EUROPEAN OPEN SCIENCE CLOUD

Working Proposal for Living Indicators to Monitor MS Progresses towards EOSC Readiness
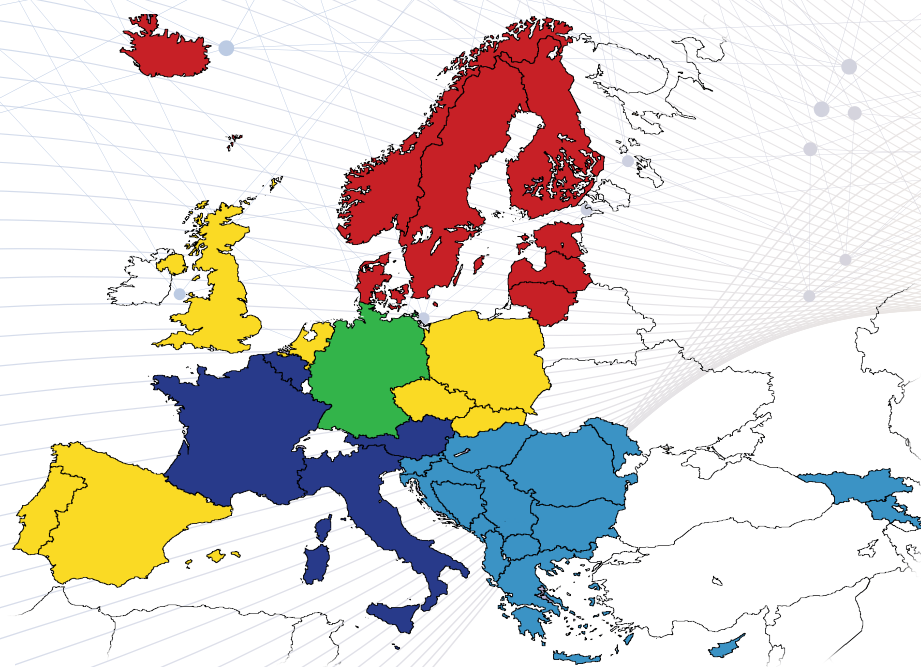
In Collaboration with FAIRSFAIR Fostering Fair Data Practices in Europe EOSC-hub

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July 2020

Summary of the report from EOSC regional projects

Content

1. Introduction

The Landscaping Task Force, consisting of representatives of EOSC Regional Projects (*EOSC-Pillar, EOSC-Nordic, NI4OS-Europe, EOSC Synergy, ExPaNDS, FAIRsFAIR*), has created an initial list of indicators by exploiting the requirements of the Landscape Working Group in collaboration with EOSCsecretariat.eu and EOSChub. In addition to the Landscape Analysis, the results would strongly benefit the Strategic Research and Innovation Agenda (SRIA).

This document is based on the report **Working Proposal for Living Indicators to Monitor MS Progresses towards EOSC Readiness** prepared by the Landscaping Task Force. The summary briefly explains the findings of the workshop "National Policy Development Supporting the EOSC Implementation" held during the EOSChub Week in May 2020.

The aim of the report is to reply on questions of usefulness of indicators, responsibility to monitor indicators, frequency to monitor the indicators, evaluation of an initial list of candidate indicators.

For further information, the workshop material is available **here.** The full report is available at the end of this summary, and all the data received during the workshop **here**.

2. Results in a nutshell

96% of the respondents stated the Readiness Indicators are useful to monitor the progress of EOSC at the level of MS's. 35% of recipients have an opinion that National Open Science Initiatives should be responsible for tracking the indicators. The responsibility should be by National Stakeholders according to 47% of respondents and EOSC LE according to 25%. Most of the recipients indicated only one type of actor could be responsible for it. The majority of respondents answered by stating that the assessment should be performed at the national level with 50% indicating national actors and an additional 15% indicating national representatives in EOSC as the best placed candidates to monitor them. The underlying assumption is that the exercise would be pointless without commonly defined indicators, as emerged during the discussion. A wider majority of respondents (89%) responded that the measurements should be publicly accessible, and 54,5% suggested that monitoring indicators should be updated at least yearly.

Everyone (100%) of the respondents selected policy-related candidate indicators relevant to measure, while 83% of respondents selected also as relevant infrastructures related indicators. Funding (26%), Sustainability (19%) and Usage (12,5%) were seen as missing though. 38% of responses indicate there should be a "readiness certification" on EOSC level, and 50% have an impression that self-assessment would be enough.

The aim of this consultation is to officially validate the indicators for EOSC Readiness with the EOSC governance (GB and EB), the EC and other relevant stakeholders (e.g. leading RIs).

The next paragraph presents the full list of candidate indicators.

3. Proposed Readiness Indicators

3.1 Architecture groups: candidate indicators

Proposed Readiness Indicators for Architecture	% of votes
A. National (regional) registry or other federation mechanisms for data in place/planned	71%
a1 Number of enrolled services	53%
a2 Number of searches	26%
a3 SLAs available	37%
B. National(regional) dataset catalogue(s) in place/planned	74%
b1 Number of enrolled datasets	53%
b2 Number of searches	29%
b3 Integration with other data catalogues	71%
C. National PID policy in place/planned	87%

Additional Indicators proposed by respondents for Architecture	N° of votes
Citizen scientists involved	1
User satisfaction	**4**
Data usage	**6**
Interoperability	1
API Usage	1
Impact	1

Note: during the discussion, the need to better measure the **usage (data usage in particular)** and **user satisfaction** was clearly voiced by many respondents. Although the criteria and specific indicator may be subject to discussion (see the full report for a discussion), the need is clear and these indicators should be incorporated in the list.

3.2 Organisation & Governance: candidate indicators

Proposed Readiness Indicators for Organization and Governance	% of votes
A. National Initiative in place/planned/etc.	72%
a1. Funding – structural, internal, per project.	56%
a2. Funding plans	67%
a3. Stakeholders involved (number, type)	67%
B. Strategic roadmap (IR, OS, etc)?	81%
C. Specific funding programmes for OS/EOSC/data science?	75%

Additional Indicators proposed by respondents for Organization and Governance (1 vote)
EU initiatives
National accountable body
Integration in the EU bodies
Interoperability with trans-national initiatives
Support for PlanS/COAR/other such initiatives

3.3 Policies: Candidate indicators

Proposed Readiness Indicators for Group Policies	% of votes
A. OS/FAIR policies supported/ monitored/ planned	85%
a1. National	77%
a2. At the organisation level	58%
a3. Mandatory/formal/informal	46%
a4. Funding constraints	31%
a5. Incentives	65%
B. DM policies in e/supported/ monitored/ planned	85%
b1. National	65%
b2. At the organisation level	54%
b3. Mandatory/formal/informal	38%
b4. Funding constraints	27%
b5. Incentives	62%

Additional Indicators proposed by respondents for Group Policies (1 vote)
Source of funding

3.4 Infrastructure: candidate indicators

Proposed Readiness Indicators for Infrastructure	% of votes
A. Resources	75%
a1. # of CPUs	46%
a2. Storage capacity	54%
a3. Infrastructure Availability 7/24	64%
a4. Helpdesk support 7/24	57%
a5. Availability of certain types of infrastructure services to researchers (HPC, storage, HTC, GPUs, remote access to science facilities...)	75%

B. # of infrastructure users (individuals, organisations)	61%
C. National NREN delegates security and user management policies?	46%
D. National IdP exists?	50%
E. TRLs	32%

Additional Indicators proposed by respondents for Infrastructure (1 vote)
Clicks/download
National Federation
Access policies
National Identity Federation

3.5 Training & skills: candidate indicators

Proposed Readiness Indicators for Training & Skills	% of votes
A. National/regional curricula in place/planned (compliance with international?)	77%
a1. Data scientists	31%
a2. Data stewards	58%
a3. How many university courses? How many graduates?	35%
B. Basic training available for researchers & research support staff	92%
b1. National competence centres	50%
b2. Certification of competences?	35%
C. Number of trained people per year.	73%

No additional indications were proposed for this category.

