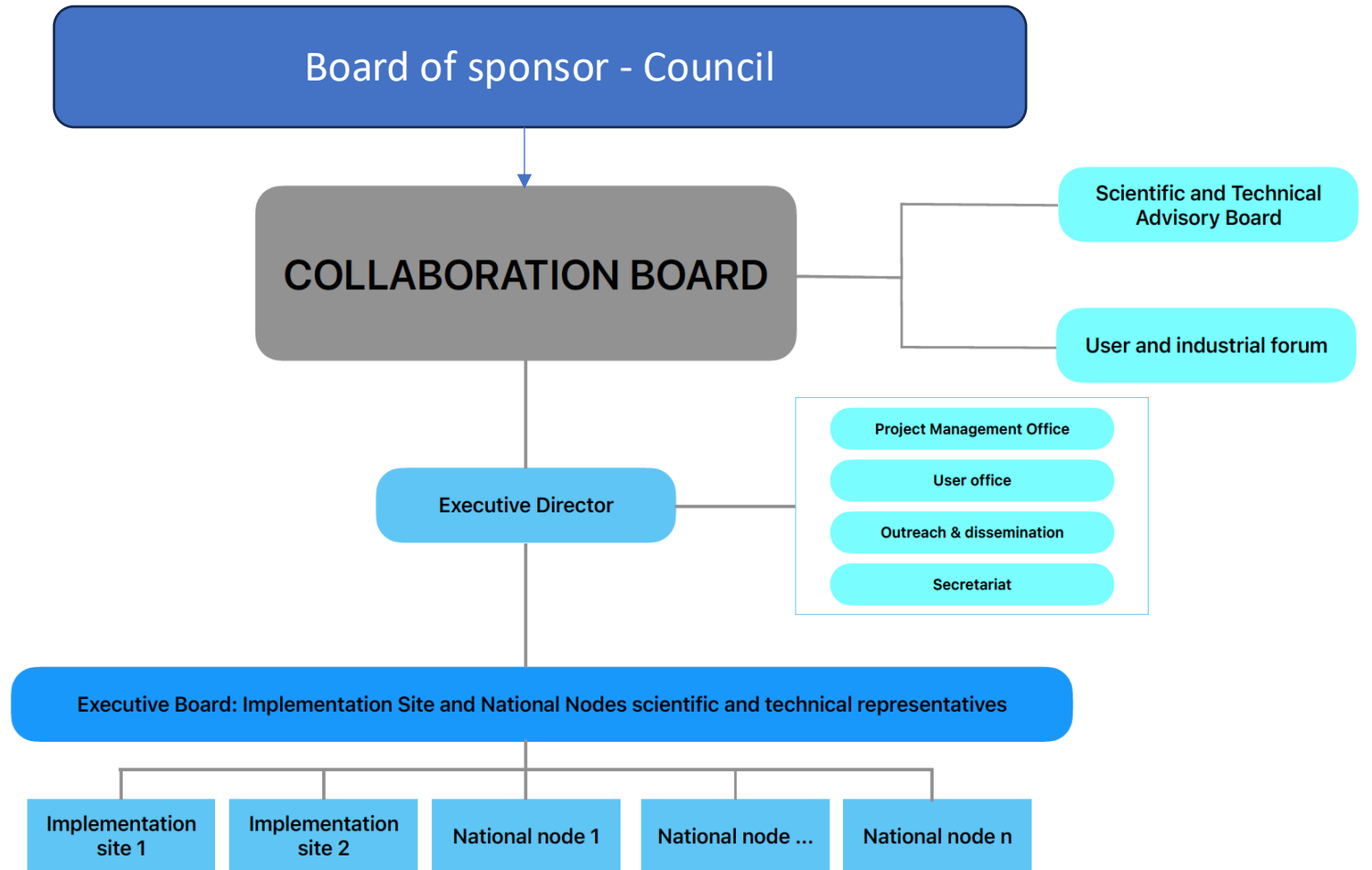
NO-Legal personality model is essentially a long term collaboration agreement in which a tailor-made governance model is described.

Not significantly different from the current CA but this is specifically designed for the preparatory phase (project constraints and DESCA model).

A new CA should have the following features:

- Open end agreement (or very long term).
- Not linked to specific funding sources.
- Fair representation of all the members and some special role for the 2 implementation sites.
- IKC from national nodes will be regulated by dedicated agreements
- Possibility to have “common funds” to cover some management costs. Common fund must be reasonably affordable but help to reinforce the collaboration and mutual commitment.
- Lean and agile decision making process.

