Pathways for improved coordination and cooperation among e-Infrastructures

e-IRG White Paper 2022

Fotis Karayannis, Innov-Acts, e-IRGSP7

'whoami'

Working in e-Infrastructures since year 2000 - Thanks to V. Maglaris!

(@fkarayan)

e-Infrastructure Reflection Group (e-IRG)

- e-IRG is a self-regulated and independent **policy advisory body**
  - Operates on **consensus**-based decision-making;
  - it decides when, where and what it will discuss
- e-IRG advises national authorities and the EC on electronic Infrastructures (**e-Infrastructures**)
  - Networking-, Computing-, Data Infrastructures and related services (middleware/AAI, software, tools, etc.)
  - On national and international initiatives of EU significance

http://e-irg.eu/bylaws

e-IRG Mission and Vision

Vision:

- ***To facilitate integration*** *in the area of EU* **e-Infrastructures and connected services***, within and between Member States, at the EU level and globally*

Mission:

- *To* **support** *both* **coherent, innovative and strategic European e-Infrastructure policy-making for convergent and sustainable e-Infrastructure services**

http://e-irg.eu/about   https://zenodo.org/record/5567014

The e-IRG e-Infrastructure Commons
→ Foundation of EOSC

e-IRG e-Infrastructure Commons

(e-IRG Roadmap 2012 -> e-IRG White Paper 2013 -> e-IRG Roadmap 2016)

The e-Infrastructure Commons can be defined as the 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.
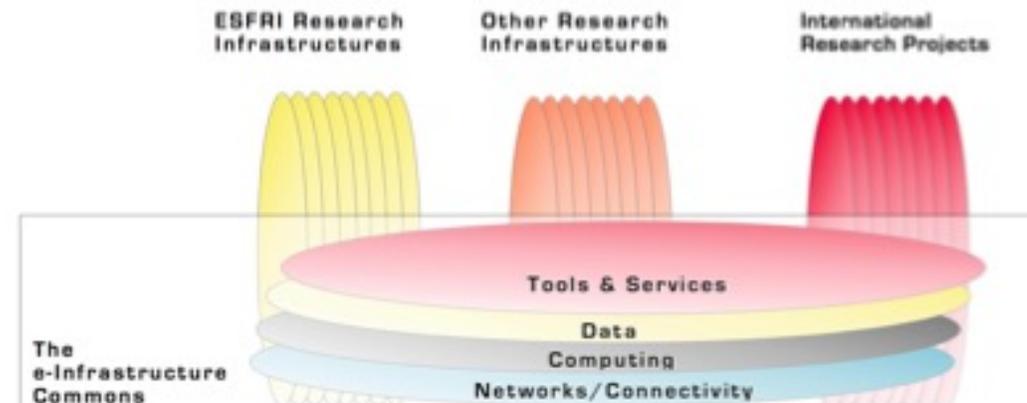
EOSC= e-IRG Commons + Open Science