A working proposal for living indicators to monitor MS progresses towards EOSC Readiness

Table of contents

Introduction and context

This document is based on the proceedings of the workshop on National Policy Developments supporting the EOSC Implementation, held on 20 May 2020 and jointly organised by **EOSC-Pillar** and its three sister regional implementation projects funded in last year's INFRAEOSC-5 call, **EOSC-Nordic**, **NI4OS-Europe**, and **EOSC Synergy.**

The programme featured four speakers who introduced the projects and briefly presented some highlights from the findings of their landscaping work that are of relevance to the policy state of the art in the different regions. The fifth speaker shared the experience gained in the LEARN project on designing KPIs. An interactive part was designed to collect the audience's input. The workshop registration and materials are available here: https://www.eosc-hub.eu/eosc-hub-week-2020/agenda/national-policy-developments-supporting-eosc-implementation

Going somewhere starts from knowing where you are. This motto is at the basis of the survey work the Regional projects carried out, and of the creation of a task force to coordinate their work and get information that is as comparable as possible. The work done by the single projects and the TF is intended as complementary to the landscape report being put together by the Landscape working group. However, the both the landscape report and the survey results are but a snapshot of the situation, and one bound to become quickly outdated as EOSC is a process, and one evolving very rapidly, at that. This is why the regional projects came to the conclusion, also thanks to the collaboration with the Landscape WG and the discussion with several stakeholders, that what's needed now is to transform the snapshot into a set of living indicators.

We therefore proceeded to create a working list of possible indicators and presented it in the aforementioned workshop, where we asked stakeholders to provide their comments and opinions during the session and through an interactive sli.do poll.

The questions cover the usefulness of indicators, who should have the responsibility to monitor them, and how often, and then proceeds to evaluate an initial list of candidate indicators. The results of this first consultation are provided in the next section.

The objective of the session was not to present an out-of-the-box solution, but to start a process to define one, with the stakeholders' input. Stakeholders were invited to get in touch and learn more about the next steps of this work, through the EOSC secretariat liaison platform or directly contacting the regional project covering their region.

1. Indicators: why, who, how often

1.1 Are indicators useful to monitor the progress of EOSC within each Member State?

Q1 Are indicators useful to monitor the progress of EOSC within MSs?

- Yes
- No
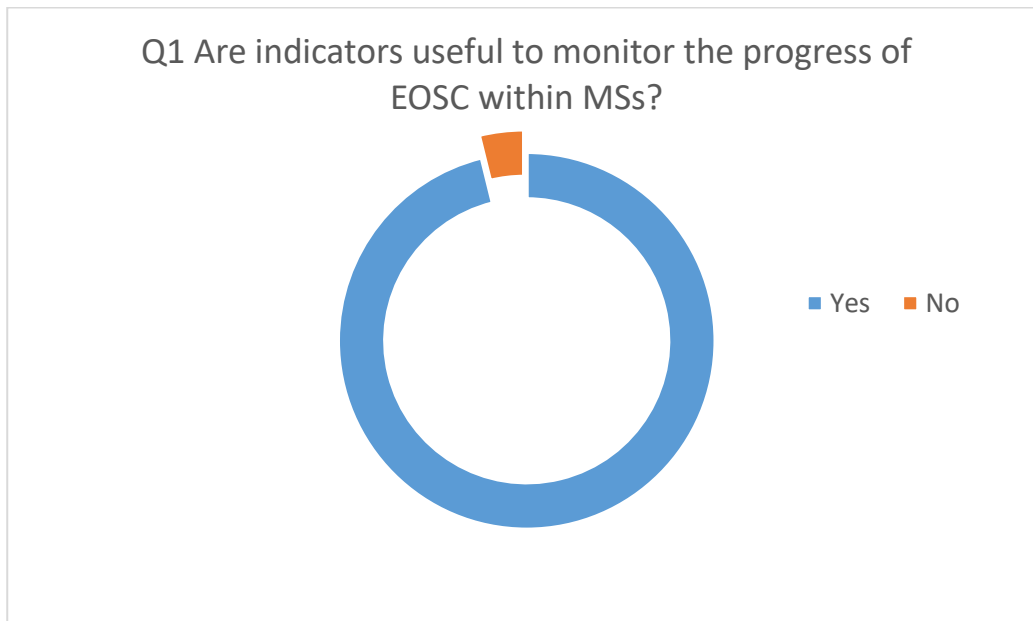
1.1.1 If you answered no, can you suggest an alternative to track progress of EOSC?

