e-IRG Workshop

National Nodes
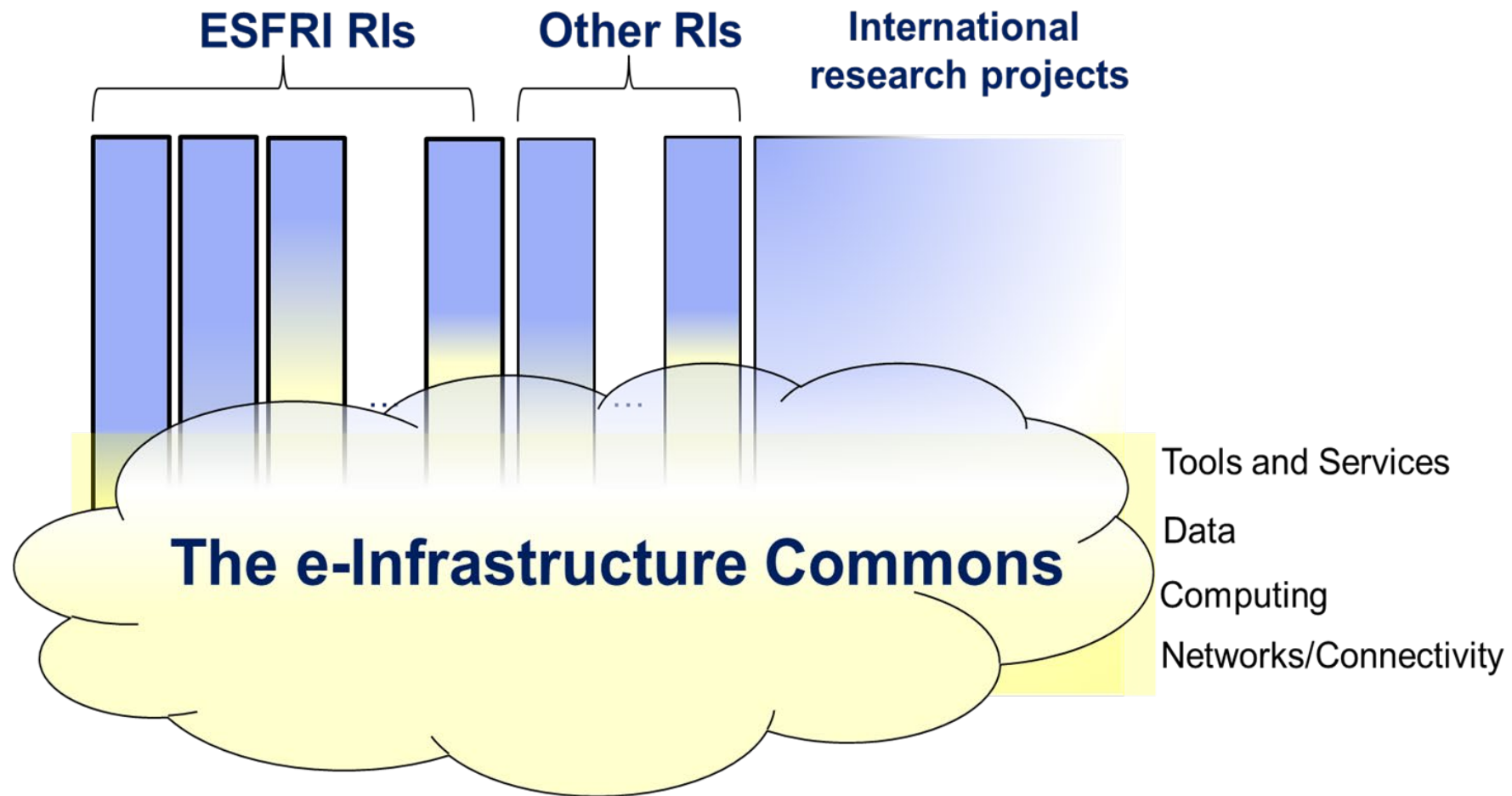# -
Getting organized; how far are we?

