Financial Sustainability Task Force Interim Progress Report

EOSC Symposium, Prague
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Jan Meijer   Jessica Klemeier
Dale Robertson   Miguel Rey Mazon

16 | 11 | 2022 TF FinSust

Agenda

- Welcome and introduction to the session

- Introduction to the interim progress report

- Financial sustainability - EOSC Core
    - Brief Q&A

- Financial sustainability - EOSC Exchange
    - Brief Q&A

- Financial sustainability - Data Federation
    - Brief Q&A

- Discussion

- Wrap-up and next steps

Welcome and Introduction

Objective & Deliverables

Objective

☐ Produce by 2023 a proposal for long term financial sustainability of the main building blocks of EOSC: EOSC-Core, EOSC-Exchange and the Federation of Data & Data Services as defined in the FAIR Lady report <u>"Solutions for a Sustainable EOSC"</u>

Workplan, Deliverables

☐ Review of the relevant documentation, interaction with stakeholders (e.g. other EU R&I partnerships, alliances, initiatives and EU projects)

☐ Q3 2022: first set of models, discussed and evaluated with relevant stakeholders

☐ Q2 2023: validated scenarios and recommendation

Source: <u>Task Force Charter</u>

Core Activities Foreseen in the TF Charter

Core	Develop scenarios for financial sustainability of EOSC Core
Exchange	Develop scenarios for financial sustainability of EOSC Exchange
Federation of Data	Develop scenarios for financial sustainability of the federation of data and data services
Feasibility	Validate the feasibility of the scenarios with relevant stakeholders
Compatibility	Validate scenarios' compatibility with national and European policies and legislation
Impact	Assess scenarios' impact on the value proposition of EOSC

Timeline as Envisaged in Dec 2021
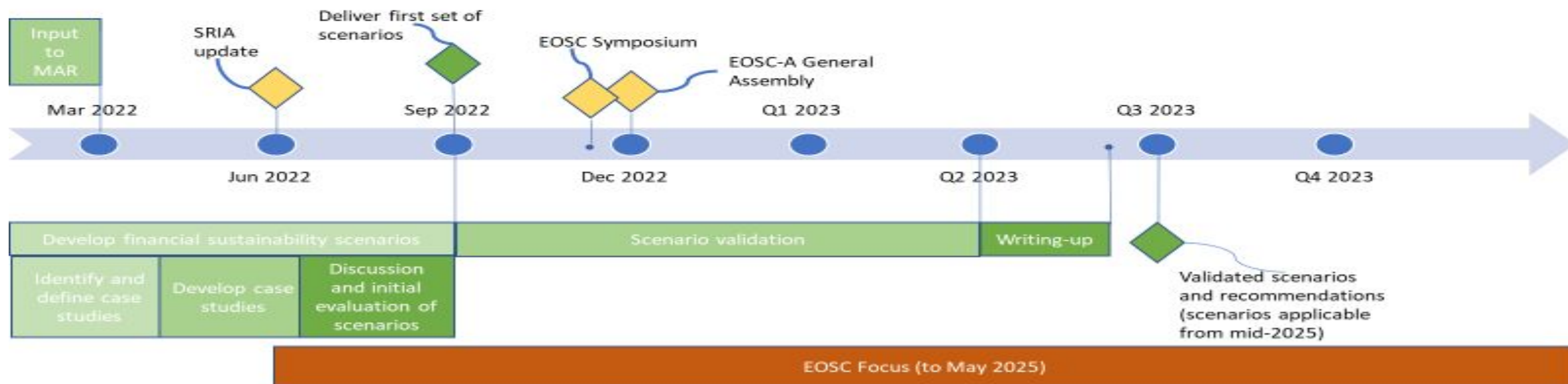
Introduction to the Interim Progress Report

Now available from:

https://www.eosc.eu/advisory-groups/financial-sustainability

https://www.eosc.eu/sites/default/files/2022-11/financial-sustainability-tf-progress-report-nov-2022.pdf

https://doi.org/10.5281/zenodo.7318481

Organisation of Work

Face-to-face workshop in Brussels, 23-24 May 2022

Monthly plenary meetings

3 self-organising subgroups, chaired by TF co-chairs, meet biweekly

Core
Exchange
Federation of Data

3 writers' groups progress writing between subgrou meetings (bi-weekly meeting)

Subgroup alignment through plenary reporting/discussion, cross-group membership (organically grown)

F2F workshop 23-24 May

Communication

TF mailing list
Shared Google-drive folders

Direction of work

Objective

Proposal for long term (2027+) financial sustainability of main EOSC building blocks:

- EOSC-Core
- EOSC-Exchange
- Federation of Data

How?

How much?

What?