- To measure the number of real adopters in the research institutions (not necessarily supported by projects involved in the EOSC implementation)
- Indicators - Yes...but with the caveat that they should be the same for each country - otherwise the picture is skewed and incomplete….⌈P⌉⌊SEP⌋
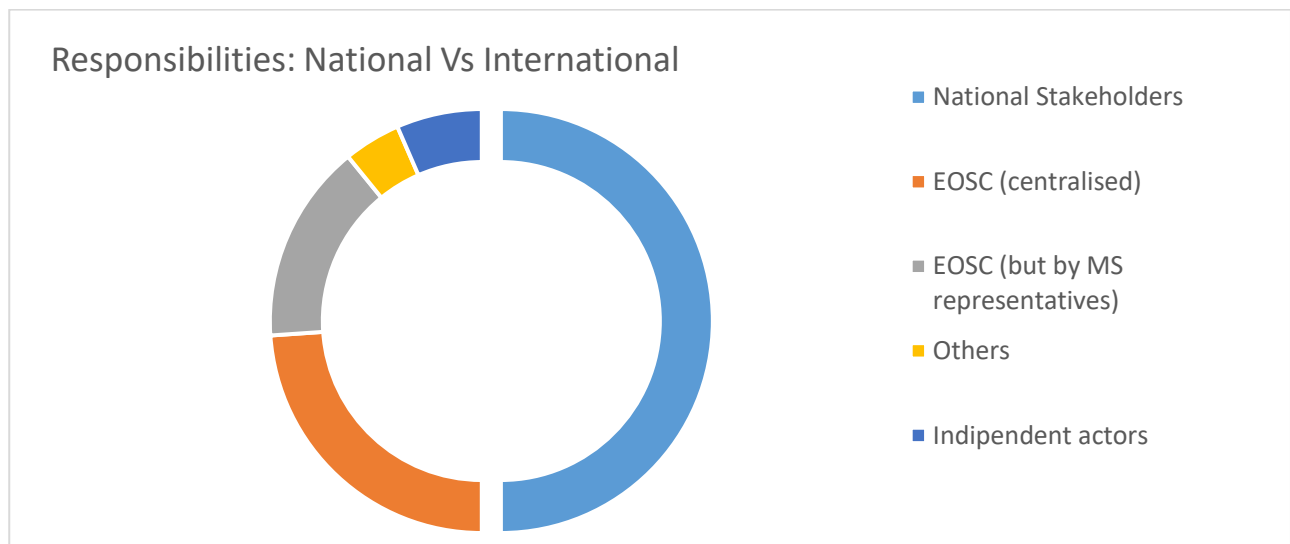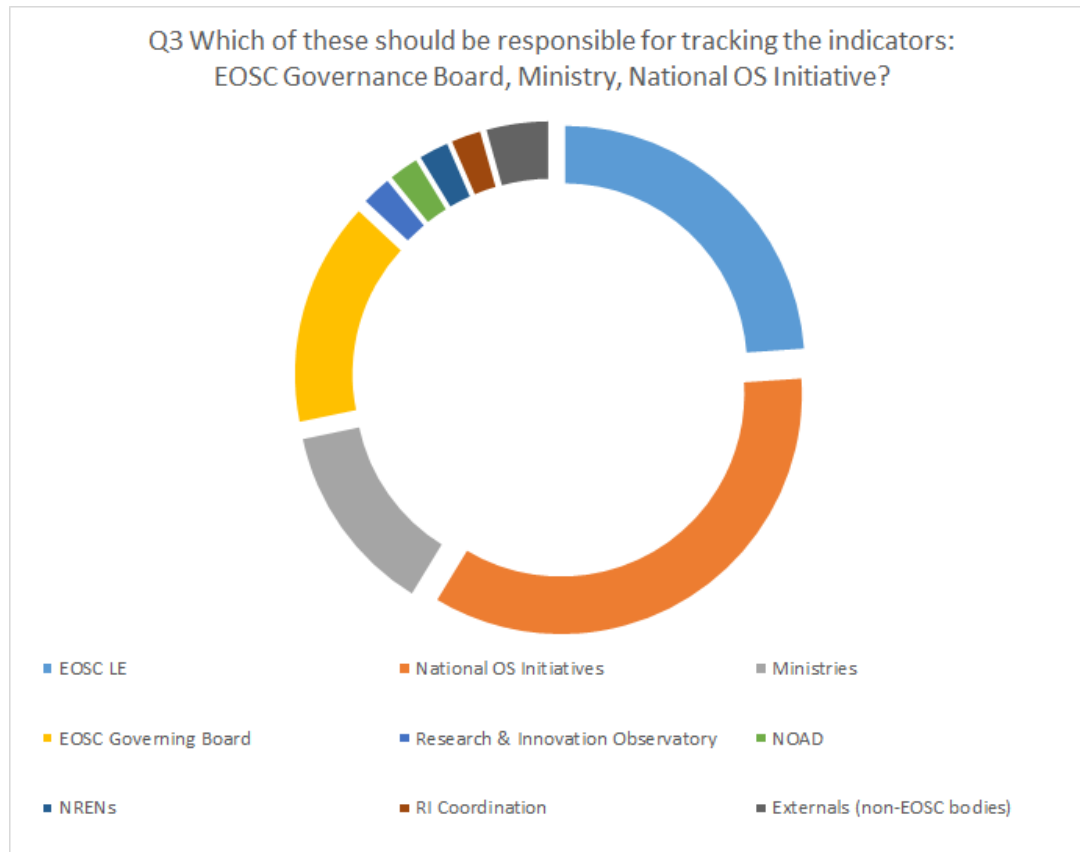
1.1.2 Other free comments offered re. this question:
- Usefulness strongly depends on the choice of the indicators
- The indicators should be the same for each country - otherwise the picture is skewed and incomplete… (this raised much consensus among users)
- Indicators. What really matters is to know how much and what sort of scientific data that is produced, how much of that is stored (with code) and to what extend the data stored is FAIR – that is the core indicator. From that we could have supplementary indicators on, which systems are in place to enable that – storage capacity and access etc.
- other important indicators are the services made available though the EOSC catalogue/Marketplace and (more important but difficult) the use of the service thanks to the EOSC catalogue/Marketplace
- The use is probably more important
- Some good work was done in the EOSCpilot project, specifying OS toolkit and monitor. See D3.2, 3.4, 3.5 and 3.7 at https://eoscpilot.eu/media/deliverables
- See also the e-IRGSP deliverable on policy and financial KPIs for e-Infrastructures at https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5c219a8fe&appId=PPGMS
- Another example is the GÉANT Compendium of NRENs in Europe which has been running for several years now https://compendium.geant.org/#!/

1.2 Who should monitor the indicators?

Q3 Which of these should be responsible for tracking the indicators: EOSC Governance Board, Ministry, National OS Initiative?

- ■ EOSC LE
- ■ National OS Initiatives
- ■ Ministries
- ■ EOSC Governing Board
- ■ Research & Innovation Observatory
- ■ NOAD
- ■ NRENs
- ■ RI Coordination
- ■ Externals (non-EOSC bodies)

Responsibilities: National Vs International

- ■ National Stakeholders
- ■ EOSC (centralised)
- ■ EOSC (but by MS representatives)
- ■ Others
- ■ Indipendent actors

1.2.1 Additional free comments offered on this question:

- Responsibility: The actual national body is not crucial, but the fact that there is such a body is.
- NREN or NOADs could take this role
- EOSC LE - and then distributed to relevant stakeholders e.g. Ministries, National OS initiative

- The EOSC association is hardly independent, but then NREN are not impartial, too
- Nobody is independent, in principle, and this could be an indication for the KPI/indicators to be jointly monitored by more than one entity
- International eInfrastructures in disciplinary fields eg ELIXIR will also be well positioned to monitor in their field
- Indicators should be linked to scientific practice.

1.3 Who should have access to these measurements?

Q4 Who should have access to these measurements?

