Incident Response for Federated Identities

Authentication and Authorisation for Research and Collaboration

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Agenda

Security Incident Response in Distributed Infrastructures

The challenge of Federated Identity Management

What can we do?

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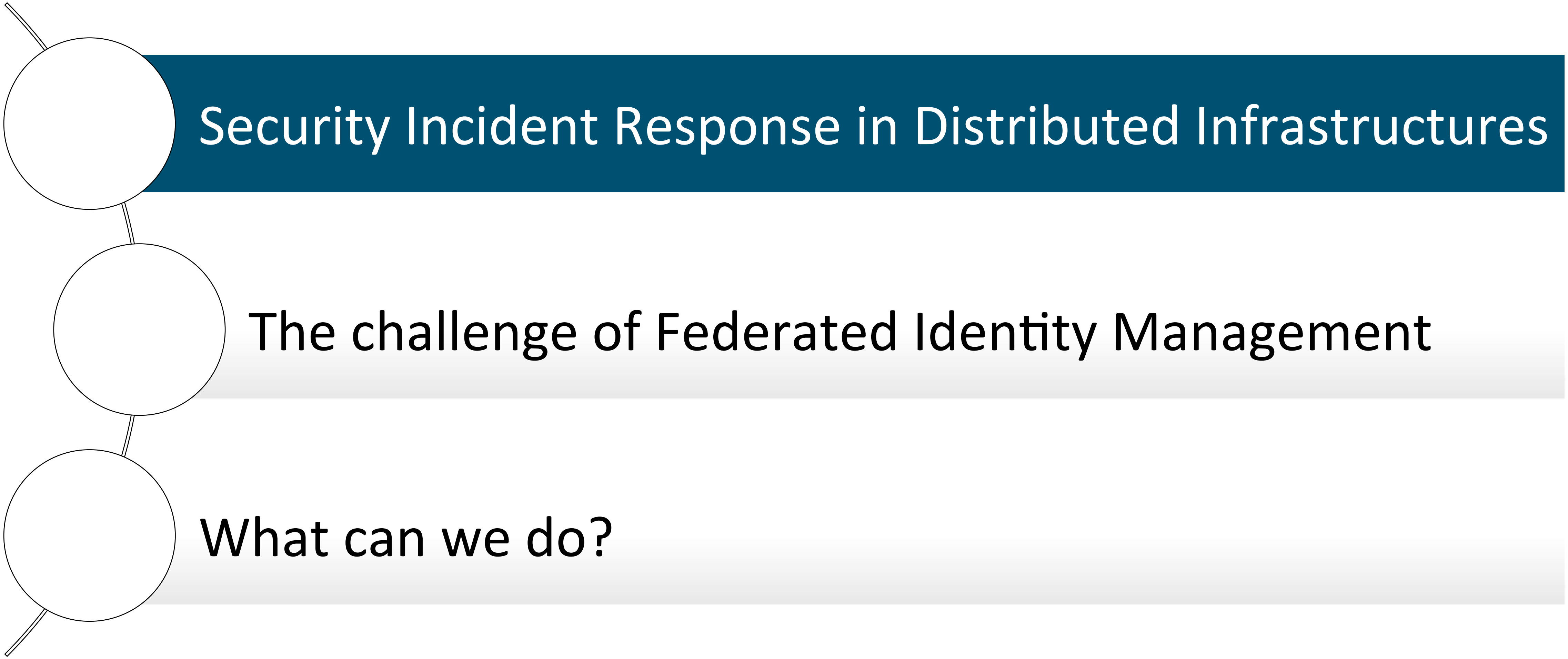
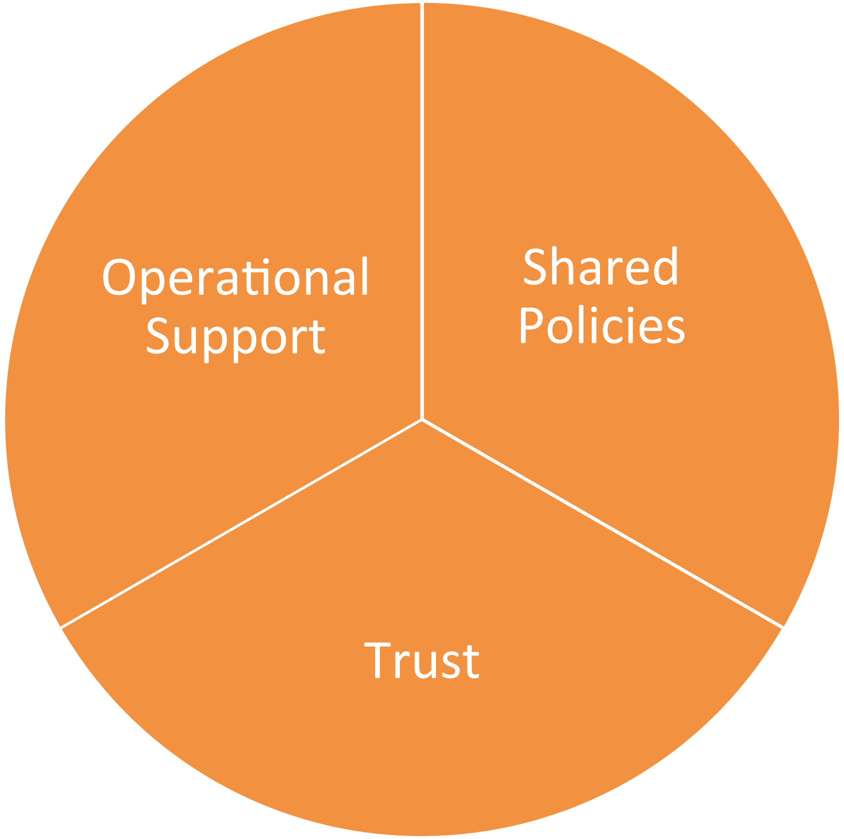


- Security Incident Response in Distributed Infrastructures
- The challenge of Federated Identity Management
- What can we do?

