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Networks • Services • People

Multilateral Federations From Research and Education Identity Federations to eduGAIN

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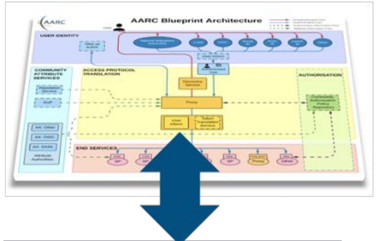
Agenda

- Authentication: Local, Centralized, Single Sign On
- Federated Authentication
- Research and Education Identity Federations
- R&E federated identity standards
- AARC Blueprint Architecture

T&I Service Portfolio

The big picture

eduTEAMS


AARC
AARC Blueprint Architecture
USER IDENTITY
COMMUNITY ATTRIBUTE SERVICES
ACCESS PROTOCOL TRANSLATION
AUTHORISATION
END SERVICES

Supporting virtual teams and sharing resources

InAcademia ONLINE STUDENT VALIDATION

Is this a student?
Yes/No
InAcademia
ONLINE STUDENT VALIDATION

Offering a validation service based on “studentness”

Widening scope with OpenRoaming

eduGAIN

eduroam

haka
COFRe Comunidad Federada REUNA
GakuNin
SWITCHaai
The UK Access Management Federation FOR EDUCATION AND RESEARCH
TAAT
MiNGA
FEIDE
cafe
confia
Carsi
WAYF Where are you from
grnet
SWAMID
arnes
RCTSaai
SURF CONEXT
Belnet R&E Federation
eduID
SIFULAN
InCommon
aconet
idem garr aai
RENATER CONNECTEUR DE SAVOIRS
AUSTRALIAN ACCESS FEDERATION
Colfire
Edugate
AFIRE
Tuakiri
DFN-AAI
eduID.cz
SIR
AAI@EduHr

Single Sign On

Primordial Soup

- Nothing yet!