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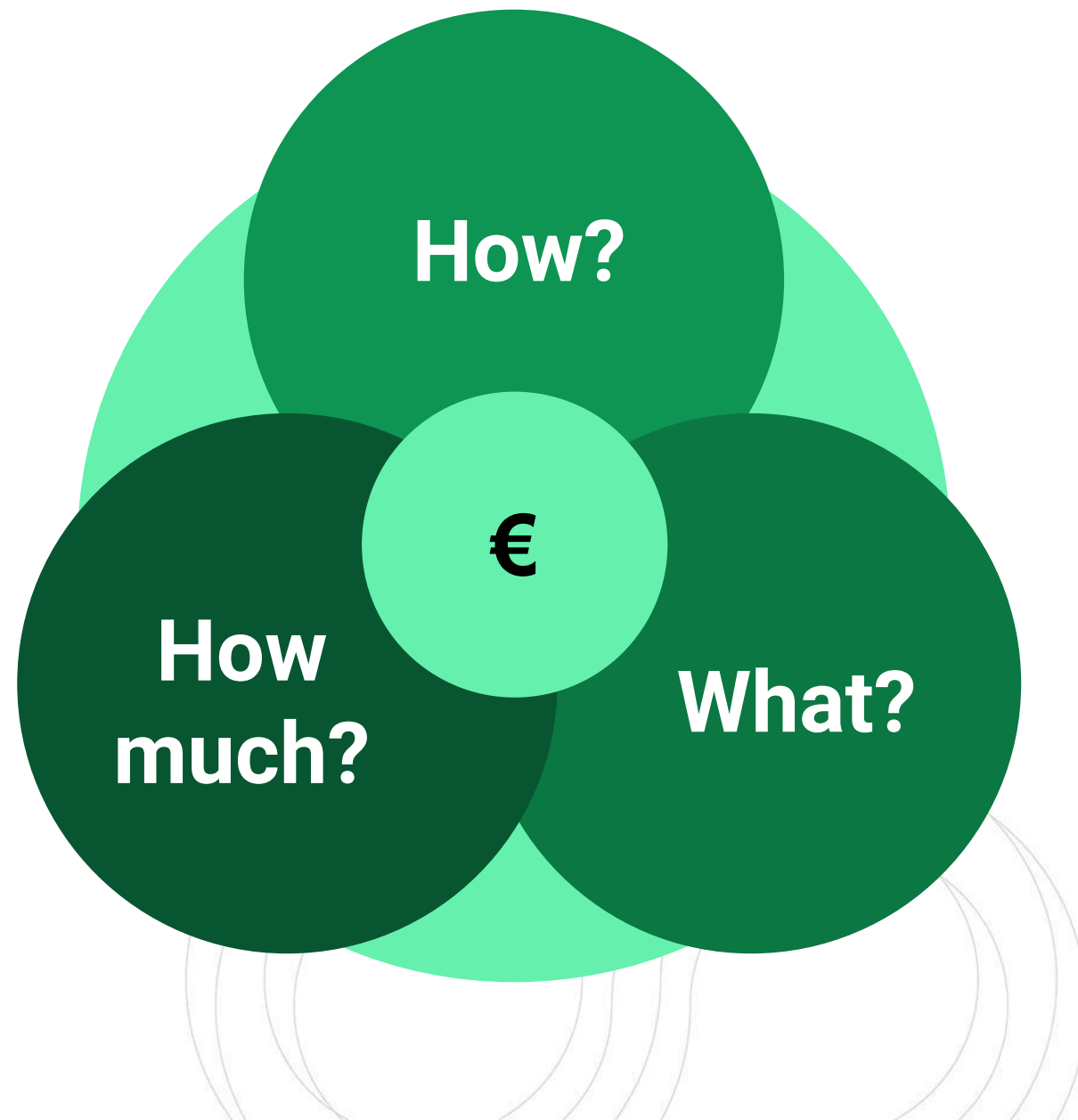
Organisation of the report

