EOSC Future Security Operations and Policy

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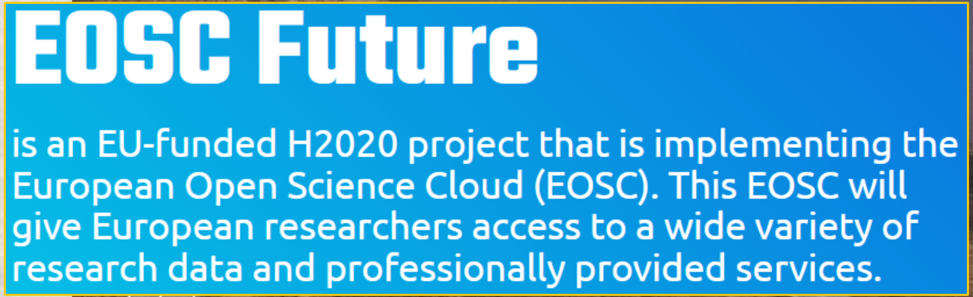
David Groep
PDP group Nikhef, Amsterdam, NL
EOSC Future WP7.5 task lead

A challenging landscape ahead

Entities of all kinds – EOSC spans *data sets* to *storage* to *computing* to *publications* & *digital objects*

An open ecosystem – user driven favouring a low barrier to entry

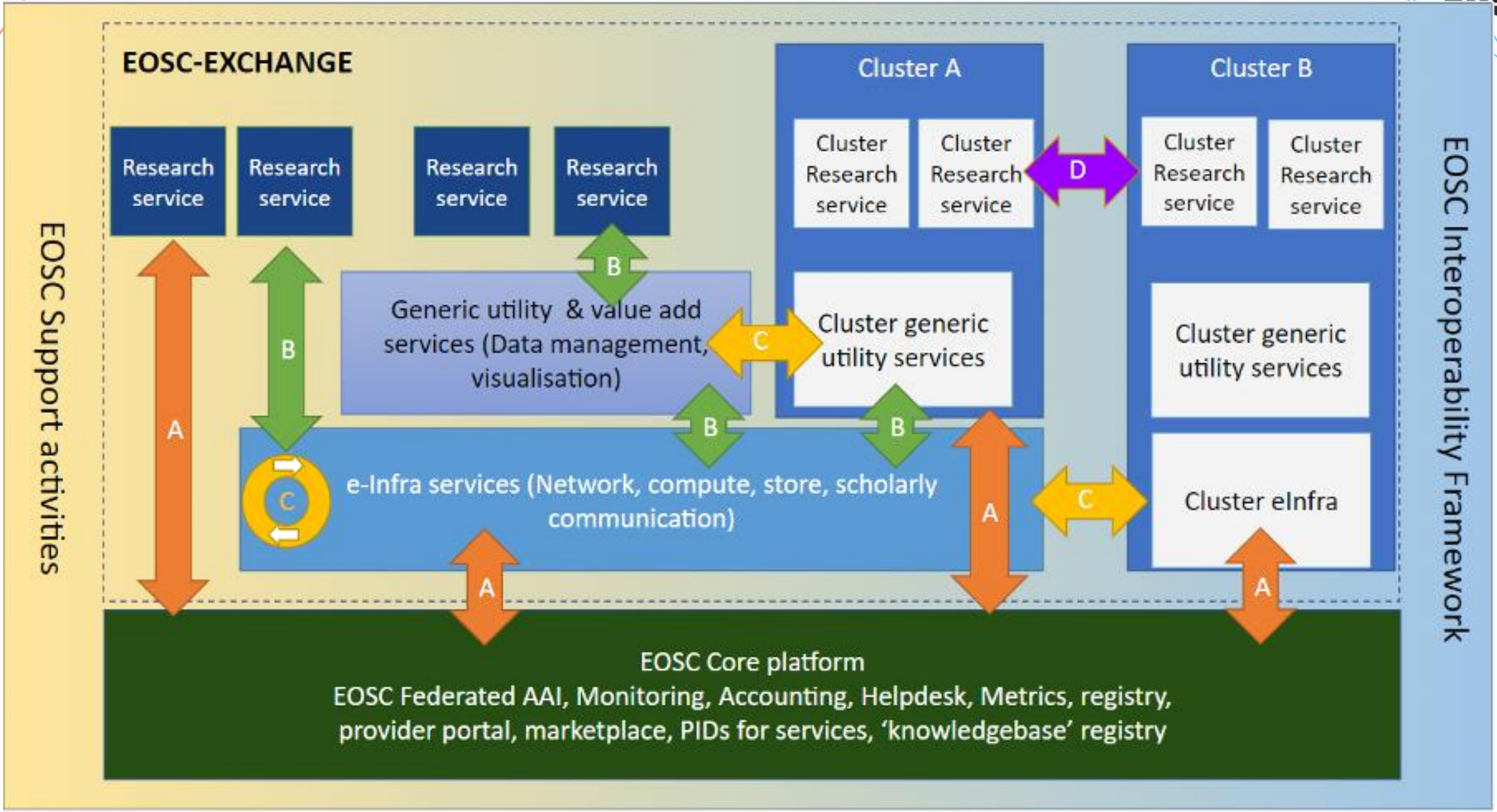
A diverse ecosystem – e-Infrastructures, research services, private sector, …