- Collaboration board as ultimate decision making body.
- Voting rules to be determined (PP outcome)
- Executive board which includes national nodes representatives, implementation sites representatives
- Several advisory boards
- Support office : PMO, User office, outreach etc...



Phasing approach motivation → Sustainability of the implementation.

Smooth transition to the operational phase.

Strengthen the collaboration and commitment from members.

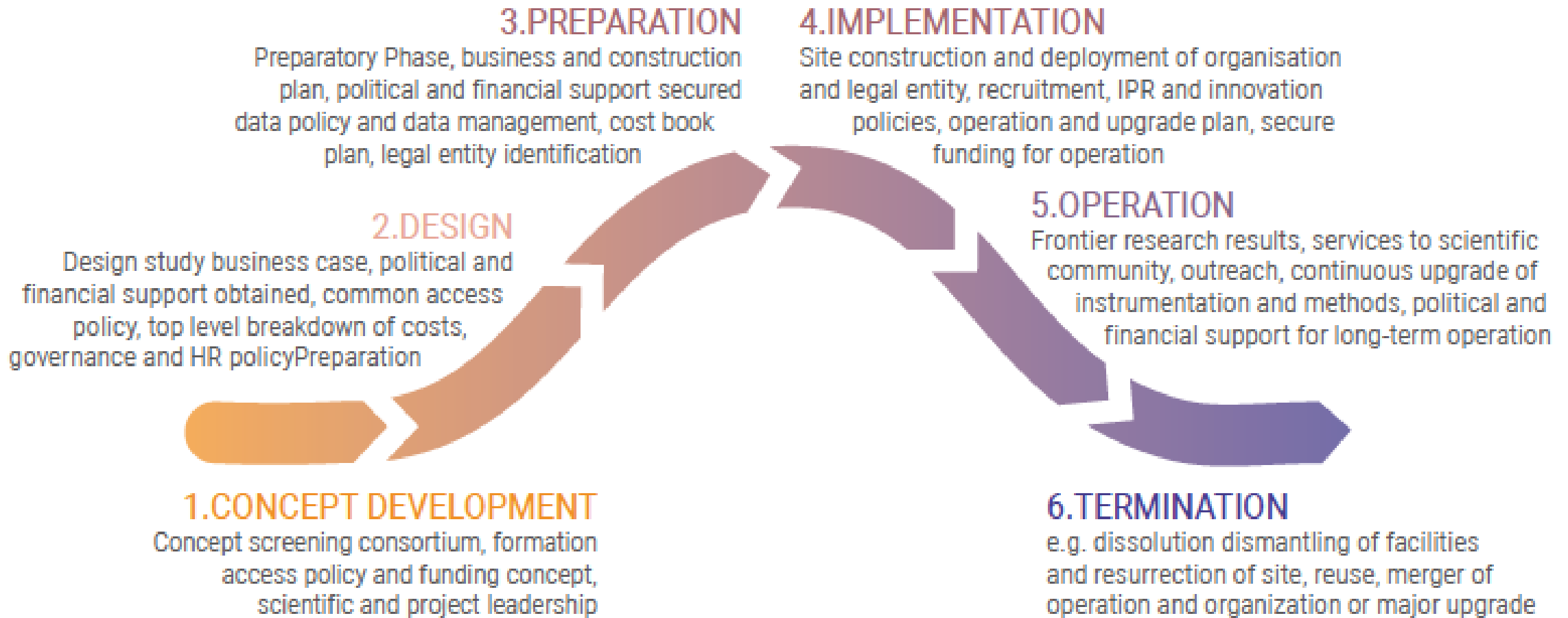
Better match with the associated funding model for each phase.