Scope - Core, Exchange, Federation of Data in financial sustainability context

Financial sustainability of Core

Financial sustainability of Exchange

Financial sustainability of Federation of Data

Conclusions and next steps

! Interim Report !
<u>reflects current status</u>
TF mandate 2023

basis for consultation

Financial Sustainability - EOSC Core

EOSC-Exchange

EOSC-Interoperability Framework

Federated Data

EOSC-Core

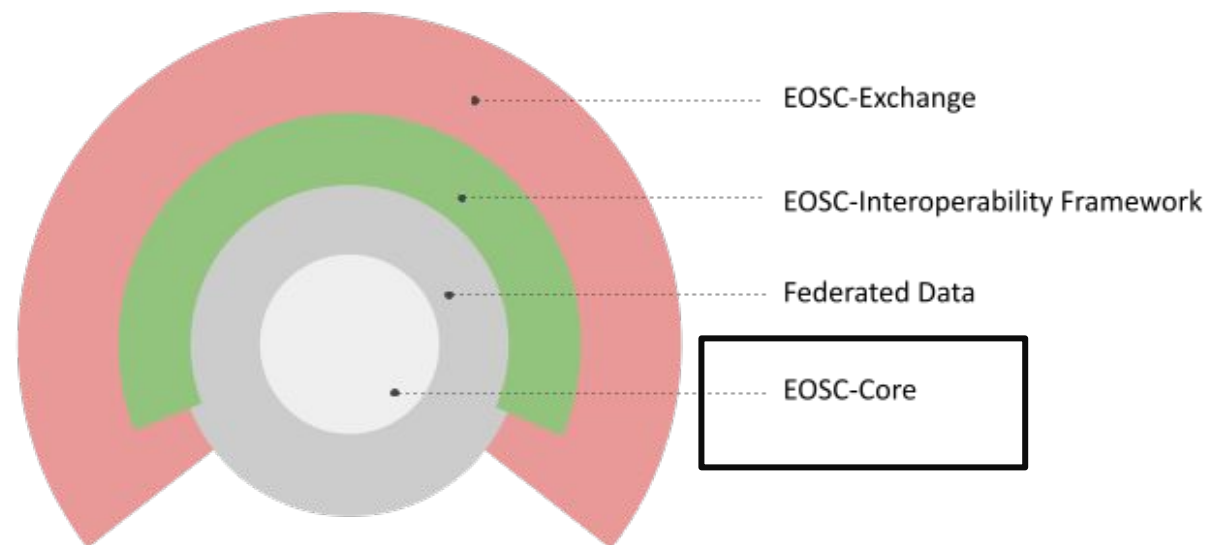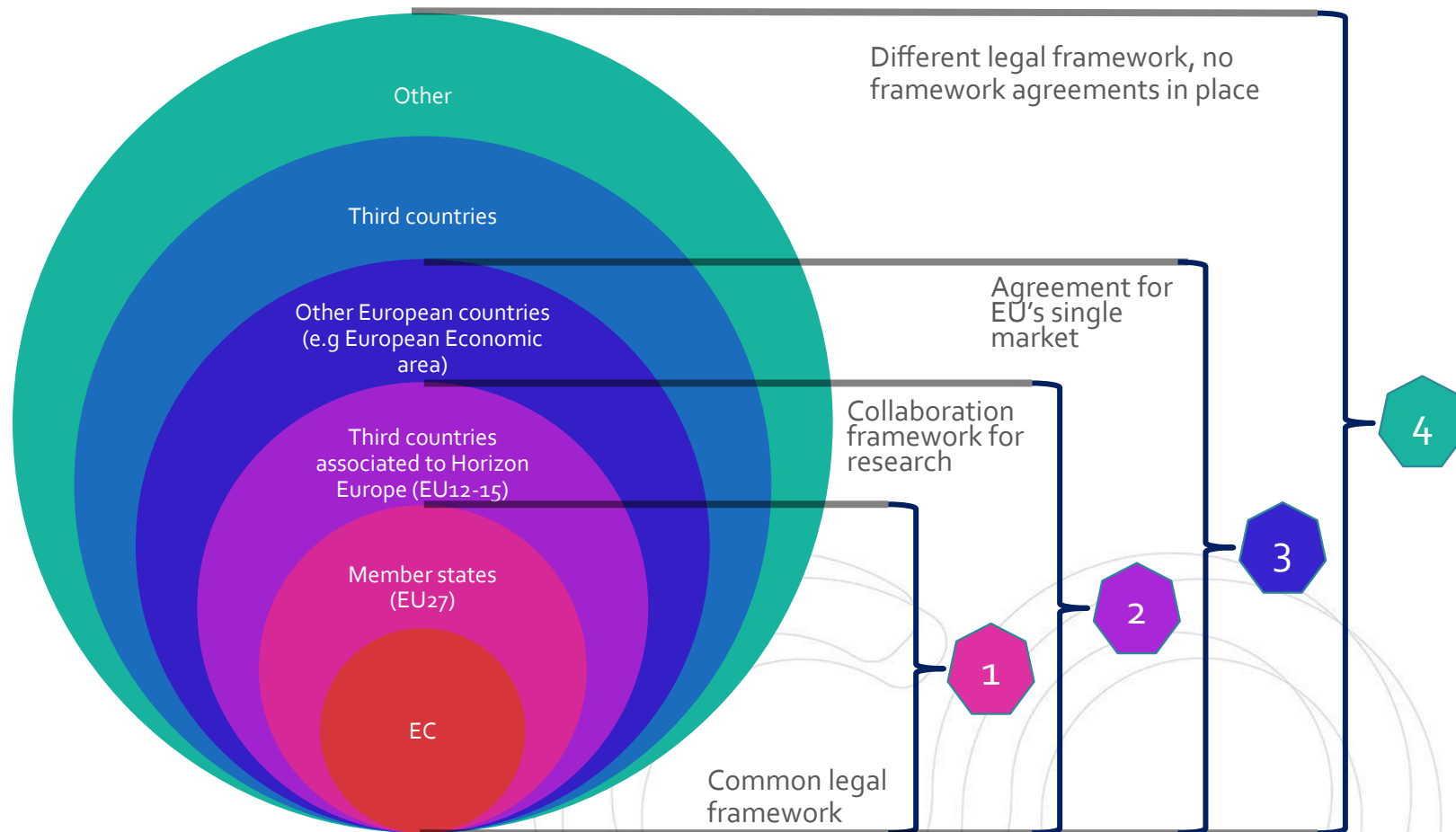Layers diagram of EOSC
Source: EOSC Association

Proposal for Funding the EOSC Core

The EOSC Core should be funded and governed by member states and the EC, in a proportion to be defined.

- The operational cost of the EOSC Core is to be funded jointly by the EC and Member states for the core to be sustainable (Area 1)
- Associated Countries should be able to contribute financially to the Core (Area 2)
- Financial contributions from third countries and others should be considered as additional sources of revenue (i.e. non-essential for operating the Core) (Areas 3 and 4)
- In-kind contributions may be considered but do not confer the right to be exempted from the financial contribution

Other

Third countries

Other European countries (e.g European Economic area)

Third countries associated to Horizon Europe (EU12-15)

Member states (EU27)