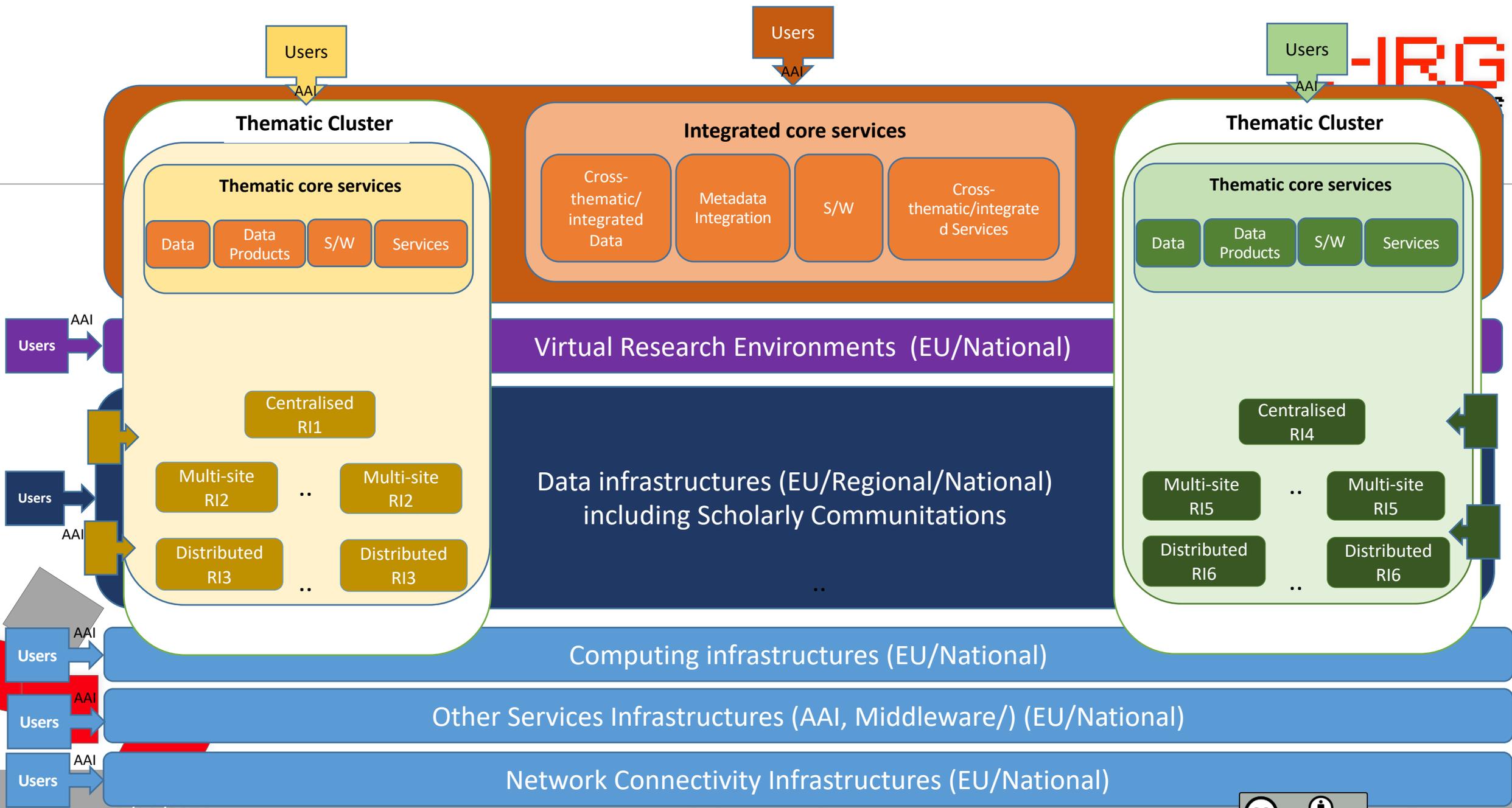