■ Ministries ■ Relevant Stakeholders ■ Industries ■ Institutions ■ National Initiatives ■ Public
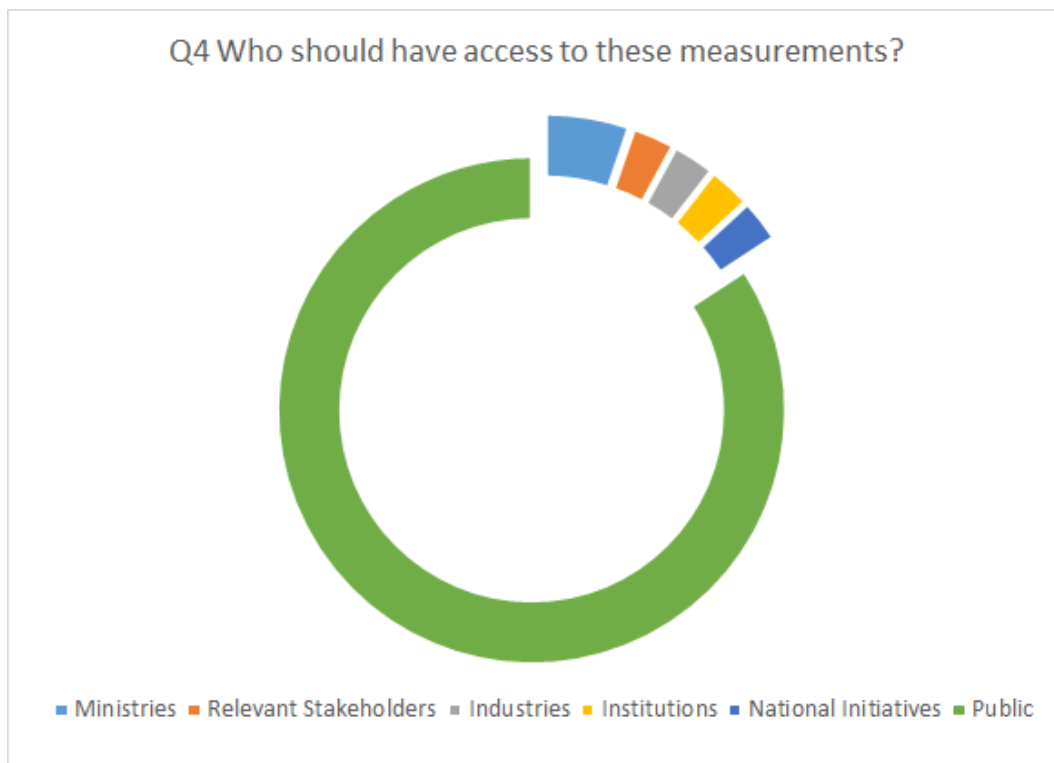
- They should be public in the form of an easily accessible electronic "compendium" (which also has in-country data)
- Openness also depends what the indicators would be used for. Some info to be used to inform strategic decisions, might be sensitive and not to be shared with everyone. (several participants supported this statement. However, no specific examples of sensitive data that could pose a problem to be disclosed were offered, but there is consensus that although generally the data should be open and publicly available, some info may be restricted if needed.
- Machine readability could support regular updating of indicators (several participants supported this statement).

1.4 How often should indicators be monitored?

Q5. Monitoring: how often?

■ Depending on indicators   ■ Yearly   ■ Every 6 months   ■ Continuous
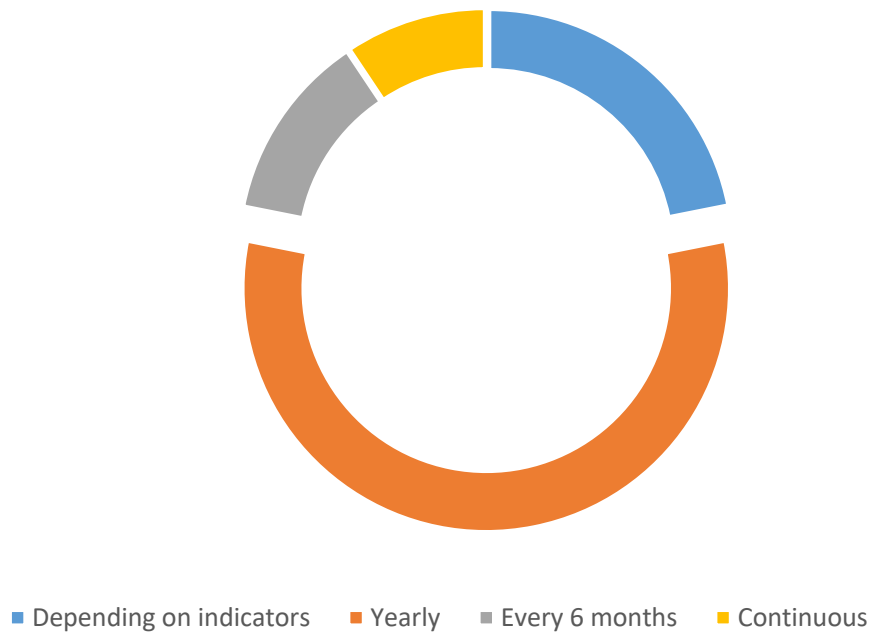
Do you see the need for a EOSC-ready certification for services/organisations?

■ Yes, to be certified at the national level   ■ Yes, at the EOSC level
■ No, a self-assessment would be enough   ■ No, we don't need to assess this
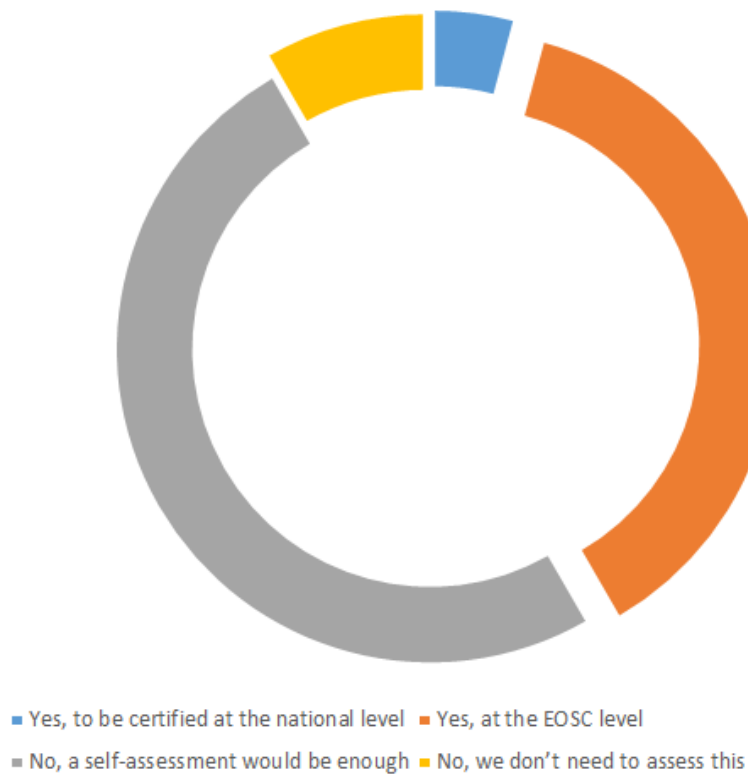
1.4.1 Additional comments provided by respondents

- You could ask for EOSC services/Organisations to provide links to evidence when asserting metadata (such as through eduGAIN), this way you have a way to automatically access EOSC readiness and compliance.
- It's very useful work to do such survey and monitor the adoption progress. The next logical question is what is the most efficient way to engage/reach out/promote the EOSC vision to the far end researchers and implement in their daily work?
- What does EOSC-ready mean? Be mature enough?

- RoP WG should be asked
- It is very difficult to agree on this, the devil is in the details. It is about how the certification is done as usual and it also depends on whether the certification is paid or free
- how can one use the KPIs presented before they are onboarded?
- Start with a common format for self-assessment from experience which this one can move on to a stricter certification procedure.
- Self-assessment plus post facto checking is possible

2. What kind of indicators?

2.1 Which categories are regarded as relevant to measure country readiness?

Q6 Please select all the categories you see relevant to measure country readiness

Category	Value
ARCHITECTURE	15
INFRASTRUCTURES	30
ORGANISATIONS & GOVERNANCE	24
POLICIES	36
TRAINING	22

Q7. In ONE WORD, what is missing from the proposed categories?