Security Incident Response in Distributed Infrastructures



Shared Policies

- Written rules, and obligations
- Clear basis for exclusion from infrastructure if not followed
- Reasonable likelihood that sites follow best practices in security

Operational Support

- Incident preparation and prevention - cascade advisories, IOCs, patches etc
- Coordinate incident response across multiple Sites
- Power to block problematic Sites & users

Trust

- Fundamentally, incident response is more successful when the individuals know and trust each other
- Online trust
  - Consistent, trustworthy behaviour
  - Voluntary collaboration
- Offline trust
  - Key exchange
  - Verification that you are a real person ☺

Agenda

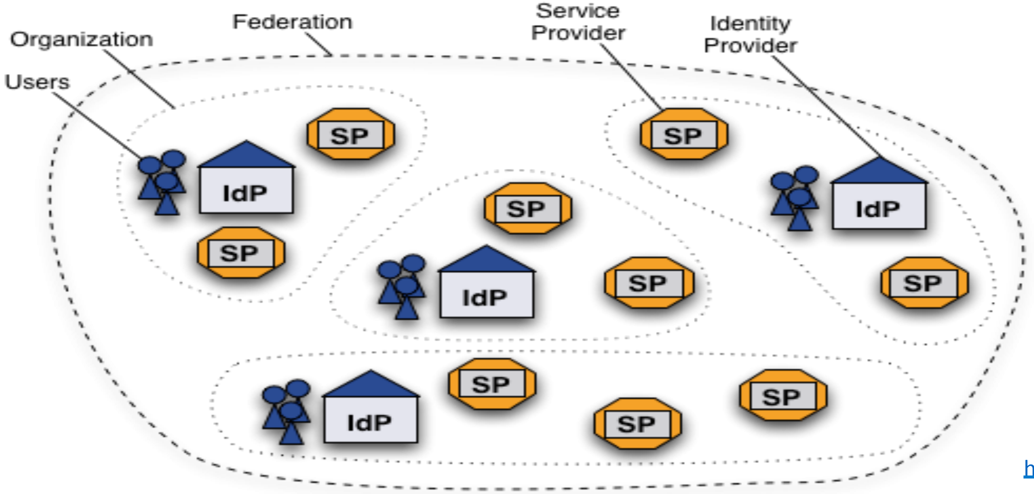
Security Incident Response in Distributed Infrastructures

The challenge of Federated Identity Management

What can we do?

Federated Identity Management Worldwide
What is a Federation?

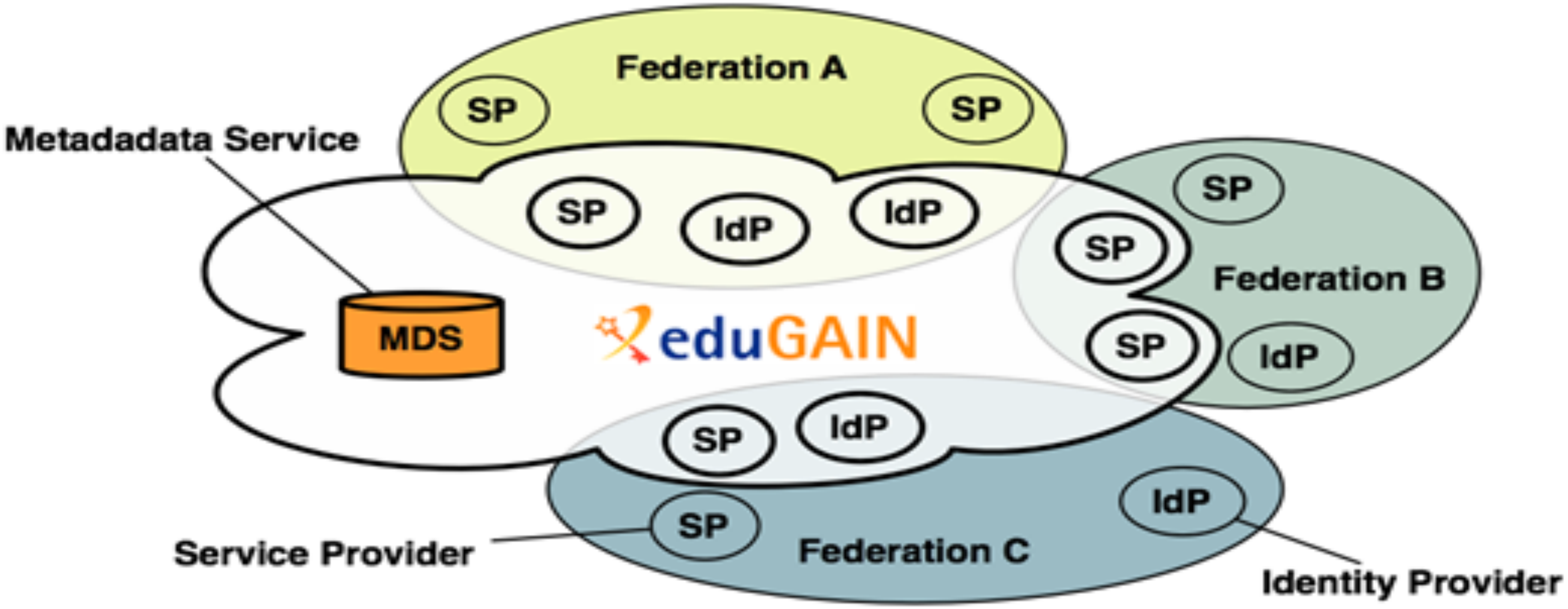
- Federated Identity Mangement (FIM) is the concept of groups of Service Providers (SPs) and Identity Providers (IdPs) agreeing to interoperate under a set of policies.
- Federations are typically established nationally and use the SAML2 protocol for information exchange
- Each entity within the federation is described by metadata



