

# DiSSCo related output

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## Title

DPP WP4 D4.5 "Models for government funding"

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**Abstract**

This intermediary deliverable establishes possible models for government funding of the future DiSSCo European Research Infrastructure Consortium (ERIC). The key argument behind this deliverable is that, in order to ensure economic sustainability, reach the full potential and explore the maturity of the Research Infrastructure (RI), DiSSCo ERIC will need to find new, national and European funds, to cover both essential DiSSCo activity, as well as helping DiSSCo further its ambition and demonstrate added value (through mass digitisation programmes and centres of excellence, for example).

DiSSCo essential activity means ensuring funding for only the fixed costs of the DiSSCo Central Hub, whereas it is possible to imagine mass digitisation programmes and centres of excellence being funded by a combination of variable and fixed funding from national and European funders. This deliverable will address how funding will enter the RI, and circulate between the different bodies, in order to better understand the relationships between these entities.

Following a series of workshops in consultation with DiSSCo Prepare Project partners and National Nodes, WP4 has used the feedback from these meetings to put forward the following models for government funding, as well as considerations of their suitability for the future Research Infrastructure.

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# National contributions to the DiSSCo RI

## DiSSCo Prepare WP4 – Deliverable 4.5 Models for government funding

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## Abstract

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## Key words

National contributions, contribution model, government funding, DiSSCo, fixed funds, national roadmap, added value, Natural Science Collections, fixed costs, potential, maturity, principles & assumptions, Central Hub, Centres of Excellence



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# 1. Introduction

## 1.1 Background of this deliverable

The Distributed System of Scientific Collections (DiSSCo), currently in its preparatory phase under the aegis of the DiSSCo Prepare Project (DPP) (until 2023), is expected to reach its construction phase in 2024 and operational phase from 2026 (Fig.1). As a European Commission project funded under H2020, funding for DPP is guaranteed until the project end date, 31 January 2023. However, from this date forth, the groundwork done in DPP to lay the foundations of the DiSSCo RI will need to be backed by national funding commitments in order to ensure longevity and economic sustainability. Following the vote at the DiSSCo iGA on 11 June 2021, which served as an initial agreement to use the ERIC legal framework for the future DiSSCo RI, Work Package 4 (WP4) of DiSSCo Prepare is basing our considerations on the working hypothesis that DiSSCo will take this legal form. As stated by the European Commission:

“To establish an ERIC a minimum number of members is necessary. At least one EU country and 2 other countries, which are either EU countries or associated countries, is the minimum configuration. Other members can join later depending on the conditions specified in the statutes.”<sup>1</sup>

Based on this regulation, this deliverable assumes that DiSSCo ERIC will have financial input from its members (EU member countries or associated countries) and that this will be formalised in its Statutes (WP7). Whilst there is still a level of uncertainty surrounding the DiSSCo Research Infrastructure and its financial requirements (currently being addressed in tasks within WP4), we know that every ERIC currently in operation is funded, to some extent, by the ERIC’s members. Therefore, this deliverable uses this knowledge to consider how national funding can work for DiSSCo and ensure the infrastructure reaches its full operational potential.

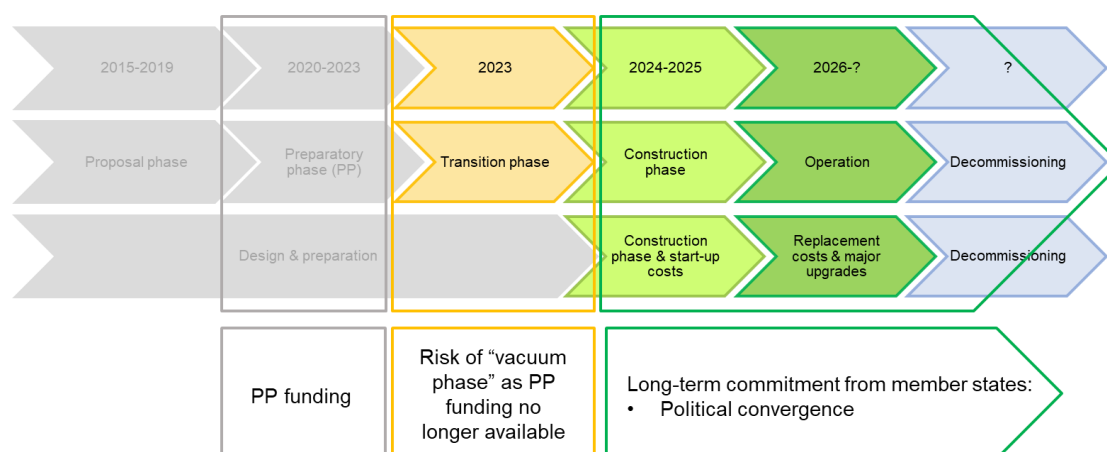


Figure 1 Expected timeline of DiSSCo Prepare to DiSSCo Research Infrastructure

The exploratory work for this deliverable took place in a series of workshops held by WP4 leaders MNHN (Paris) and involving input from WP4, WP7 and WP8 partners, as well as some representatives

<sup>1</sup> European Commission, Regulation (EC) No 723/2009 – rules for creating a European Research Infrastructure Consortium (ERIC) [2009], OJ L 206, 8.8.2009, pp. 1-8. Last updated 28.02.2020

of the National Nodes. The outcomes of the workshops resulted in two questionnaires that gave further insight into the ideas explored. The minutes of all three workshops can be found in the Appendices of this deliverable.

## 1.2 Scope of the deliverable – no one-size-fits-all solution

Because of the legal and financial framework afforded by the ERIC status, there is a finite number of possible models for government funding. We might then ask ourselves why additional consideration is needed in terms of government funding when these structures are implemented as a matter of course. Whilst we have acknowledged that DiSSCo is likely to become an ERIC and therefore benefit from these national funding frameworks, it is important to bear in mind some words of caution about taking a standardised approach to these funding mechanisms, from the ERIC Forum Policy Brief:

“Due to [ERICs’] diversity, there is no one-size-fits-all solution, and funding mechanisms must be carefully adapted to the long-term operational needs of each individual ERIC.”<sup>2</sup>

It is true that obtaining ERIC status should afford DiSSCo several benefits of being part of a community of ERICs (for example, VAT exemptions and ability to apply for and receive EU and national grants), however we should consider that DiSSCo has a specific user community, currently focused on natural science, and a range of services that need to be studied in respect of the ERIC structure, but not without a consideration of the specificities of DiSSCo.

This deliverable therefore seeks to establish the foundations of the government funding model for DiSSCo ERIC, whilst also considering how DiSSCo might grow as an infrastructure, to explore its potential, and how the government funding model may be required to adapt to changes in operational maturity.

## 1.3 Structure of the document

The following presents an overview of possible models for government funding of DiSSCo ERIC, initially focusing on the role of government funding within the Research Infrastructure and addressing what we know to be true, and what we assume to be true, about the ways in which national contributions will impact the ERIC. It then goes on to consider how DiSSCo could capitalise on national contributions to increase the operational potential and maturity of the Research Infrastructure, and finally considers how national funding could circulate within the RI, based on returns from national funders who are currently financing Research Infrastructure. In the conclusion, the document addresses areas where there is a need for further study (involving other user communities; the circulation of funding) in order to increase the financial and organisational readiness of DiSSCo.

## 1.4 Key terms

The terms below are used with the meanings given:

**DiSSCo Research Infrastructure:** The organisational structure comprising National Nodes, DiSSCo governance, the secretariat and advisory bodies. Relationships between the different bodies are governed by formal procedures, including the Statutes, Rules of Operations, and Service Level Agreements (SLAs).

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<sup>2</sup> ERIC Forum (2020) ERIC Forum Policy Brief, Funding Models for Access to ERIC Multinational/Transnational Services. Accessed on 28/10/2021



**DiSSCo ERIC:** The legal entity and statutory seat of DiSSCo, responsible for overseeing implementation of the Statutes and responsible for all aspects of DiSSCo activities.

**DiSSCo Central Hub:** The body in charge of operational and coordination activities, acting under the coordination of DiSSCo governance.

**DiSSCo facility:** The geographically distributed collection-holding organisation(s) (i.e., natural science/history collection(s)) and related third-party organisations that deliver data and expertise to the DiSSCo Hub infrastructure, and which can be accessed by users via the DiSSCo Hub infrastructure.<sup>3</sup> A DiSSCo facility is present in and represented by a National Node.

**Government funding:** This includes DiSSCo member states (contributing members part of the European Union) as well as DiSSCo members not part of the European Union. This may include full and observer members. A “member state” of DiSSCo ERIC is not necessarily a Member State in the sense of the European Union.

### 1.5 Connections with other DPP Work Packages

The work done to prepare this deliverable has been carried out in partnership with members of DPP Work Packages 4, 7 and 8, as well as representatives of the National Nodes, who have provided their input during workshops on national funding for digitisation programmes, national funding for ERICs, and principles and assumptions of financial contribution. Their experiences have also fed into the questionnaires issued after these workshops.

Indeed, in order to take a holistic view of the financial contribution model for DiSSCo, it is necessary to collaborate with a range of Work Packages in DiSSCo Prepare. Throughout this deliverable, direct and indirect reference is made to WP7 (Governance, policy and legal framework) as the governance models established will have a direct impact on the way that government funding will flow around the DiSSCo Research Infrastructure. These models are under discussion. There are also dependencies with technical work packages, WP1 and WP6, as the service development, establishment of priorities for digitisation and IT technical architecture are likely to have an impact on the capacity needs of the DiSSCo Central Hub. Furthermore, there is a need for future collaboration with WP2 (Human resources, training and user support) in order to better define the human resources needs of the Central Hub and ensure alignment between the HR policy and the strategic objectives of the infrastructure. In Chapter 6, the deliverable draws parallels with WP8 (Task 8.1) and the work on a thematic specialisation plan among DiSSCo partner institutions.

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<sup>3</sup> Hardisty A. *et al* (2020) Conceptual design blueprint for the DiSSCo digitization infrastructure – Deliverable 8.1, DOI: 10.3897/rio.6.e54280

## 2. Finding and justifying critical funding for DiSSCo ERIC

### 2.1 Who will provide the critical income of DiSSCo ERIC?

We know that there are several possible funding sources for an ERIC. By looking at other models we can see that European funding, private funding and government funding can all feed into the Research Infrastructure (DPP Milestone 4.3<sup>4</sup>) to some extent. However, in order to ensure economic sustainability, a Research Infrastructure needs to ensure at least one stable and predictable source of income which can match the financial basic needs of the infrastructure over a fixed period of time. Via a process of elimination, therefore, it is possible to demonstrate the pivotal role played by government funding. Take the below diagram as an example:

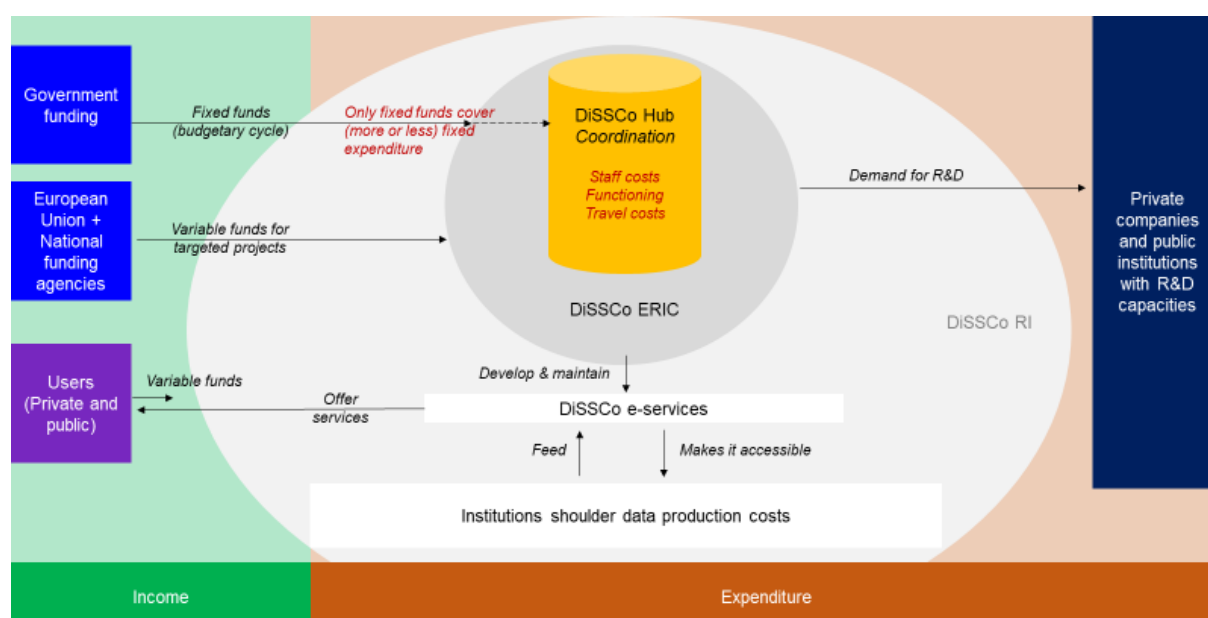


Figure 2 Possible business model for DiSSCo Research Infrastructure

The purpose of this diagram is to show a possible income/expenditure model for the DiSSCo infrastructure. On the left-hand side, it shows three possible sources of income, however only funding from governments can be considered as fixed, as this is likely to be established in conformity with yearly, or pluriannual budgets.

Funding from the European Union is likely to come in the form of project funding, either sent directly to the DiSSCo ERIC acting as the coordinating entity of the project, or sent to the Nodes, who apply for the funding as representatives of the DiSSCo Research Infrastructure. Nevertheless, European Commission funding is reliant on a successful funding application and appropriate project calls, therefore these funds are variable and cannot be relied upon to provide a stable income for DiSSCo.

There may also be funding from other user communities, such as industry, if DiSSCo is able to successfully involve these communities in its scientific strategy. Today, however, the role of industry

<sup>4</sup> Guiraud M. *et al* (2021) National Contributions to the DiSSCo RI – Revenue stream based on identified partnerships (<https://dissco.teamwork.com/#/files/10301536>).

in DiSSCo is too weak and unpredictable to guarantee any stable funding from this source. If DiSSCo is able to attract funding from other sectors outside of taxonomy, this could be considered in a business model as additional money, that supports the infrastructure's ambition and potential to grow, but does not play a crucial role in its stability.

This takes us back to the first option: government funding from DiSSCo member countries. According to a questionnaire carried out by WP4 among 7 DiSSCo partner institutions, at least 6 of the countries currently involved in DiSSCo responded that there were funds available within their department of Research / Education / Innovation for ERICs. Therefore, it is possible to imagine that Research and Development programmes in DiSSCo member countries could provide DiSSCo with a fixed income to ensure day-to-day activities. There is a precedent for this, as shown in the below graph of R&D expenditure of each EU Member State (2020) as a percentage of its Gross Domestic Product (GDP). Five out of the seven countries which spend above the EU average have a statutory seat of an ERIC on their territory (Sweden – ESS ERIC; Austria – BBMRI; Germany – SHARE ERIC, EU-OPENSREEN; Finland – ACTRIS, ICOS; France – EMBRC, DARIAH, ECRIN, EURO ARGO)<sup>5</sup>.