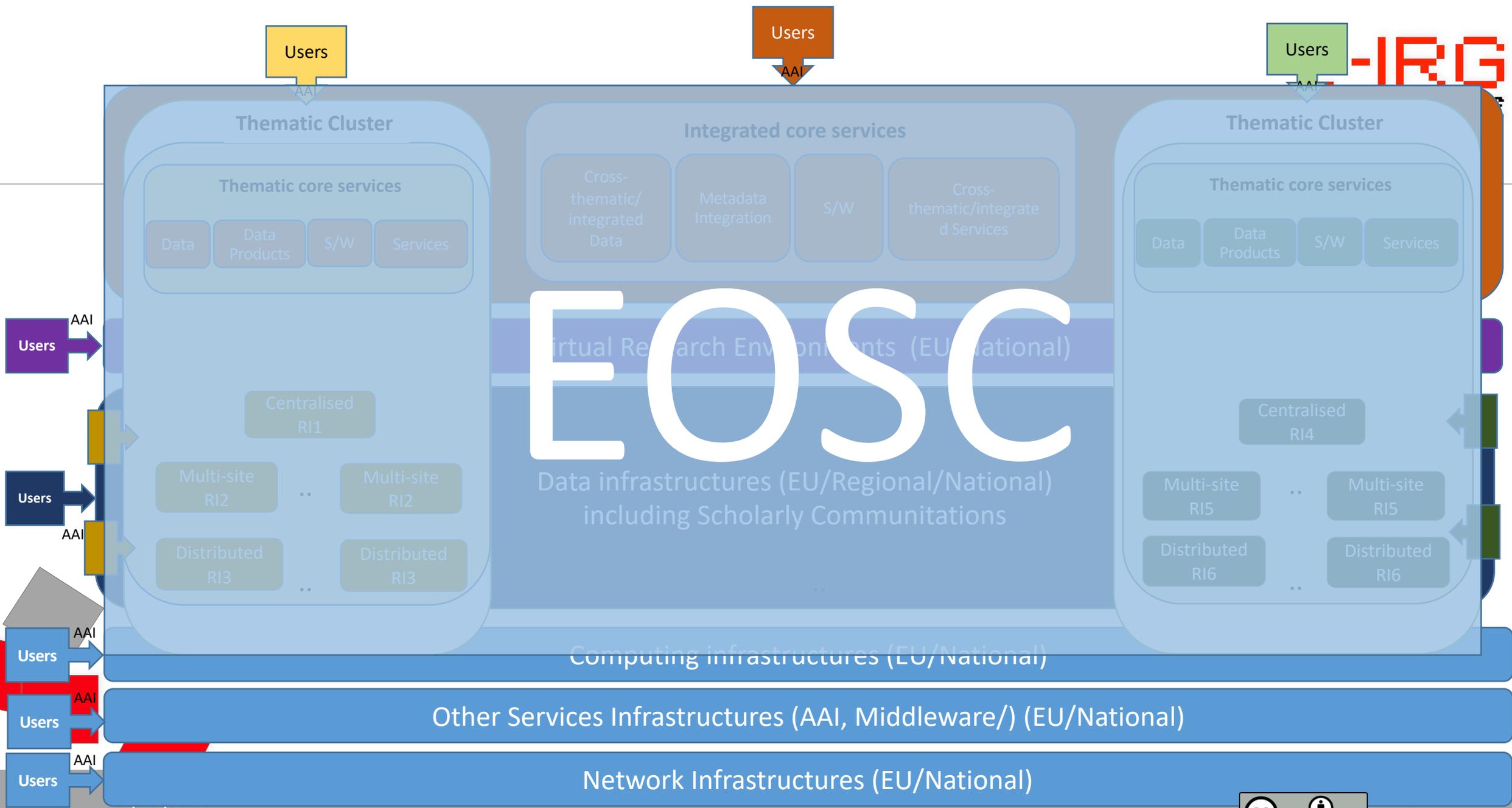In Dec 2014, I drafted the doc:

- https://zenodo.org/record/406356

Towards the e-Infrastructure Commons 2020:
A marketplace for e-Infrastructure services

A concrete step towards e-Infrastructure services integration

- Expanding the e-IRG Infrastructure Commons idea

- **Contributing to the definition of EOSC and several of its key concepts (portal)**
  - Point of access, catalogue of services, search, research + commercial services, compliance (rules of participation), AAI, multiple views (national, regional, EU..)

Users

Users

Users

Thematic Cluster

Integrated core services

Thematic Cluster

Thematic core services

| Data | Data Products | S/W | Services |

Cross-thematic/integrated Data

Metadata Integration

S/W

Cross-thematic/integrated Services

Thematic core services

| Data | Data Products | S/W | Services |

AAI

Users

Virtual Research Environments (EU/National)

Centralised RI1

Centralised RI4

Users

Multi-site RI2 .. Multi-site RI2

Data infrastructures (EU/Regional/National) including Scholarly Communitations

Multi-site RI5 .. Multi-site RI5

AAI

Distributed RI3 .. Distributed RI3

..

Distributed RI6 .. Distributed RI6

Users

AAI

Computing infrastructures (EU/National)

Users

AAI

Other Services Infrastructures (AAI, Middleware/) (EU/National)

Users

AAI

Network Connectivity Infrastructures (EU/National)

Fotis Karayannis

EOSC

Thematic Cluster

Thematic core services

Data | Data Products | S/W | Services

Integrated core services

Cross-thematic/integrated Data | Metadata Integration | S/W | Cross-thematic/integrated Services

Thematic Cluster

Thematic core services

Data | Data Products | S/W | Services

Virtual Research Environments (EU/National)

Centralised RI1

Multi-site RI2 .. Multi-site RI2

Distributed RI3 .. Distributed RI3

Centralised RI4

Multi-site RI5 .. Multi-site RI5

Distributed RI6 .. Distributed RI6

Data infrastructures (EU/Regional/National) including Scholarly Communitations

Computing infrastructures (EU/National)

Other Services Infrastructures (AAI, Middleware/) (EU/National)

Network Infrastructures (EU/National)

Users
AAI

22/09/2022

Fotis Karayannis

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About cooperation & coordination: Competitive Council conclusions (1)

On EOSC (2018)

*Encourages Member States (MS) to invite their relevant communities, such as **e-infrastructures, RIs**, Research Funding Organisations and Research Performing Organisations, to **get organized** so as to prepare them for connection to the EOSC,*

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

About cooperation & coordination: Competitive Council conclusions (2)

On the new ERA (2020)

encourages the EC and the MSs/ACs *"to increase the level of **national and European coordination,** in particular on RIs and e-infrastructures".*

On the Pact for R&I (2021)

"connection of existing and new European and national research infrastructures, including e-infrastructures"

On ERA Future Governance & Policy Agenda → ERA Action 8 on RIs

"increased cooperation between RIs, e-infrastructures and stakeholders, including through EOSC"

e-IRG advice on coordination & cooperation

e-IRG stresses the need for e-Infrastructure **coordination at the national level** and strong national building blocks, enabling coherent and efficient participation in European efforts **[e-IRG Roadmap, 2016]**

Role of **National Nodes**, in the implementation of the e-Infrastructure Commons and its instantiation as the European Open Science Cloud **[National Nodes, 2019]**

Good practices of **coordination** within and across e-Infrastructures and thematic Research Infrastructures **[e-IRG White Paper 2021]**

Realisation and enhancement of **coordination and collaboration** in the e-Infrastructure landscape covering the full spectrum of e-Infrastructures (networking, computing, data infrastructures) and related services **[e-IRG White Paper 2022]** planned for Dec' 2022

National Nodes – Getting organised; how far are we?

In response to the Council Conclusions: e-IRG report published in **June 2019**
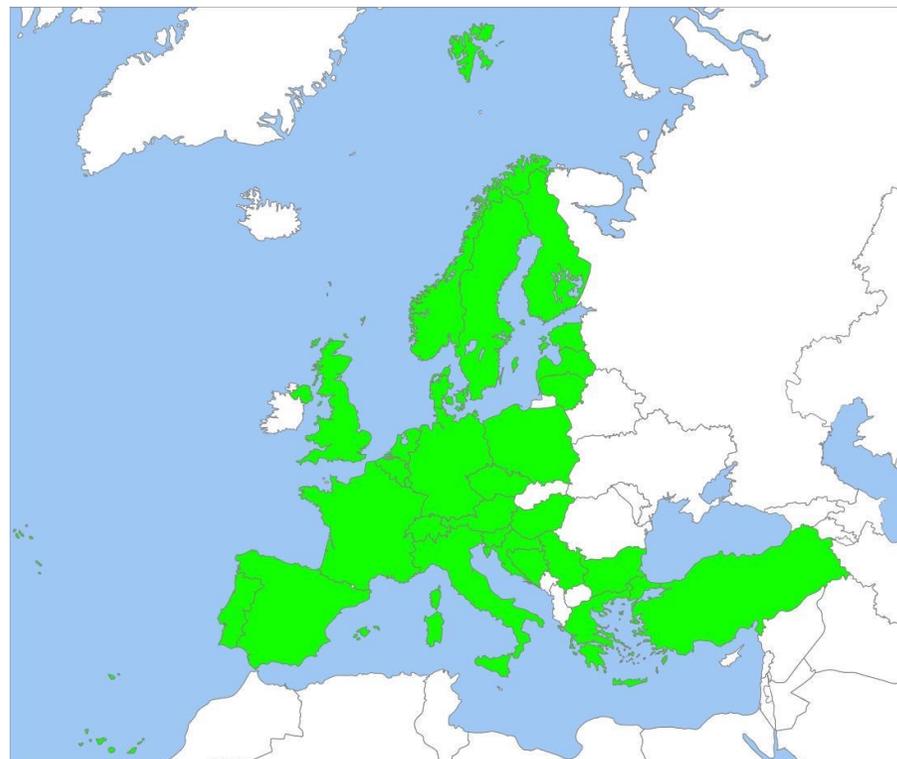
Based on analysis of the responses by **28 countries** on related questionnaire (on coordination, governance, funding, access, etc.)
→
Diversity among countries; still patterns and approaches identified