https://www.switch.ch/aai/about/federation/

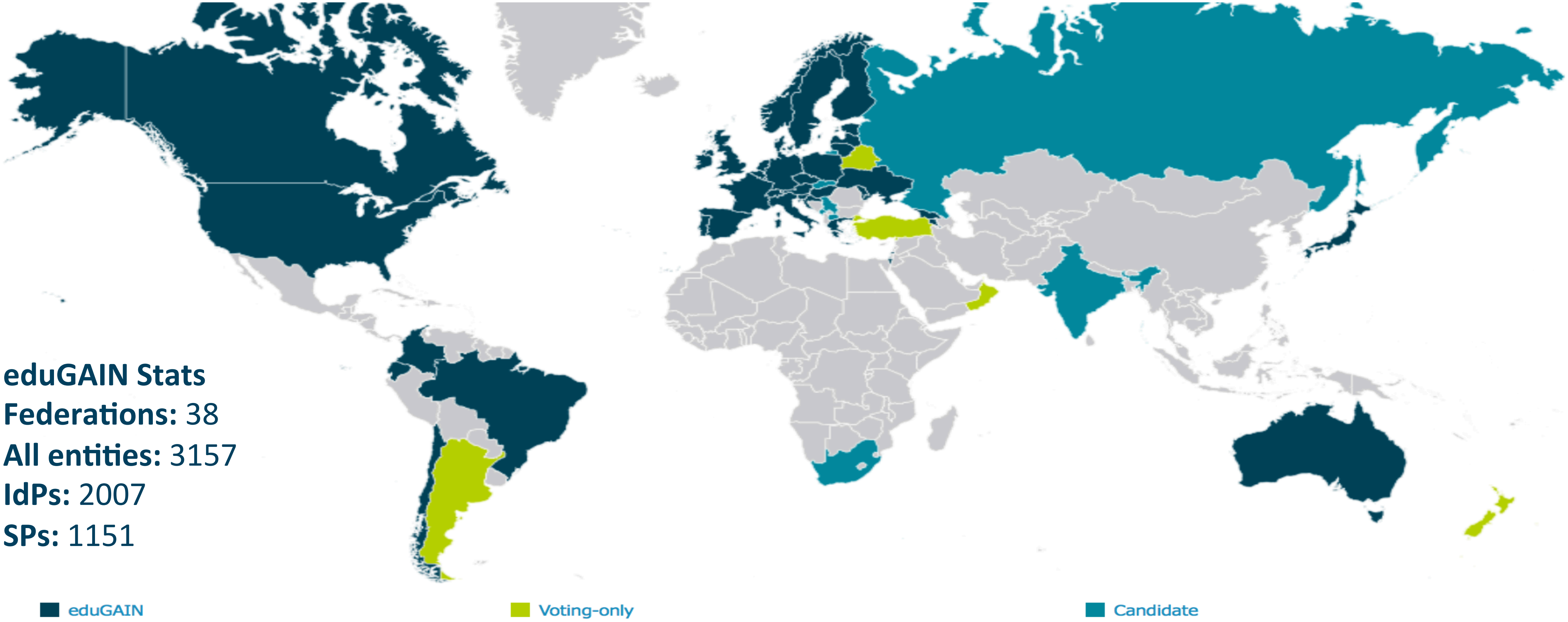
Federated Identity Management Worldwide
eduGAIN

- eduGAIN is a form of interfederation
- Participating federations share information (metadata) about entities from their own federation with eduGAIN
- eduGAIN bundles this metadata and publishes it in a central location.



Credit to Alessandra Scicchitano – GEANT for this slide

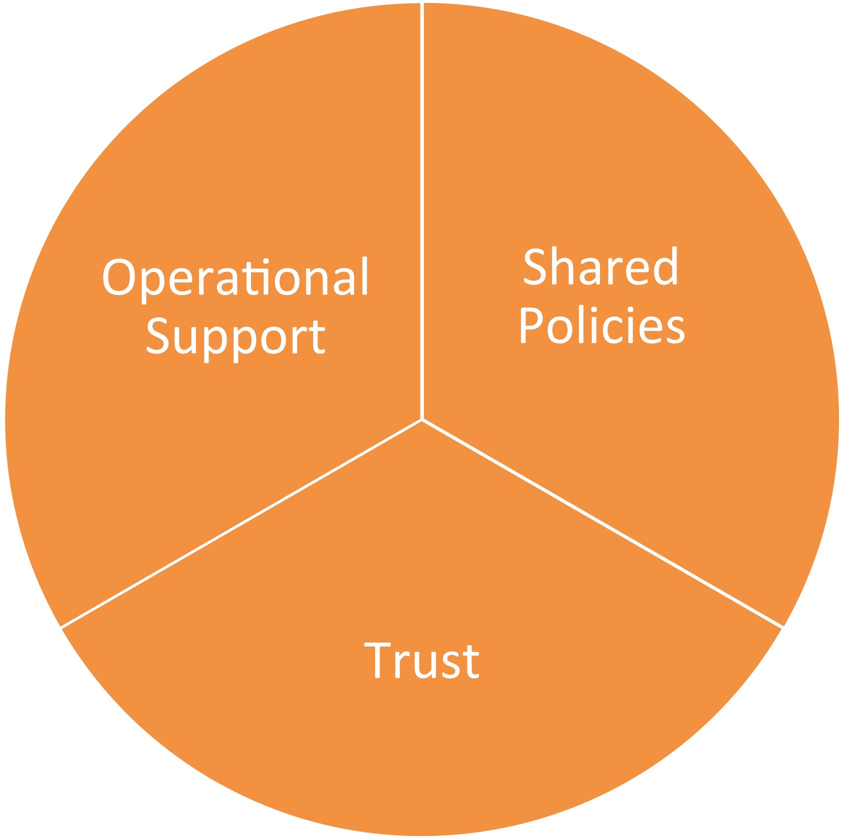
Federated Identity Management Worldwide
eduGAIN adoption