EOSC Future

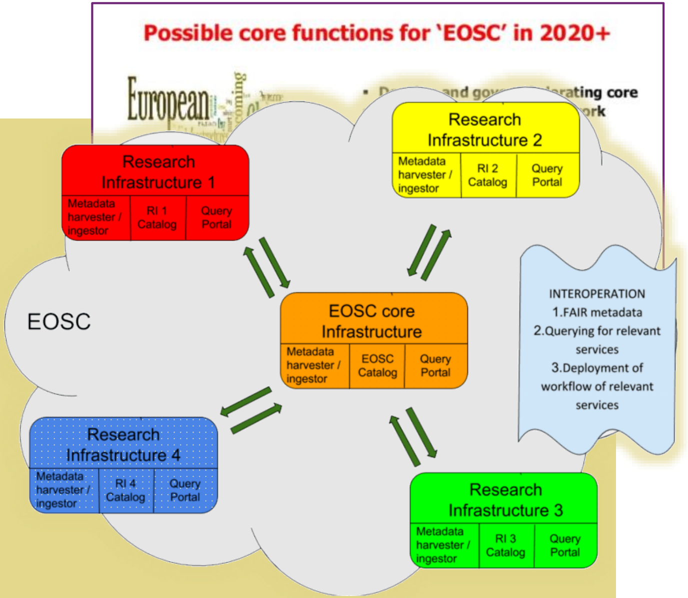
is an EU-funded H2020 project that is implementing the European Open Science Cloud (EOSC). This EOSC will give European researchers access to a wide variety of research data and professionally provided services.

An *interdependent* ecosystem – aiming at composability, collective service design, and a federated approach to AAI


EOSC-EXCHANGE
Research service
Research service
Research service
Research service
Cluster A
Cluster Research service
Cluster Research service
Cluster B
Cluster Research service
Cluster Research service
D
B
Generic utility & value add services (Data management, visualisation)
C
Cluster generic utility services
Cluster generic utility services
B
B
B
A
A
C
e-Infra services (Network, compute, store, scholarly communication)
Cluster eInfra
A
A
A
EOSC Support activities
EOSC Interoperability Framework
EOSC Core platform
EOSC Federated AAI, Monitoring, Accounting, Helpdesk, Metrics, registry, provider portal, marketplace, PIDs for services, 'knowledgebase' registry

Operating core services and ‘exchange’

- IT service management for the (core) services
- Portal operation, with a demand and supply side
- **AAI federation** - authentication and authorization *based on the ‘AARC BPA’ and federation concepts*
- **operational security capabilities, trust policy, and security risk structuring**



Possible core functions for ‘EOSC’ in 2020+

EOSC

Research Infrastructure 1: Metadata harvester / ingestor | RI 1 Catalog | Query Portal

Research Infrastructure 2: Metadata harvester / ingestor | RI 2 Catalog | Query Portal

EOSC core Infrastructure: Metadata harvester / ingestor | EOSC Catalog | Query Portal

Research Infrastructure 4: Metadata harvester / ingestor | RI 4 Catalog | Query Portal