2009 (c) Guillermo Maldonado - Stone age stargate 2

Stone Age

- Application holds all info

Bronze Age

- Centralised credential e.g. LDAP
- Identity in app

Iron Age

- Central credentials and Identity
- App only has specific user data

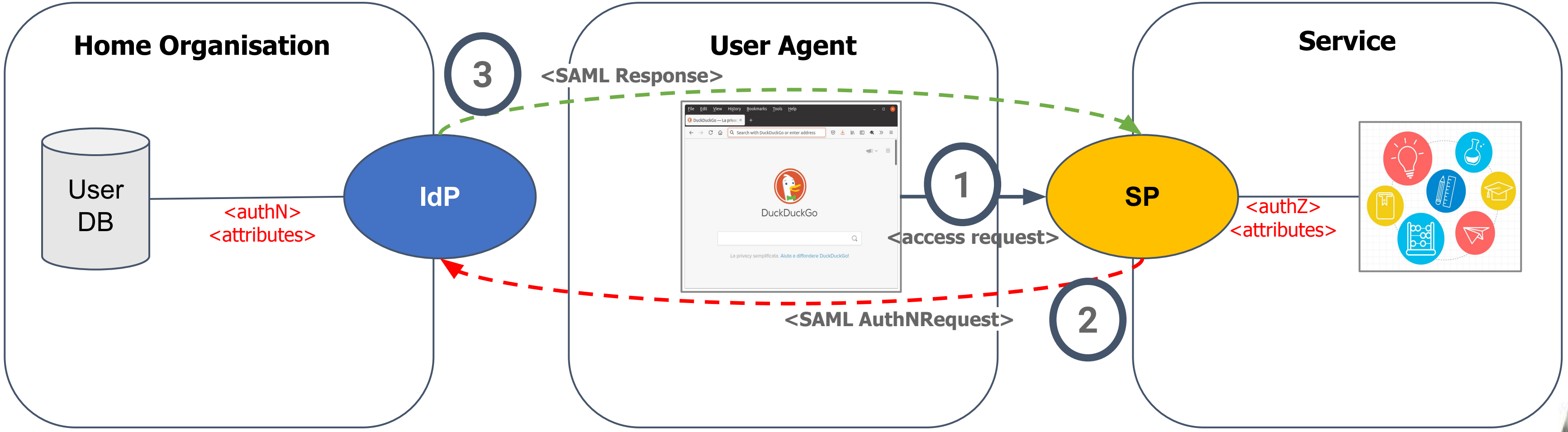
Diamond Age

- Federated Identity
- Share information outside one domain

Local, Centralized and SSO identity management

	Local	Centralized	Single Sign On
Users	Each application has its own user database.	One database or directory for the entire organization.	Users’ database and authentication systems are separated.
Credentials	Each application assigns a set of credentials to its users.	Applications collect user’s credentials and send them to centralized systems for authentication.	Applications access and authentication are completely decoupled. Credentials are managed only by the SSO system.

Federated Authentication in action



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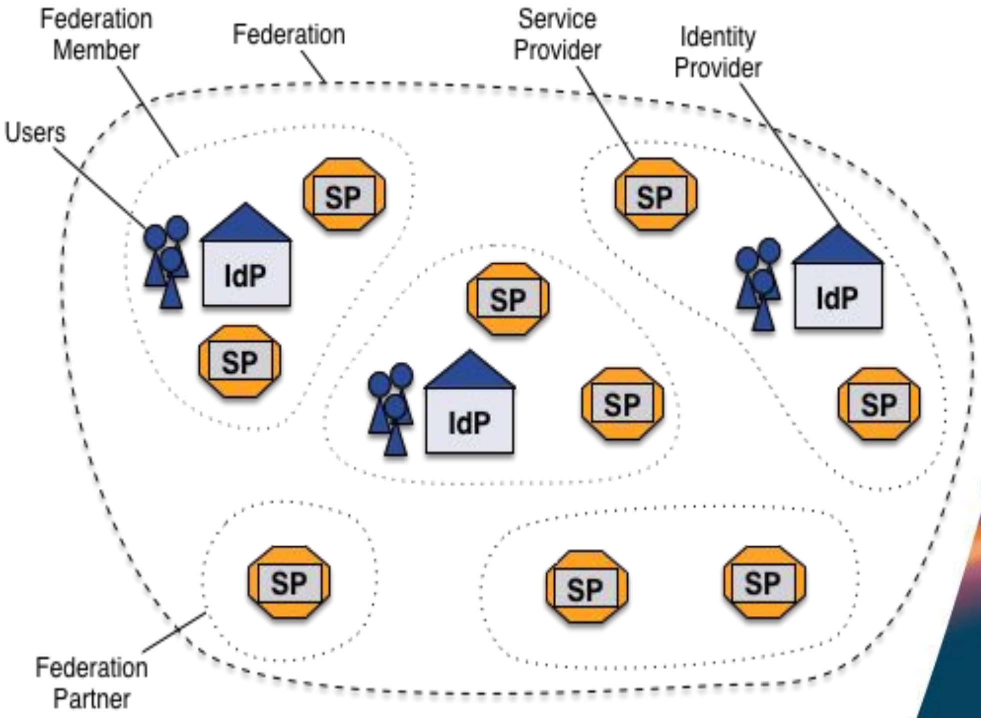
Identity Federation

An identity federation is a collection of organizations that agree to interoperate under a certain rule set.

This rule set typically consists of **legal frameworks**, **policies** and **technical profiles** and standards.

It provides the necessary **trust** and **security** to exchange home organizations' **identity** information to **access services** within the federation.



Identity Provider, Service Provider, Discovery Service

Identity Provider

The system component that authenticates a user (e.g. with username and passwords) and issues identity assertions on behalf of the user who wants to access a service protected by a Service Provider.

Service Provider

The system component that evaluates identity assertions from an Identity Provider and uses the information from the assertion for controlling access to protected services.

Discovery Service

The Discovery Service service, also known as "Where Are You From (WAYF)" service, lets the user choose his home institution from a list and then redirects the user to the login page of the selected institution for authentication.