EC

Different legal framework, no framework agreements in place

Agreement for EU's single market

Collaboration framework for research

Common legal framework

1

2

3

4

Proposal for Governing the EOSC Core

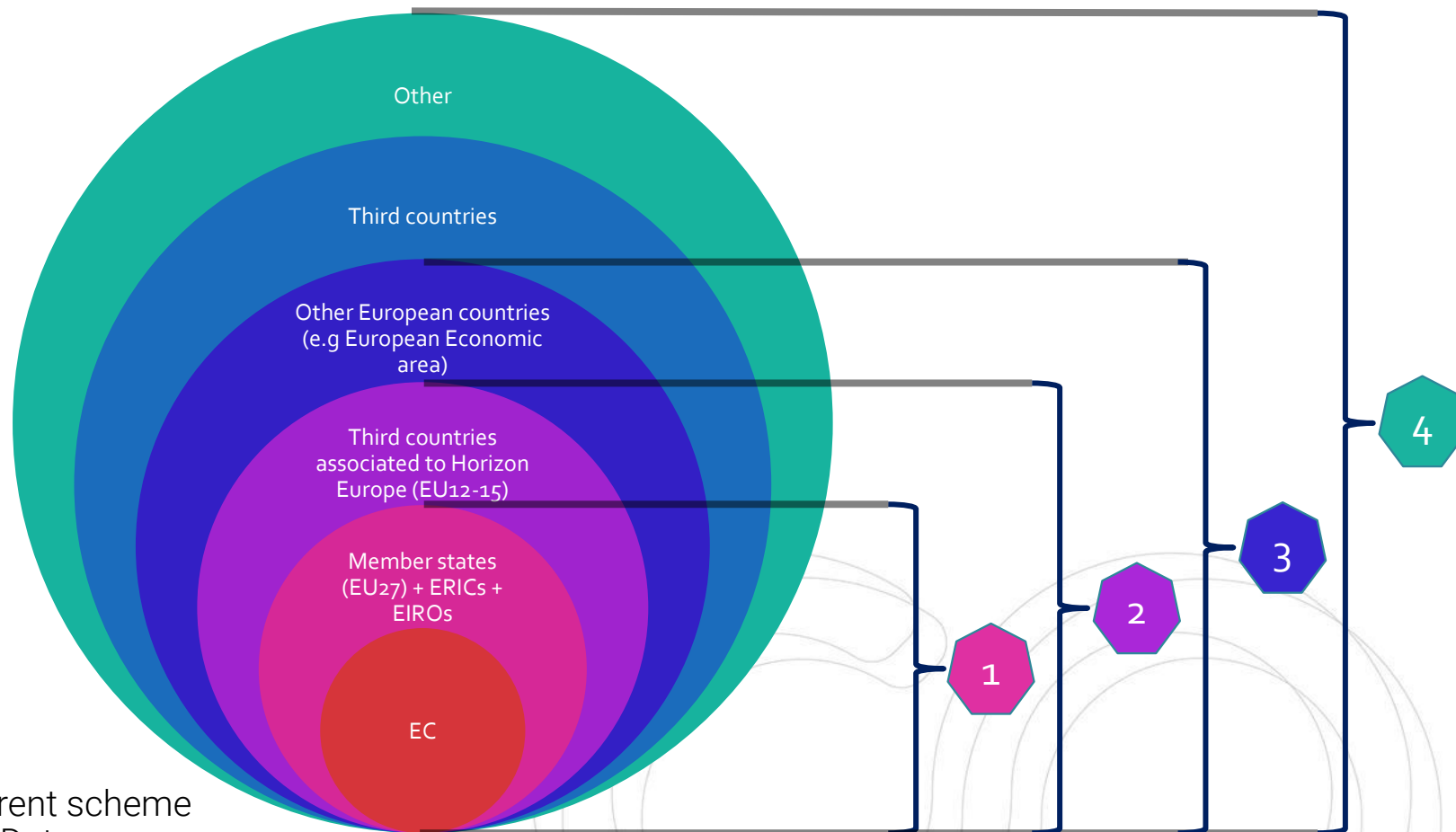**The EOSC Core should be funded and governed by member states and the EC, in a proportion to be defined**.

- The governance of the core should comprise the Member States and the EC (Area 1)
- Intergovernmental organisations such as ERICs and EIROs which represent large RIs and bigger organised research communities should also take part in the governance
- The involvement of Associated Countries (Area 2) may be considered
- Involvement of EEA countries (Area 3) and other third countries (Area 4) in advisory and even executive bodies may be considered

The governance of the core may have a different scheme from that of the exchange and Federation of Data

Other

Third countries

Other European countries (e.g European Economic area)

Third countries associated to Horizon Europe (EU12-15)

Member states (EU27) + ERICs + EIROs

EC

1

2

3

4

Who should fund the EOSC Core?

- The Core should be funded by public money provided by the EC and Member States
  - The presence of the EC as a co-funder ensures inclusiveness
  - Funding from Member States will ensure they remain co-responsible for its deployment in their countries
- The Member States' contributions should be agreed once the legal instrument is selected. There is experience in these funding models from ERICs and intergovernmental organisations, which could be used to effectively achieve a consensus amongst funders
- Additional funding streams, e.g. by third countries, not precluded but should not be necessary to cover the operating costs of the Core
- In-kind contributions should not give the right to waive the financial contribution
  - It is important for adequate funding of the Core to be assured
  - Fees should be contributed by all funders, independently of their contribution in-kind (with or without cost reimbursement) to the EOS Core

Who should govern the EOSC Core?

- **Joint ownership goes hand-in-hand with joint funding of EOSC Core**

- **Co-ownership and co-funding has several advantages**

  - Member States and EC jointly decide the strategic direction of EOSC

  - presence of EC balances representation of Member States

  - ensures strategy of EOSC is in line with European vision and priorities

  - countries have a voice in governance and are co-responsible for EOSC deployment in their countries

- **Research community should be represented**

  - Scientific Advisory Committee reporting to the Core governance

  - Broad representation of users - ERICs, EIROs, long tail

- **Commercial providers may participate in a non-voting capacity**

A core principle: access for all

- All European researchers should be able to benefit from data and services in EOSC

- Although the contributions by MS and the EC (and possibly Associated Countries) should provide 100% of the operation and maintenance costs of the Core, individual researchers should not be punished and excluded, should their country decide not to pay the contribution

- The Task Force recognises that the MS may wish to install a mechanism (for example removal of voting rights in the governance) to prevent a misuse of the all-inclusive model needed for EOSC Core services, where the majority use the Core while just a few contribute financially, but emphasises the importance of access for all users