Research Infrastructure 3: Metadata harvester / ingestor | RI 3 Catalog | Query Portal

INTEROPERATION
1.FAIR metadata
2.Querying for relevant services
3.Deployment of workflow of relevant services

Sustainability and Architecture WGs
Architecture WG

set criteria for inclusion of additional services
set interoperability standards

The EOSC AAI /Federation

In order to outline a globally viable, scalable and secure EOSC AAI, the group defined the following three core principles, on which to base their work:

- **User experience** is the only touchstone.
- All trust flows from **communities.**
- **There is no centre** in a distributed system**.**

“The human element was the starting point of our exploration. We believe that providing a good user experience and making use of the existing trust relations that users already have within their research communities are the key factors for delivering a successful EOSC AAI.” [Klaas Wieringa, EOSC AAI TF chair]

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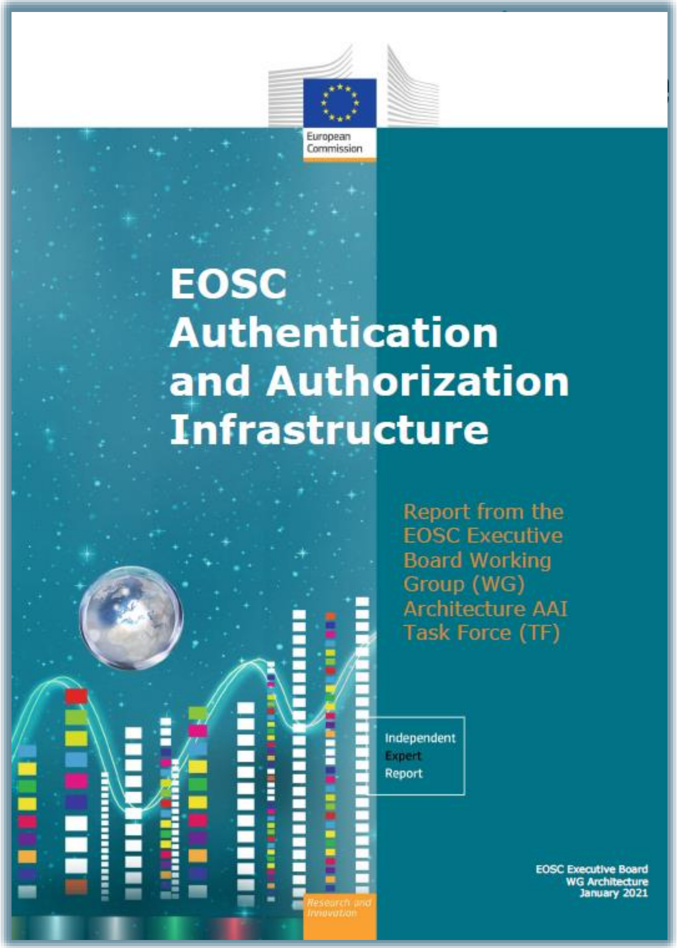


European Commission

EOSC Authentication and Authorization Infrastructure

Report from the EOSC Executive Board Working Group (WG) Architecture AAI Task Force (TF)