eduGAIN Stats
Federations: 38
All entities: 3157
IdPs: 2007
SPs: 1151

Credit to eduGAIN, data taken March 2016

Security Incident Response in Distributed Infrastructures

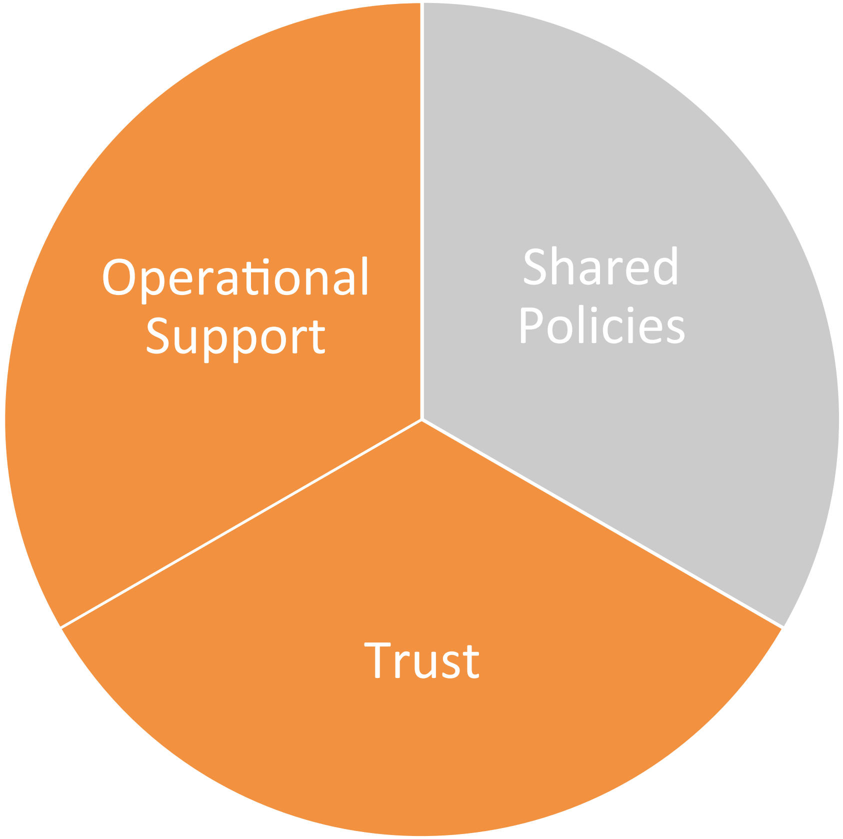


The challenge of Federated Identity Management

- EduGAIN membership includes 4 policies… Security Incident Response is not one

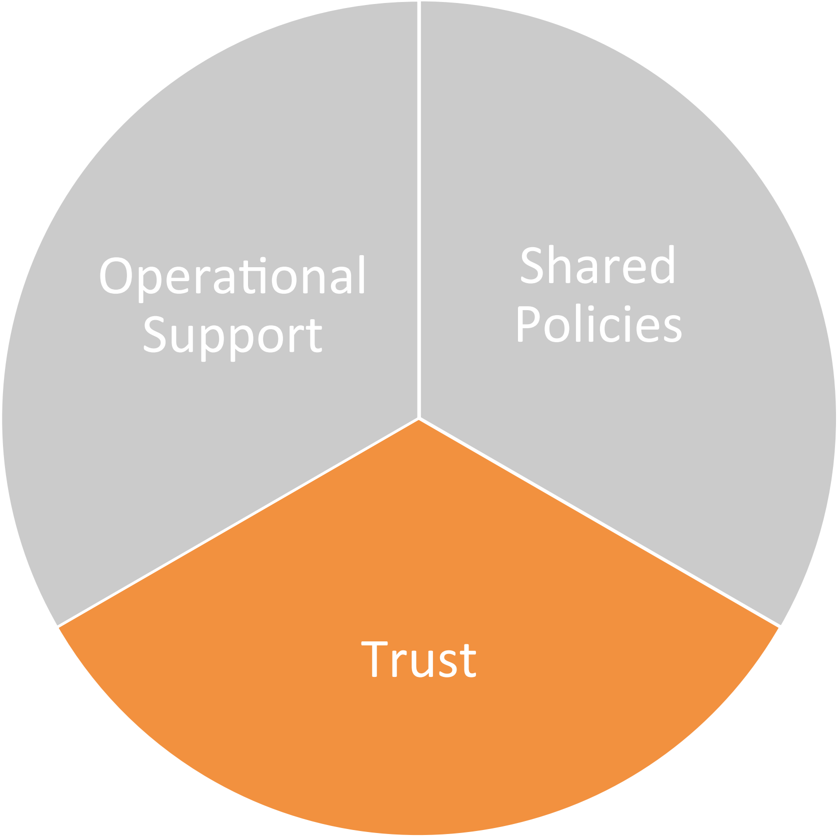
- We have no insight into security practices of each participant

- Collaboration between IdPs and SPs is essential to build full incident timeline – they have no obligation to collaborate



The challenge of Federated Identity Management

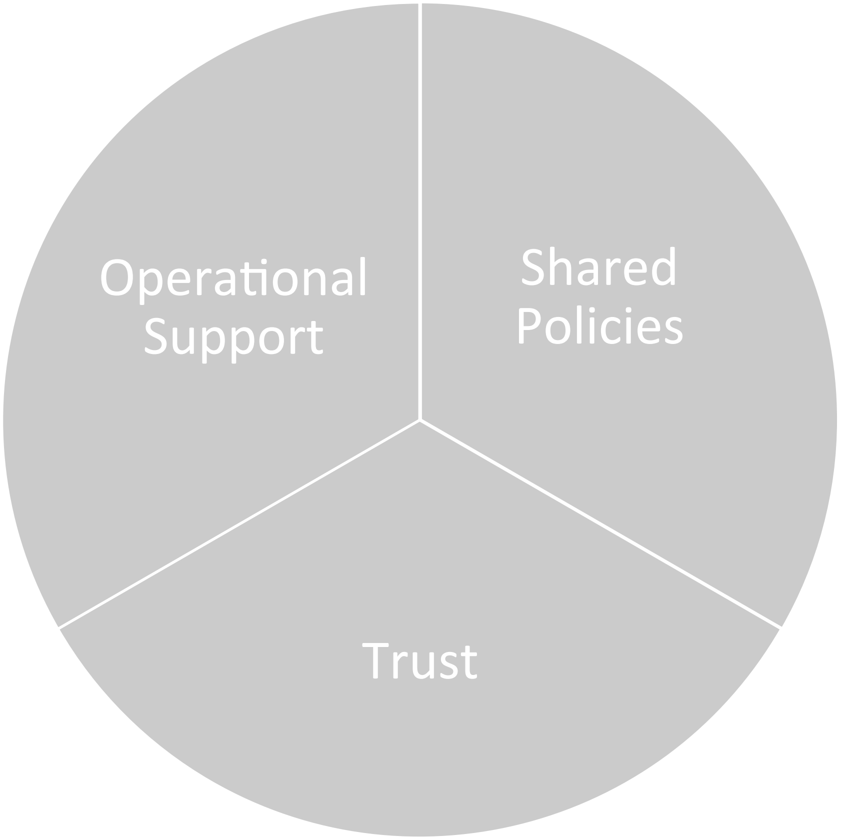
- EduGAIN has no central help desk
- Few national federations offer central security support
- No way to block an identity, IdP, or federation <u>everywhere</u> and <u>immediately</u>