- Incentive for others (third countries) to pay a contribution needs to be addressed
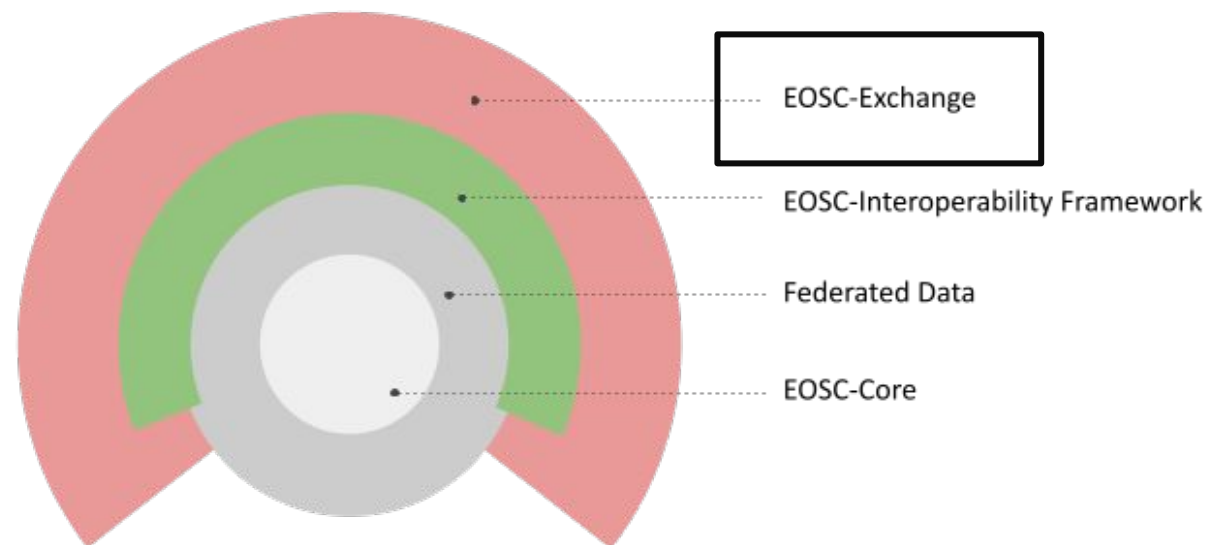
TF FinSust Proposals for the EOSC Exchange

Definition/Scope of EOSC Exchange in context of financial sustainability

- Currently insufficient definition required TF to do further work before diving into the question of potential financial models

- TF's view on EOSC Exchange: The Exchange as EOSC's pan-European marketplace for research services
  - Value proposition: **Researchers should have freedom of choice to use the services from the Exchange that best fit the researcher's problem**
  - Exchange has to facilitate cross-border service consumption, contribute to better services emerging through competition, and provide a fertile ground for niche services
  - enables the brokering of horizontal and thematic services between providers and researchers

Current situation

- complex funding landscape

- mismatch of national & European funding

- grant funding hinders sustainability of services

- national providers lack mandate to provide services outside established borders

- political, legal, policy and cultural barriers

Consequences

- Researchers aren't really able to use the services that best fit their challenges, unless those services are available in a national portfolio

- For providers, difficulty to scale up their services beyond the initial pool of users

- Duplication of services, leading to loss of efficiency, additional costs, etc.

- Barriers to engage in cross-border service building are too high

TF FinSust Proposals for the EOSC Exchange

Three types of services
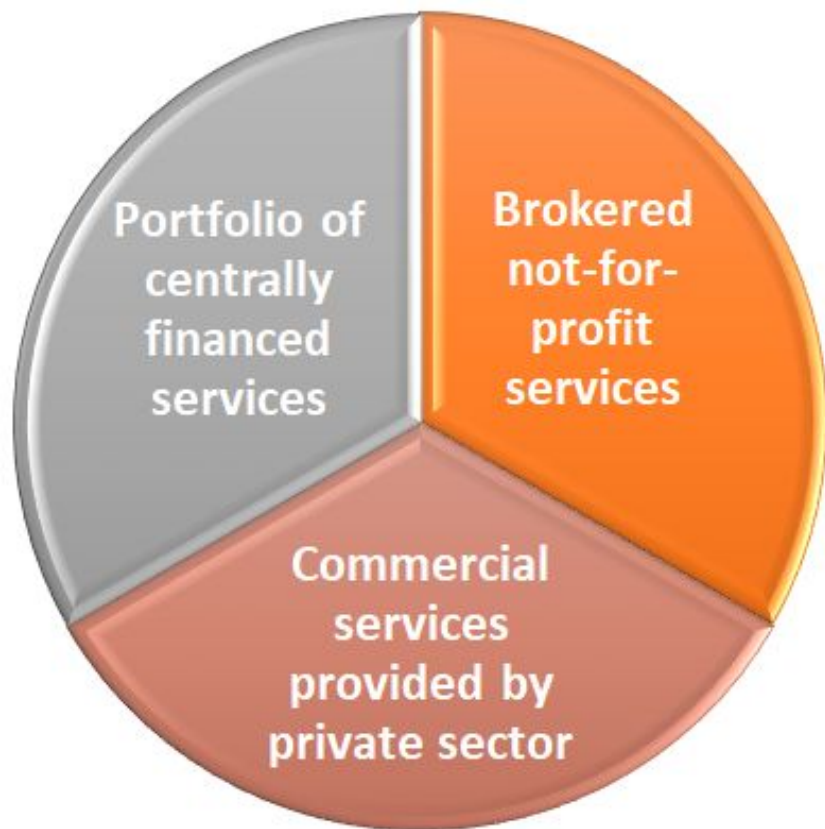
- EOSC Exchange encompasses a very heterogeneous set of services which makes a "one size fits all" funding model an inadequate solution
- no distinction between horizontal and thematic services