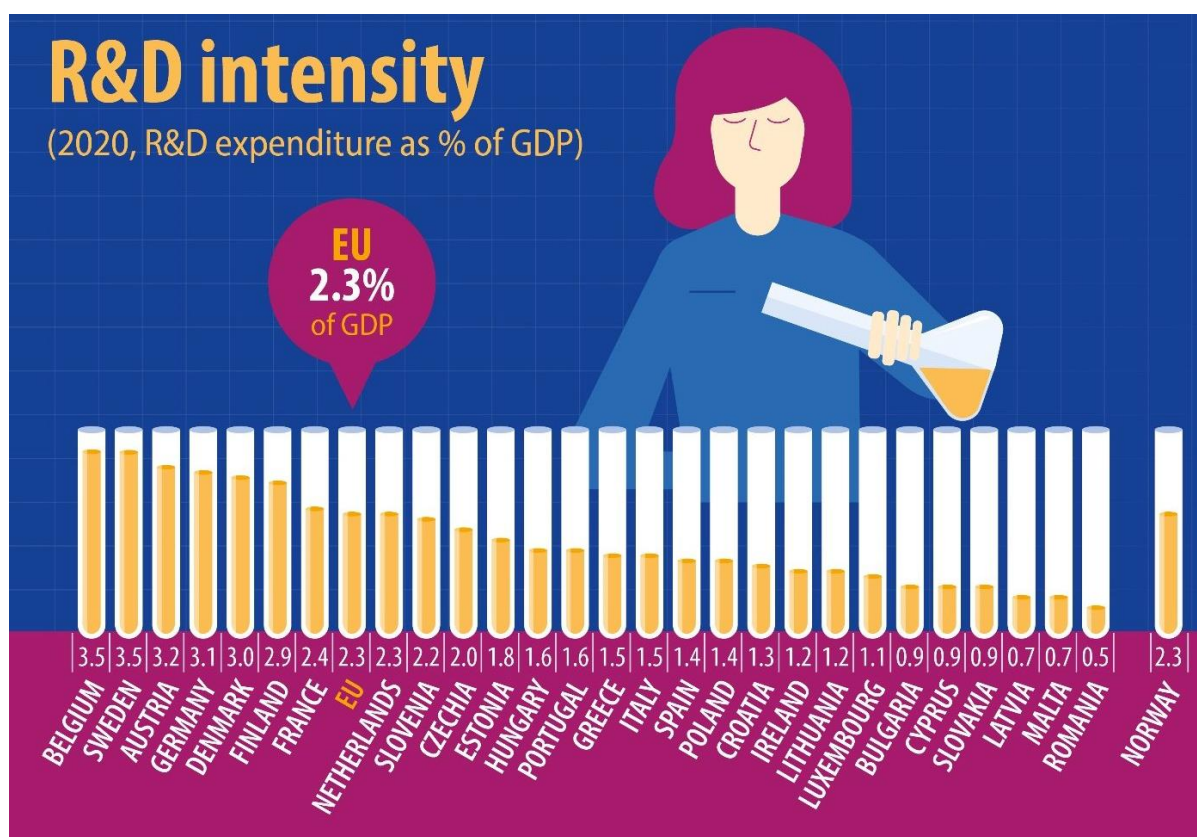


Figure 3 Eurostat, R&D intensity in the EU (2020 data)

It is therefore possible to assume that funding is available for ERICs within the EU member states and that this funding will form the backbone of the DiSSCo infrastructure. As shown by our survey, although the majority of our respondents cited their departments for Research as having funding available for ERICs, a wide range of departments were noted, including Culture/Media and Health. Nevertheless, it is important to consider the competitiveness of this funding. As noted by Susan Daenke (Instruct ERIC) at the ERIC Forum Stakeholders' workshop, "membership contributions may have to compete with

<sup>5</sup> Eurostat, R&D expenditure as % of GDP in 2020 (2021). Accessed on 08.12.2021

other national projects or programmes and national funding priorities may change”<sup>6</sup>. With this in mind, DiSSCo ERIC will need to prove its added value when convincing national funders of its merit. It will also be important to develop and build on other sources of funding (projects, industry, etc.) in order to mitigate against any loss of national funding due to changes in priorities at national level.

## 2.2 What is the critical income of DiSSCo ERIC?

When considering the critical funding of DiSSCo Research Infrastructure, it is important to note that the infrastructure in its ensemble will not be able to exist without a neutral, coordinating entity, in the form of the ERIC. Nor, because of its independent nature and new legal status, will the ERIC be able to exist without new funding being found. DiSSCo ERIC will need to establish a Central Hub to coordinate DiSSCo activities and liaise with DiSSCo governance. Whilst the Central Hub might be located in a DiSSCo member institution, it will be its own statutory body and will need to be funded in order to cover essential costs, as shown in the below diagram:

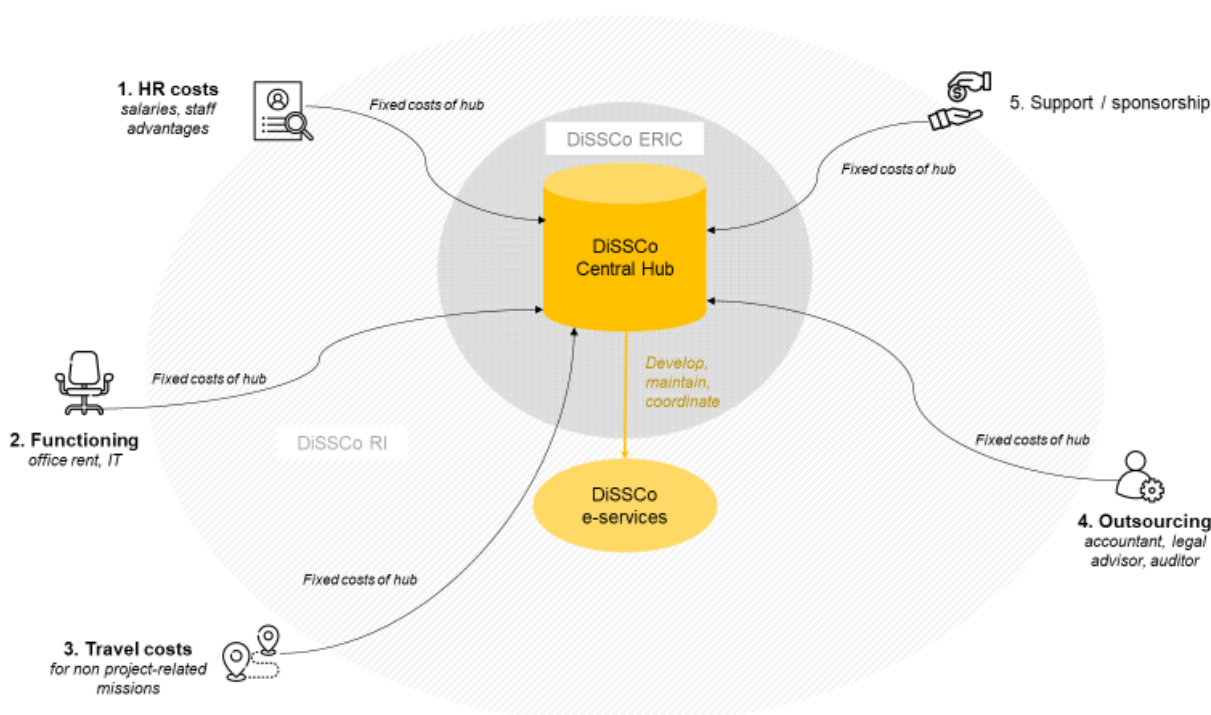


Figure 4 Fixed funds cover fixed costs of DiSSCo Central Hub (DiSSCo-ERIC)

The Central Hub is likely to grow with time as the Research Infrastructure reaches maturity, but an initial composition can be imagined as a core team with fixed HR costs, a budget for travel, outsourcing, sponsorship and functioning. One key role of the Central Hub will be the development, maintenance and coordination of DiSSCo e-services, therefore stable income to the hub is needed to ensure stable supply of e-services.

At this stage of the project it is not yet certain what resources the DiSSCo Central Hub will require in order to carry out its daily activities. The exact costs will be dependent on where the hub is based, as differences in salaries, rent and employment law will vary from country to country (DPP WP2). It is possible to imagine a core team however, to fully understand the need for capacity in the Central Hub,

<sup>6</sup> Daenke S. Elements of an innovative funding model, ERIC Forum Stakeholders’ workshop (2021). Accessed on 13.09.2021

it will be necessary to establish the organisation of DiSSCo e-services and the level of responsibility the Central Hub will have in their maintenance and coordination. In terms of estimation, a benchmarking exercise of 16 ERICs, carried out by WP4 using information available on the internet (e.g. Statutes, annual reports, etc.), resulted in a range of annual expenses for the RI central hubs of between 340,000 and 2.2 million euros (Fig. 5).

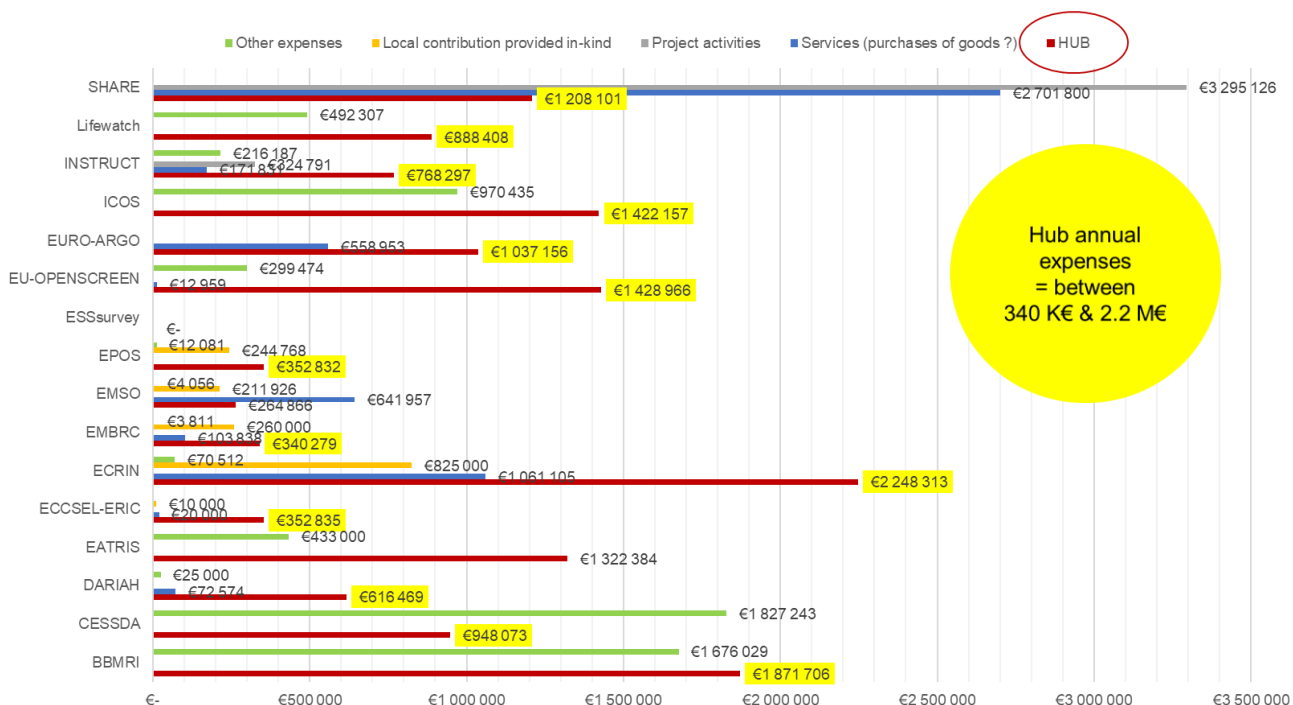


Figure 5 RI expenses by category

In the case of DiSSCo, it is possible to imagine a relatively low HR budget which will need to be significantly increased to take into account any expenditure on e-services.

### 2.3 National funding for DiSSCo ERIC: what we know already

In order to better forecast for the challenges and opportunities of obtaining government funding, and following a workshop on national funding for ERICs, WP4 asked DPP partners to complete a questionnaire on the same theme, in order to verify if the results of the benchmarking exercise (carried out as part of DPP Milestone 4.3) could be backed up by feedback from institutions. The questionnaire was split into three sections, which aimed to find out if DiSSCo partner institutions were already in the process of discussing government funding for the future DiSSCo ERIC with their national funders; what the current funding landscape for ERICs looks like in their country; and their awareness of the government funding for ERICs that have already received funding from their national funders.

The questionnaire obtained responses from 7 institutions, which gives a relatively small sample of the current funding landscape within DiSSCo partner countries (considering that 21 countries have signed the DiSSCo Memorandum of Understanding and 11 countries have signed to be part of the DiSSCo Funders' Forum). It was brought to our attention that the questions asked could be sensitive for some institutions, who might have had concerns over being criticised for demonstrating a lack of financial readiness. For this reason, we have kept the results anonymous.

Out of the 7 responding institutions, 5 said that they are already in discussions with national funders about funding DiSSCo ERIC. Additionally, an interactive quiz carried out during the workshop on national funding for ERICs asked the same question to 12 participants (from 8 different institutions as well as the DiSSCo CSO located in The Netherlands), 11 of whom responded “yes”. This suggests governments are aware of the future request for funding and that there is a dialogue around this. When asked which arguments were most convincing for national funders to finance, respondents said that the opportunity to implement and boost the national research strategy, and demonstrating established links with existing research infrastructure were the most successful with governments (Fig.6). The results underlined the importance of providing added value at a national level, which will be a key consideration when thinking about the flow of money around the infrastructure: it will be necessary to show how the funding can have an impact at a national level in order to convince funders of the need to fund DiSSCo ERIC.