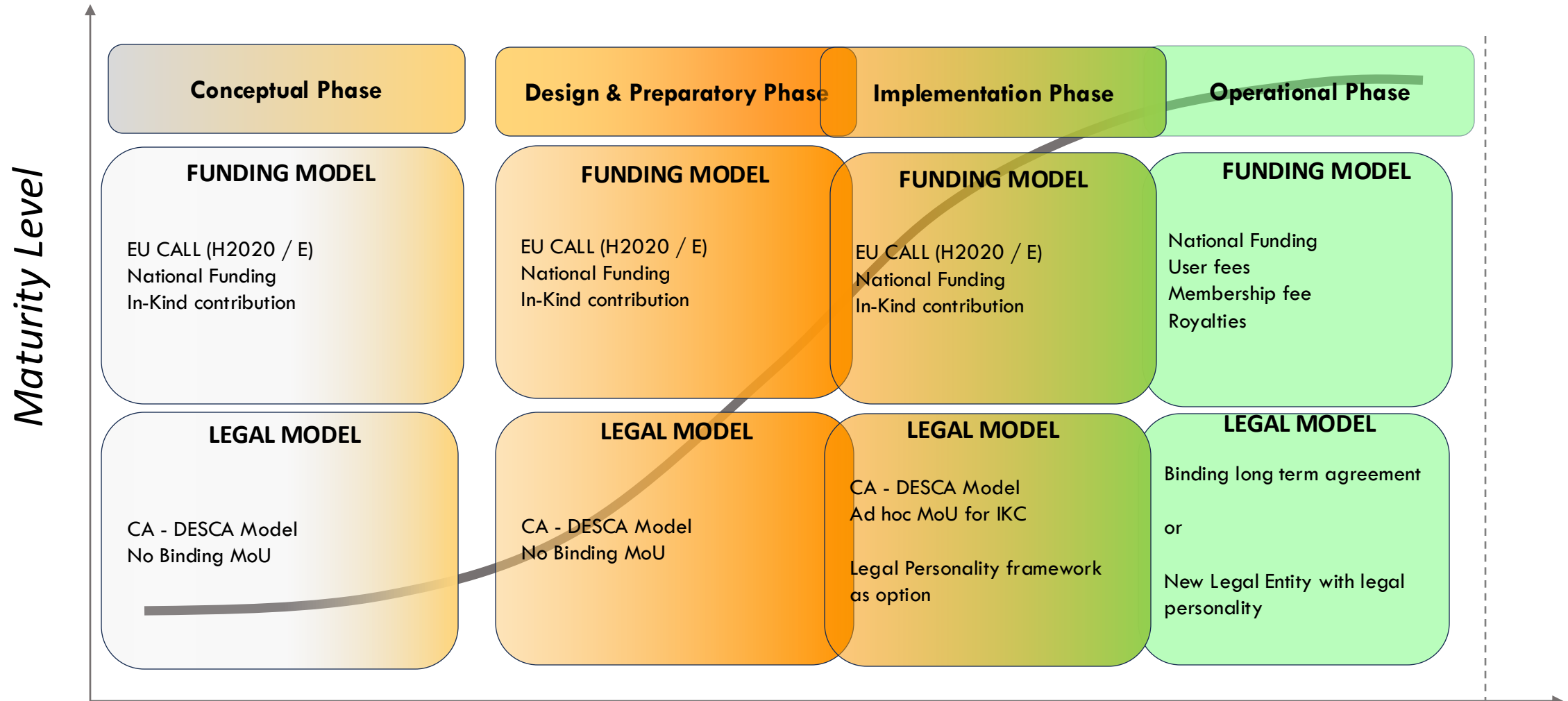
On the long term the creation of a new legal entity that oversees the combined effort of all the members towards the realization of a distributed RI is a relevant topic that has to be addressed, and it is clear that a legal entity that guarantee the user access, coordinate the R&D and upgrade will certainly provide a more solid foundation and might ensure a long term sustainability.