Centrally financed services	Financed by EOSC. This category is divided into two subsets: - a selective portfolio of essential services (horizontal and thematic) - a small set of temporarily subsidised services to initiate take-up in the research community
Access to commercial services	Procurement-compliant access to contracts with research-relevant commercial services
Brokered not-for-profit services	Largest and most dynamic category. Not-for-profit services brokered between the thousands of organisational participants in EOSC

TF FinSust Proposals for the EOSC Exchange

Centrally financed services

Selective EOSC service portfolio

➔ Subset of horizontal, thematic and commercial services and resources deemed essential to heterogeneous scientific domains and research communities

➔ Rigorous portfolio management through Scientific Advisory Committee (SAC)

➔ Same financial model as the EOSC Core i.e. co-financed by European Union and Member States/Associated Countries
  ◆ amount of financing required will depend on which services are included in the portfolio and how much consumption is to be centrally financed

Temporarily subsidised uptake of new services

➔ "Start-up" funding to stimulate uptake of novel services

➔ Sliding scale (10-100%) of service consumption cost, to be reduced over time

➔ Could target specific areas where services beneficial for research outcome are insufficiently supported or adopted, e.g. geographies or disciplines

➔ SAC responsible to assess whether a (novel) service is mature enough or has enough potential to receive temporary subsidy
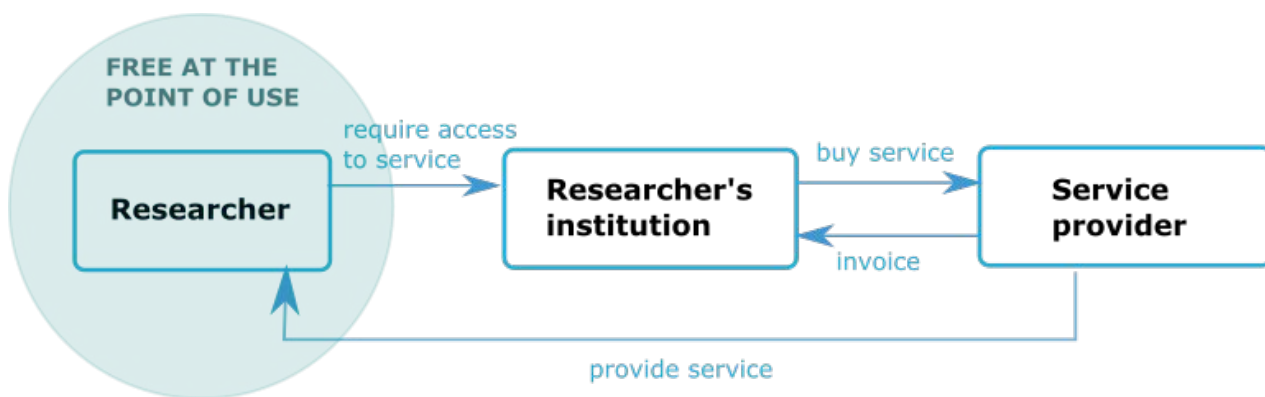
TF FinSust Proposals for the EOSC Exchange

Access to commercial services

- Buying commercial services requires public procurement exercise = separate category in EOSC Exchange

- Potential way forward: A central portfolio of procurement-compliant agreements with research-relevant commercial service providers which is well integrated with the EOSC technical infrastructure

Benefits
➔ Enables continuous strategic dialogue with suppliers at a high level thus influencing direction of development of services and business models
➔ Conducting one procurement for the entire EOSC user community rather than thousands (institutions) or dozens (countries)
➔ Improves access to research-relevant commercial services for all researchers in the EOSC-community

Challenges
➔ Costs: about € 1 million/year (estimated magnitude per class of service)
➔ Agreements only *enable* service consumption; financing is a different issue
➔ A key challenge: ensuring their availability for all EOSC participants because joint European procurement is not supported by all countries associated to Horizon Europe

Brokered not-for-profit services

FREE AT THE POINT OF USE

Researcher → require access to service → Researcher's institution → buy service → Service provider

Service provider → invoice → Researcher's institution

Service provider → provide service → Researcher

**Possible financial transaction mechanism, e.g. via subscription model**

- Biggest category in EOSC Exchange: thousands of public sector EOSC participants can offer services to each other
  - horizontal and thematic services

- marketplace facilitates service transactions and cost recovery mechanisms
  - services free at the point of use for researchers

- potential direct and indirect cost recovery mechanisms (mutually non-exclusive)
  - voucher/token model
  - subscription
  - freemium model
  - …

- Two major challenges:
  - VAT
  - Procurement

- more in-depth analysis required

TF FinSust Proposals for the EOSC Exchange

Boundary conditions

Mandate	No current mandate for national service providers and institutions to provide or purchase community-services outside well-established boundaries – might even face legal restrictions
Political funding choices	Cultural and political incentives effectively restrict national and institutional funding to be used only on national and institutional service production, very few exceptions
Protectionism and cultural change	Changing national service provisioning for research after building it for 30 years will require strong national top-down commitment, e.g. to address protectionist incentives, as well as time
Procurement	Absence of exemption public procurement rules for public sector consumption if brokered through the EOSC Exchange hinders cross-border service provisioning against payment in practice
VAT	In absence of VAT-exemption, clear guidance for providers on how to deal with cross-border VAT + practical facilitation of VAT-payments, should be offered by EOSC, adding value to the Exchange
Transaction support	Open questions remain: Should EOSC Exchange provide full logistical support for transactions? Should a central actor be involved in invoicing all transactions? Should B2C transactions be supported?
Ownership	Future ownership of EOSC-Portal is closely linked to decisions on the future EOSC legal entity and may have consequences for transactions, invoicing, VAT calculation and other dues and taxes