Sverker Holmgren
Geneva, 21st May 2019

e-IRG
e-Infrastructure
Reflection Group

e-Infrastructure Commons ($\rightarrow$ EOSC)

e-Infrastructure Commons (→ EOSC)

In 2016, e-IRG defined the *e-Infrastructure Commons* as *the (future) integrated living ecosystem of resources and services (along with its policies and governance) that is open, user friendly and accessible to European researchers and scientists, and continuously adapts to the changing requirements of research and science.*

e-IRG Roadmap 2016

Two recommendations are directed at national governments and funding agencies. They should reinforce their efforts to:

- *embrace e-Infrastructure coordination **at the national level** and build strong national e-Infrastructure building blocks, enabling coherent and efficient participation in European efforts, especially in alignment with the FAIR principles concerning data and services*

- *together analyze and evaluate their national e-Infrastructure funding and governance mechanisms, identify best practices, and provide input to the development of the European e-Infrastructure landscape*

Competitive Council (28/29 May 2018)

"AGREES that the EOSC model should be based on a pan-European *federation* of data infrastructures in order to be flexible and adaptable to changing needs of the stakeholders;

with regard to enabling this federation of national and European data infrastructures, ENCOURAGES *Member States* to invite their relevant communities, such as *e-infrastructures, research infrastructures*, Research Funding Organisations (RFO's) and Research Performing Organisations (RPO's), to *get organized* so as to prepare them for connection to the EOSC and

CALLS ON the Commission to make optimal use of ongoing projects, existing expertise and knowledge available via existing initiatives, such as **ESFRI, eIRG, GO FAIR** and others;"

The e-IRG National Nodes Working Group

A Working Group with the goal to:
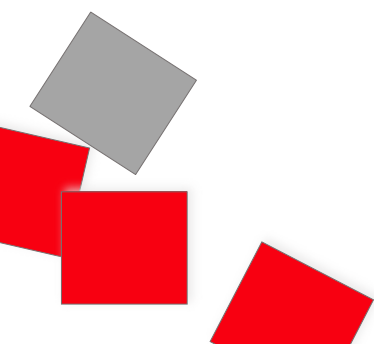
- Present current status and develop recommendations/name good practices towards national e-Infrastructure Commons, to ease integration/federation at EU level

Process:

- Questionnaire to e-IRG national delegates on the
  - organisation of national e-Infrastructures (including data infrastructures)
  - coordination for national horizontal (generic) e-Infrastructures
  - domain-specific e-Infrastructure
- Analysis of the responses, deliberation resulting in recommendations

Recommendations (MS/AC)

→ *MS/AC should continue to increase the **level of coordination** and consolidation of the various national e-Infrastructure players.* – horizontal (generic) and vertical (thematic)

Recommendations (MS/AC)

- *Member States and Associated Countries should explore, pilot and install **funding schemes**, which*

  a) *give the **incentive to both research communities and provisioning organisations** to collectively optimize e-Infrastructure service development and provisioning;*

 b) ***enable easy cross-border research collaboration**;*
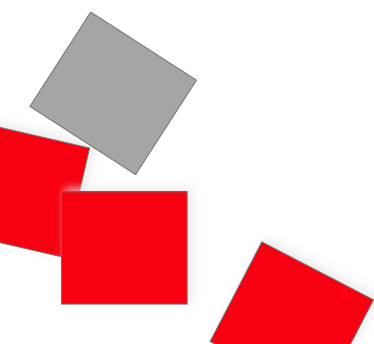
Recommendations (EC)

It is evident that in order to reach the goals of the EOSC *most of the resources need to be mobilised at the national level.*

This is why e-IRG considers it of the utmost importance to reach *strong national e-Infrastructure coordination*, because the EOSC will most likely be a federation of national (and thematic) Open Science Clouds.