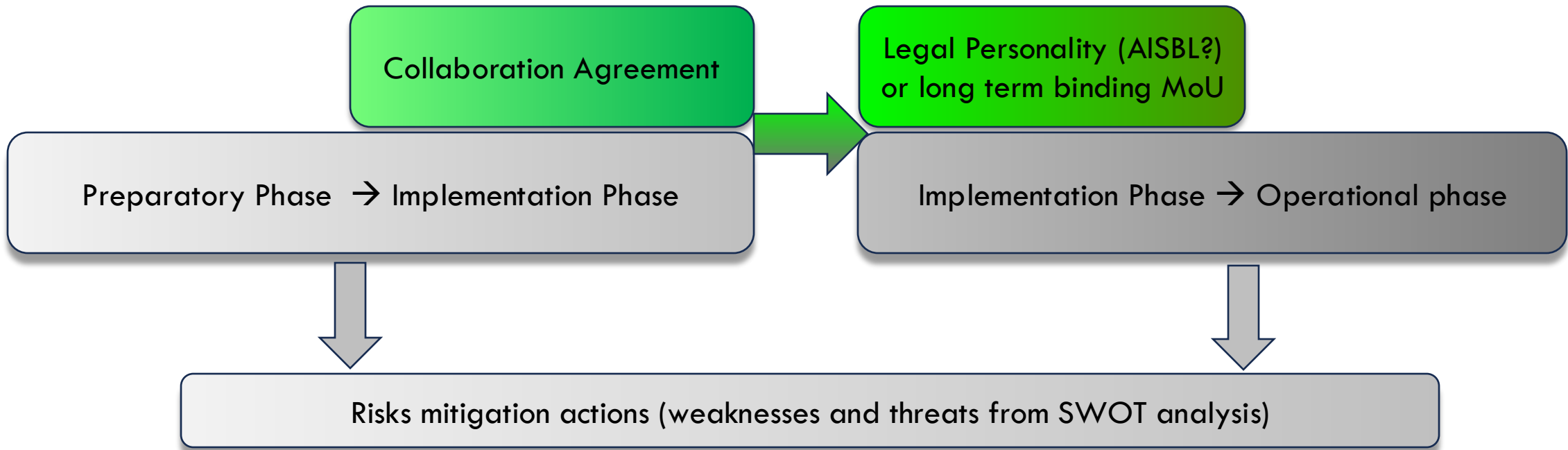
However at this stage it seems a bit premature to formalize a new legal entity especially in the complex transition to the implementation phase, selection of the 2nd site and fund raising still to be fully developed.

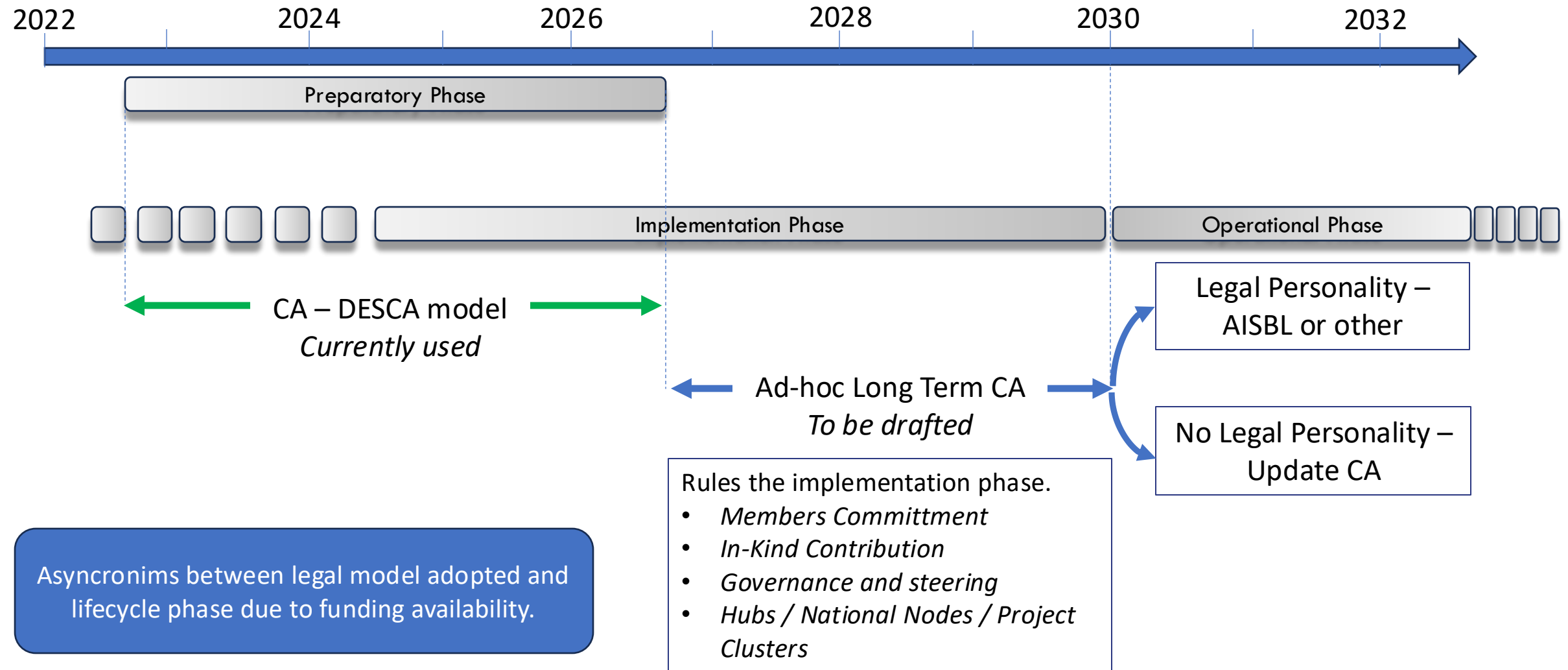
A phasing approach seems to be more adequate to steer the project smoothly towards the operational phase.