The Federation Operator

The Federation Operator is the **trusted third party** that manages and signs the metadata about the federation entities

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        xmlns:mdrpi="urn:oasis:names:tc:SAML:metadata:rpi"
        xmlns:mdui="urn:oasis:names:tc:SAML:metadata:ui"
        xmlns:ds="http://www.w3.org/2000/09/xmldsig#" entityID="https://wiki.idem.garr.it/rp" ID="_20240126T080128Z"
validUntil="2024-01-28T08:01:28Z" cacheDuration="PT1H">
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```

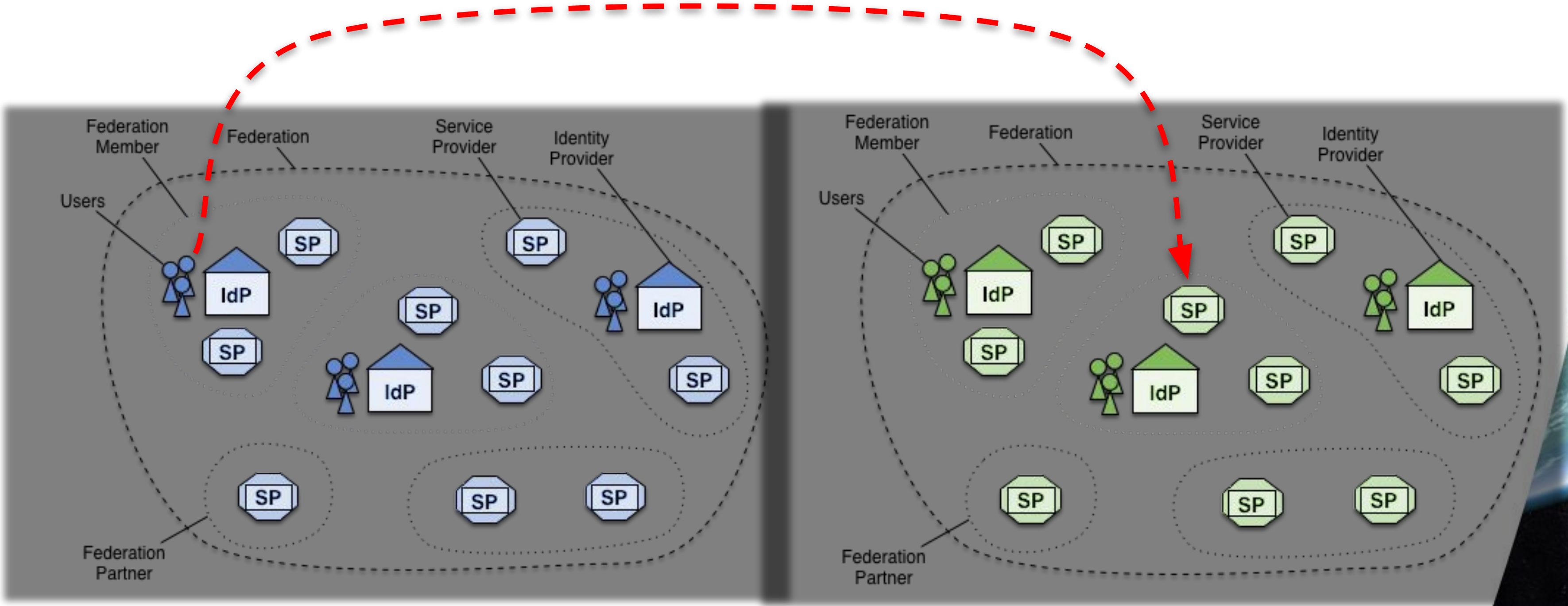
eduGAIN

*“eduGAIN **interfederation service** connects identity federations around the world, simplifying **access** to content, services and resources for the **global** research and education community”*

The eduGAIN many contributors

RENATER CONNECTEUR DE SAVOIRS
AUSTRALIAN ACCESS FEDERATION
Colfire
Edugate
AFIRE
Tuakiri
AAI @EduHr
eduID.cz
SIR
InCommon
WAYF Where are you from
idem garr aai
aconet
eduID
SIFULAN
TAIFE
DFN-AAI
GakuNin
FEIDE
TAAT
MiNGA
confia
Carsi
SURFCONEXT
Belnet R&E Federation
arnes
RCTSaai
haka
grnet
COFRe Comunidad Federada REUNA
SWITCHaai
cafe
The UK Access Management Federation FOR EDUCATION AND RESEARCH
SWAMID