Financial Sustainability - Data Federation

- EOSC-Exchange
- EOSC-Interoperability Framework
- **Federated Data**
- EOSC-Core
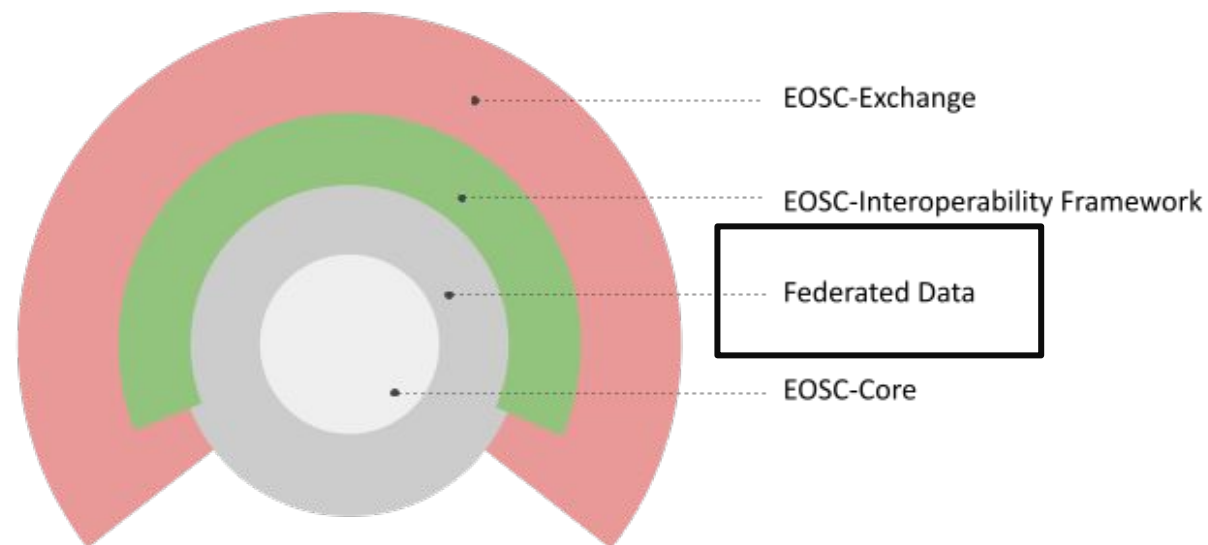
Data Federation in EOSC

Definition & Current situation

TF's view: EOSC DF value proposition

EOSC DF must enable researchers to find and acquire data from multiple sources available at any level of aggregation (local/institutional, national, thematic, EU, int'l) through attribute-based discovery.

Principle of data federation

[federated architecture]: loosely coupled or decentralised cooperating components, interconnected in a way that allows interoperability and information sharing
https://en.wikipedia.org/wiki/Federated_architecture

& SRIA definition of EOSC DF

EOSC will be primarily a federation of existing data and services where data remain in their current repositories and EOSC provides a means to make those data more broadly discoverable and interoperable (SRIA)

Use experience from discipline communities, including their (very) different paths to sustainability

❗ **Problem: Costs associated with federating data, FAIRification or EOSC-compliance frequently not included in research budgets**

Data Federation in EOSC

Lessons learned from use cases

We selected **four use cases** to gain insight in existing DFs

- *organisation*
- *historical development (if relevant)*
- *involvement of stakeholders*
- *funding mechanisms (in place/planned)*

⇒ **Data and services must go together** but have different financial requirements

⇒ **Interoperability** required

⇒ **Rely on existing repositories and (FAIR) federations** & on all levels and make them discoverable

⇒ **Use existing infrastructures** and thematic ecosystems to avoid duplicating efforts

⇒ Connect with **European Common Data Spaces, Gaia-X, Global Open Science Cloud**

⇒ **Establish of EOSC globally** will help with funding, competitiveness int'l visibility

Data Federation in EOSC

Solution	Main characteristics
Overlay Intermediary software layer in addition to any federation layers existing in a scientific domain or geographical area	Centrally managed and maintained by EOSC Enables data discovery from any provider Ensures data interoperability to the highest degree possible
Metadata catalogue System to track metadata organised into a catalogue	Strong contribution to interoperability
Catalogue of data providers and platforms Compilation of providers, platforms, and how to access them	**Less likely** to achieve interoperability
Natural evolution Default solution in the absence of EOSC	Existing data infrastructures remain as go-to sources Convergence expected to still occur but uncoordinated and slow; involves significant costs

Data Federation in EOSC

Identified additional costs

Making data FAIR	Making experiments reproducible	Ensuring long-term access to data	Federating data to EOSC
Operational Costs • Data Stewardship • Control Systems to acquire metadata • Storage • Data transfer • Access to computing • Making data findable Development costs • Capture metadata • Improve data reduction Legacy → FAIR-data	Workflows and software Data analysis environments Software catalogues Computing capacity to run data analysis Data transfer protocols	Storage & archival costs for sustainable repositories Update of metadata and APIs Connect endpoints and make data findable via data catalogues across Europe Tools & services to make data FAIR	Creating links & enabling interoperability between data resources and EOSC Operational costs of interoperability Data deduplication Data harmonisation Alignment of metadata schemas Certification & validation of repositories Legal & ethical (sensitive data)

Data Federation in EOSC

Interim conclusions + open questions + next steps

- Several options available for EOSC DF (from "Overlay" to keep "natural evolution"). Some preference for lower integration, but still no clear way forward.