In addition there's a discussion at EU and National Levels on reforming the ERIC statute and to implement new legal tools for RI in single countries. Maybe the evolution will be favorable to us.

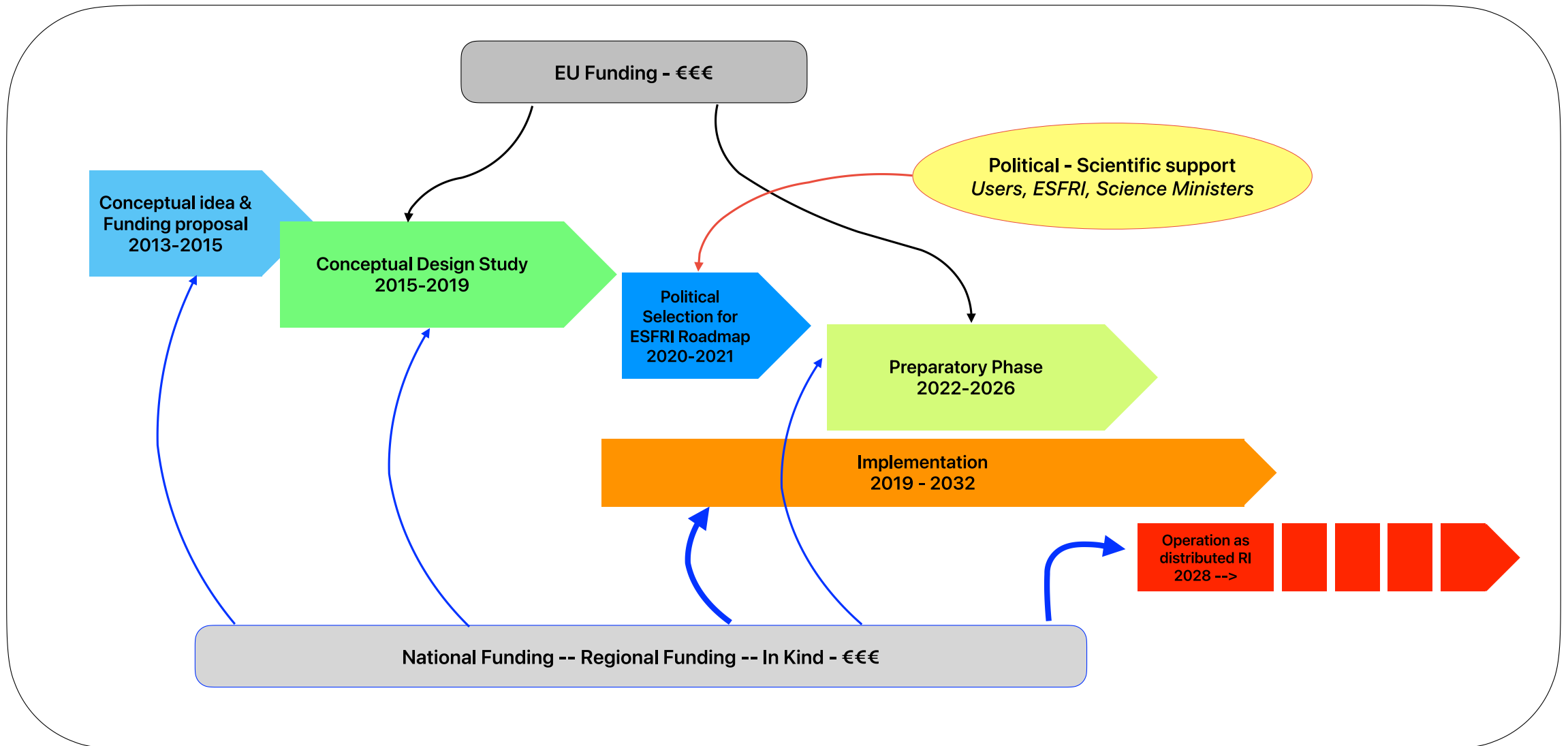








FUNDING MODEL



Portfolio of different funding sources : mitigate the risks, open new opportunities, strengthen the collaboration but also management issues.