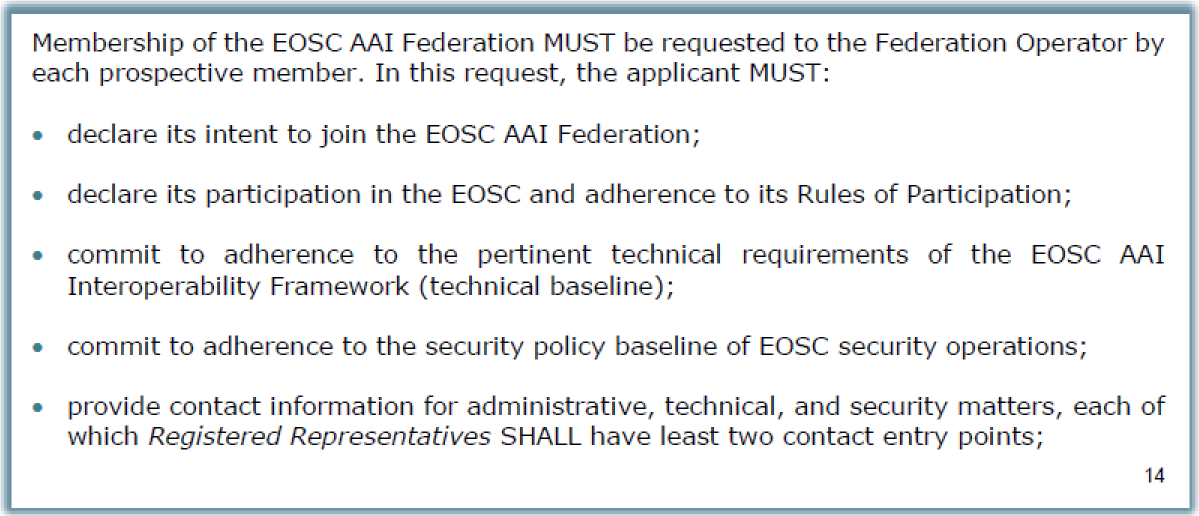
Independent Expert Report

EOSC Executive Board
WG Architecture
January 2021

Research and Innovation

Why is the EOSC AAI important here?