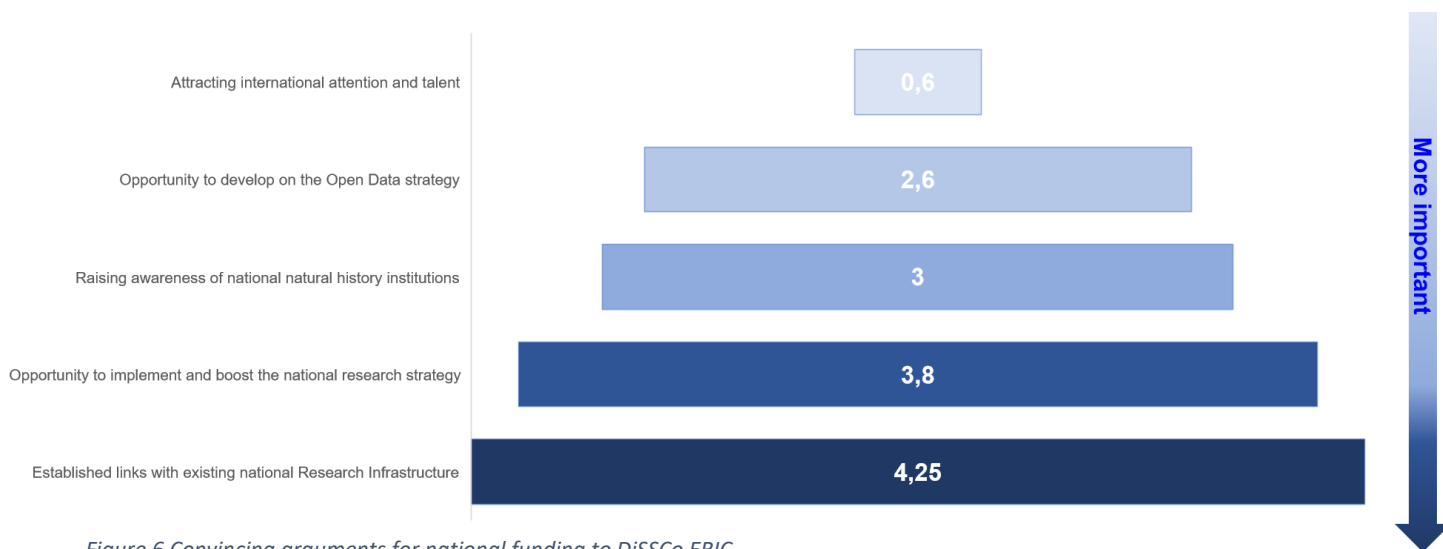


Figure 6 Convincing arguments for national funding to DiSSCo ERIC

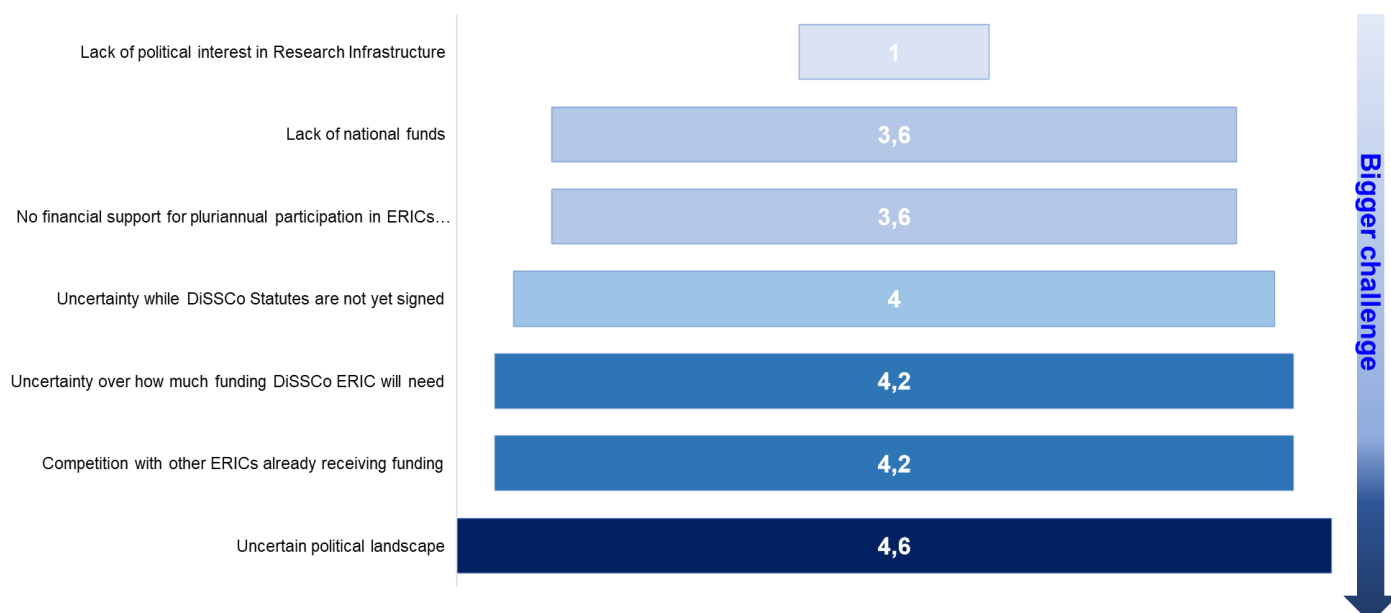


Figure 7 Main challenges in acquiring national funding for DiSSCo ERIC

The survey also asked participants to rank the main challenges in acquiring national funds for ERICs (Fig.7), in an effort to understand if these challenges are within, or outside of, the control of DiSSCo.

The results demonstrated a combination of both scenarios, with an uncertain political landscape posing the biggest challenge to securing funding, alongside uncertainty over the future of DiSSCo whilst the Statutes have not been signed and the funding amounts have not been decided.

Perhaps reassuringly, and in line with Figure 3, lack of political interest in Research Infrastructure was not considered to be a considerable challenge in obtaining funding. This result is backed up by the knowledge that a number of DiSSCo institutions are already talking to their national funders.

In the second part of the questionnaire, respondents were asked about their experience of the funding landscape in their country. A number of respondents did not know enough about funding for ERICs in their country to answer all of our questions: it is important to bear in mind that the reason for the creation of the DiSSCo Research Infrastructure is to fill a gap, by creating an RI in the natural sciences sector, and therefore it is unsurprising that some natural history institutions have only a limited grasp of the funding of ERICs in their country. It is hoped that the birth of the DiSSCo RI will broaden a knowledge of ERICs and their added value to the natural sciences sector. Among the questions that many were unable to answer, the questionnaire asked if national funding for ERICs was sent directly to the Central Hub or channelled through the National Nodes: 2 respondents noted it was channelled through National Nodes, and one said it was sent directly to the Central Hub. To better understand the flow of funds, WP4 expands on this question in Chapter 7.

Furthermore, the survey asked if respondents could shed light on why ERICs had been successful in obtaining national funding (Fig.8). The majority of respondents said that this was because the ERIC had demonstrated a clear definition of added value provided by the Research Infrastructure. However, results showed that nearly all factors (including a solid financial plan and strong existing national backing) were rated as important.

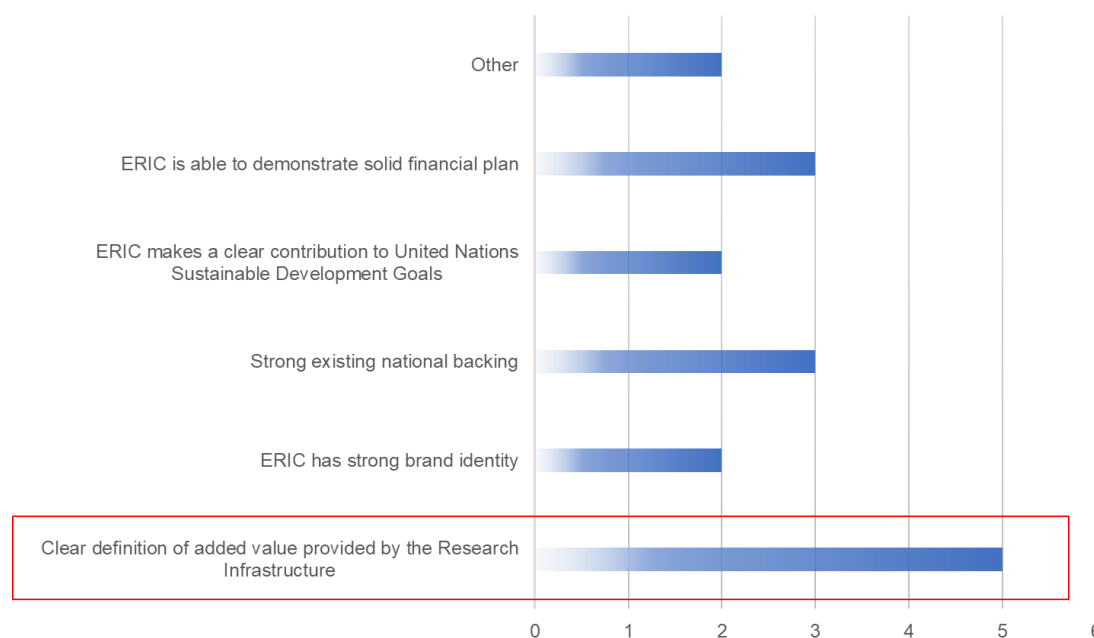


Figure 8 Hypothesis on why ERICs have been successful in obtaining funding



The final part of the questionnaire asked respondents to consider specific ERICs that are funded by their country and why these ERICs were successful in obtaining funding (Fig. 9). The majority of respondents noted that one main reason was because the ERIC provided services that are not available elsewhere. This will be the crux of the argument put to national funders for DiSSCo, and can be evidenced by showing DiSSCo as a data producer, which will facilitate the unlocking of research data for the natural history community and, in the longer term, for other communities.

|                              |                           | ERICs funded by your country |         |          |                |         |         |         |        |         |        |         |       |            |             |        |        |          |          |          |       |        |    |
|------------------------------|---------------------------|------------------------------|---------|----------|----------------|---------|---------|---------|--------|---------|--------|---------|-------|------------|-------------|--------|--------|----------|----------|----------|-------|--------|----|
|                              |                           | Austria                      | Belgium | Bulgaria | Czech Republic | Denmark | Estonia | Finland | France | Germany | Greece | Hungary | Italy | Luxembourg | Netherlands | Norway | Poland | Portugal | Slovakia | Slovenia | Spain | Sweden | UK |
| Environment                  | EMSO                      |                              |         |          |                |         |         |         |        |         |        |         |       |            |             |        |        |          |          |          |       |        |    |
| Environment                  | EPOS                      |                              |         |          |                |         |         |         |        |         |        |         |       |            |             |        |        |          |          |          |       |        |    |
| Environment                  | LifeWatch                 |                              |         |          |                |         |         |         |        |         |        |         |       |            |             |        |        |          |          |          |       |        |    |
| Health & Food                | BBMRI                     |                              |         |          |                |         |         |         |        |         |        |         |       |            |             |        |        |          |          |          |       |        |    |
| Health & Food                | ELIXIR                    |                              |         |          |                |         |         |         |        |         |        |         |       |            |             |        |        |          |          |          |       |        |    |
| Health & Food                | MIRRI                     |                              |         |          |                |         |         |         |        |         |        |         |       |            |             |        |        |          |          |          |       |        |    |
| Social & cultural innovation | E-RIHS (transition phase) |                              |         |          |                |         |         |         |        |         |        |         |       |            |             |        |        |          |          |          |       |        |    |

Figure 9 ERICs currently funded by DiSSCo partner countries

## 3. Principles and assumptions of financial contribution

### 3.1 Establishing Principles & Assumptions of financial contribution

We already know that models for government funding have a precedent established by the European Commission as a result of the ERIC framework. We also know that the current DiSSCo landscape is made up of publicly-financed natural history institutions, therefore we could assume that the foundations have been laid to channel national funding into the DiSSCo Research Infrastructure. However, as demonstrated by the survey on national funding for ERICs, there are a number of factors which can have an impact on the availability of this funding, both within the control of, and outside the control of DiSSCo. By establishing principles and assumptions of financial contribution, this deliverable seeks to develop an overview of what DiSSCo can realistically expect of, and request from government funding (principles), and what will need to be further studied and worked on in order to ensure an economically sustainable contribution model (assumptions). This work builds on section 6.3.2. criteria influencing national funding commitment towards DiSSCo, of the Conceptual Design Blueprint for the DiSSCo digitisation infrastructure<sup>7</sup>.

<sup>7</sup> Hardisty A. *et al* (2020) Conceptual design blueprint for the DiSSCo digitization infrastructure – Deliverable 8.1, DOI: 10.3897/rio.6.e54280



## 3.2 Definitions

In order to facilitate our work, WP4 used the following definitions for principles and assumptions:

**Principle:** a fundamental truth or proposition that serves as the foundation for a system of belief or behaviour or for a chain of reasoning.

**Assumption:** a thing that is accepted as true or as certain to happen, without proof.

## 3.3 Principles

Assuming DiSSCo is to take the legal form of an ERIC, there are certain conditions predefined by the European Commission which must be respected. These form the basis of the principles established below. Additionally, following the feedback from the workshops and questionnaires carried out within task 4.3, there are some principles that can be established based on the interactions that have taken place between project partners and national funding agencies. They are as follows:

- National contributions to the DiSSCo RI will begin after signing of the Statutes;
- DiSSCo-ERIC will be an independent accounting entity;
- DiSSCo ERIC contributions could comprise full and observer members;
- Member contribution amounts will be fixed in Euros;
- All national contributions will be based on the same calculation;
- Paying DiSSCo member countries will be part of DiSSCo governance;
- All national contributions will be agreed within the same budgetary cycle;
- National funding for DiSSCo ERIC is being discussed in most DiSSCo partner countries.

### 3.4 Assumptions

Assumptions of financial contribution can be established as a result of the questionnaires issued (following the opinions of project partners with reference to their national funding landscapes) and from strategic discussions in DiSSCo Prepare, regarding the direction that the DiSSCo RI should take. The following assumptions have been established:

- Member contributions fund fixed costs of Central Hub;
- Member contributions ensure DiSSCo critical income of Construction phase and Operational phase;
- Political landscape plays a crucial role in obtaining funding;
- Institutions likely to be expected to “top up” national contribution with own funds (cash or/and in-kind);
- Competition for funding and political uncertainty are key challenges;
- Alignment with European and national roadmaps play an important role in obtaining national funding;
- Financial model could develop, evolve and diversify over time (mass digitisation, centres of excellence).

The assumptions outlined above are examples of the possible uncertainties and hurdles that the DiSSCo Research Infrastructure will need to address as the project moves forward. As outlined in the design blueprint for DiSSCo, “circumstantial criteria, such as internal political volatility or national fiscal capacity might temporarily also affect the position of a national government towards committing to the construction and operation of a European RI”.<sup>8</sup> It must therefore be assumed that this could threaten the economic sustainability of DiSSCo, and that demonstrating added value created by the RI is the only way to truly mitigate against this. The design blueprint continues, “continuous adjustment of key operational and organisational parameters of the RI might be needed in order to retain the interest and commitment of national governments”. The assumption that the financial model could evolve over time, in order to increase the potential of the RI, or purely to ensure its continued funding, is discussed in the following chapters.

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<sup>8</sup> Hardisty A. *et al* (2020) Conceptual design blueprint for the DiSSCo digitization infrastructure – Deliverable 8.1, DOI: 10.3897/rio.6.e54280

## 4. The basic model: fixed funds cover fixed costs

### 4.1 The basic model: fixed funds cover fixed costs

As this deliverable has so far shown, the DiSSCo Central Hub will need to be financed by new funds coming from governments of DiSSCo members in order to function and therefore coordinate the e-services of the Research Infrastructure, as well as the day-to-day activities. Based on the key financial principles of an ERIC and the knowledge that national and European priorities play a crucial role in the funding strategies of national governments, it is possible to imagine a simple financial contribution model for government funding that would allow DiSSCo to become operational, channelling funding into the Central Hub. The below diagram (Fig.10) imagines DiSSCo in its most basic form and only considers the fixed government funds received by the ERIC: it does not include variable funds from European projects or private/public partnerships, although these could be included in this model.

This model shows two options for the flow of money into the DiSSCo ERIC (indicated by numbers 1 & 2): fixed funds enter the Central Hub directly from the DiSSCo members' ministries (1), or the funds are first sent to the National Nodes, who transfer this to the Central Hub, both in cash and/or in-kind (2). Irrespective of the flow of money at this stage, the National Nodes participate in the governance of the Central Hub, for example in the manner in which the budget is spent and the strategic direction of ERIC services.