- Costs & responsibilities must be assigned to the right level (EOSC, national, etc.) depending on the DF model chosen

- Further exploration of case studies (e.g. to obtain figures), or new ones, may be required

- Compare/combine TF analysis with EC-commissioned study on characterisation of European Research Data Landscape & outputs from TFs Long-term Data Preservation & FAIR Metrics and Data Quality

- Seek alignment with the Data Spaces Support Centre about Smart Middleware Platform

- What will happen to current thematic data portals?
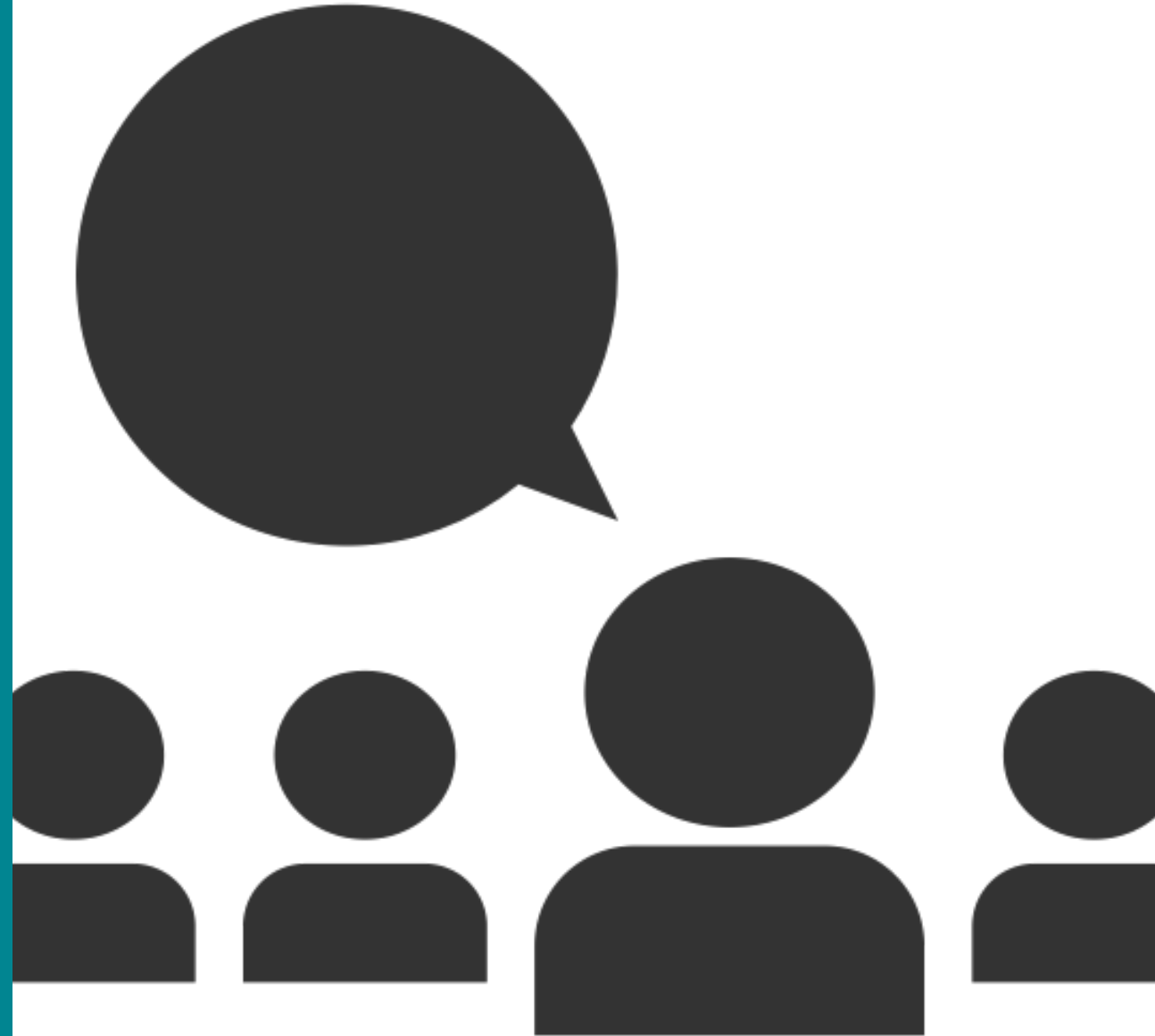
Wrap-up and Next Steps

Consultation

- Initial evaluation of proposals with selected stakeholder groups

  - Nov-Dec 2022
  - primarily the EOSC Tripartite Governance, EOSC Association mandated organisations and Task Forces, and relevant experts such as those in EOSC projects, ESFRI RIs and clusters, and European e-Infrastructures

- Results analysis (Jan 2023) will inform workplan for remainder of 2023

- Further proposals (scenarios) as per charter (milestone dates may alter)

- Further consultation expected later in 2023 to validate proposals

Financial Sustainability
Task Force

To be discussed further with EOSC Focus

- Manage consultation exercise with key stakeholders to gather feedback on the proposals in the progress report, including analysis of the responses
- Two pieces of specialist advice relating to the legal entity chosen for the Exchange
  - advice of a tax expert on the EU VAT consequences of the choice, and
  - advice of a lawyer on the public procurement requirements which would apply to the Exchange owner(s) and users
- Specialist analysis and advice on facilitation and remuneration mechanisms for brokered services in the Exchange and whether they will always require a central EOSC entity
- Based on consultation feedback and under the direction of the Task Force, conduct studies to estimate the implementation and operation costs of one or more architecture models for the EOSC Data Federation.

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