- *e-IRG recommends, that in future Work Programmes the EC provides* **strong incentives for further coordination and consolidation of e-Infrastructure service development and provisioning at the national and the European level***.*

Where did this come from?
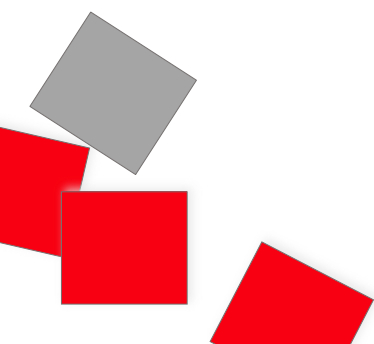
Questionnaire (1/2)

Focus on organisations, governance, funding, access policies for e-Infrastructures (or its components) in your country (~ 2 A4 pages).

- *Describe which organisation or organisations have been given the **responsibility on the national level** for provisioning e-infrastructure services in your country.*
  - *if the answers contains multiple organisations, describe (if applicable) how these organisations coordinate their activities amongst themselves.*

- *Describe the **governance of this organisation/these organisations** (such as: legal entity, composition of board or council, representation of stakeholders, such as universities, research infrastructures, funding agencies, etc.).*

Questionnaire (2/2)

- *Describe how this **organisation/these organisations are funded** (main funding streams, such as ministries, research councils, grants, subsidies, third parties (industrial, other), membership contributions, user contributions, etc.).*

- *Describe the **access policies** of this organisation/these organisations, including any **legal restrictions** in using the e-infrastructure.*

- *Please list **national domain-specific e-Infrastructures** or other domain areas of particular interest in the country (e.g. ELIXIR nodes) and include whether they use the horizontal e-Infrastructures.*

Responses

Responses
from
28 countries
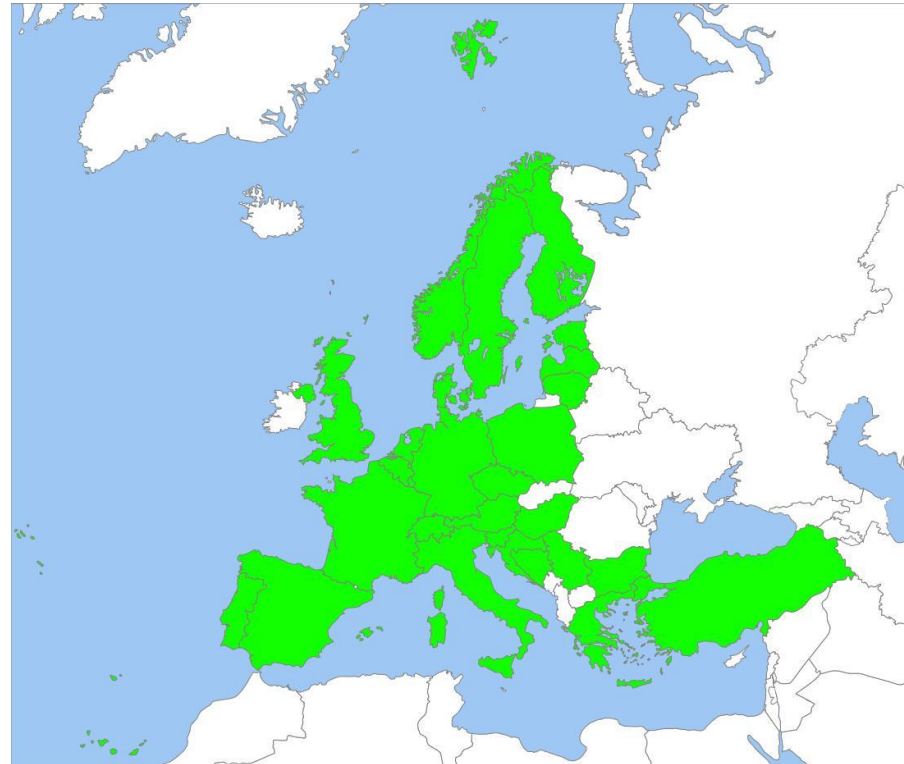
Final document is to
be endorsed in the e-
IRG delegates meeting
May 22, 2019

Note:
*Classifications made
are best estimates and
a first attempt to
come-up with a picture
of the complex EU
landscape.*

Funding - Networking

- Nearly all countries have established an NREN

- The majority **is funded by the corresponding ministries or research councils**.