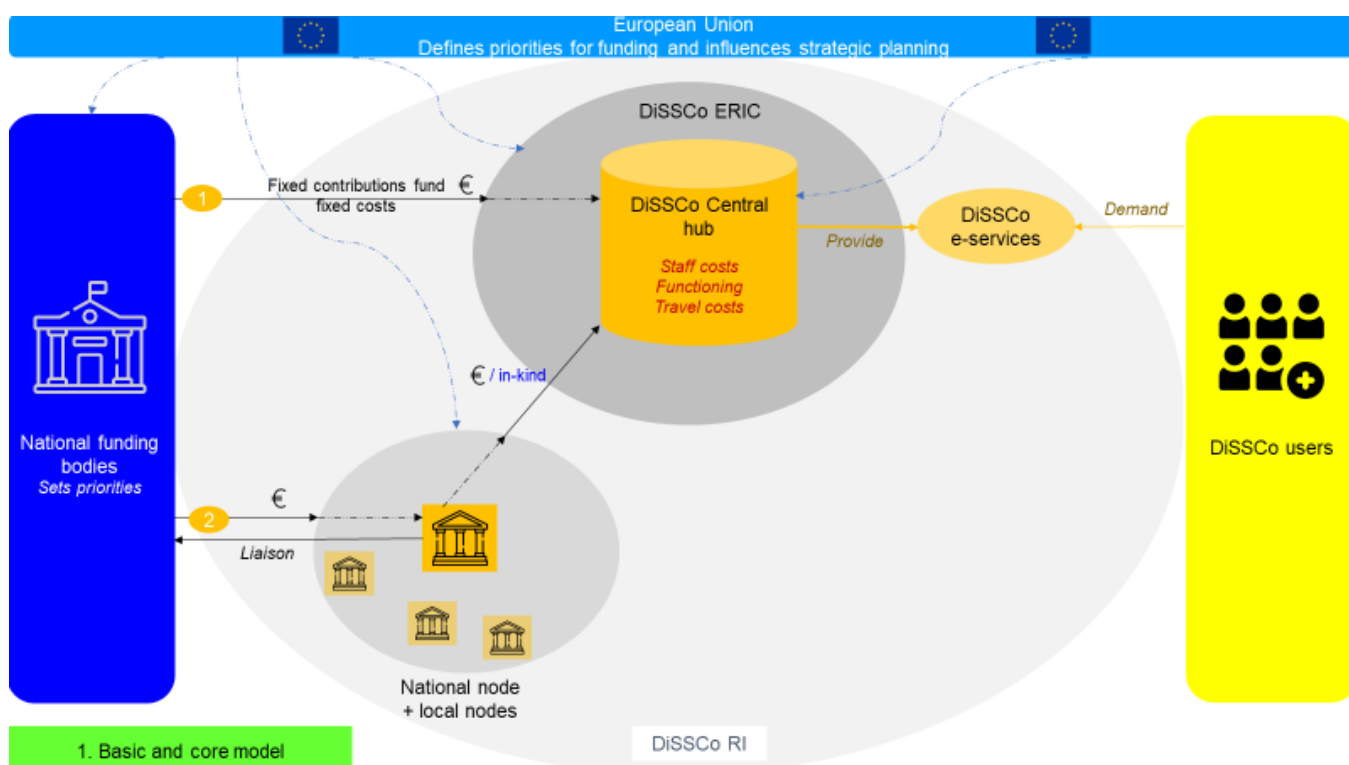


Figure 10 "Basic" model for government funding for DiSSCo RI

### 4.1.1 SWOT analysis

In order to assess the feasibility of this fundamental model of government funding of DiSSCo ERIC, WP4 initiated a SWOT analysis of the model as part of a task workshop, asking participants to collectively consider strengths, weaknesses, opportunities and threats.

#### SWOT analysis - Model 1 (fundamental model)

|                 | Helpful  | Harmful   |
|-----------------|--|---|
| Internal origin | <p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Simplicity of the model; institutions &amp; member states have clarity</li> <li>• Focus on running costs - clarity on needs and clarity to partners;</li> <li>• Clear insight</li> <li>• Stability on long-term;</li> <li>• More easy to simplify priorities</li> <li>• Internal focus strengthens basis;</li> <li>• Cheaper</li> <li>• Model promotes open science</li> <li>• Robust model (stick to what we know) - reassuring for institutions already involved</li> </ul> | <p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Reactivity to market needs is reduced;</li> <li>• Reduced responsiveness to other stakeholders: narrow vision</li> <li>• Isolating third parties</li> <li>• Potential loss of influence in sector</li> <li>• Passively induce a lowering of expectations (ambition)</li> </ul>  |
| External origin | <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Internal needs will be covered</li> <li>• Strong collection expertise;</li> <li>• Well defined unit for partnerships and collaboration - diversifying the model could introduce complexity (easier to partner?)</li> <li>• FAIR principles: helpful for community to reach our goals</li> <li>• Looking out for innovation - expertise (involving third parties)</li> </ul>   | <p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Changing political landscape;</li> <li>• Funding decisions taken in relation to regular evaluations of ESFRI - if the ERIC does not function well at international level the funding could be transferred to Nodes. Funding period might be linked to periodicity of evaluations.</li> <li>• External party needs may lose weight within the organisation</li> <li>• This model could increase administrative burden - government will not fund anything that is not fully open science</li> </ul> |

Figure 11 SWOT analysis of fundamental model

Key takeaways from the strengths of the fundamental model include the clarity afforded by the simplicity of the model, as well a simple and robust structure that would prevent resources from being spread too thinly. The opportunities of the model focussed on the basic positive attributes of the future DiSSCo RI, notably the collections expertise the RI will assemble. The group found several weaknesses with the model, however, noting that its simplicity could lead to a loss in market reactivity and competitiveness, and external threats such as a changing political landscape and regular ESFRI evaluations render the less ambitious model vulnerable to fluctuating national priorities and targets.

The basic model, whilst solid in its foundations, would struggle to enable DiSSCo to grow as a Research Infrastructure, especially as DiSSCo will be operating within a landscape of Open Access and FAIR data, which will increase the complexities of charging for services. This is backed up by the ERIC Forum Policy Brief, which notes, “the costs of supporting projects are considerable and vary amongst the ERICs. Some ERICs can cover the vast majority of their operational and service costs with member country fees and can provide free access to most of their users. [...] However, if [...] ERICs who provide free access are to continue sustainably expanding their service base and are to expand their outreach to new communities, supplementary funding is crucial.”<sup>9</sup> Expansion of the outreach of DiSSCo will be

<sup>9</sup> ERIC Forum (2020) ERIC Forum Policy Brief, Funding Models for Access to ERIC Multinational/Transnational Services. Accessed on 28/10/2021

especially necessary in order to ensure continuing relevance of the RI. Indeed, with more regular evaluations from ESFRI, if DiSSCo cannot demonstrate innovation, it may well fall victim to punitive funding deductions.

Mitigating against this risk of a drop in national funding will be especially necessary for DiSSCo, and the RI will need to prove its utility to governments. In April 2020 the Swedish Research Council decided not to take DiSSCo onto the national RI roadmap as the proposal was considered as “not relevant to be considered as infrastructure of national interest as the need can be covered by existing national or international infrastructures”<sup>10</sup>. It is intended that the collaboration opportunities afforded by the DiSSCo RI, by allowing the formation of National Nodes, will increase the international visibility and relevance of Swedish Natural History collections, in order to demonstrate the added value of DiSSCo to funders. However, in order to ensure that the need covered by DiSSCo cannot be fulfilled elsewhere, there is a case for pushing the limits of a basic Research Infrastructure format, in order to establish a more competitive model that will surpass the possibilities of national initiatives.

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<sup>10</sup> DiSSCo Work Package 8: NN’s National Priorities (Sweden)

## 5. Exploring the potential of DiSSCo RI: mass digitisation programmes

### 5.1 DiSSCo as a data producer

In order to demonstrate its value and mitigate against the risk of national funders failing to see the value provided by DiSSCo, there is an argument for an expansion of the government funding model, to extend its outreach and find supplementary funding. DiSSCo's unique selling point is its capacity, as a distributed virtual infrastructure with e-services, to produce data. As noted in the DiSSCo design blueprint, "in most countries there are no systematic mass digitisation programmes. There is a lack of funding, lack of skills, workflows able to cope only with low throughput and lack of suitable ICT systems. This makes the unit cost of digitisation too high for rapid mass digitisation. The existence of a large research infrastructure that tackles digitisation could change this. In other words, to be viable, digitisation requires large volumes to become more affordable"<sup>11</sup>. In a competitive RI landscape, the mass digitisation opportunities facilitated by the DiSSCo RI act as catalyst to demonstrate the research and development opportunities of scientific collections.

### 5.2 National funding for digitisation programmes: what we know already

To gain a better understanding of the feasibility of obtaining national funding for mass digitisation programmes, WP4 asked task partners to provide information about government funded digitisation programmes in their institutions. The study was split into two parts in order to learn more about digitisation programmes that took place within one institution, and digitisation programmes that were coordinated by an institution and were carried out among several national partners. Task leaders MNHN referenced the two mass digitisation programmes carried out at the Museum national d'histoire naturelle in Paris, concerning the renovation of the Botanical building and digitisation programme e-ReColNat. Between 2010-2012, the museum spent around 11.2 million Euros of its own resources on the digitisation of around 6 million specimens from the herbarium that was emptied for renovation. A year later, beginning in 2013, the e-ReColNat programme won 16 million Euros in funding from the French National Research Agency to coordinate a digitisation project among a consortium of 9 partners across France. The project ran officially until 2019 and included 34 institutions: 3.8 million herbarium specimens, and 162,400 palaeontology and zoology specimens were digitised.

In addition to the experience in digitisation programmes gained at MNHN, 11 institutions responded to a questionnaire on national funding for digitisation programmes, providing greater insight into the feasibility of integrating this into a model for government funding. Among them, at least 6 institutions had received funding for institution-centric digitisation programmes, with at least one other receiving funding for coordinating a programme. It is possible to gain an idea of the average funding received and duration of the project from the results gathered (Fig.12).

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<sup>11</sup> Hardisty A. *et al* (2020) Conceptual design blueprint for the DiSSCo digitization infrastructure – Deliverable 8.1, DOI: 10.3897/rio.6.e54280

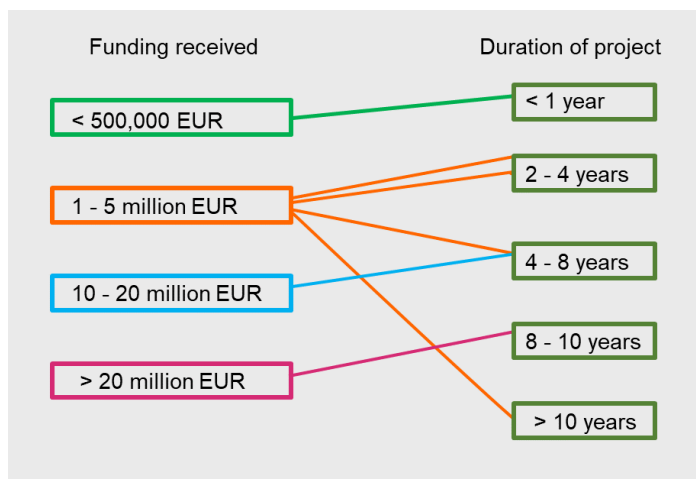


Figure 12 Digitisation programmes: funding received and duration of programme

The fact that over half of respondents have received funding for digitisation programmes suggests that national priorities in this domain are gaining more weight, and this could also be in line with improved technologies and a drive to make science more participative. It is especially interesting to consider the readiness of governments to fund national coordination mass digitisation programmes, as it is possible to imagine that this would serve as the model within the DiSSCo RI, in order to demonstrate added value at both national and European level. Indeed, by combining national digitisation efforts, it is possible to liberate data from information silos as institutions will coordinate in a combined effort to produce data to be shared: at European level this increases knowledge sharing and alignment. Nevertheless, the information collected by WP4 on coordination of mass digitisation programmes left some unanswered questions, that could be further explored in the consideration of a funding model:

- Is it easier for institutions to get funding to pilot digitisation programmes if they have already demonstrated successful in-house digitisation programmes?
- Is there more funding for targeted programmes than for coordinated programmes?
- Is it easier for an institution to get funding for its own collections?
- What does this tell us about the future of DiSSCo?

### 5.3 Mass digitisation programme model

By developing on the fundamental model for government funding of DiSSCo RI, it is possible to imagine a model for government funding that includes additional funds for mass digitisation programmes, thus opening up opportunities to increase the potential of the Research Infrastructure by reaching new communities and continue sustainably expanding its service base. It is important to note that, irrespective of the additional funding envisaged, the fundamental government funding model for DiSSCo remains the same, as fixed funds into the DiSSCo Central Hub will be crucial for economic sustainability.

This model, adapted to show additional funds coming in from national funders, demonstrates how DiSSCo can increase its potential value by adding an extra national, and variable funding source. The second diagram takes a closer look at how the national funding could be used to fund digitisation programmes.

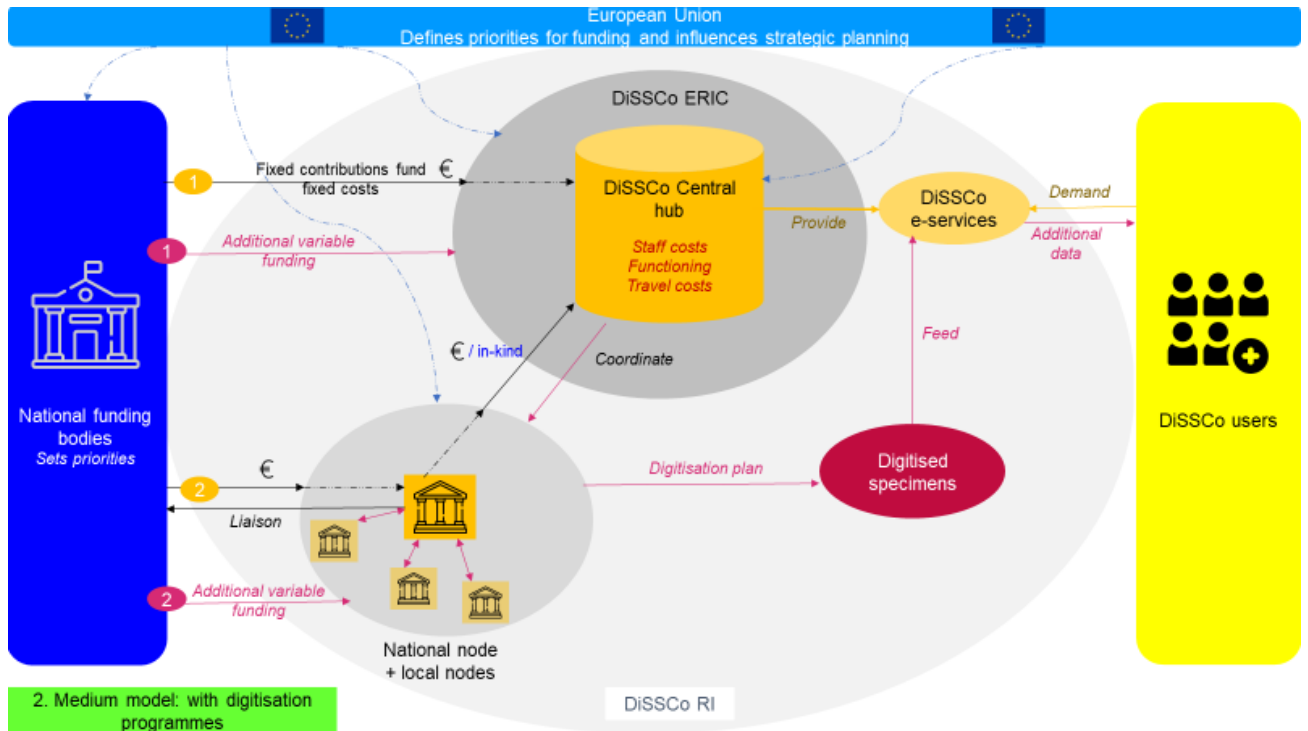


Figure 13 Possible government funding model: mass digitisation programmes

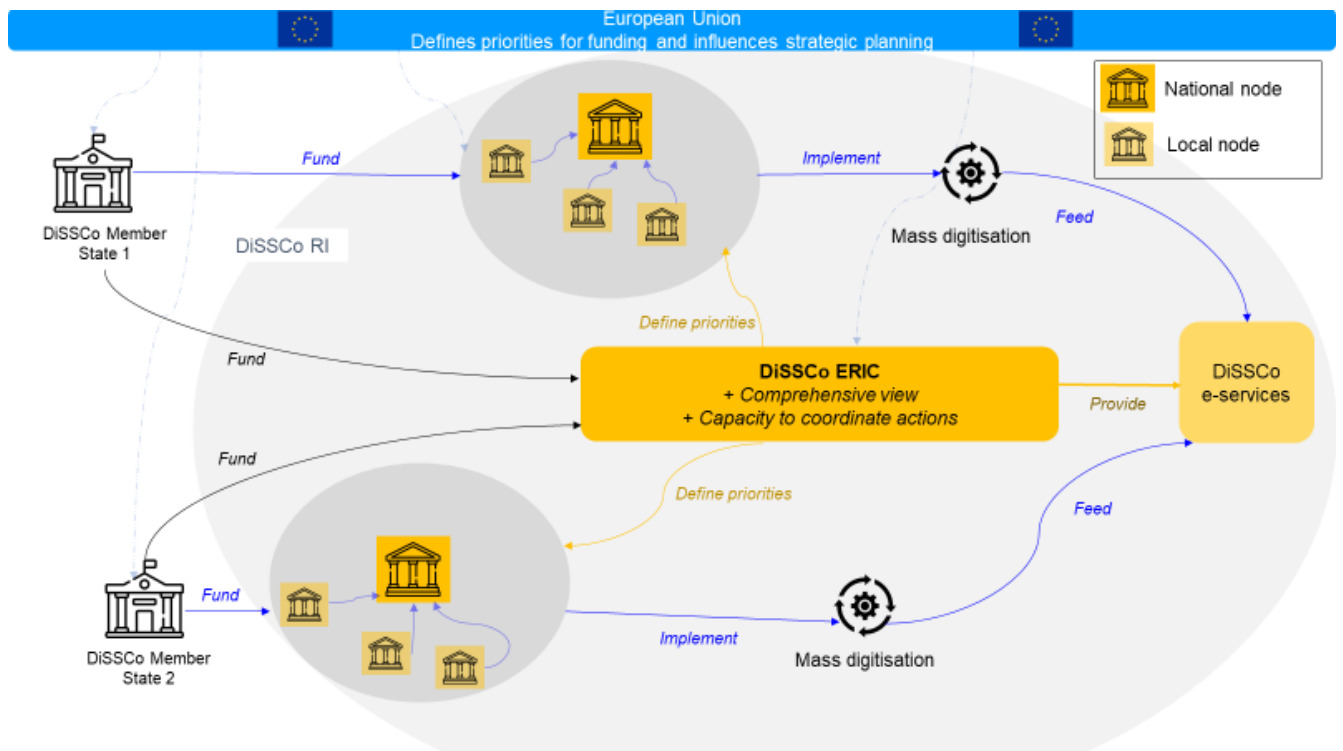


Figure 14 Possible government funding model: mass digitisation programmes (in detail)