- Funding — 24%
- Cost — 3%
- Awareness — 3%
- Accountability — 3%
- Performance — 3%
- Users — 12%
- Data — 3%
- Uptake of EOSC services — 3%
- Cost-recovery-models — 3%
- 18%
- 6%
- 3%
- 3%
- 3%
- 3%
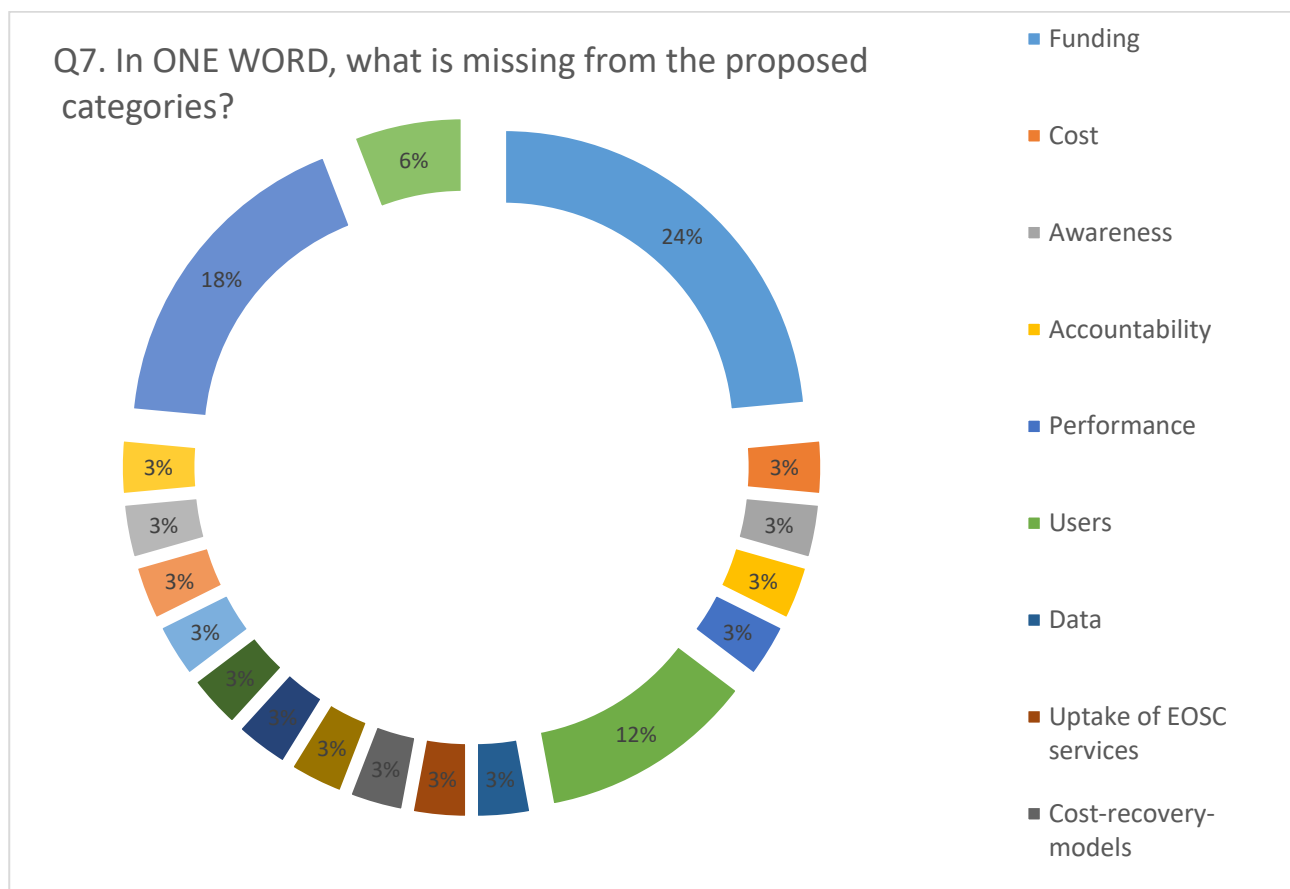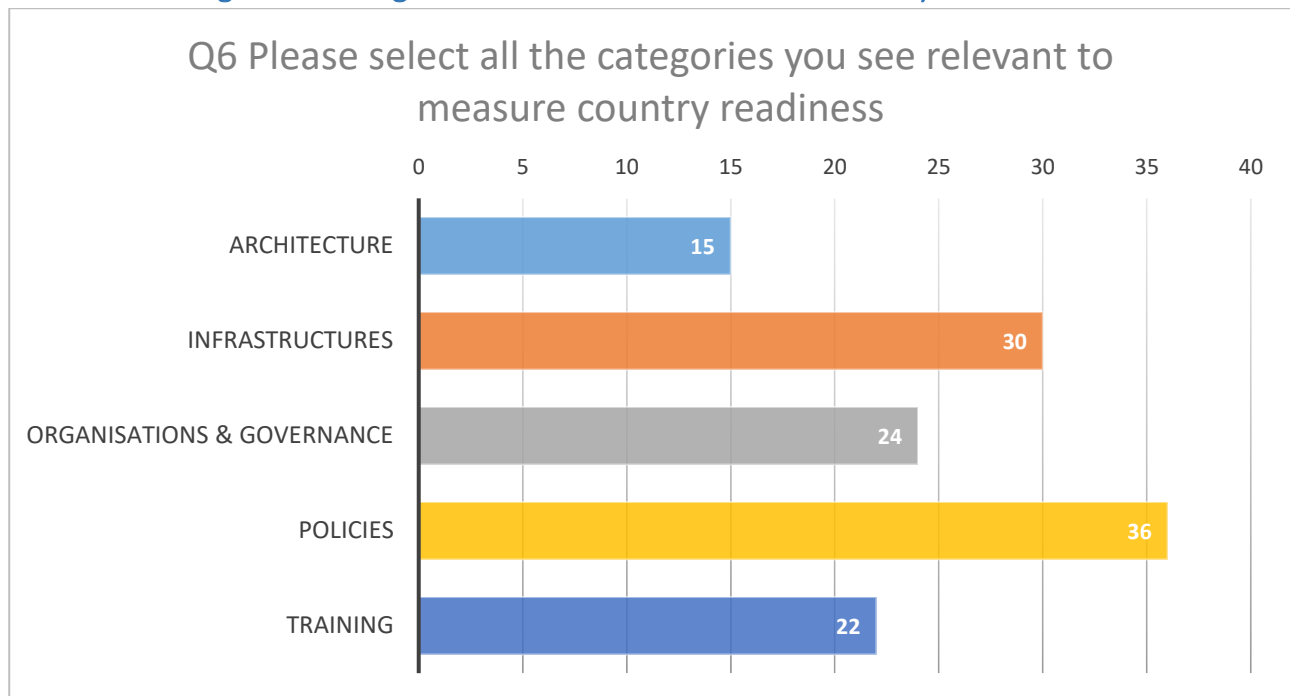
2.1.1 Additional comments provided by respondents

- Sustainability, funding, engagement, interest of the users …
- Level of compliance with EOSC requirements.