https://zenodo.org/record/3608075

e-IRG White Paper 2021
Coordination at institutional, national and regional level(s)

Main message

- **Coordination** is continuously needed **at national level** among all players
  - Both among generic (horizontal) e-Infrastructure providers
  - Across generic (horizontal) and thematic (vertical) RI providers

- *Coordination should be expanded within and **across countries***
  - *At **institutional** level*
  - *At **regional** level*
  - *At **EU level** (already treated at multiple fora, but only within an area, e.g. GEANT, EOSC, EuroHPC)*
  - *Coordination across GEANT, EOSC, EuroHPC is part of White Paper 2022*

  https://zenodo.org/record/5741971 (two files, main part + annexes)

Background

- Some e-Infrastructures are in production for decades

- Considerable developments in computing/data infrastructures in the last 5-15 years

- Two significant initiatives have been launched → well underway
  - European Open Science Cloud (EOSC
  - EuroHPC Joint Undertaking

- Still coordination across all major EU players is in an early stage

Topic

- Bridge the identified cooperation/coordination gaps:
  - reflecting on the above issues
  - providing concrete advice and recommendations to all stakeholders
  - contributing towards increasing cooperation and coordination

Envisaged outcome (in the long run)

- Provide integrated user-friendly services, easing the work of researchers
  - So that they can focus on the disciplinary or cross-disciplinary research, not on the infrastructures and tools!

e-IRG related past recommendations! (1)

e-IRG White Paper 2013

Proposed approach

- *"In the 2020 vision, providers have the freedom to innovate, and users enjoy the freedom to choose the services they need from a mix of public e-Infrastructure and commercial services. In order to enable this vision, we need an ecosystem of different organisations, at the national and international levels, each with their own focus but also **with effective coordination between them**."*

https://zenodo.org/record/4049675

e-IRG related past recommendations! (2)

e-IRG White Paper 2013

e-IRG believes this challenge can be met by maintaining a clear separation between the three core functions:

- ▪ *1. **Community building, high-level strategy and coordination in Europe**: for each type of e-Infrastructure service, a single coordinating organisation with a central role for user communities. **These bodies**, in turn, **will need** **a forum for coordination between them across the different e-Infrastructure types.***

- ▪ *2. **Service provision:** flexible, open, and competitive approach to national, European, and global service provision; with advanced collaboration among the interested public and commercial service providers.*

- ▪ *3. **Innovation:** Implementation of major innovation projects through the best consortia including e-Infrastructure suppliers, industry, users and academia with a dedicated management structure comprising the partners per project.*

e-IRG related past recommendations! (3)

e-IRG White Paper 2013

- The e-IRG sees a clear *need for a single e-Infrastructure umbrella forum for community building, high-level strategy setting and coordination for the entire e-Infrastructure.*

- This umbrella forum is not a separate organisation, but a forum in which the strategy and coordination bodies for the different parts of the European e-Infrastructure and user communities work on a common strategy.

e-IRG related past recommendations! (4)

e-IRG Roadmap 2016

- *"..**an emphatic co-operation** among all main stakeholders is required: **the providers** (the e-Infrastructure developers and operators), **the users** (the scientific communities, both big users including Research Infrastructures and the long tail), **and the funders** (the EC and the national governments and their agencies).*