- In some cases membership fees or universities and research institutions provide a major funding stream.

- Furthermore, in some countries **users provided services fees (pay per use).**

- In a few countries the NREN is financed **entirely, or for its most part, by the universities/research institutions or user communities**.

- Most countries reported that (additional) **project-based funding** is received from the Commission through participation in GÉANT or other European projects.

- Two countries report that **European Structural Funds** are used to co-fund the NREN.

Funding – Computing

- all kinds of computing: **Cluster/grid/cloud to large scale high-performance computing (HPC)**.

- Most countries: **At least partially funded through national ministries and research councils**. Several indicate this is the main source.

- Many countries: **Significant additional funding comes from other stakeholders and/or user communities**.

- Some **mention EU Structural Funds use for financing compute resources**, or report on subsidies from the EU for computing activities

Funding - Data

- Less clear situation – the national data landscape is in many cases less mature

- Many countries: **Funding for their data repositories by the Ministry of education and research**.

- Some countries: **Research Council is funding the data repositories or provide project-based funding for data repositories**.

- Several countries: **Membership fees or user contributions.**

- **EU funding is also noted by some countries**.

Access policies

- In most countries **access is strictly at a national level,** *especially for computing services*.

- Some cases of ***regional access*** (Nordic and Iberian countries) to service portfolios. Some countries allow international access to some HPC resources.

- In most countries the *access of country-wide service-portfolios is* ***free of charge for the user***.

- In many countries there are policies in place to allow for the use of the national resources (mainly computing related, but services too) based on a ***peer-review process*** (mainly in the HPC field), while few provide access on an annual contribution basis or a pay-per-use model.

- *Several countries have access policies to allow for* **(partial) industrial use** *of the national e-Infrastructures* (mostly for innovation), mainly in the area of computing. Some countries follow a regulated model to do this, while most have a pay-per-use one.

- A ***horizontal*** *(country-wide)* ***data infrastructure service is still missing*** *in most countries.*
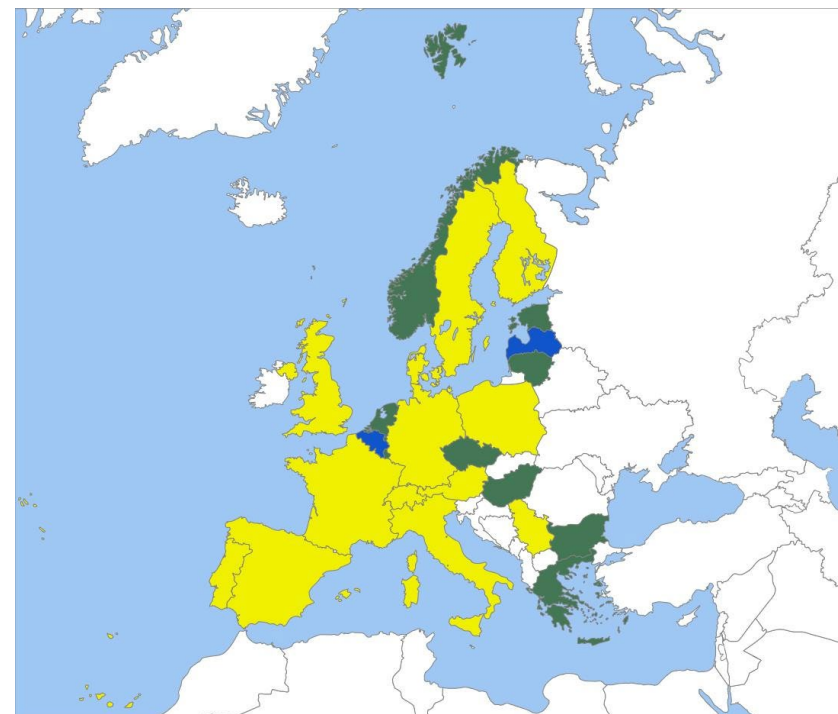
Horizontal - vertical integration