The challenge of Federated Identity Management

- Security is often not priority (or even in skillset) of engaged FIM participants

- Simply too big…



2037 IdPs

Potential sources of compromised identities

1197 SPs

Potential targets

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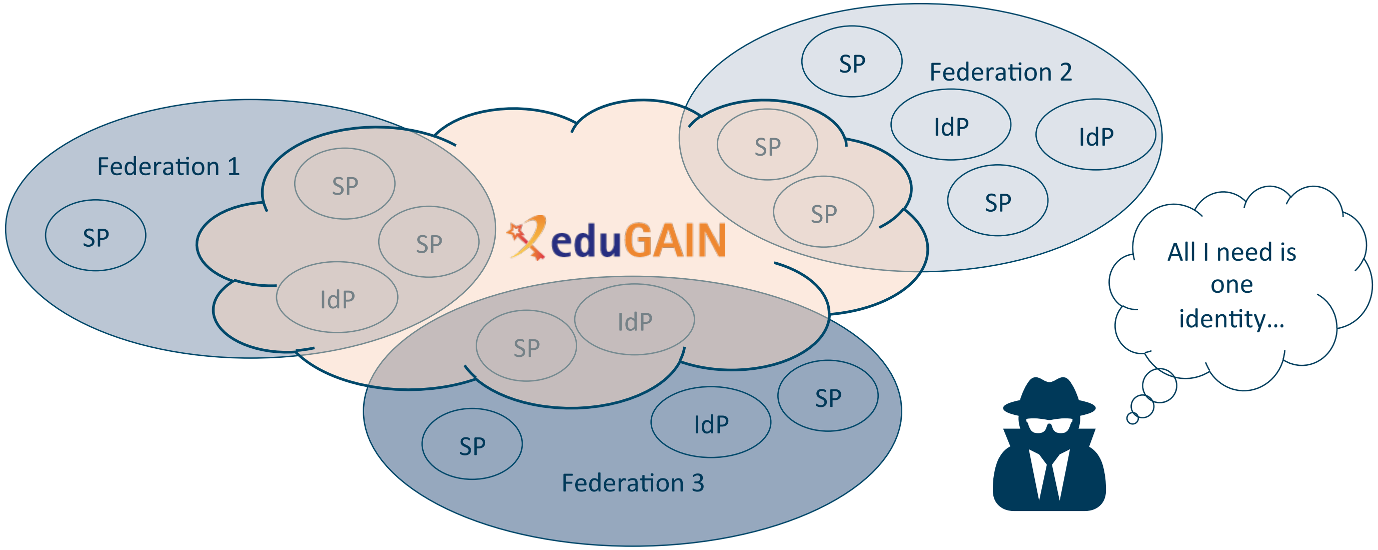
The challenge of Federated Identity Management

What can we do?

What can we do?



Clearly an inviting vector of attack… luckily, this was noticed several years ago!

Beginnings

- Issues of IdM raised by IT leaders from EIROforum labs (Jan 2011)
  - CERN, EFDA-JET, EMBL, ESA, ESO, ESRF, European XFEL and ILL
  - These laboratories, as well as national and regional research organizations, face similar challenges

- Prepared a paper that documents common requirements
  https://cdsweb.cern.ch/record/1442597

"Security procedures and incident response would need to be reviewed. Today, each resource provider is for example responsible for terminating access by known compromised identities. With identity federation, this responsibility will be shifted to the IdP though resource providers will insist on the ability to revoke access."

"Such an identity federation in the High Energy Physics (HEP) community would rely on:
*• A well-defined **framework** to ensure sufficient **trust** and **security** among the different IdPs and relying parties."*

Credit to David Kelsey (STFC) for this content

Evolution

Several years later, 2016

Security
Incident
Response
Trust Framework for
Federated
Identity

✓Approved by the REFEDS (Research & Education FEDerations) Community

✓Registered Internet Assigned Numbers Authority (IANA) Assurance Profile
https://www.iana.org/assignments/loa-profiles/loa-profiles.xhtml

Sirtfi

Operational Security

- Require that a security incident response capability exists with sufficient authority to mitigate, contain the spread of, and remediate the effects of an incident.