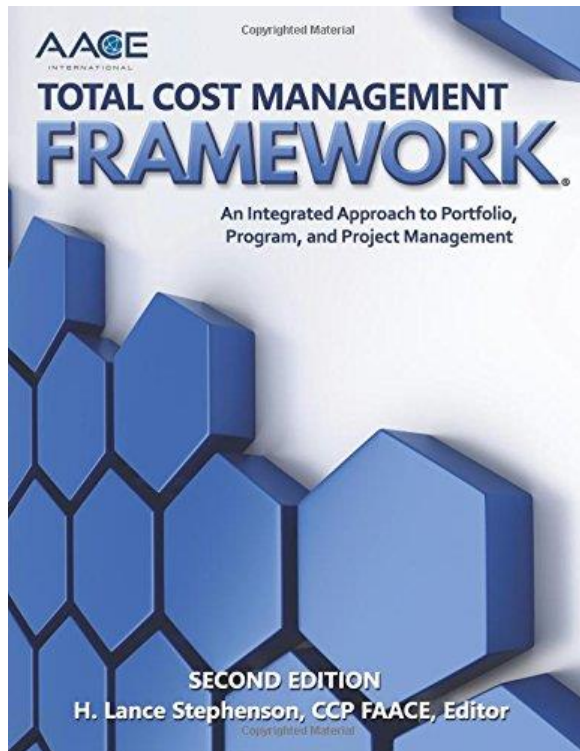
Project	Amount (M€)	Year	Funding source
EuPRAXIA – PP	2,49	2022	Horizon Europe
EuPRAXIA - DN	2,53	2023	Marie Curie Grant
EuPRAXIA@SPARC_LAB	108	2019	IT National Funding for Phase 0 Beam driven site implementation
EuAPS	22,4	2022	Next Gen. EU – PNRR Italian program
PACRI	10	2024	Horizon Europe
TOT	145,42	+ In-Kind contribution & contribution from associated partners supported by local government (UK and CH)	

Negotiations with Regione Lazio (Regional Government for INFN-LNF) are ongoing for further funding lines.

So far effective fund raising!

Beam Driven Pillar @LNF is undergoing an extensive cost-assessment (assisted by a cost & schedule review committee)

Cost assessment is based on best practices (AACE) and follows ESFRI guidelines. It is highly advisable (mandatory) that the 2nd site cost estimation would follow the same approach.



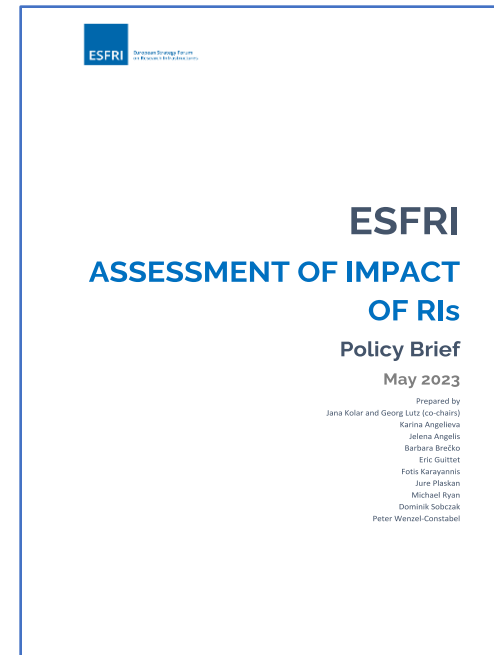
- 1 **Define unit of analysis**
 - Delimit the boundaries for apportionment and aggregate items
 - Ris do not necessarily coincide with the hosting organisation(s)
- 2 **Long time horizon**
 - Consider an appropriate number of years
 - Costs are reported for each year
- 3 **Fix the start date**
 - Start date corresponds to the year in which the first outflow was incurred or the first in-kind contribution was received
 - Sunk costs should not be included
- 4 **Fix the base year**
 - The base year is the point-in-time when the cost estimation is made
 - Past and future costs are intended with respect to the base year
- 5 **Costs should be expressed in real terms**
 - Future costs are forecasted according to their real price
 - Past costs are converted to base year value by the inflation index
- 6 **Adopt a cash flow method**
 - Only cash flows are reported
 - Sources of financing should not be confused with costs
- 7 **Include in-kind contributions**
 - In-kind contributions must be reported
 - They are estimated at their market price
- 8 **Costs must be expressed in Euro**
 - Convert other currencies in Euro
 - Use the official exchange rate at base year
- 9 **Investment and operating costs**
 - Investment costs: design & preparation, construction, replacement, upgrades, decommissioning; residual value
 - Operating costs: rent, equipment, personnel, ord. maintenance, etc.
- 10 **Express costs at their present value**
 - In addition to inflation, future costs are discounted and past costs must be capitalised
 - All costs are then aggregated