### 5.3.1 Impact of the mass digitisation programmes on DiSSCo governance

This deliverable imagines contribution models that could evolve with DiSSCo alongside its maturity as a RI and, inevitably, have an impact on the levels of autonomy of each of the main entities within the governance of DiSSCo. In the basic contribution model, it is possible to imagine that very little will change for DiSSCo member institutions, who will keep a similar level of activity to the present day, with



the added responsibility of a possible contribution (perhaps through Service Level Agreements) to DiSSCo e-services (including Transnational and Virtual access, and the Digital Specimen Repository). Aside from these e-services, the DiSSCo National Nodes will be largely autonomous with regards to their strategic direction. That being said, this could stunt the growth of institutions within DiSSCo and, because new fixed government funding will only be covering costs in the Central Hub, there could be a relatively low number of funding pipelines for data sharing and production, meaning information risks being left in existing silos. Conversely, by expanding the model to include mass digitisation programmes at European level, there could be greater funding for targeted digitisation projects. It is important to note that DiSSCo National Nodes form part of DiSSCo governance, and therefore they will be part of the decision-making process regarding any funding requests for European mass digitisation programmes, and must also advise on their capacity to fulfil this ambition. Because this funding will be targeted, institutions will most likely have specific goals and will, to an extent, need to cede some control to DiSSCo ERIC, who will coordinate the mass digitisation programme and define priorities. It will be up to DiSSCo institutions to decide if they have the organisational and structural maturity to implement this, as a future vision of their involvement in an evolving Research Infrastructure.

### 5.3.2 SWOT analysis

In order to better understand the benefits and risks of expanding the government funding model by integrating punctual funding for mass digitisation programmes at European level, WP4 carried out the same SWOT analysis as for the fundamental model. The team working on this analysis noted that many of the categories are the same as the fundamental model, as the basic organisation does not change, however there are some additional points.

#### SWOT analysis - Model 2 (digitisation programmes)

|                 |                 | Helpful  | Harmful   |
|-----------------|-----------------|--|---|
| Internal origin | Strengths       | <ul style="list-style-type: none"> <li>- more flexible and resilient than the 1st model</li> <li>- More close to reality taking as core part the programme and services developed by the RI</li> </ul>   | <b>Weaknesses</b> <ul style="list-style-type: none"> <li>- be able to have a clear message → added value with the institutions → proper and systematic way</li> <li>- Difficult to have a clear and collective model among 21 different countries</li> </ul>  |
|                 | External origin | Opportunities  | <b>Threats</b> <ul style="list-style-type: none"> <li>- 'sets priorities' = not clear enough from Member States + European Union → more possible to be set at the national / institutional level</li> <li>- clarify how European Union 'clarify priorities' → in continuity with what member states negotiated as part of the European Union</li> </ul> |
|                 |                 | <ul style="list-style-type: none"> <li>- From a government / member states point of view → access to the programs → better understanding of the added value</li> <li>- This model seems more flexible than the 1st: some MS more variable / than fixed fund</li> <li>- Help States to fund the DiSSCo program without funding the ERIC → join the RI without being a member</li> <li>- e-services: benefit added value for member states</li> <li>- Common e-services: government pays for the whole package → data production + e-services</li> </ul> |   |

Figure 13 SWOT analysis of the model with mass digitisation programmes

In addition to the points made by the first group, the group assessing this model noted that DiSSCo services take on more importance in this version, and therefore there is greater opportunity to demonstrate to national funders the added value of the RI. There is also a possibility that national governments could fund digitisation programmes coordinated by DiSSCo ERIC without funding the ERIC itself, and therefore creating greater flexibility to participate in the RI. However, concerns were raised over the risk of confusing the messaging around DiSSCo RI by introducing new funding streams and a possible failure in achieving the same model among a potential 21 DiSSCo partner countries. There is a need to clarify the way in which priorities are set, as there could be a conflict if priority targets are coming from both national and European sources.

#### 5.4 Economies of scale and comparative advantage

One of the key arguments in support of the inclusion of European mass digitisation programmes in the DiSSCo funding model is the opportunity this creates to demonstrate economies of scale: whereby more units of a good or service can be produced on a larger scale with fewer input costs. As the DiSSCo Research Infrastructure will be based on free access to data, the means through which the RI can create an economically sustainable business model are relatively few. By introducing nationally funded mass digitisation programmes, DiSSCo can harness the economic gain created by data production. 18<sup>th</sup>-Century economist Adam Smith identified the division of labour and specialisation as means to achieving larger return on production, and a century later David Ricardo developed on this via the theory of comparative advantage: Ricardo theorised that, in international trade, different factors of production specialise in different economic activities based on their relative productivity differences. This argues that, if one country is relatively better at producing one thing compared to another country, the first country will focus on the production of what they are relatively better at producing, and the second will produce the other product, meaning that at least one country will be completely specialised in one of these two factors. Within the context of DiSSCo and data production, this might mean that, whilst one institution may have an advantage in producing data in a specific area, if another institution can also contribute in the production of data in a different area, the overall economic value of the RI will rise. With this in mind, it is also possible to consider the integration of specialisations into the DiSSCo model for government funding, via centres of excellence (Chapter 6).

## 6. Exploring the potential of DiSSCo RI: centres of excellence

### 6.1 Centres of excellence and specialisation

In reference to the theory of David Ricardo and the propensity of specialisation to increase the efficiency and performance of production, it is possible to integrate DiSSCo Centres of Excellence into a possible model for government funding. As outlined in the DiSSCo blueprint, “a special kind of DiSSCo Facility could be a DiSSCo Centre of Excellence (DCE), specialised in one or more of researching, innovating, developing and operating/performing techniques and/or process or digitization or other related facets, and disseminating information on same”<sup>12</sup>. For the purpose of this deliverable, and

<sup>12</sup> Hardisty A. *et al* (2020) Conceptual design blueprint for the DiSSCo digitization infrastructure – Deliverable 8.1, DOI: 10.3897/rio.6.e54280

following initial discussions had within DPP, WP4 is applying the following working definition to our work on DiSSCo Centres of Excellence: an institution, national node, service provider node, regional node or transnational group of institutions, with proven excellence in a given domain, providing a specific service at European level to DiSSCo RI users. However, it is important to state that the concept of Centres of Excellence in DiSSCo is a concept that is still under discussion.

The blueprint underlines the need to consider these Centres of Excellence in conjunction with a possible funding model: “such specialisms can potentially have influence on factors like funding models, legislative and legal requirements, availability of facilities and logistics that differ from the more generic model. There are also regional contexts to be considered, where the fit between services and organisational levels may be influenced by patterns of local and national funding, institutional expertise and regional differences in collections management practices”.<sup>13</sup>

Work is currently being carried out in Task 8.1 to create a Thematic Specialisation Plan for DiSSCo institutions and this will provide greater clarity on the specialisation capacity in each institution. In the meantime, it is possible to imagine a national funding model that includes Centres of Excellence. It is possible that integrating Centres of Excellence and specialisation into the DiSSCo funding model will also open up opportunities for programmatic alignment, which could help DiSSCo demonstrate added value in the coordination of its activities.

A model for government funding involving DiSSCo Centres of Excellence is a new train of thought within WP4 and therefore DiSSCo Prepare project partners have not yet had the opportunity to discuss this model: there is a need for further discussion and liaison. Initially, in order to find out more about the DiSSCo community’s view of this, WP4 asked participants of the survey on national funding for ERICs to give their view of how this could work in practice. There were different interpretations of programmatic alignment and this suggests more work needs to be done on this within DiSSCo Prepare. Respondents noted that “the challenge is to reconcile the synergies and collaborations at local level with those at EU and international levels” and that programmatic alignment could in fact undermine the added value of the DiSSCo RI, as it could confuse the clarity of vision and purpose by falling foul to a lack of cooperation. Nevertheless, it is possible to imagine a funding model that incorporates Centres of Excellence.

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<sup>13</sup> Hardisty A. *et al* (2020) Conceptual design blueprint for the DiSSCo digitization infrastructure – Deliverable 8.1, DOI: 10.3897/rio.6.e54280

## 6.2 Centres of excellence funding model

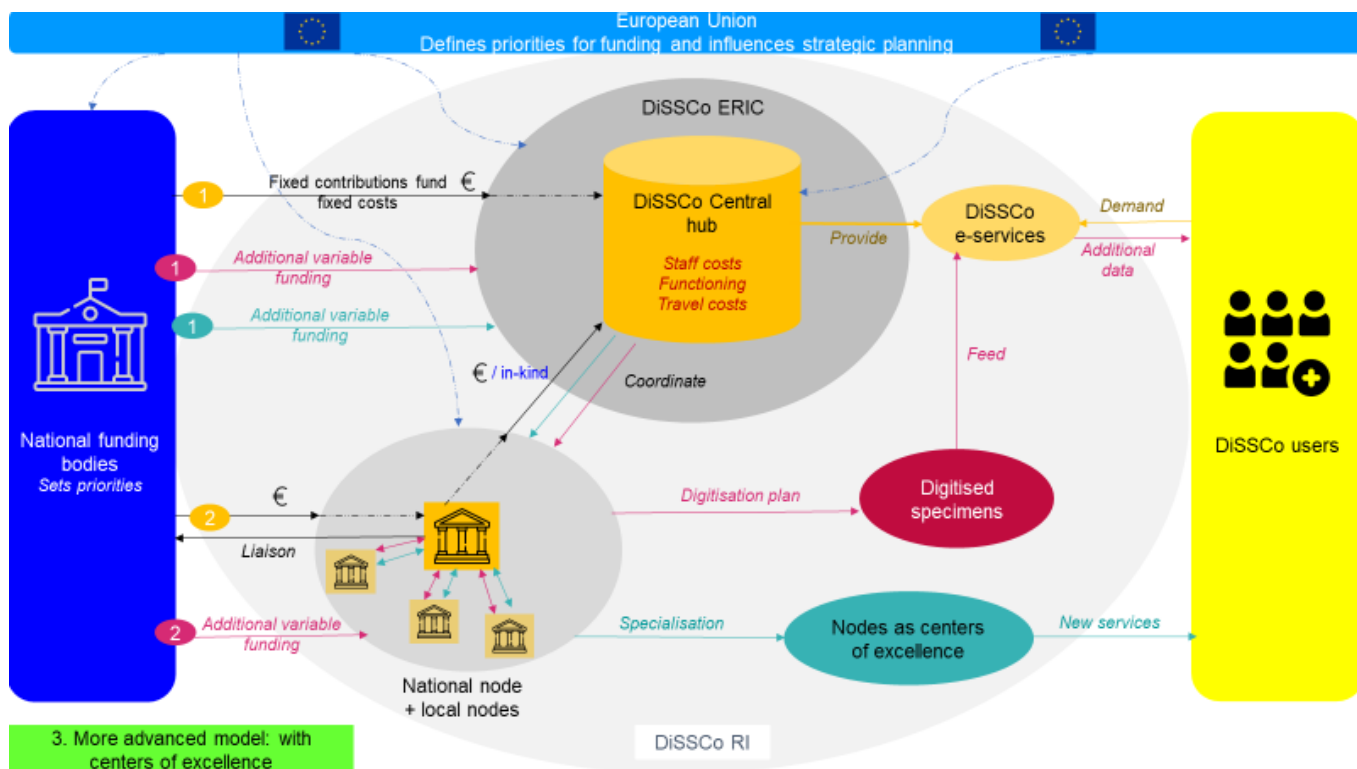


Figure 14 Centres of Excellence funding model

The above model serves as a vision of what the future potential of DiSSCo RI might be: fixed funds from government would fund the day-to-day running of the ERIC, whilst variable funds from government and the EU would fund mass digitisation programmes that met punctual needs. Simultaneously, the ERIC would use some of the fixed government funds to channel into DiSSCo Centres of Excellence which may fix their own programme priorities, based on their specialism, current scientific demand and national priorities. Centres of Excellence are especially beneficial for the DiSSCo user, who is clearly signposted to the most appropriate and efficient facility for their needs, and for whom a new service becomes available, that did not exist before DiSSCo RI. It is possible to imagine that, in addition to funding coming via the Central Hub from national governments and the European Union, DiSSCo users might pay for the services of DiSSCo Centres of Excellence.

In the next chapter, the ELIXIR funding model demonstrates how this might work in practice. It should be noted that ELIXIR is not an ERIC, it is instead legally attached to the international treaty organisation EMBL. Nevertheless, the ELIXIR Board is composed of representatives from each Member State and EMBL, and carries out similar functions to what might be imagined in an ERIC: such as the appointment of a Director, approval of a budget and establishing Rules of Operations. According to the ELIXIR model, the Nodes are responsible for deciding what the funding will be spent on, and it is only at the very end of this consultation process led by National Nodes that the ELIXIR board approves the funding (see Fig.17). If this were to be implemented in DiSSCo, it is possible that DiSSCo institutions – especially those that made up the DiSSCo Centres of Excellence – would retain some control over the strategic direction of the RI, whilst the DiSSCo ERIC would set priorities for the activities carried out within these Centres of Excellence, and therefore determine to some extent the strategic direction of each institution.