Incident Response

- Assure confidentiality of information exchanged
- Identify trusted contacts
- Guarantee a response during collaboration

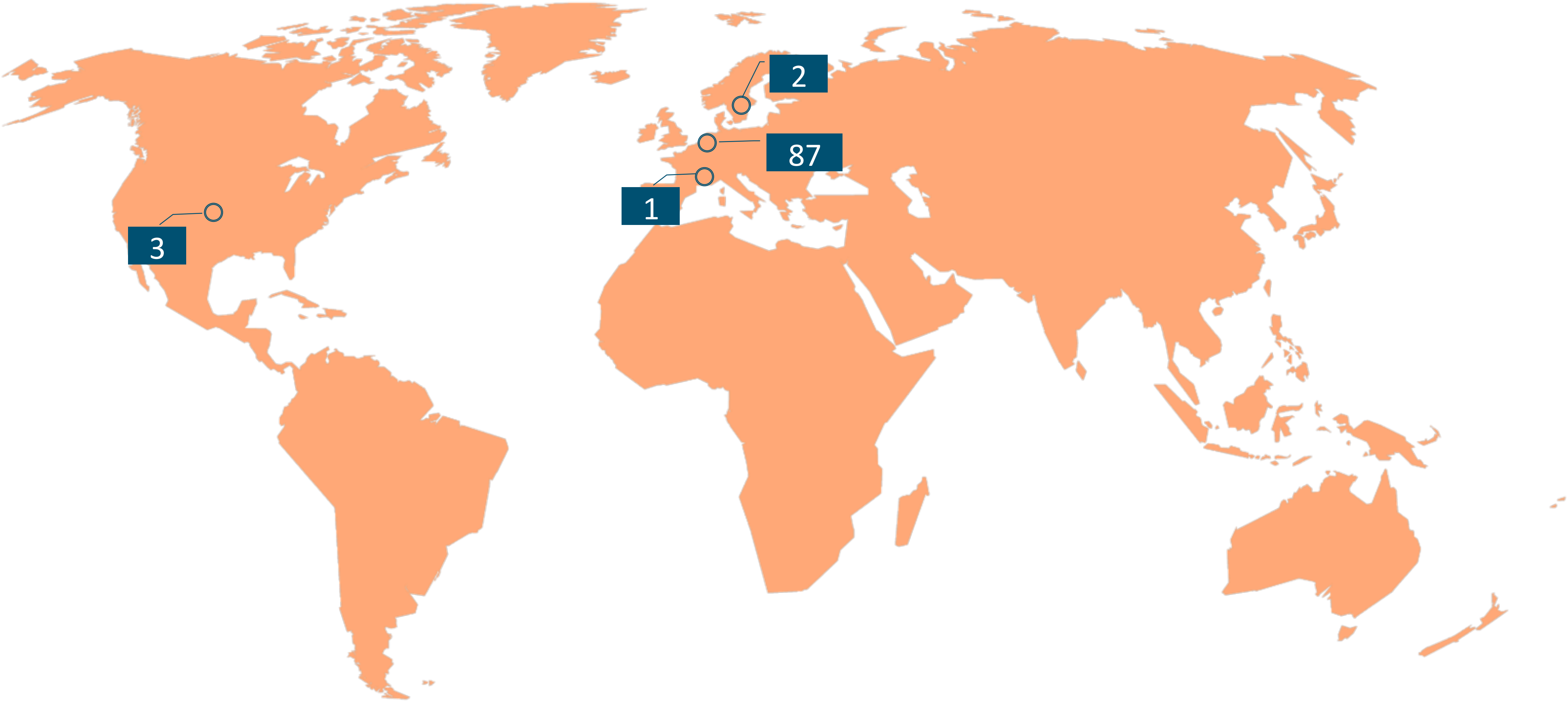
Traceability

- Improve the usefulness of logs
- Ensure logs are kept in accordance with policy