2.2 Architecture groups: candidate indicators

Q8 - which are indicative and practical indicators for the group Architecture?

Indicator	Value
A. NATIONAL (REGIONAL) REGISTRY OR OTHER FEDERATION MECHANISMS FOR DATA IN PLACE/PLANNED	27
A1 NUMBER OF ENROLLED SERVICES?	20
A2 NUMBER OF SEARCHES?	10
A3 SLAS AVAILABLE?	14
B. NATIONAL(REGIONAL) DATASET CATALOGUE(S) IN PLACE/PLANNED	28
B1 NUMBER OF ENROLLED DATASETS?	20
B2 NUMBER OF SEARCHES?	11
B3 INTEGRATION WITH OTHER DATA CATALOGUES	27
C. NATIONAL PID POLICY IN PLACE/PLANNED	33

2.2.1 Additional indicators suggested by respondents:

- Citizens
- user satisfaction (adding likes-dislikes to the catalogue entries?)
- Rate of DOI growth
- user feedback
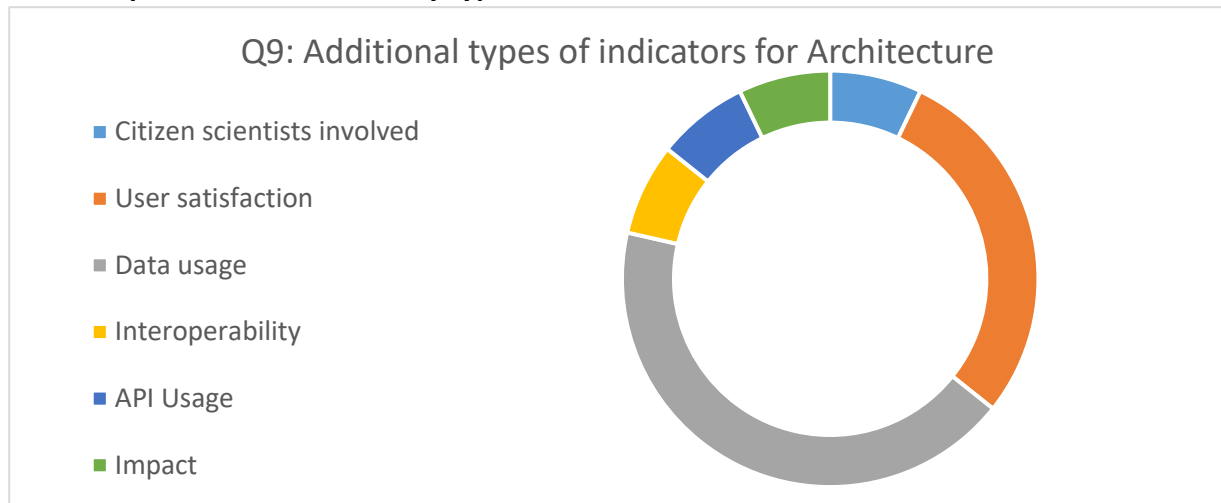- uptake
- impact
- User satisfaction
- Data citation-> usage of data
- usage
- Interoperability
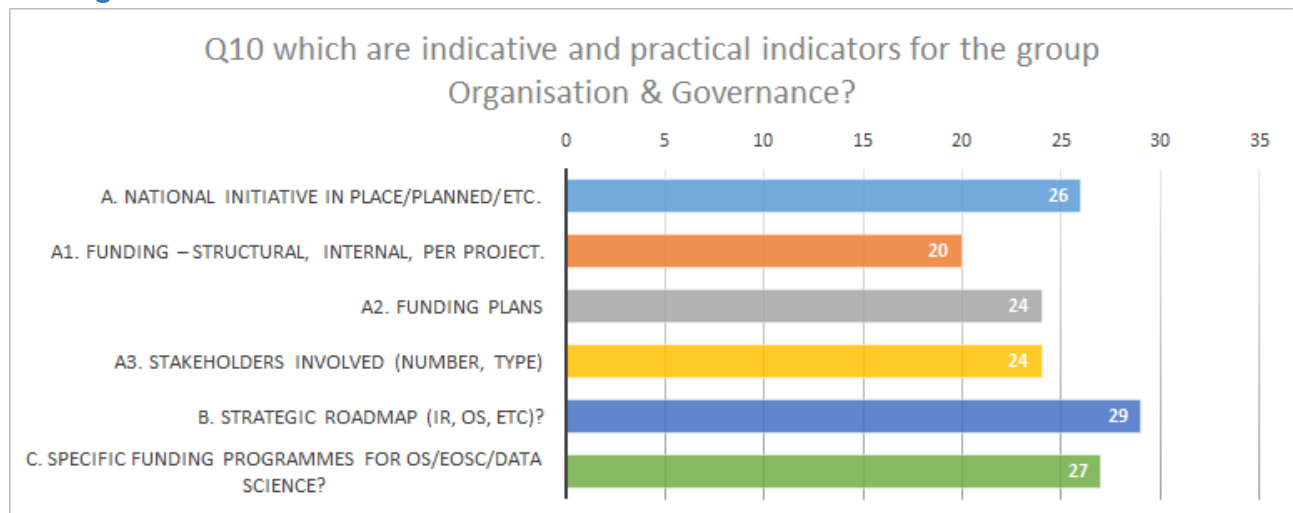- User satisfaction (feedback surveys)
- Which APIs are used

2.2.2 Additional free comments provided by respondents

- None in the proposed set of indications seem to capture actual usage by the end users, which would be useful for this group. Strong consensus was expressed on this comment, although many respondents also pointed out that to some extent the number of searches would cover this aspect. However, it was suggested to consider both searches for 'open data' and services. For the latter, user satisfaction was also suggested, however very different notions on how to monitor the user satisfaction were proposed.
- Adoption is hard to monitor if users don't use common services directly, but indirectly through their own infrastructure.
- These are measures of usage, the next step is to relate them to outcomes (such as increased citation of open research outputs), and then ultimately impact (better research).
- See also the e-IRGSP KPI report: https://www.researchgate.net/publication/330995155_Report_on_the_Retrieval_Provision_and_Analysis_of_Policy_and_Cost-Related_Information_Indicators

2.2.3 Responses are clustered by type:

Q9: Additional types of indicators for Architecture

- Citizen scientists involved
- User satisfaction
- Data usage
- Interoperability
- API Usage
- Impact

2.3 Organisation & Governance: candidate indicators

Q10 which are indicative and practical indicators for the group Organisation & Governance?