- **Sites funding:** based on in-kind contributions from institutes/country + regional funding + EU calls+national funding
- **Operational costs:** basically relying on hosting Institution (other schemes possible, although difficult)
- **National nodes/ technology clusters:** based on in-kind contributions from institutes/country + regional funding + EU calls. They are expected to contribute to specific technical parts of sites
- **Funding opportunities** (non-exhaustive list):
 - ESFRI can trigger national support: Italy (PNRR+Lazio Region), France (CNRS, PALLAS project), Portugal (fund request submitted for HPC centre), ... + other tools to be investigated
 - ESFRI can trigger EU support: PP+DN grants (~ # ME), future Implementation grant (~ 5 ME), current or future participation to specific calls (**recent PACRI**)
 - Long term sustainability of facilities relying on institutes (part of ESFRI commitment)
- **Collaborative approach:** supporting sites through specific funding (as above) or point2point agreements (e.g. INFN-ENEA on undulators, INFN-CERN on X-band, INFN-PSI on diagnostics, INFN-ELETTRA under discussion, etc...), to be replicated possibly in other sites/nodes

In order to further enhance the fund raising process it is crucial to be proactive

SOCIO-ECONOMIC IMPACT

SEI (Socio-Economic Impact) is a crucial assessment that needs to be done during the preparatory phase to understand the benefit provided by the creation of a new RI over a wide range of topics. It helps to promote the fund raising, increase awareness and understand the actual value of the investment (ROI).



+ a lot of literature and case studies.

- Understand the distinction between performance monitoring and impact assessment.
- Adopt a **tailored approach** to impact assessment methodology
- Prioritize scientific impact in assessments.
- Consider impacts beyond scientific achievements
- Adopt a long-term perspective for impact assessments.
- Promote results of RI impact assessments.

- **Direct Scientific Impact:** Measure the RI's contribution to scientific advancement, including publications, patents, and new knowledge creation.
- **Technological Innovation:** Analyze how the RI fosters innovation, including technology transfer, collaboration with industry, and the development of new products, services, and processes.
- **Economic Growth:** Evaluate the economic benefits generated, such as job creation direct and indirect, business opportunities, and GDP growth linked to the RI's presence.
- **Human Capital Development:** Assess the RI's contribution to education, training, and the development of high-skilled personnel.
- **Societal Impact:** Include non-market effects, such as environmental sustainability, and contribution to solving societal challenges.

For each impact area relevant quantitative indicators must be chosen for example:

- **Scientific output:** Number of publications, citations, and patents.
- **Innovation:** Number of collaborations, technology transfer agreements, and spinoff companies.
- **Economic indicators:** Direct and indirect jobs created, investment attracted, and regional economic performance.
- **Education and training:** Number of trained individuals, professional mobility, and skill improvements. Number of master thesis and PhD.
- **Societal benefits:** Improvements in environment, or cultural aspects.

- Review of the key impact area and relevant indicators.
- Provide a quantitative analysis and prediction of the indicators.
- Monitor and control the evolution of the indicators along time
- Disseminate the results of the impact



D4.3– EuPRAXIA socio-economic impact assessment – M40

A lot of work has been done so far and more is to come.

The second half of the preparatory phase will be dedicated to:

Legal

- Final ranking and discussion on the strategic approach on the legal framework
- Draft of the governance and statute of the new agreement.
- Settle the foundation for a possible evolution into a legal personality model.