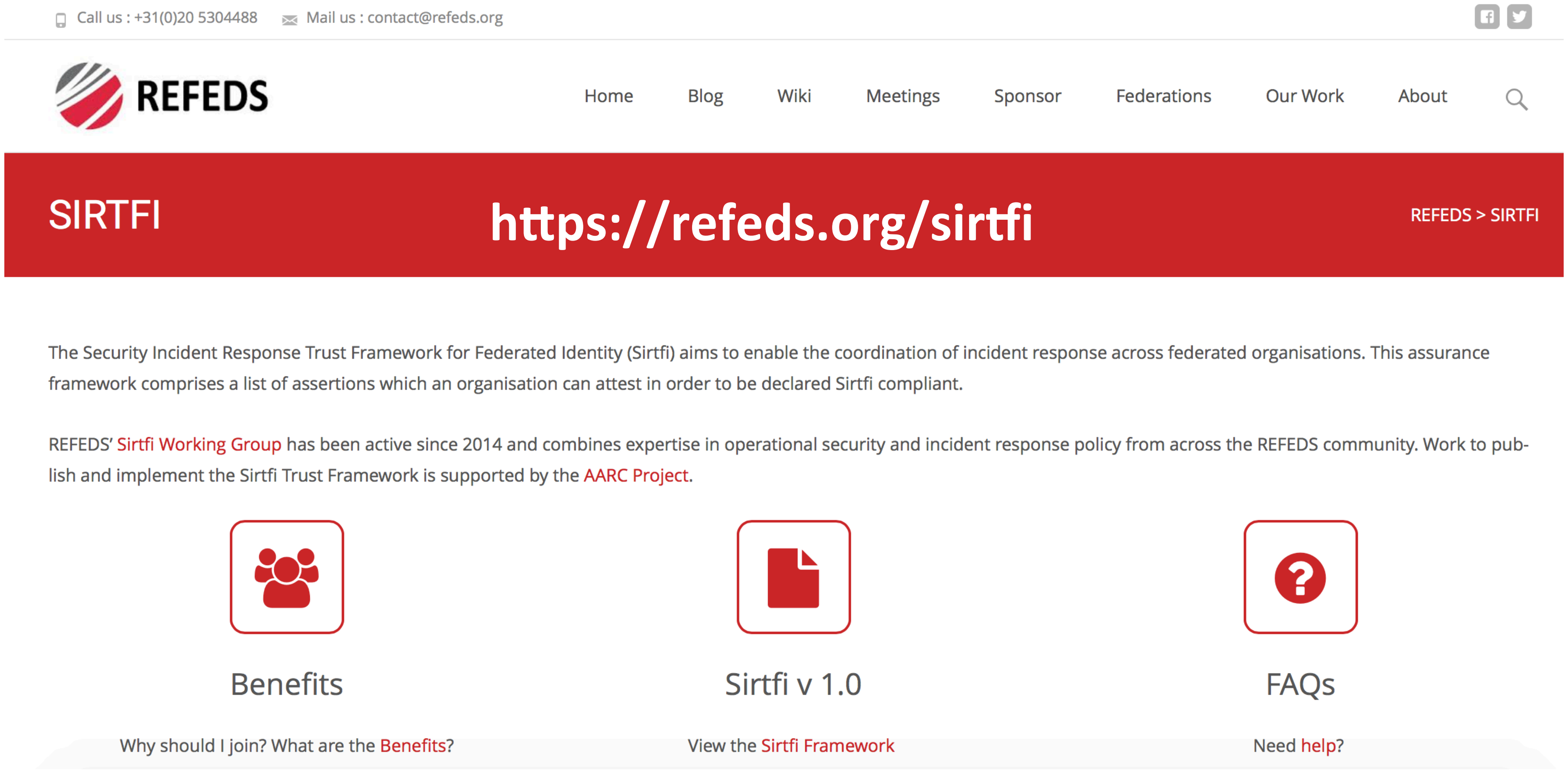
Participant Responsibilities

- Confirm that end users are aware of an appropriate AUP

Current adoption



Find out more



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REFEDS

SIRTFI

https://refeds.org/sirtfi

REFEDS > SIRTFI

The Security Incident Response Trust Framework for Federated Identity (Sirtfi) aims to enable the coordination of incident response across federated organisations. This assurance framework comprises a list of assertions which an organisation can attest in order to be declared Sirtfi compliant.

REFEDS' Sirtfi Working Group has been active since 2014 and combines expertise in operational security and incident response policy from across the REFEDS community. Work to publish and implement the Sirtfi Trust Framework is supported by the AARC Project.

Benefits

Why should I join? What are the Benefits?

Sirtfi v 1.0

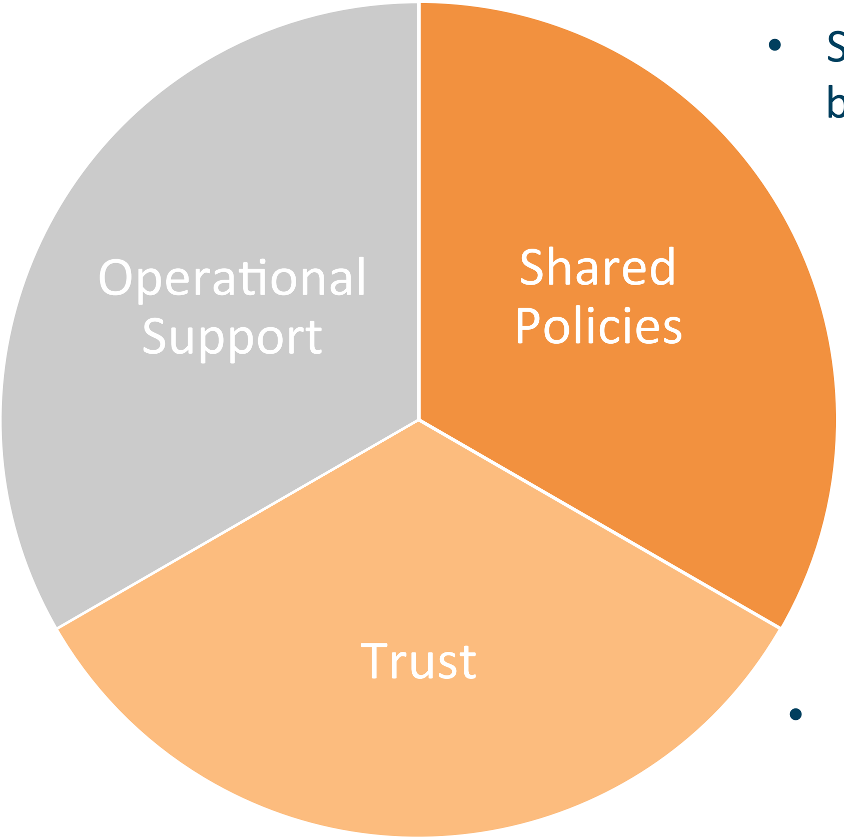
View the Sirtfi Framework

FAQs

Need help?

How does Sirtfi help?

How does Sirtfi help?



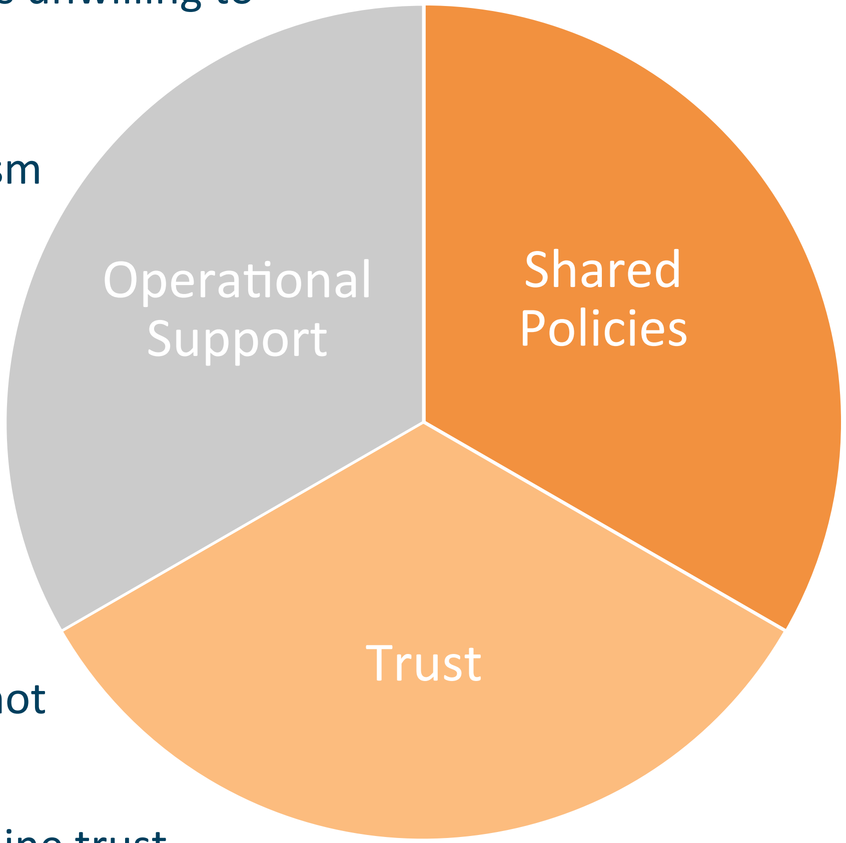
- Shared framework fulfills purpose of basic policy
    - Obliged to collaborate
    - Basic operational security best practices

- Allows us to identify security conscious bodies

How does Sirtfi not help?