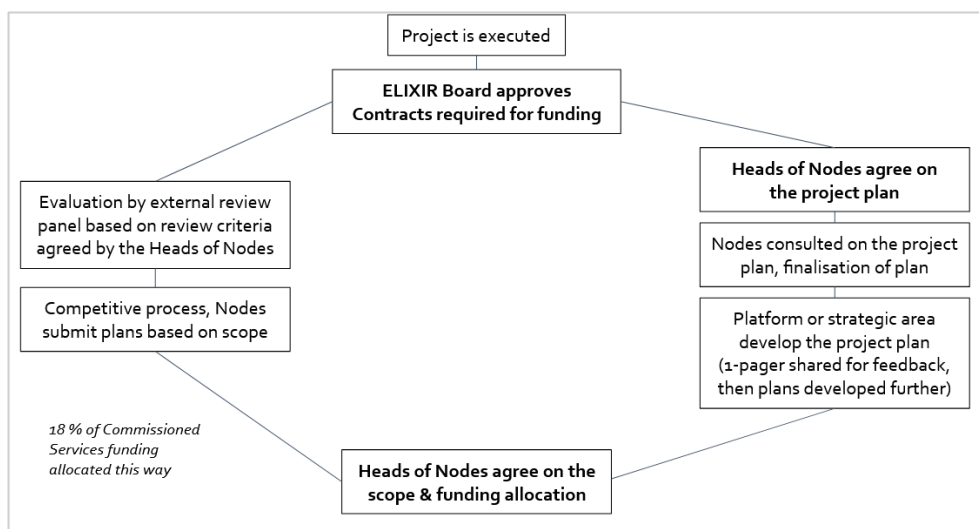


Figure 15 ELIXIR model for Nodes funding

### 6.2.1 Impact of DiSSCo Centres of Excellence on DiSSCo governance

Just like the model involving European mass digitisation programmes, the model for government funding combining DiSSCo Centres of Excellence serves as an opportunity to reflect on what DiSSCo might seek to become in the medium- to long-term. Centres of Excellence provide several points for reflection in terms of governance: National Nodes would maintain an important role in the governance of the RI, although it is not yet sure if Centres of Excellence would be restricted to National Nodes or if these could be extended to local Nodes. Additionally, establishing Centres of Excellence would increase the strategic driving force of DiSSCo ERIC, as their creation would be a way to organise and structure the services performed for DiSSCo by its institutions, both enriching the service offer of DiSSCo RI and creating distributed system of services which may allow users to benefit from services which are currently outsourced outside of Europe due to logistical and capacity challenges. In collaboration with the work being done in WP8 on a Thematic Specialisation Plan for DiSSCo, further work needs to be done on establishing the readiness of DiSSCo institutions to be prepared that the ERIC may attribute a strategic direction based on their specialisation. If this model is combined, over time, with the model including European mass digitisation programmes, more strategic influence is afforded to the ERIC in terms of setting priorities, and it will be necessary to ensure constant and close liaison with the National Nodes to ensure that this strategic alignment remains feasible for the whole RI.

## 7. How government funding circulates in the Research Infrastructure

### 7.1 How government funding might circulate around the DiSSCo RI

Having addressed the potential sources of national funding into DiSSCo ERIC, it is necessary to consider the routes by which this funding might enter the ERIC, and therefore the Central Hub, and the ways in which it could travel around the whole Research Infrastructure. There are several possibilities for this and it is an important consideration because it is directly linked to the work being done by DPP WP7 on a governance model for the DiSSCo Research Infrastructure. Depending on the entry point of national funding into the DiSSCo ERIC, this will have an impact on the strategic direction of the infrastructure, as well as the relative influence of each body within the infrastructure.

As demonstrated in the below diagrams, there are at least two options for national funding entering DiSSCo ERIC:

1. The national ministry (either one or multiple depending on the funding available in each country or federal state) could send the member contribution directly to the DiSSCo Central Hub, whose role would be to redistribute this funding among the fixed costs of the Central Hub, and the maintenance and coordination of DiSSCo e-services. This direct funding stream would represent a new funding channel for national funders, who would otherwise only send the funds to national institutions. In this scenario, the Central Hub would have full control over the member contributions and the funding for the DiSSCo ERIC would be separate from any national funding provided to the DiSSCo member institutions.

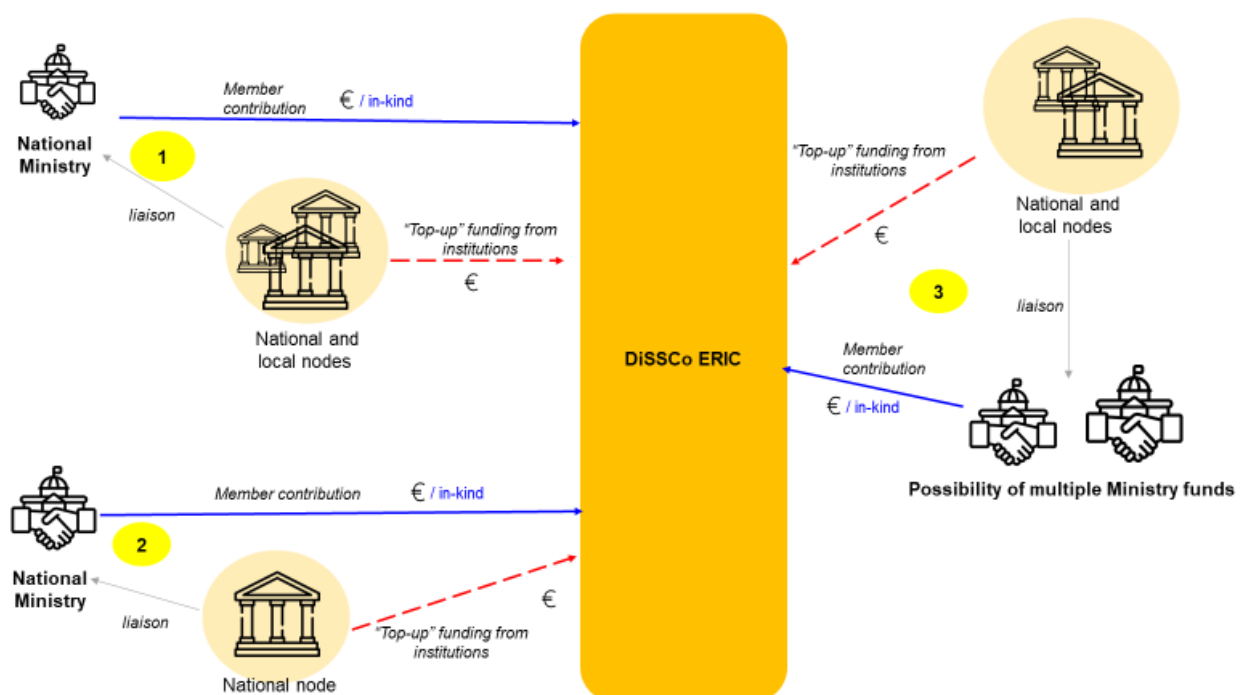


Figure 16 Flow of funding from National Ministries to DiSSCo ERIC

- Alternatively, the national ministry (either one or multiple depending on the funding available in each country or federal state) could send the member contribution to the DiSSCo member institutions, which would then be transferred to the DiSSCo ERIC. This funding method would allow DiSSCo institutions to have greater control over the flow of money into the DiSSCo Central Hub and, for national funders, it would more closely resemble the status quo of providing funding for natural history institutions. There would be no new funding stream created, only new funds sent directly to institutions.

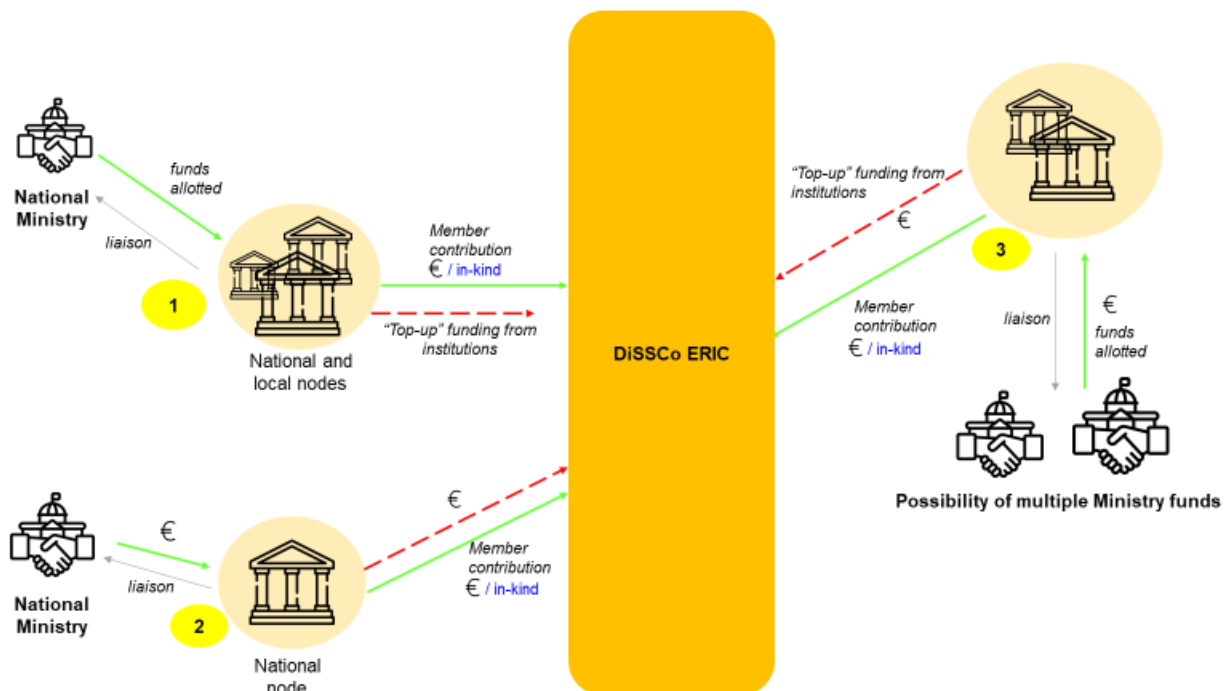


Figure 17 Flow of funding from National Ministry to DiSSCo institutions

Both diagrams show the institutions as “topping up” government funding by sending funds to the Central Hub. These funding streams are shown as red arrows in the diagrams. This is a hypothesis based on results of our survey on national funding for ERICs, in which 4 out of 7 institutions who responded said that their governments expect their national natural history institutions to contribute to funding the ERIC. In this scenario, these contributions might be cash or in-kind. If the contributions are in-kind, formal agreements may need to be established to quantify these contributions, and the institutions’ participation will not be monetary in the sense whereby money exchanges hands, but will instead be a transfer of services.



The above diagrams focus solely on the flow of money into the ERIC. Something that has not yet been considered, and a point for further reflection, is how the funding will circulate once it has been transferred to the Central Hub. In order to take a more holistic view of this, work needs to continue with DPP task 4.2 (Cost model for charging services) in order to ascertain the level of funding needed by DiSSCo services, and how the Central Hub will be able to channel funding into these services. Therefore, the following questions will need to be explored:

- What portion of critical funding will need to be used to develop, maintain and coordinate DiSSCo e-services?
- To what extent can DiSSCo member institutions participate with their own budget to the DiSSCo ERIC?
- How will national funding to the DiSSCo ERIC be channeled back into DiSSCo national nodes?
- Should we have one standardised system for contribution or should each country adapt their own contribution model?

In order to better understand future possibilities for the circulation of national funding in the DiSSCo Research Infrastructure, WP4 carried out a broad-brush survey of four of the current DiSSCo partner countries and their national ministries, in order to better understand how government funding could move around. We asked the following questions, asking participants to focus on the current funding landscape of European RIs:

**1. How does your country (government, ministry, etc.) pay its member contribution to the ERICs they are member of?**

- Does your government fund the Central Hub of the ERIC directly, or does their funding go to the National nodes, who then transfer it to the Central Hub? If another option is used, please elaborate.
- Does your government have a set policy on this? Or do the rules vary depending on the RI?

**2. Does your government have a fixed policy regarding the calculation of the member contribution fee to an ERIC? For example, is this based on GDP?**

## 7.2 Belgium

In Belgium, the funding landscape is unique. Belgium is a federal state with at least four funding strategies and the final Belgian position regarding funding is reached by consensus between the parties. Therefore, there is no such thing as a “national” research infrastructure at the federal level.

The Ministry contact for the Royal Belgian Institute of Natural Sciences is located within the Brussels-Capital region. They noted that they fund the Central Hub of the ERICs directly, adding “we have used this procedure with all the existing ERIC until now. Annual membership fee is paid directly to the ERIC Central Hub. We are usually in favour of a calculation method that include an element related to the economical capacity of countries (GDP or GNI). The full calculation method is very much depending also of the ERIC structure, relation with the nodes (in or out ERIC perimeter, is there seeds funding



from central hub to national nodes etc...) and in-kind contribution from national nodes or national facilities. So no one size fits all.”

Meise Botanical Garden is under the tutelage of the Flemish government. Participation and positions towards international and national matters are governed by the CIS-CFS commissions where the federal government sits together with the other governments of the country to reach a consensus and a common answer. Currently the membership fee for ERICs is paid by the Federal government (Belgian Federal Science Policy, BELSPO), while the other governmental levels do not contribute to the payment of this fee, but can continue to engage in the implementation and maintenance of the ERIC with structural or project-based funding. It has been in discussion if the other governments could contribute to the membership fees or pay for it, if there is an interest but not sufficient funds available at federal level, but no decision has been taken yet to change the current model in place. The membership fee is paid directly by the Federal Financial Services of which BELSPO depends upon and does not transit via a node or a mandated institution.

For DiSSCo: There are 2 representatives of the CIS-INFRA on board of the DiSSCo Funders’ Forum and this is where the amount that the country would pay is discussed and negotiated. There is not a fixed membership amount decided upfront. It is negotiated and agreed upon with the respective infrastructures in the process of becoming a Landmark (ERIC). A very important point is to be clear about what expenses the membership fee will be used for and distinguish it from the funding that will come from other sources. Further criteria are the number of institutions involved and scale of contribution to the RI, role in the RI, will the country have thematic or technical hubs, centres of expertise, of service providing to third parties, etc.

### 7.3 France

The response from the French Ministry for Research and Innovation (MESRI) noted that the Ministry does not directly finance ERICs and that the institution is responsible for assuring that the French government contribution is financially secured. The MESRI requires a letter of commitment from the coordinating institution or an agreement signed by all the parties in order to commit to funding an ERIC. Regulation surrounding the ERIC framework allows member states to designate one or several representing bodies. The representing body receives a mandate from the State in order to carry out all or part of France’s obligations to an ERIC (e.g. in-kind or monetary contributions).

When asked if there is a set policy on funding ERICs, the MESRI responded that this is not the case. Some large Research Infrastructure benefit from ringfenced funding, but these are rare exceptions and require substantial funding that is frequently analysed by the Ministry. It is not the legal status of an ERIC that makes it eligible for special funding.

### 7.4 The Netherlands

### 7.5 UK

The Natural History Museum responded for the UK, noting that the government approaches funding on a case-by-case basis, either funding the ERIC directly through the Central Hub or through the National Nodes, depending on the national infrastructure already present and the nature of the ERIC. There is no national policy regarding this and, likewise, there is no fixed national policy for the

calculation of member contribution fees. This is also addressed on a case-by-case basis. The UK highlighted the importance of involving the Funders' Forum in this conversation.