Financial

- Cost assessment for the implementation phase (both sites)
- Cost assessment for the operational phase → Financial sustainability
- Funding sources and IKC

Impact

- SEI impact areas
- SEI quantified indicators
- Long term strategy and monitoring

Coordinator



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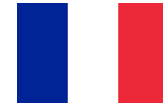
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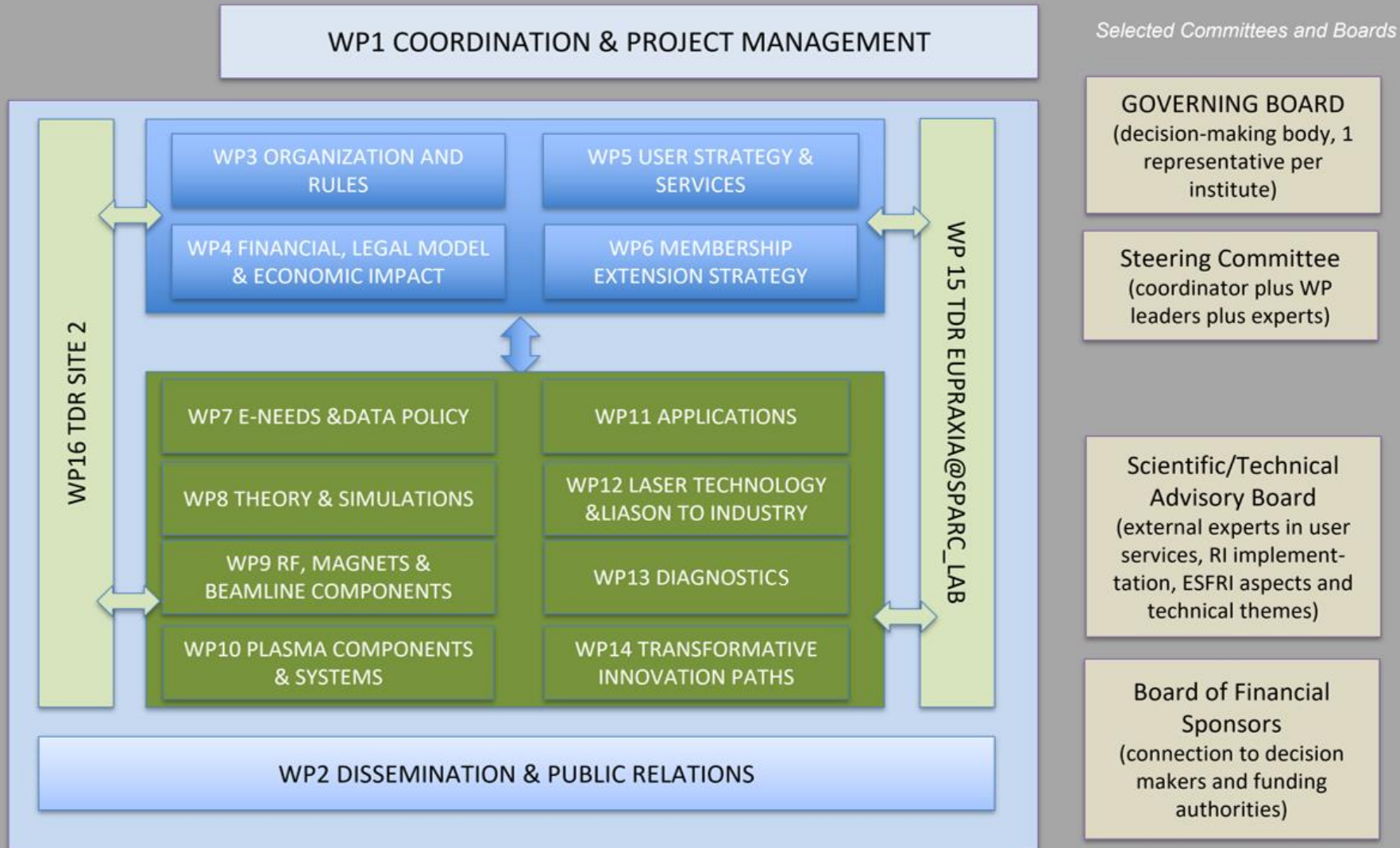
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- EuPRAXIA Preparatory Phase



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- EuAPS



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