- *A joint EU e-Infrastructure ERIC still seems to be far away, and thus the only way forward **is good coordination through a formal coordination platform** among all stakeholders in-line with the Commons, implementing a distributed multi-stakeholder model of governance".*

https://zenodo.org/record/4048805

e-IRG White Paper 2022
Coordination at EU-level

Process:

- Dedicated meeting with EC (DG Connect and DG RTD) in Dec '21

- Established informal link with EOSC Steering Board

- Organised related sessions at May '22 e-IRG workshop under French EU Presidency
  - Session I: Towards a sustainable EOSC - The role of e-Infrastructures
  - Session III: Cross-e-Infrastructure collaboration and coordination

- Prepared a questionnaire sent to all major e-Infra stakeholders – Aug '22

- A set of first answers received last and this week – Sept '22
  - GEANT, PRACE, EOSC Steering Board, EUDAT, OpenAIRE

e-Infrastructures coordination: EOSC implementation and ERA

67th e-IRG Delegates Meeting

Organised in the framework of the Slovenian EU Presidency

9-10 December 2021

Michel Schouppe, EOSC Team Leader A4, DG RTD

Liina Munari, Deputy Head of Unit C1, DG Connect

e-IRG in the EOSC context

- Increased cooperation between research infrastructures, e-infrastructures and stakeholders in the ERA shall notably take advantage of the EOSC tripartite governance (EC, MS/AC, service providers and the research community).

- An impactful eIRG should develop the proper interfaces with the EOSC-SB, its members and the EOSC-A (participating NRENs in the General Assembly but also in the Task Forces).

- Such interfaces could hopefully help convergence within MS and across the EU, expressed ideally in the form actionable recommendations.
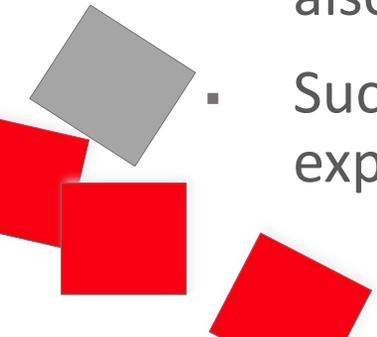
e-IRG May Workshop on cooperation Panel 1

Panelists:

- **Ute Gunsenheimer** (EOSC Association)
- **Joséphine Wood** (EuroHPC)
- **Cathrin Stöver** (GÉANT)
- **Tiziana Ferrari** (EGI Foundation)
- **Natalia Manola** (OpenAIRE)
- **Debora Testi** (EUDAT)
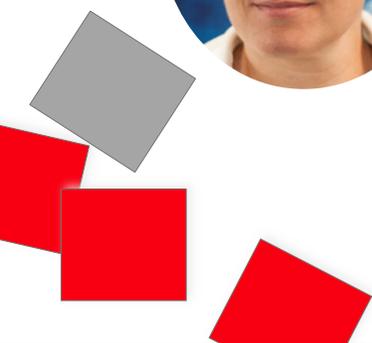
e-IRG May Workshop on cooperation Panel 2

Moderator:

- **Ignacio Blanquer** (e-IRG delegate ES)
- **Peter Brönnimann** (e-IRG delegate CH)

Speakers:

- **Sergej Mozina** (ERA-Forum)
- **Gareth O'Neill** (Technopolis)
- **Pablo de Castro** (EuroCRIS)

2. Governance of EU e-Infrastructures (strategy setting-coordination):

a. How does the European e-Infrastructure organisation/initiative you represent perceive the idea of an **e-Infrastructure umbrella Forum** for community building, high-level strategy setting and coordination for the entire e-Infrastructure landscape

   i. **The vast majority of answers received so far is positive (covering all e-Infrastructures, including open scholarly communications)** but clear definition of roles and coordination with existing bodies is required

   ii. EOSC SB proposes existing channels, e.g. EOSC-A, ESFRI SHF or upcoming ESFRI-EOSC TF. Also get advice from ERAC.

   iii. Some form of representation of users is also favoured, possibly advisory and domain-agnostic/neutral (however this is not easy)

b. Do you believe that besides a strategy / coordination forum a technical / operational forum across all e-Infrastructures would be beneficial

   i. Mixed answers, some positive, some negative..