- Use of horizontal e-Infrastructures by domain specific Research Infrastructures networking :

  Blue = mostly yes

  Green = mixed cases

  Yellow = mostly no

  White = no classification

Observations (1) - Overall

- *The number of e-Infrastructure providers per country varies from a single organisation in a few countries to multiple providers of the different horizontal e-Infrastructure components.*
- *Large countries usually have multiple providers, while smaller countries have fewer.*
- *A situation of multiple providers may lead to competition, and in all cases requires **coordination** at the national level either bottom up (initiated by the providers themselves) or top-down (imposed by ministries or research councils).*
- *The more complex the national ecosystem is, the more challenging the coordination towards the European constituents and initiatives*

Observations (2) - Governance

- *The governance of e-Infrastructure providers varies significantly inside and across countries.*

- *The structural ownership of networking organisations usually lies with a higher-authority organisation such as a ministry, while for other e-Infrastructure providers the situation is more dispersed.*

- *The **strategic governance level is in many cases exercised by boards with representatives from universities or research centres** or other experts.*

- *Once again, the more complex the governance at national level, the more challenging the coordination within the country and towards the European constituents and initiatives.*

Observations (3) - Funding

- *In most countries, networking and computing providers are funded by ministries (and research centres) given the high budgets involved, and in fewer cases, this involves user fees or EU structural funds. Data infrastructures involve more ad-hoc or project-based funding.*

- *Sustainability of national providers with more ad-hoc funding such as data infrastructures may be complicated, which may have an impact at their European constituents and initiatives.*

- *EU funding for specific projects -aside from networking/GEANT- is used for several components of the e-Infrastructure landscape, especially for the new components, such as data, and other services.*
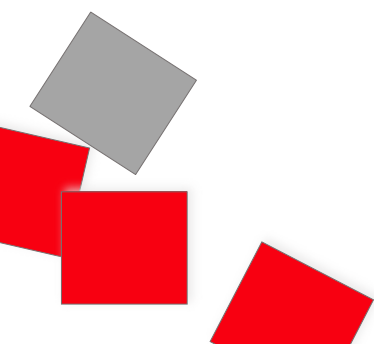
Observations (4) – Access policies

- *In most countries, access to the national resources is restricted to national users, while there are some cases, especially in computing, where a fraction of the resources is allowed to international users or collaborations (e.g. via peer-review).*

- ***This is seen to have a significant impact at the European constituents and initiatives.***
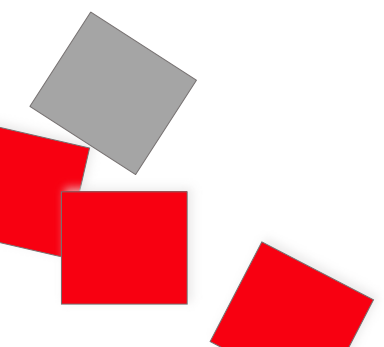
Observations (5) - Coordination

- In a sizable number of European countries, the various cornerstones of e-Infrastructure development and provisioning have *some level of coordination* between themselves.

- **The current situation is dynamic. In several countries, processes aiming at stronger national coordination are on-going**

What has been said earlier?

From e-IRG response to Staff Working Document on implementation of the EOSC:

"For e-IRG the concept of the European Open Science Cloud is an instantiation of the e-Infrastructure Commons as proposed by e-IRG in our 2013 White Paper and 2016 Roadmap, also adding more clearly the aspects of Open Science. From the point of view of provisioning EOSC services, the **challenges will reside on the interface between discipline specific (vertical) and generic (horizontal) infrastructures**.