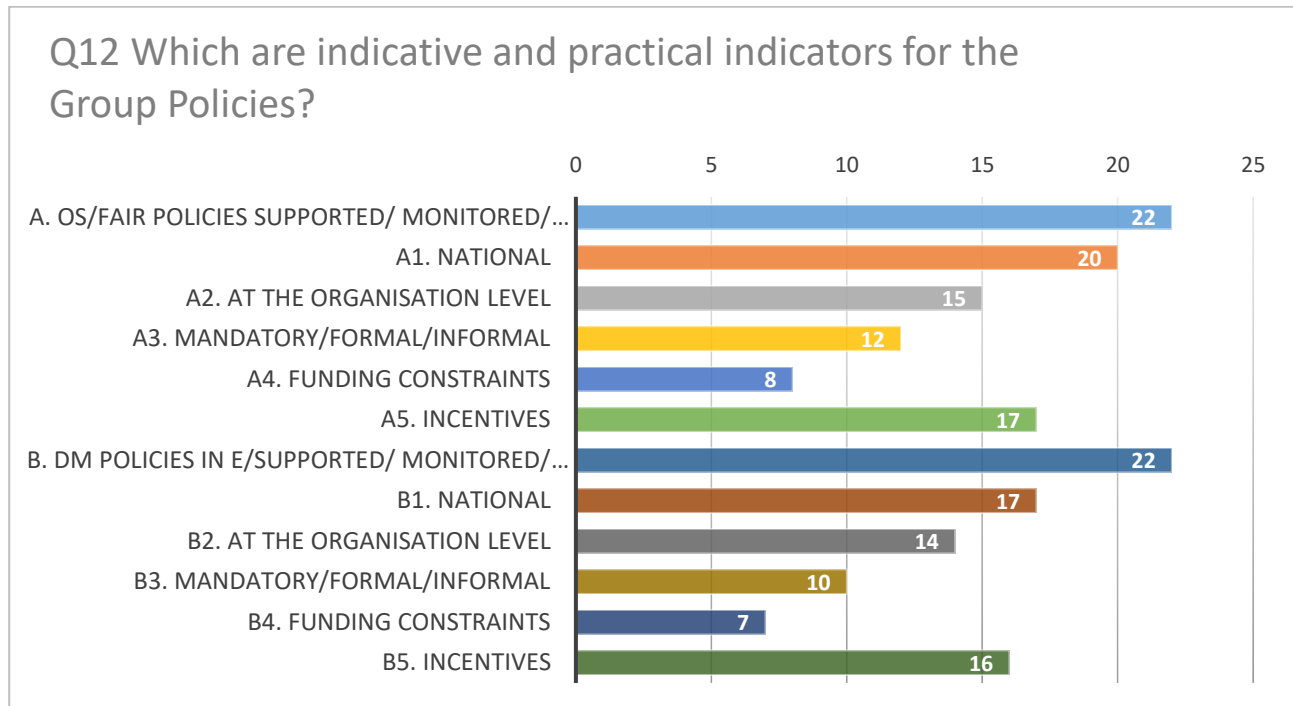| Indicator	Value
A. NATIONAL INITIATIVE IN PLACE/PLANNED/ETC.	26
A1. FUNDING – STRUCTURAL, INTERNAL, PER PROJECT.	20
A2. FUNDING PLANS	24
A3. STAKEHOLDERS INVOLVED (NUMBER, TYPE)	24
B. STRATEGIC ROADMAP (IR, OS, ETC)?	29
C. SPECIFIC FUNDING PROGRAMMES FOR OS/EOSC/DATA SCIENCE?	27

2.3.1 Additional indicators suggested by respondents:

- EU initiatives
- National accountable body
- Integration in the EU bodies
- Interoperability with trans-national initiatives
- Support for PlanS/COAR/other such initiatives

2.3.2 Additional free comments offered by respondents

- Can Stakeholder involvement not be a cross indicator for all levels?
- Who the stakeholders are can vary from Country to country, and even within the country.
- The lack of concreteness when it comes to funding is worrying. The current discussions seem nominal in the sense that funding is simply expected to come from several sources.
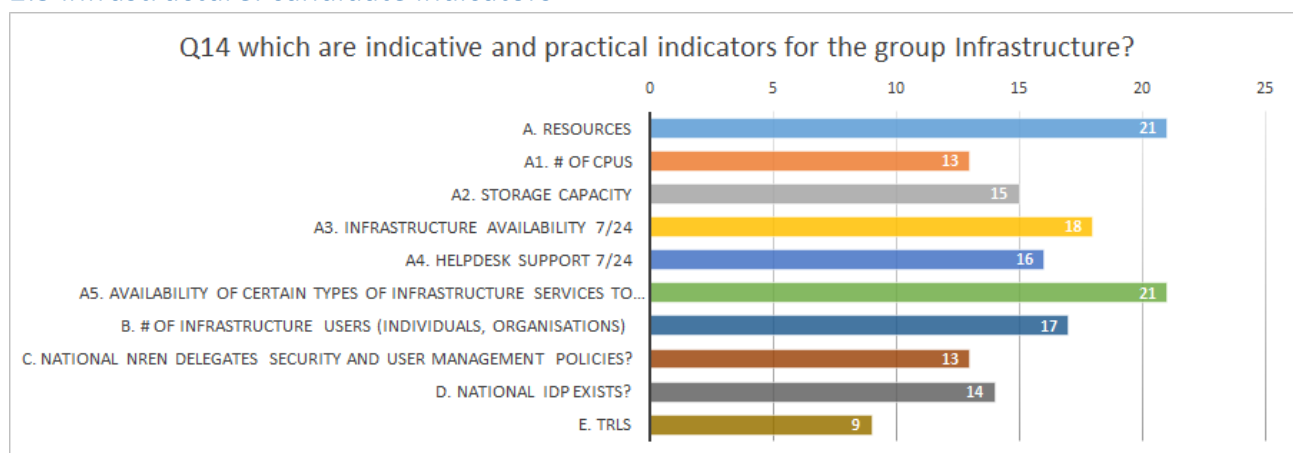
2.4 Policies: Candidate indicators

Q12 Which are indicative and practical indicators for the Group Policies?

Indicator	Value
A. OS/FAIR POLICIES SUPPORTED/ MONITORED/…	22
A1. NATIONAL	20
A2. AT THE ORGANISATION LEVEL	15
A3. MANDATORY/FORMAL/INFORMAL	12
A4. FUNDING CONSTRAINTS	8
A5. INCENTIVES	17
B. DM POLICIES IN E/SUPPORTED/ MONITORED/…	22
B1. NATIONAL	17
B2. AT THE ORGANISATION LEVEL	14
B3. MANDATORY/FORMAL/INFORMAL	10
B4. FUNDING CONSTRAINTS	7
B5. INCENTIVES	16

2.4.1 Additional indicators suggested by respondents:

● Source of funding

2.4.2 Additional free comments provided by participants

● Many of the indicators relate to concepts that are not aligned across borders (e.a FAIR policy). The existence of a FAIR policy may not not be indicative of progress towards a common goal).

2.5 infrastructure: candidate indicators

Q14 which are indicative and practical indicators for the group Infrastructure?