3. Compatible policies/interoperable services/operational aspects:

a. Do you believe that the EOSC and EuroHPC (federation and sharing) paradigms should be expanded to federate data/services across all major European e-Infrastructures?

    i. Mixed answers. EOSC and EuroHPC coordination should happen, but possibly a bit later

b. What about (EOSC and EuroHPC) compatible policies and interoperable services, so that they can be integrated in a federated portal?

    i. Mixed answers, priority on each of the two first, before attempting to work together…

c. AAI paradigm: is this a success story?

    i. Rather positive, although multiple providers and slow progress. Still quite some work to make it more user friendly and transparent when using services across different service providers.

3. Compatible policies/interoperable services/operational aspects:

d. Coordination to bridge the gap between resource access models in HPC and HTC?

    i. Still early, but there is some work from PRACE on this. E.g. light weight peer-review evaluation for AI resources.

e. Contribution of the e-Infra Forum in the EU Charter of Access for RIs including e-Infrastructures

    i. **Very positive**!

f. Coordination with industry (e.g. GAIA-X)?

    i. Mixed answers, some positive, some negative (not a priority)

i. Other?

    i. *Yes,* need for a cross eInfra helpdesk and training capacity

4. Cost and Business Models, Funding/Sustainability:

i. Does your infrastructure have a *cost model and methodology* to track its costs? If a federated e-Infrastructures, is there a common cost model/ methodology across the national components?

    i. Mixed answers, some ongoing efforts but more work required.

ii. Collecting and sharing different approaches (around methodologies and cost models) across Europe could provide value to the EU or national actors?

    i. **Very positive**!

iii. Business model and sustained funding?

    i. Most say that they are working in this direction!

5. Other points :

a) Main barriers/obstacles for cross-e-Infra activities?

    i. Different legal and funding environments, dependencies on projects

    ii. Administrative barriers rooted in the funding of resources that govern their usage

    iii. Fragmented environment (many e-Infras/services), different types of actors (from network, to hard core computing, to scholarly communication), different priorities/policies

    iv. Different or lack of common/coordinated business models

b) Other?

    i. Common challenge for all e-Infrastructures: Talent shortage, keeping high-talented personnel (lower salaries compared to industry)

    ii. Ease of use / user-friendly services

e-IRG White Paper 2022
Coordination at EU level

Next steps:

- Feedback today (from panel and via Whova questions)

- Proper analysis of questionnaire answers

- Discussion at 70th e-IRG meeting (tomorrow!)

- Analysis to be presented at e-IRG White Paper 2022 by Dec'2022
  - It will be prepared by e-IRG and include some recommendations
  - Contributions from e-Infrastructures to be included as annexes
    - To be discussed with e-Infrastructures (e.g. either include their answers (if agreed) and/or provide a summary position statement for the e-IRG White Paper)

- Next e-IRG Workshop here in Prague: 12-13 December 2022 (Hotel Vienna House Diplomat)
  - One session on coordination and the White Paper finalisation

1ˢᵗ ESFRI Stakeholder Forum last week

- Main topic: Cooperation among ESFRI and its stakeholders

- ESFRI Chair: RIs should go beyond their "comfort zones" to cooperate with all stakeholders and perform cross-disciplinary research

- Similar approach from e-Infrastructures?

e-IRG White Paper 2022

Preliminary Conclusions:

- Cooperation and coordination is required at/and across all levels:
  - Federation Chain: Institutional/National (/Regional)/EU

- First answers to questions indicate that e-Infrastructures appear to be willing to discuss the idea of an e-Infrastructure Umbrella Forum for coordination and strategy setting
  - Ultimately, this will benefit the end users

- e-Infrastructures may need to go beyond the vested interests and comfort zones?

- Is federation enough, or start talking about some more integration by 2030?

- ***White Paper 2022 planned to be concluded by the end of the year!***

Thank you!

- Questions?

    @eirgeu, #eIRG
    e-IRG community

www.e-irg.eu