… the new ‘EOSC’ federation gets policies and a base line at ‘onboarding’ time

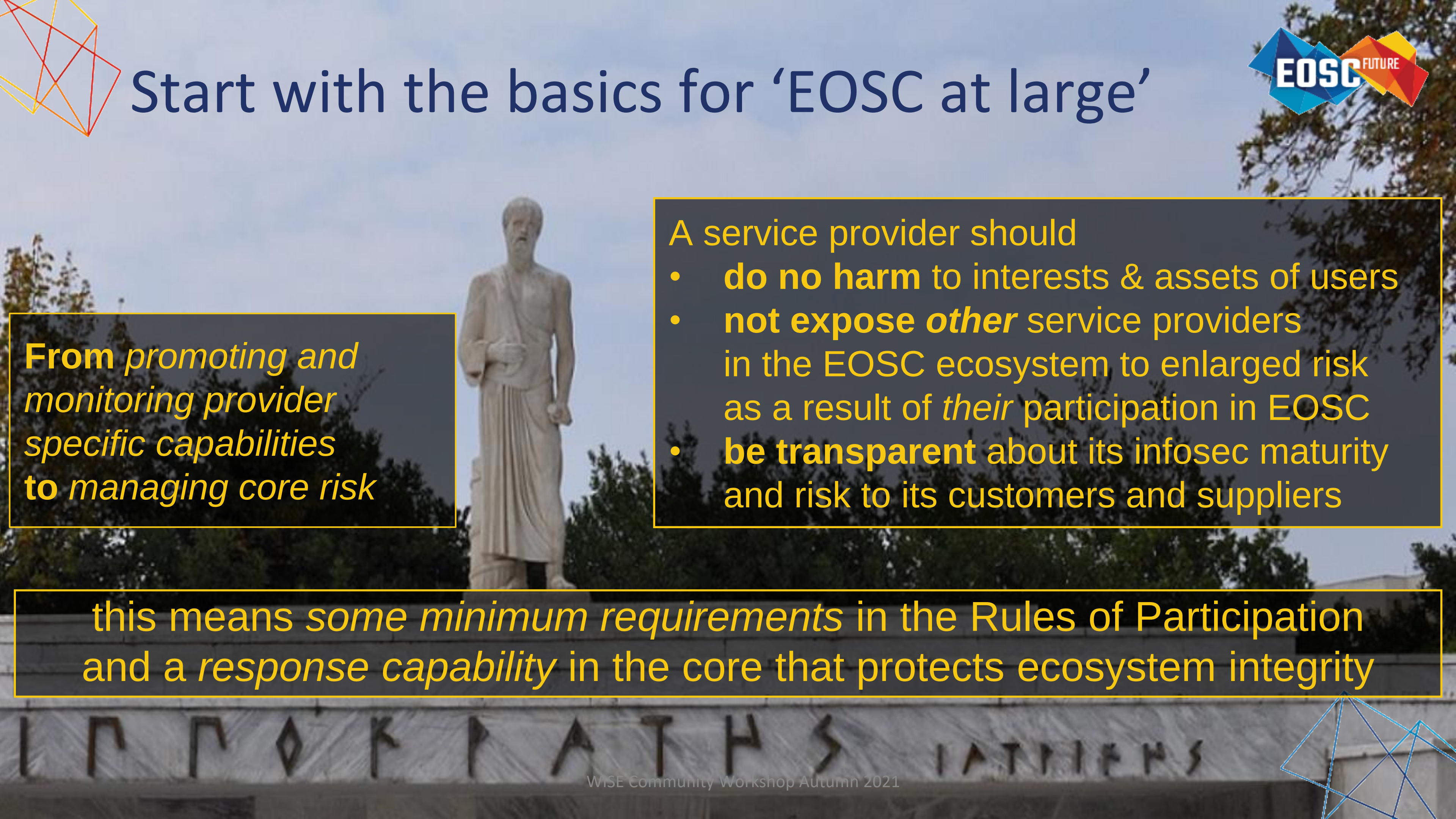


Membership of the EOSC AAI Federation MUST be requested to the Federation Operator by each prospective member. In this request, the applicant MUST:

- declare its intent to join the EOSC AAI Federation;
- declare its participation in the EOSC and adherence to its Rules of Participation;
- commit to adherence to the pertinent technical requirements of the EOSC AAI Interoperability Framework (technical baseline);
- commit to adherence to the security policy baseline of EOSC security operations;
- provide contact information for administrative, technical, and security matters, each of which *Registered Representatives* SHALL have least two contact entry points;

- leveraging existing trust frameworks
- not repeat earlier mistakes: so implement a baseline at the start

Start with the basics for ‘EOSC at large’



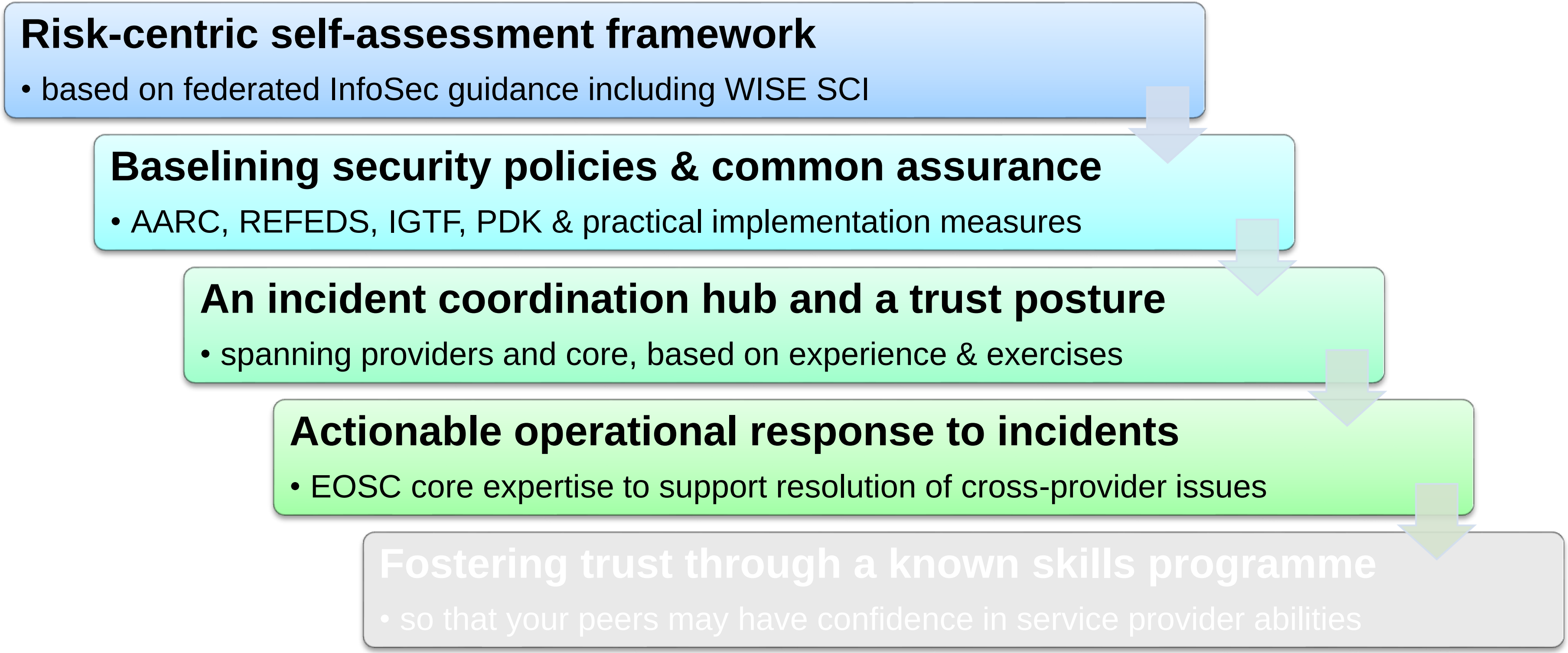
From *promoting and monitoring provider specific capabilities* **to** *managing core risk*