## 7.6 The ELIXIR example

Finally, it is possible to take inspiration from a funding model currently in place at ELIXIR, an intergovernmental organisation part of EMBL. During a DPP workshop led by Work Package 7 on the participation of National Nodes and CETAF, Susanna Repo, Head of Operations at ELIXIR, presented the ELIXIR funding model.<sup>14</sup> Like DiSSCo, ELIXIR calls itself a distributed virtual infrastructure, and it is possible to draw parallels with DiSSCo e-services and the commissioned services offered by ELIXIR. The below diagram demonstrates the flow of funding within ELIXIR:

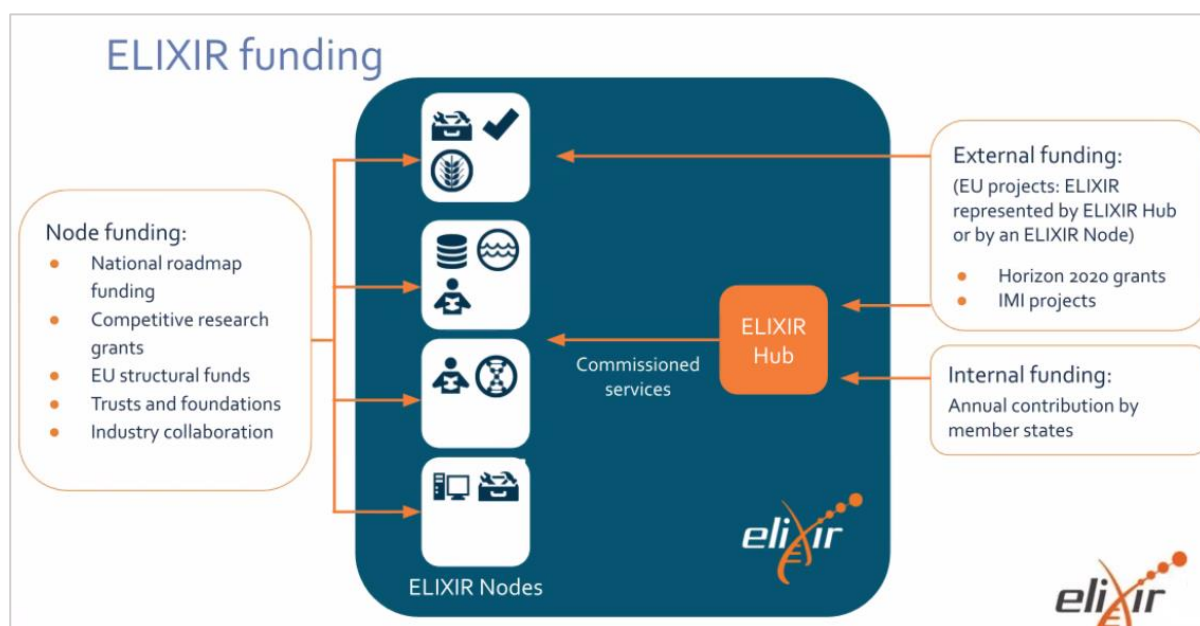


Figure 18 ELIXIR funding model

This model could inspire future considerations within WP4 as it demonstrates the interaction between incoming national funding and node funding, showing a holistic view of a contribution model that DiSSCo Prepare is trying to achieve. The ELIXIR model, with commissioned services, might be replicated by DiSSCo in such a way as to allow DiSSCo to combine both coordination of national programmes funded by national governments (on the left of the diagram) in parallel to a development of its own scientific strategy (like commissioned services), which would be coordinated by the Central Hub.

<sup>14</sup> Repo S., ELIXIR Governance, Nodes and Community (DiSSCo Prepare WP7 T7.1 Participation of NNs and CETAF), 22.11.2021

## 8. Conclusions and next steps

This deliverable has presented three possible stages in the evolution of the government funding model for the DiSSCo Research Infrastructure, including the challenges faced in implementing these transitions and the fundamental likelihood of obtaining government funding. The three models (basic, mass digitisation programmes and centres of excellence) are fundamentally the same. The key factor in the evolution from one model to another will be the decisions regarding the strategic direction of DiSSCo RI and its institutions, taken at governance level by the main governing bodies, including the National Nodes. The more the government funding model evolves to include strategic initiatives, the greater the necessity for DiSSCo institutions to allow DiSSCo ERIC to determine, at least in part, their strategic direction. An evolution from the basic funding model to a more ambitious model will depend on the level of integration of institutions in DiSSCo.

As highlighted by responses regarding the flow of funding, more work needs to be done on establishing how government funds could circulate around the Research Infrastructure, and this will most likely involve a consultation with the DiSSCo Funders' Forum. Additionally, it is probable that WP4 will seek expert advice in order to better understand the potential for national funding and in order to learn from experience gained in other ERICs. The next 12 months will be crucial and the work done over the coming months will form the backbone of the deliverable 4.3 Report on recommendations for the most suitable models, due in December 2022.

## 10. References

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Daenke S. Elements of an innovative funding model, ERIC Forum Stakeholders' workshop (2021). Accessed on 13.09.2021

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European Commission, Regulation (EC) No 723/2009 – rules for creating a European Research Infrastructure Consortium (ERIC) [2009], OJ L 206, 8.8.2009, pp. 1-8. Last updated 28.02.2020

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Guiraud M. *et al* (2021) National Contributions to the DiSSCo RI – Revenue stream based on identified partnerships (<https://dissco.teamwork.com/#/files/10301536>).

Hardisty A. *et al* (2020) Conceptual design blueprint for the DiSSCo digitization infrastructure – Deliverable 8.1, DOI: 10.3897/rio.6.e54280

Repo S., ELIXIR Governance, Nodes and Community (DiSSCo Prepare WP7 T7.1 Participation of NNs and CETAF), 22.11.2021

## 11. Appendices

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- 11.1 Minutes of Workshop 1: National funding for digitisation programmes
- 11.2 Minutes of Workshop 2: National funding for ERICs
- 11.3 Minutes of Workshop 3: Principles & Assumptions of financial contribution

## Minutes

### T4.3 Workshop “National contributions to the DiSSCo RI” Towards Deliverable 4.5 (Models for government funding)

#### Workshop 1: National funding for digitisation programmes Attendees

**Judite Alves** – Universidade de Lisboa (MUHNAC Ulisboa), Portugal

**Ana Casino** – CETAF

**Lorenzo Cecchi** – Università di Firenze, Italy

**Jiri Frank** – National Museum, Czech Republic

**Eva Häffner** – Botanischer Garten und Botanisches Museum Berlin, Germany

**Helen Hardy** – Natural History Museum, United Kingdom

**Kari Lahti** – Finnish Museum of Natural History Luomus, Finland

**Patricia Mergen** – Agentschap Planetarium Meise, Belgium

**Mareike Peterson** – Museum für Naturkunde, Leibniz, Germany

**Niels Raes** – Naturalis Biodiversity Center, the Netherlands

**Patrick Semal** – Royal Belgian Institute of Natural Sciences, Belgium

**François Dusoulier** – Museum National d’Histoire Naturelle, France

**Michel Guiraud** – Museum National d’Histoire Naturelle, France

**Salomé Landel** – Museum National d’Histoire Naturelle, France

**Eva Perez** – Museum National d’Histoire Naturelle, France

**Katharine Worley** – Museum National d’Histoire Naturelle, France

## Agenda

When : Friday 01/10/2021 14:00-15:30 (CEST)

Venue : Zoom

Facilitator(s) : Katharine Worley, François Dusoulier, Salomé Landel, Michel Guiraud, Eva Perez (MNHN)

Notetaker(s): MNHN

|    |   |     |                  |
|----|---|-----|------------------|
| 1. | Welcome; overview of workshop goals                                     | 5’  | MNHN             |
| 2. | Presentation of key considerations in development of contribution model | 20’ | MNHN             |
| 3. | Group discussion of outcomes & questions of Milestone 4.3               | 20’ | All              |
| 4. | Introduction to national funding for digitisation programmes            | 10’ | MNHN             |
| 5. | Discussion of national funding for digitisation programmes              | 20’ | All, led by MNHN |
| 6. | Wrap up & conclusions   | 10’ | MNHN             |

## Minutes

Prior to the meeting, Niels Raes (NR) sent information regarding the digitisation programme at Naturalis between 2009-2015, with an investment of 13 million euros resulting in 8.7 million records, partly at storage unit level. The funding for the programme *FES Collectie Digitalisering* came from the national profit from gas resources. Niels also spoke about the ARISE project, with a budget of 20 million

Euros which is going to develop a reference barcode library for all multicellular life in the Netherlands. The project follows the infrastructural design of DiSSCo as a blueprint.

The workshop kicked off with questions regarding the duration for which governments can commit to national funding. Patricia Mergen (PM) noted that there had been discussions regarding this in Belgium, as a stricter evaluation process is to be introduced and this will make it harder for RIs, including ESFRI landmarks, to ensure long-term funding. PM noted there is a real need to highlight the socio-economic impact of an RI to ensure best possible funding opportunities.

Ana Casino (AC) noted that countries want to see a return on their investment in RIs and that this needs to be considered when asking for funding. AC noted 2-4 years seems the average time period for funding commitments.

Michel Guiraud (MG) asked participants to consider whether they had drawn upon examples of other digitisation programmes in European institutions to encourage national funders to give funds, or if their arguments were limited to national examples.

Helen Hardy (HH) noted there is an important difference between demonstrating to funders that the initiative is part of something bigger, or that an institution is being told what to do by a European initiative. HH explained that the UK has not received any remarkable public funding for digitisation programmes: funding has financed construction work for buildings that will house digitisation capacity, but the digitisation itself is not funded.

Kari Lahti (KL) spoke about his experience of digitisation programmes in Finland. He noted the Finnish national consortium is in the process of a third application for national funding for a digitisation programme, and part of the incentive for government funders has come from using the international dimension of DiSSCo.

PM described the DIGIT project (2005-2024) which aims to digitise Belgian federal heritage in the biggest museums, libraries, research institutes, archives, photo and audio-visual archives of Belgium. PM noted this project includes some natural history collections, but that this is limited. PM noted the digitisation programme DOE, which is structural funding provided by the Flemish government via the department of Economy, Research and Innovation (EWI) to mass-digitise the entire herbarium collection of the Meise BG (around 300,000 EUR). PM further explained that DiSSCo Flanders is part of a project to encourage more institutions in Flanders to join DiSSCo, but that digitisation is not funded as part of this project. PM noted that, in funding applications, it is important to show activities at EU level to increase the chances of obtaining funding.

Mareike Peterson (MP) noted that the roadmap application in Germany failed and there is now a drive to improve digitisation capacity, with some units undergoing digitisation.

HH advised the taskforce to look at the funding structure behind iDigBio, which could inspire a model for DiSSCo. (iDigBio is mainly financed by the National Science Foundation.)

PM suggested activities in T4.2 & T4.4 could help better understand what is better handled at institutional and at national levels, in terms of funding priorities. PM further added that government attitudes towards funding digitisation programmes may depend on the method: if the unit cost is too high, governments often prefer digitisation on demand. 50 cents to 1 EUR per herbarium sheet, 10 to 3000 EUR per object in 3D or CTscan.

Eva Häffner (EH) noted that there are little to no digitisation programmes in Germany and that there is a lack of mass digitisation programmes, whereas construction projects are considerably more

successful. EH noted that digitisation has been financed but this is mainly in conjunction with research problems. Federal states may fund digitisation programmes.

MG requested that participants consider alignment of funding priorities with regards to European and national levels. Is a better strategy to use European priorities to persuade national funders, or can this prove counterproductive in seeming like a too strong top-down approach?

HH noted that there is a consideration of DiSSCo services being a response to demand: therefore, mass digitisation might be driven by institutions who see a need to improve their service capacity. HH suggested it seems implausible that a cross-European mass digitisation programme could be implemented, especially if it was very specific in nature. HH added that there is growing interest within the Arts & Sciences Council in the UK regarding digitisation, which has historically not been the case.

PM stated that digitisation needs to show added value and that more advanced scanning methods and greater expertise demonstrate to governments that Digitisation on Demand is a more appealing funding prospect.

KL noted that priorities have not been part of the discussions in Finland but noted that funders need to understand the digitisation process as the big picture, to greater understand the return on investment. KL added that funding for FinBIF comes from a range of different sources but that an effort is always made to include digitisation in the funding application. Several participants noted that funding comes from a range of different departments.

Lorenzo Cecchi (LC) noted that Italy has submitted its first national digitisation project applying for Cultural Heritage Ministry funding (280,000 sheets from historical herbaria from 19 institutions): he noted that the majority of Italy's collections are currently regarded more as a cultural heritage than a scientific asset, therefore the outcome of the application remains uncertain. HH noted that this sense of spanning different ministries can be a disadvantage.

As there were no further questions, the meeting ended on time. A questionnaire will be circulated around attendees, and others, to continue the discussion of the meeting and gain greater insight into the issues raised.

## Links

DIGIT project: <https://www.fine-arts-museum.be/en/research/research-projects/digit>

ARISE project: <https://www.arise-biodiversity.nl/>

FinBIF:

[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi9wuXGwrDzAhVIQhoKHSMZDUYQFnoECAIQAQ&url=http%3A%2F%2Fkoivu.luomus.fi%2Fgbif%2F08\\_Saaksj%25C3%25A4rvi\\_GBIF\\_Ilari\\_Saaksjarvi.pdf&usg=AOvVaw1fUzKRdDzaoCWqfL7-viXG](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi9wuXGwrDzAhVIQhoKHSMZDUYQFnoECAIQAQ&url=http%3A%2F%2Fkoivu.luomus.fi%2Fgbif%2F08_Saaksj%25C3%25A4rvi_GBIF_Ilari_Saaksjarvi.pdf&usg=AOvVaw1fUzKRdDzaoCWqfL7-viXG)

DiSSCo Belgium: <https://www.dissco.eu/be/>

iDigBio: <https://www.idigbio.org/content/idigbio-receives-20-million-nsf-sustain-us-museum-digitization-efforts>

PowerPoint: [https://drive.google.com/drive/u/0/folders/1sDYtGIO8\\_MvgPINPvSi0nAmo\\_3G3MhB](https://drive.google.com/drive/u/0/folders/1sDYtGIO8_MvgPINPvSi0nAmo_3G3MhB)



## Minutes

### T4.3 Workshop “National contributions to the DiSSCo RI” Towards Deliverable 4.5 (Models for government funding)

#### Workshop 2: National funding for ERICs

#### Attendees

**Eva Alonso** – DiSSCo CSO

**Ana Casino** – CETAF

**Lorenzo Cecchi** – Università di Firenze, Italy

**Lisa French** – Natural History Museum, United Kingdom

**Christoph Häuser** – Museum für Naturkunde, Leibniz, Germany

**Gianna Innocenti** – Museo di Storia Naturale dell'Università degli Studi di Firenze, Italy

**Aino Julsén** – Finnish Museum of Natural History Luomus, Finland

**Dimitris Koureas** – DiSSCo CSO

**Patricia Mergen** – Agentschap Planetarium Meise, Belgium

**Carole Paleco** – Royal Belgian Institute of Natural Science, Belgium

**Hanieh Saeedi** – Senckenberg Gesellschaft für Naturforschung, Germany

**Serge Scory** – Royal Belgian Institute of Natural Sciences, Belgium

**François Dusoulier** – Museum National d’Histoire Naturelle, France

**Michel Guiraud** – Museum National d’Histoire Naturelle, France

**Salomé Landel** – Museum National d’Histoire Naturelle, France

**Katharine Worley** – Museum National d’Histoire Naturelle, France

#### Agenda

When : Thursday 21/10/2021 9:30-10:45 (CEST)

Venue : Zoom

Facilitator(s) : Katharine Worley, François Dusoulier, Salomé Landel, Michel Guiraud, Eva Perez (MNHN)

Notetaker(s): MNHN

|    |  |     |                  |
|----|--|-----|------------------|
| 1. | Welcome  | 5'  | MNHN             |
| 2. | Where is the stable income for DiSSCo ERIC?                                | 20' | MNHN             |
| 3. | What have we learned from our research?                                    | 10' | MNHN             |
| 4. | Interactive questions relating to participants’ national funding landscape | 20' | All              |
| 5. | Open discussion  | 30' | All, led by MNHN |
| 6. | Wrap up & questions  | 5'  | MNHN             |

#### Minutes

The workshop began with a presentation of assumptions on national funding for ERICs. Participants were asked to share their experience of national funding for ERICs. Michel Guiraud (MG) noted that it is important to differentiate between ERICs and TGIR (*Très grandes infrastructures de recherche*) as governments have different funding methods.