Indicator	Value
A. RESOURCES	21
A1. # OF CPUS	13
A2. STORAGE CAPACITY	15
A3. INFRASTRUCTURE AVAILABILITY 7/24	18
A4. HELPDESK SUPPORT 7/24	16
A5. AVAILABILITY OF CERTAIN TYPES OF INFRASTRUCTURE SERVICES TO…	21
B. # OF INFRASTRUCTURE USERS (INDIVIDUALS, ORGANISATIONS)	17
C. NATIONAL NREN DELEGATES SECURITY AND USER MANAGEMENT POLICIES?	13
D. NATIONAL IDP EXISTS?	14
E. TRLS	9

2.5.1 Additional indicators suggested by respondents:

- Clicks/download
- National Federation
- Access policies
- National Identity Federation

2.5.2 Additional free comments provided by respondents
- National IdP should really be National Federation

2.6 Training & skills: candidate indicators
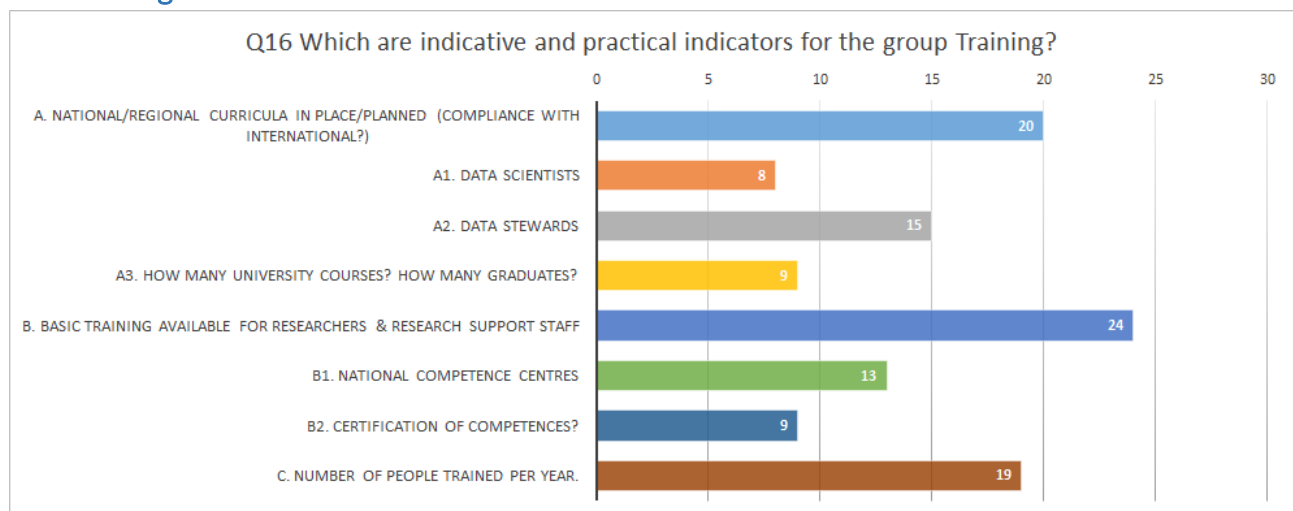
2.6.1 Additional comments provided by respondents

- Number of FAIR certified Data Repositories
- Certification of Repositories is a tricky subject (certified by whom and against what criteria)
- Ratio of researchers: digital skills professionals such as data stewards and research software engineers

3. Some preliminary conclusions

- The first feedback received is that indicators at the level of MS are generally felt as useful
- The list of indicators proposed in the session seems to go into the right direction as none of the categories (nor any single candidate indicator) was strongly challenged, however some useful additions were proposed.
- In particular, it seems clear that a stronger focus on usage is required
- In the longer term, the indicators should aim at being continuous (also using machine readability to gather information)
- The next steps would be to involve other stakeholders (the WGs, cluster projects, the GB, who else?
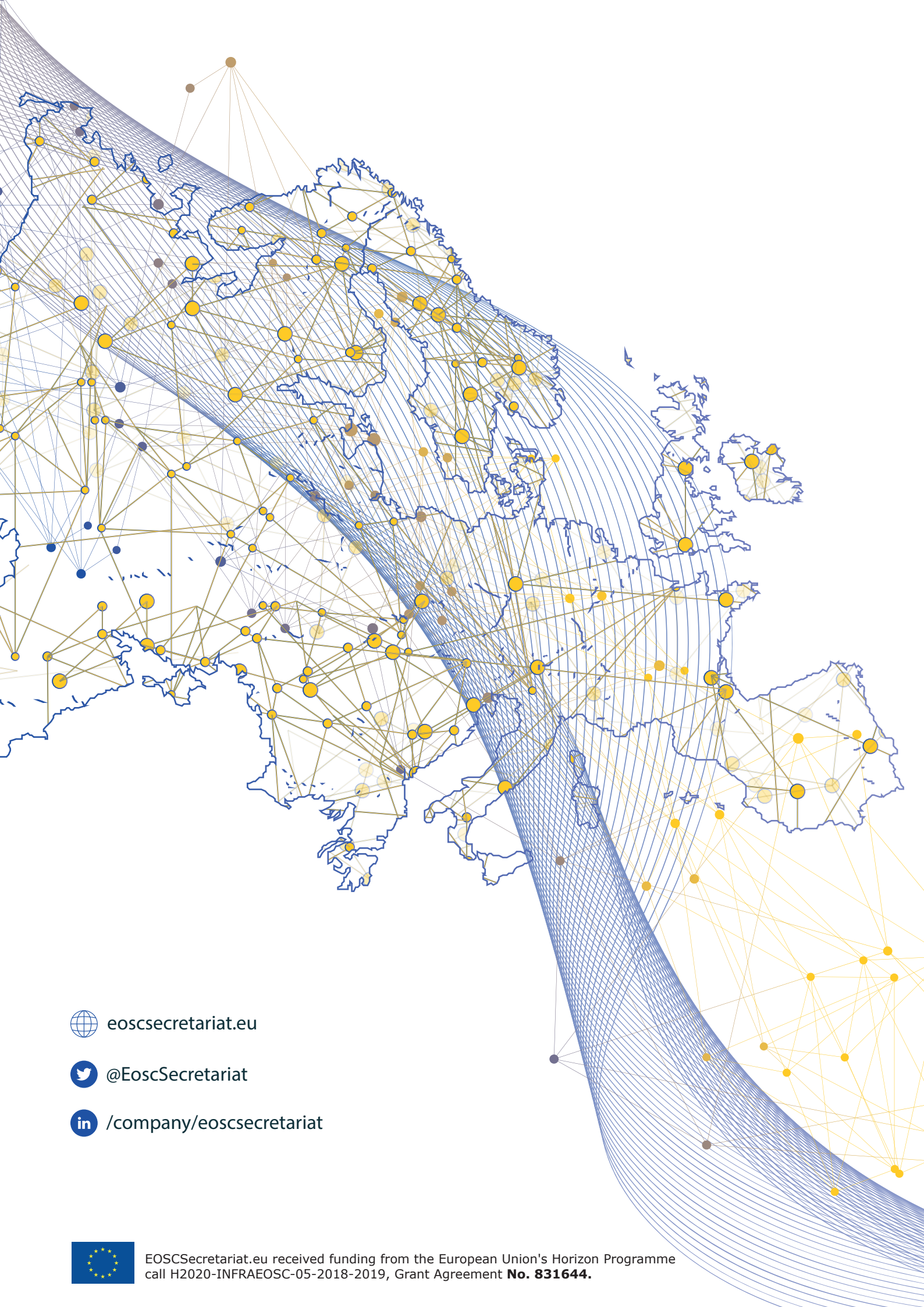
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