- Some Federation Operators unwilling to act as gatekeepers

- No large-scale blocking mechanism



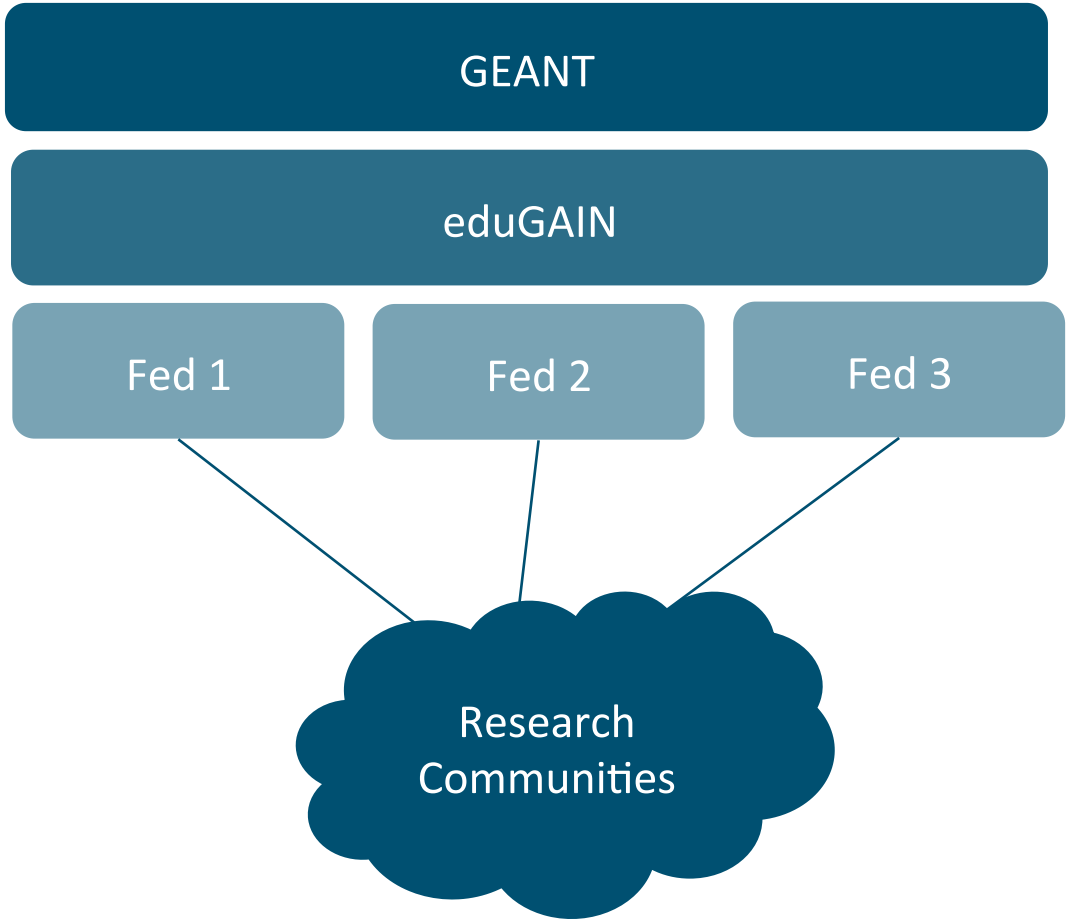
- Trust tied to organisation/entity, not individual

- Difficult to build offline trust

What’s missing?

Requirement	How could we get this?
Indication of who really trusts who	Independent trust portal, votes based web of trust
Capability to remove participants from Sirtfi	Shared Operational Support
Periodic tests of contact responsiveness	
Channel for smaller participants to access security support and trust groups	
Log of “bad behaviour”	
Ability to block identities across eduGAIN	Distributed mechanism for blocking users (e.g. confyrm, perun…)

Operational Support is needed, but where?



GEANT – possible but not ideal

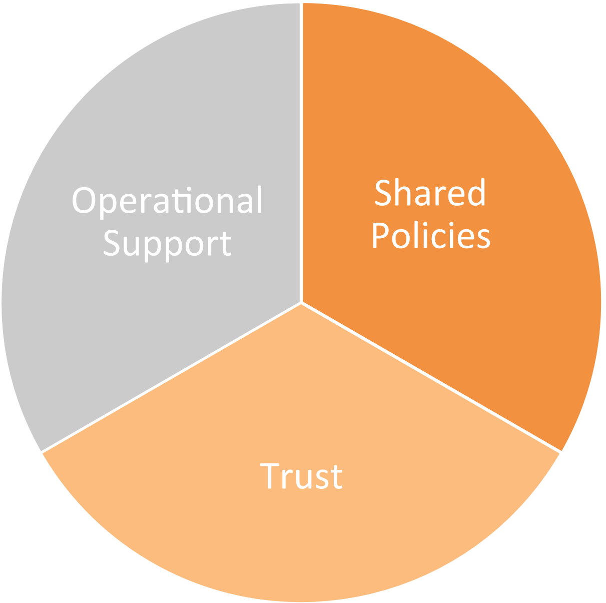
eduGAIN – no central support

Federations – not all are willing

Research Communities – very possible!

Conclusion

- Federated Identity Management is a likely evolution from the end-user certificate model
- There is a need to establish an effective Security Incident Response capability within eduGAIN
- Sirtfi goes some way to providing the missing capabilities
- There are still gaps, particularly for sustainable operational support



Thank you

Any Questions?

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https://aarc-project.eu

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