Patricia Mergen (PM) noted that Flanders has 3 different funding mechanisms for Research Infrastructure, including specific funding for international research infrastructure. Serge Scory (SS) noted that, in Belgium, funding for the hub is provided by the federal government.

François Dusoulier (FD) shared that, in France, there is no specific Research Infrastructure budget but there is leverage to find and add money to fund this.

Dimitris Koureas (DK) noted that, in the Netherlands, there is no dedicated ERIC budget but that the national roadmap improves funding chances (Eva Alonso (EA) echoed this with regards to Spain). He noted that the maturity of the RI is of little importance with regards to the availability of funding, but rather that it is important to ensure that there is a legal vehicle. The ERIC needs to ensure that there is a strong enough initial commitment from at least 3 national funders.

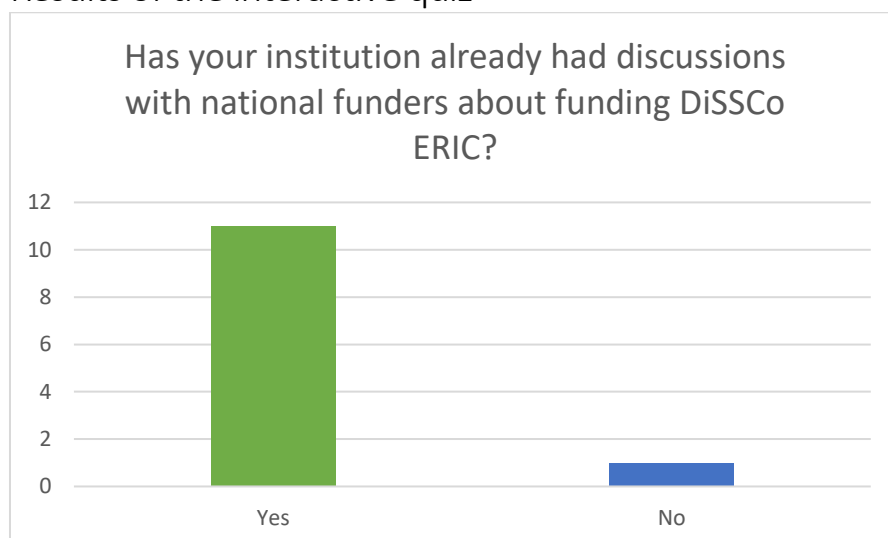
Christoph Häuser (CH) informed the group that national funding in Germany could not be compartmentalised, using the example of the funding of EU-Openscreen. CH noted it is important to make a distinction between the budget and the contribution towards the ERIC: the ERIC is much smaller than the RI and must be funded by new funds.

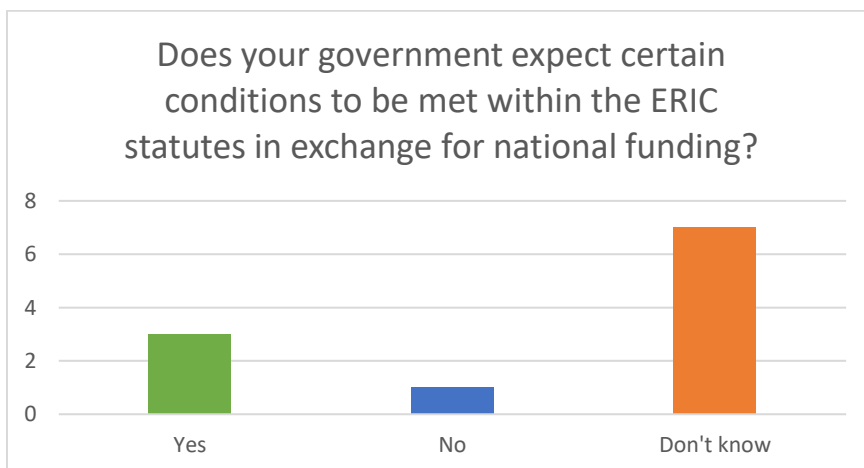
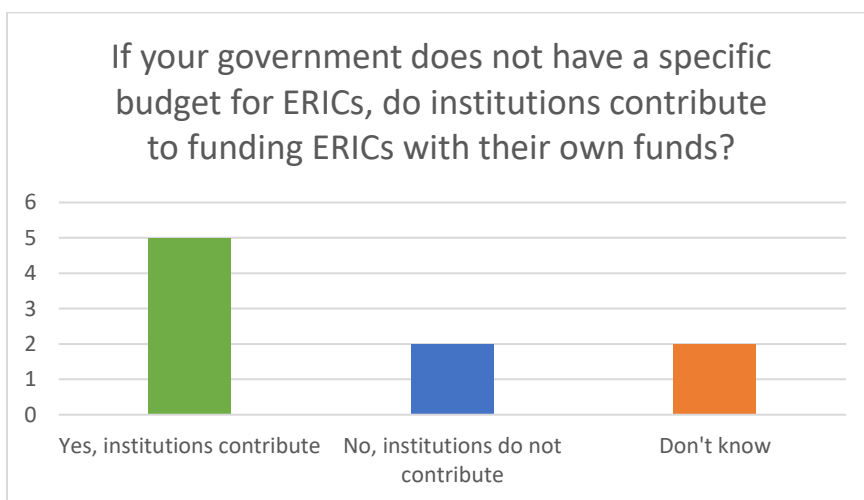
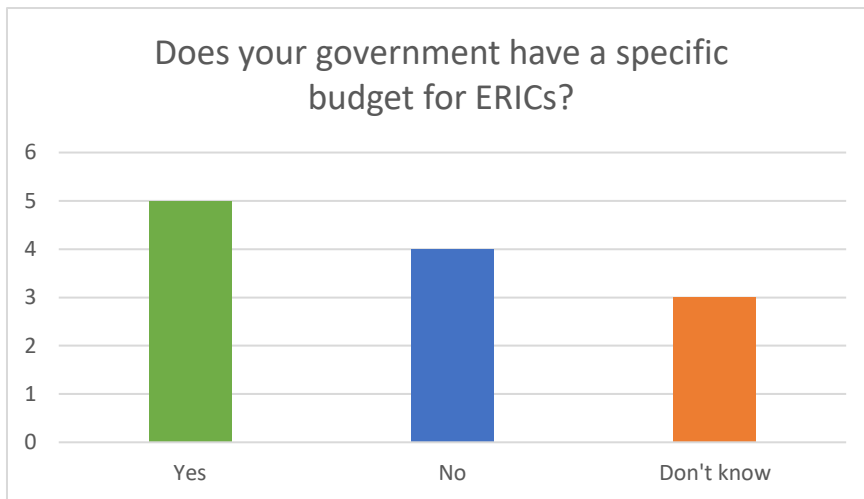
EA noted that the Statutes require a great deal of negotiation with national funders and these discussions are already underway within DiSSCo. PM added that it can be difficult to draw the line between the Statutes and what DiSSCo will actually do. It is important to demonstrate how DiSSCo will provide added value for national funders.

DK suggested that programmatic alignment could be considered as a funding model, using EMBL-EBI (Elixir) as an example of this working well. EA agreed, noting that this is a convincing argument for funders, with a focus on the coordination of activities and return of investment. EA suggested contacting 5-6 Research Infrastructures to learn more about this.

The participants discussed whether or not it is really possible to look at national funding in isolation or if it should be looked at as part of the whole model, especially if considering programmatic alignment.

## Results of the interactive quiz





PowerPoint: [https://docs.google.com/presentation/d/1t-CDcHJWVISOkmMbn6r\\_Y3T6vpJb\\_4A9/edit?usp=sharing&oid=106546706513620840728&rtpof=true&sd=true](https://docs.google.com/presentation/d/1t-CDcHJWVISOkmMbn6r_Y3T6vpJb_4A9/edit?usp=sharing&oid=106546706513620840728&rtpof=true&sd=true)

## Minutes

### T4.3 Workshop “National contributions to the DiSSCo RI” Towards Deliverable 4.5 (Models for government funding)

#### Workshop 3: Principles & assumptions of financial contribution

#### Attendees

**Eva Alonso** – DiSSCo CSO

**Ana Casino** – CETAF

**Lorenzo Cecchi** – Università di Firenze, Italy

**Helen Hardy** – Natural History Museum, United Kingdom

**Gianna Innocenti** – Museo di Storia Naturale dell'Università degli Studi di Firenze, Italy

**Aino Julsen** – Finnish Museum of Natural History Luomus, Finland

**Kari Lahti** – Finnish Museum of Natural History Luomus, Finland

**Patricia Mergen** – Agentschap Planetarium Meise, Belgium

**Carole Paleco** – Royal Belgian Institute of Natural Science, Belgium

**Hanieh Saeedi** – Senckenberg Gesellschaft für Naturforschung, Germany

**Patrick Semal** – Royal Belgian Institute of Natural Sciences, Belgium

**Mareike Petersen** – Museum für Naturkunde, Leibniz, Germany

**Eva Häffner** – Botanischer Garten und Botanische Museum Berlin, Germany

**Stefaan Pijls** – Agentschap Plantentuin Meise, Belgium

**Frederik Leliaert** – Agentschap Plantentuin Meise, Belgium

**François Dusoulier** – Museum National d’Histoire Naturelle, France

**Michel Guiraud** – Museum National d’Histoire Naturelle, France

**Salomé Landel** – Museum National d’Histoire Naturelle, France

**Katharine Worley** – Museum National d’Histoire Naturelle, France

**Eva Perez** – Museum National d’Histoire Naturelle, France

#### Agenda

When : Wednesday 10/11/2021 15:00–16:30 (CET)

Venue : Zoom

Facilitator(s) : Katharine Worley, François Dusoulier, Salomé Landel, Michel Guiraud, Eva Perez (MNHN)

Notetaker(s): MNHN

|    |   |     |                  |
|----|---|-----|------------------|
| 1. | Welcome   | 5'  | MNHN             |
| 2. | Results of questionnaire: national funding for digitisation programmes.       | 10' | MNHN             |
| 3. | Results of questionnaire: national funding for ERICs.                         | 5'  | MNHN             |
| 4. | What principles & assumptions can be established following the questionnaire? | 10' | All, led by MNHN |
| 5. | Overview of 2 possible funding models.  | 10' | All, led by MNHN |
| 6. | Break-out rooms to carry out SWOT analysis of 2 models.                       | 25' | MNHN             |
| 7. | Discussion following break-out rooms.   | 20' | All              |
| 8. | Wrap up and close   | 5'  | All, led by MNHN |

## Minutes

The workshop began with a presentation of the results of the two questionnaires issued following the previous two workshops. The participants then studied two possible funding models for national contributions, including a “fundamental” model and a model including national funding for digitisation programmes. In two break-out groups, the participants carried out a SWOT analysis of the two different models (see below).

In response to the PowerPoint presentation, Helen Hardy (HH) noted that the interpretation of the graphic “Outcomes that national funders prioritise when considering which projects receive funding” (slide 11) should be approached with care, noting that Return on investment and Socio-economic impact together represent a similar portion of the total as Alignment with National Roadmap and Alignment with European Union priorities: therefore the importance of these categories should not be underestimated.

Eva Alonso (EA) reminded participants that programmes are a cost of the DiSSCo hub (note to add e-services to “fundamental model” diagram).

Michel Guiraud (MG) discussed the reflections on the different funding models, noting that we need to find a model that can be presented to governments and that suits everyone’s criteria. What comes from institutions and what goes directly to the hub? How does going through institutions change the outcome and relationship between DiSSCo and its member institutions?

EA noted that demonstrating added value is essential criteria in obtaining national funding. Added value can be demonstrated at different levels of DiSSCo.

There was a discussion focussing on the difference between countries that will financially contribute to DiSSCo and those that will participate in DiSSCo without financial contribution. Patricia Mergen (PM) noted that in some countries, even if the country has observer status, this allows institutional researchers to apply for funding and there may be opportunities for these countries to participate in ad-hoc working groups.

Comments in the chat included a question from PM regarding the interpretation of the results of the questionnaire. This can be addressed in the deliverable. PM also noted that some countries have mechanisms in place to fund research infrastructures but they do not necessarily have an official roadmap, as is assumed in both models.

HH pointed out that the UK is not a member state and therefore caution needs to be taken when using this term.

François Dusoulier noted that the national roadmap and the ESFRI roadmap are only partly congruent but not completely overlapping. PM noted that some countries/regions have a special program for ESFRI and other international Infrastructures, like Flanders, Estonia ... directly following what the ESFRI and ERIC Forums do and decide/recommend. Others have just a Research general roadmap where there are channels to finance infrastructures but this is not necessarily linked to the ESFRIs and ERIC forums. PM added that it is important to consider EOSC Marketplace.

HH noted that it would be useful to know how the two models interact with the idea that there may be “full” and other kinds of membership (observer, data provider, etc.). Adding that the whole SWOT applies to both models, with the second model acting as a next level of maturity.

PowerPoint: [https://drive.google.com/drive/u/0/folders/1sDYtGIO8\\_MvgPINPvfSiOnAmo\\_3G3MhB](https://drive.google.com/drive/u/0/folders/1sDYtGIO8_MvgPINPvfSiOnAmo_3G3MhB)

## Results of the SWOT analysis

### SWOT analysis - Model 1 (fundamental model)

|                 | Helpful  | Harmful   |
|-----------------|--|---|
| Internal origin | <p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Simplicity of the model; institutions &amp; member states have clarity</li> <li>• Focus on running costs - clarity on needs and clarity to partners;</li> <li>• Clear insight</li> <li>• Stability on long-term;</li> <li>• More easy to simplify priorities</li> <li>• Internal focus strengthens basis;</li> <li>• Cheaper</li> <li>• Model promotes open science</li> <li>• Robust model (stick to what we know) - reassuring for institutions already involved</li> </ul> | <p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Reactivity to market needs is reduced;</li> <li>• Reduced responsiveness to other stakeholders: narrow vision</li> <li>• Isolating third parties</li> <li>• Potential loss of influence in sector</li> <li>• Passively induce a lowering of expectations (ambition)</li> </ul>  |
| External origin | <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Internal needs will be covered</li> <li>• Strong collection expertise;</li> <li>• Well defined unit for partnerships and collaboration - diversifying the model could introduce complexity (easier to partner?)</li> <li>• FAIR principles: helpful for community to reach our goals</li> <li>• Looking out for innovation - expertise (involving third parties)</li> </ul>   | <p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Changing political landscape;</li> <li>• Funding decisions taken in relation to regular evaluations of ESFR1 - if the ERIC does not function well at international level the funding could be transferred to Nodes. Funding period might be linked to periodicity of evaluations.</li> <li>• External party needs may lose weight within the organisation</li> <li>• This model could increase administrative burden - government will not fund anything that is not fully open science</li> </ul> |

### SWOT analysis - Model 2 (digitisation programmes)

|                 | Helpful  | Harmful  |
|-----------------|--|--|
| Internal origin | <p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>- more flexible and resilient than the 1st model</li> <li>- More close to reality taking as core part the programme and services developed by the RI</li> </ul>   | <p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>- be able to have a clear message → added value with the institutions → proper and systematic way</li> <li>- Difficult to have a clear and collective model among 21 different countries</li> </ul>  |
| External origin | <p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>- From a government / member states point of view → access to the programs → better understanding of the added value</li> <li>- This model seems more flexible than the 1st: some MS more variable / than fixed fund</li> <li>- Help States to fund the DiSSCo program without funding the ERIC → join the RI without being a member</li> <li>- e-services: benefit added value for member states</li> <li>- Common e-services: government pays for the whole package → data production + e-services</li> </ul> | <p><b>Threats</b></p> <ul style="list-style-type: none"> <li>- 'sets priorities' = not clear enough from Member States + European Union → more possible to be set at the national / institutional level</li> <li>- clarify how European Union 'clarify priorities' → in continuity with what member states negotiated as part of the European Union</li> </ul> |