A service provider should

- **do no harm** to interests & assets of users
- **not expose *other*** service providers in the EOSC ecosystem to enlarged risk as a result of *their* participation in EOSC
- **be transparent** about its infosec maturity and risk to its customers and suppliers

this means *some minimum requirements* in the Rules of Participation and a *response capability* in the core that protects ecosystem integrity

EOSC Security Operations & Policy



Risk-centric self-assessment framework

- based on federated InfoSec guidance including WISE SCI

Baselining security policies & common assurance

- AARC, REFEDS, IGTF, PDK & practical implementation measures

An incident coordination hub and a trust posture

- spanning providers and core, based on experience & exercises

Actionable operational response to incidents

- EOSC core expertise to support resolution of cross-provider issues

Fostering trust through a known skills programme

- so that your peers may have confidence in service provider abilities

Structuring security for the EOSC

1. Information security **risk assessment framework** based on SCI and a maturity model – targeting connected services as well as data, and correlated risks
2. Coordinate security policies for a **baseline** aligned with the Rules of Participation of the EOSC, and the EOSC AAI federation – ensuring transparency for the ‘risk appetite’ of the participants
3. Mechanisms for **coordination** and resolution of incidents through Information Security Management (ISM) processes – leveraging WISE community and Sirtfi, and enabling the (tested) framework for information sharing
4. Security **operations and incident response capabilities** related to or affecting the EOSC Core (in relatively broad sense) - with content and service providers

Risk Assessment

- base on WISE Risk Assessment for WISE (RAW-WG) assessment template
- moves beyond single-domain framework
- specifically challenging if you cannot enumerate your assets?
- EOSC-specialised maturity model and (self-)assessments
- assessment of risk of combined and composite services

Security policy baseline and trust

- needs to preserve the risk appetite of the participants involved
- trust should be transparent, comparably formulated, and address existing and emergent usage patterns
- taking in EOSC Rules of Participation WG, governance activities, and WISE

1. security policy baseline to be incorporated into EOSC AAI Federation participation policy and incorporate secure service operations guidelines
2. evolving trust ‘mapping’ framework of WISE SCI by explicitly incorporating federative aspects
3. effective peer-reviewed self-assessment of information security maturity

Coordination framework and operational sharing process

- incidents are not limited to just one participant, so their mitigation, containment, and ultimate resolution requires a collective response
- leverage, enhance mechanisms developed in WISE and REFEDS
- procedures for collaborating and sharing of the so-called ‘Indicators of Compromise’ (IoCs)
- since incidents do not stop at the EOSC edge, needs engagement with whole constituency: EOSC Core, Exchange, providers, community
- concrete processes that enable collaboration during actual response
- periodically exercised!

Remediation of Core incidents and coordinated security response

- interdependency of services requires exchange of information and a coherent and simultaneous response to incidents both across services as well as inside each individual service
- coordinating response for incidents affecting the EOSC
- remediation of incidents in the Portal, Core Services, and key infrastructure elements

effective remediation of incidents in the EOSC at large *also* depends on subsidiarity and participation of service providers and Infra’s

‘EOSC will shape the research area – and trust drives its resilience and security’

Nikhef

David Groep
https://www.nikhef.nl/~davidg/presentations/
iD https://orcid.org/0000-0003-1026-6606

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