Horizontal infrastructures (e-infrastructures) have the potential of being efficient and effective, pooling hardware and software but more importantly people and expertise together instead of building disciplinary pillars. In the long run e-IRG believes that strong horizontal infrastructures will serve the ultimate goal of the EOSC, *offering professionals in science and technology a virtual environment with free at the point of use, open and seamless services for storage, management, analysis and re-use of research data, across borders and scientific disciplines."*

Deliberations (1)

- Realising the e-Infrastructure Commons in Europe requires:
  - *coordination mechanisms among horizontal and vertical e-infrastructure service providers*
  - *easy access to data and interoperable services*,
  - *robust and sustainable (national and European) funding mechanisms* that can enable scalable and long-term development and operation
- The EOSC should eolve into **an ecosystem of national and thematic views or abstractions** of the EU-level services
  - *with extra services available at national, regional or thematic levels*
  - *and/or a subset of the EU services based on the participation of a national constituent in EU or thematic initiatives and Research Infrastructures*
  - *or possible restrictions at national/regional/thematic levels*

Deliberations (2)

A ***broad user involvement at the strategic governance level*** *of national horizontal e-infrastructures through representatives from the universities and research communities is needed.*

- *Processes and mechanisms to **coordinate the interplay and integration between national horizontal and vertical e-Infrastructures** are emerging in several e-IRG member countries.→ **Structured and more conscious attempts** are needed.*

- *There are interesting mechanisms and ongoing processes on further national e-Infrastructure **landscape development and coordination** mechanisms. → The experiences should be **collected and shared to develop best practices** […].*
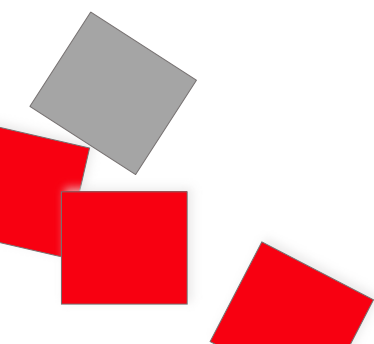
Recommendations

Disclaimer

The answers provided have to be very carefully interpreted and by no means e-IRG will claim that every question has been interpreted and answered by each delegate in exactly the same way. Therefore, any attempt from the authors to derive conclusions and recommendations must be handled with care.
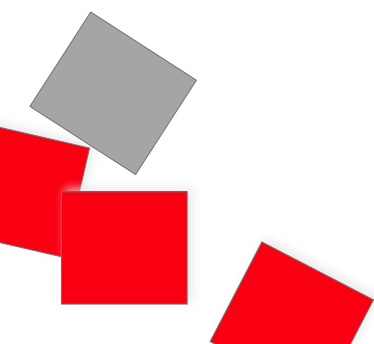
Recommendations (MS/AC)

*Further **coordination** across funding streams of **horizontal (generic) and vertical (thematic)** e-Infrastructures within the countries appears increasingly important.*

➔ *MS/AC should continue to increase the **level of coordination** and consolidation of the various national e-Infrastructure players.*

Recommendations (MS/AC)

- In the European context: ***funding mechanisms*** should include how to provide ***access to the national services for cross-border research collaboration***.

- *Member States and Associated Countries should explore, pilot and install **funding schemes**, which*

  a) *give the **incentive to both research communities and provisioning organisations** to collectively optimize e-Infrastructure service development and provisioning;*

  b) ***enable easy cross-border research collaboration**;*

Recommendations (EC)

It is evident that in order to reach the goals of the EOSC *most of the resources need to be mobilised at the national level.*

This is why e-IRG considers it of the utmost importance to reach *strong national e-Infrastructure coordination*, because the EOSC will be most likely the federation of national (and thematic) Open Science Clouds.

- *e-IRG therefore recommends, that in future Work Programmes the EC provides* **strong incentives for further coordination and consolidation of e-Infrastructure service development and provisioning at the national and the European level**.

Thank you!

For further information see e-irg.eu

Special thanks to all e-IRG delegates contributing to this presentation, as well as the support project (e-IRGSP6) for performing the analysis.

e-IRG is supported by e-IRGSP6

http://e-irgsp6.e-irg.eu