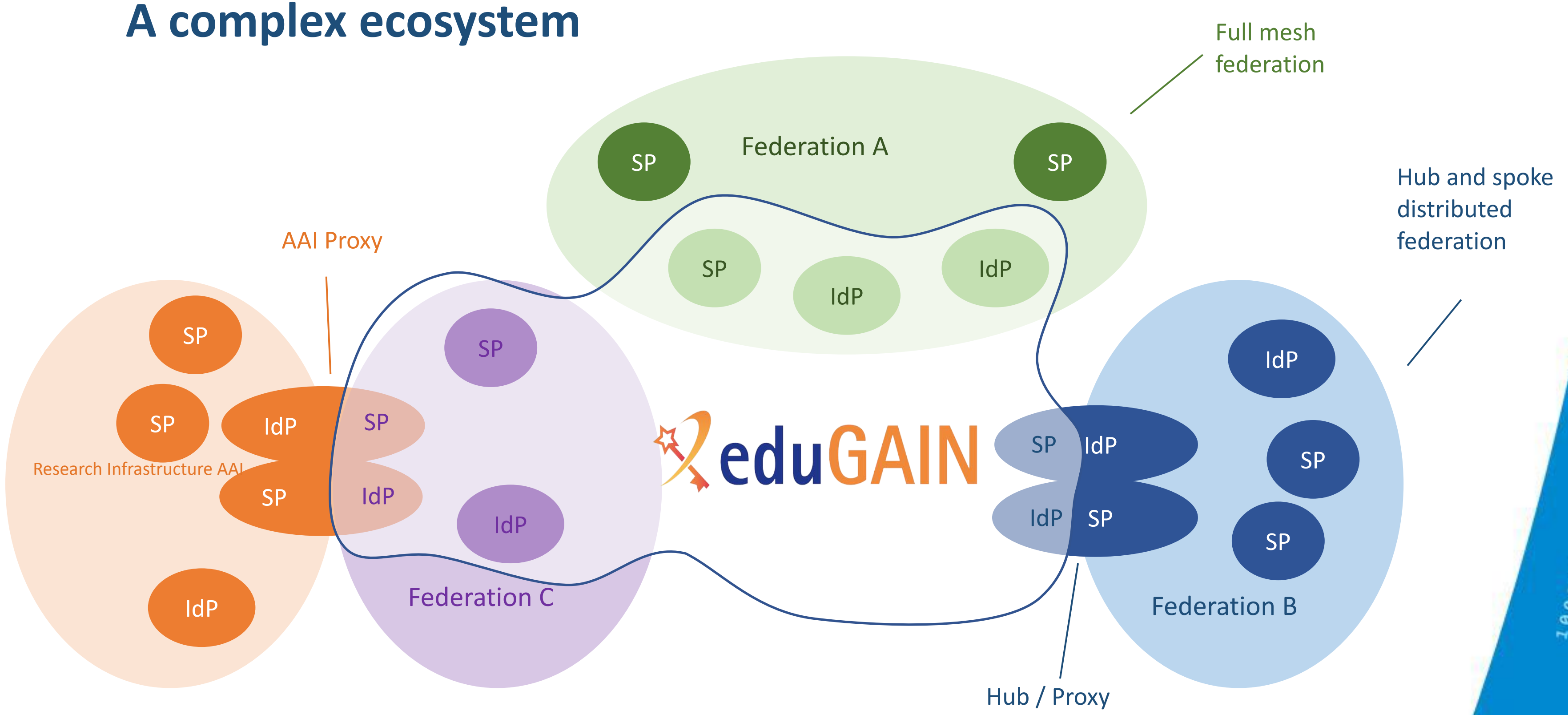
Interfederated access



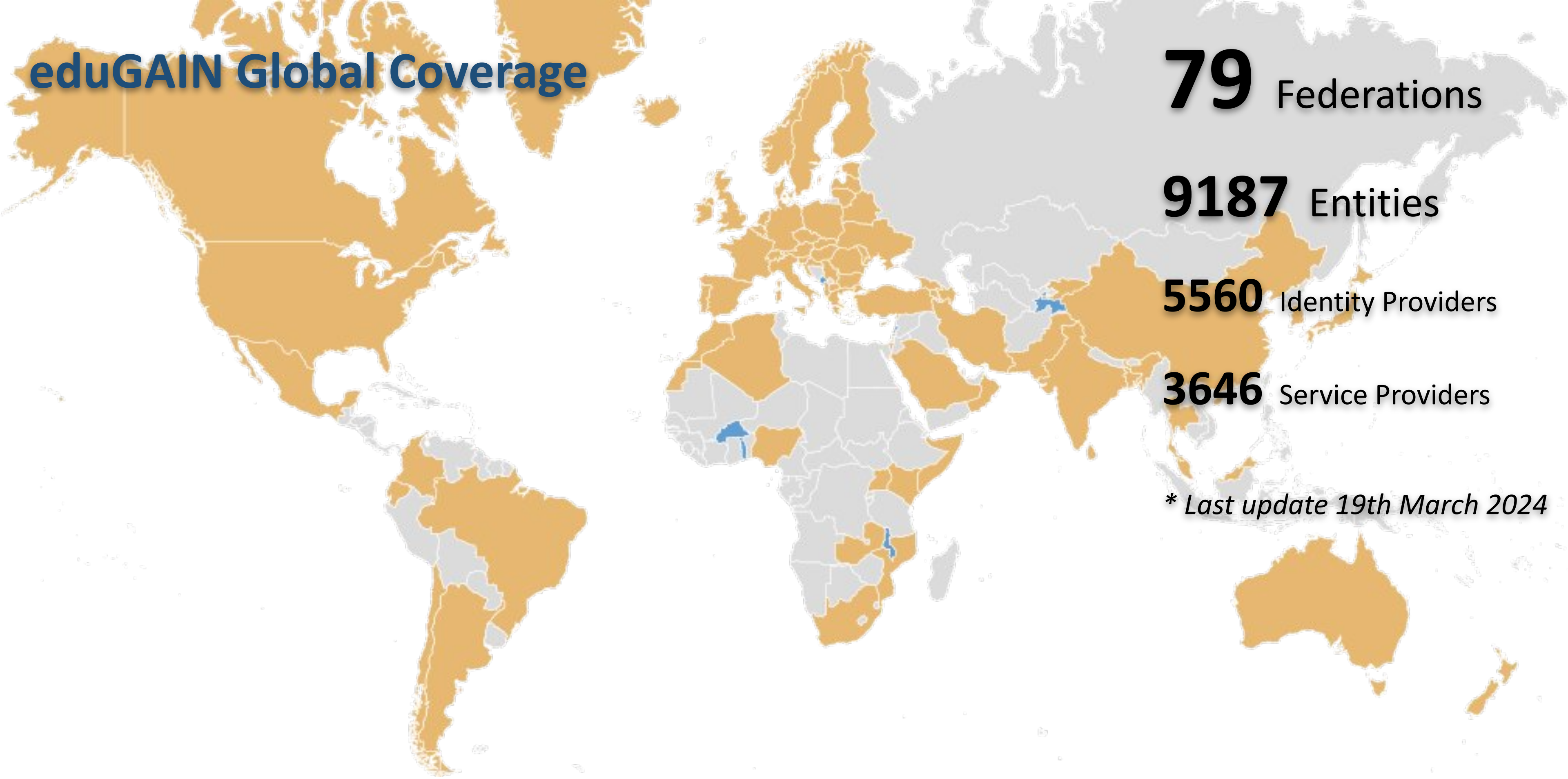
Federation Blue

Federation Green

A complex ecosystem



eduGAIN Global Coverage



79 Federations

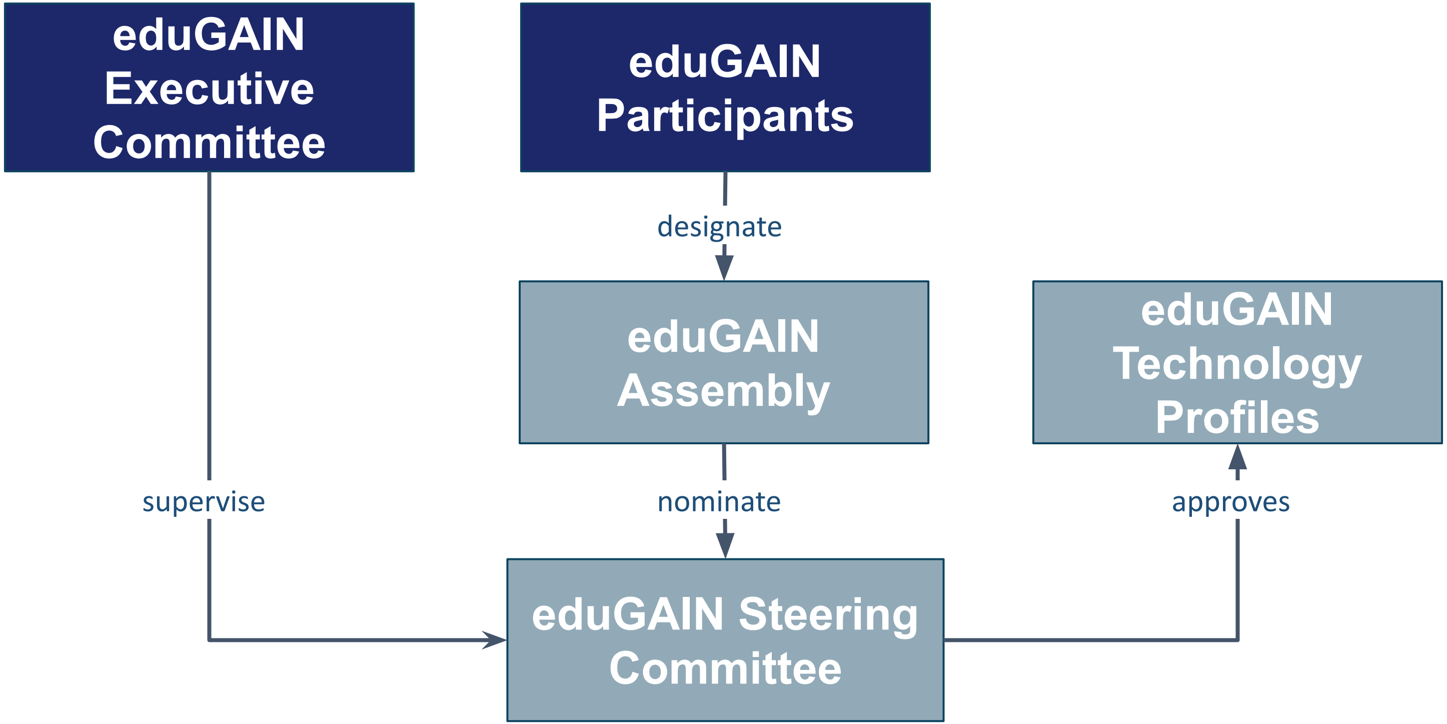
9187 Entities

5560 Identity Providers

3646 Service Providers

** Last update 19th March 2024*

eduGAIN Governance and Tech Profiles


eduGAIN Executive Committee
eduGAIN Participants
designate
eduGAIN Assembly
eduGAIN Technology Profiles
supervise
nominate
approves
eduGAIN Steering Committee

ref https://technical.edugain.org/documents

eduGAIN SAML Profile

Policy requirements	Metadata Registration Practice Statement
Metadata Requirements	SAML V2.0 Metadata Extensions for Registration and Publication Information Version 1.0, SAML V2.0 Metadata Extensions for Login and Discovery User Interface Version 1.0
Metadata Signing	Metadata for the OASIS Security Assertion Markup Language (SAML) V2.0, SAML V2.0 Metadata Interoperability Profile Version 1.0
Metadata Publication	*Federations MUST provide their members with trustworthy SAML Metadata about eduGAIN Entities, signed with their own signing key [..]*
Participant requirements	*Produce and register a URL to the (participant) SAML Metadata export* *Register a signing certificate and an* `mdrpi:registrationAuthority`

ref https://technical.edugain.org/documents

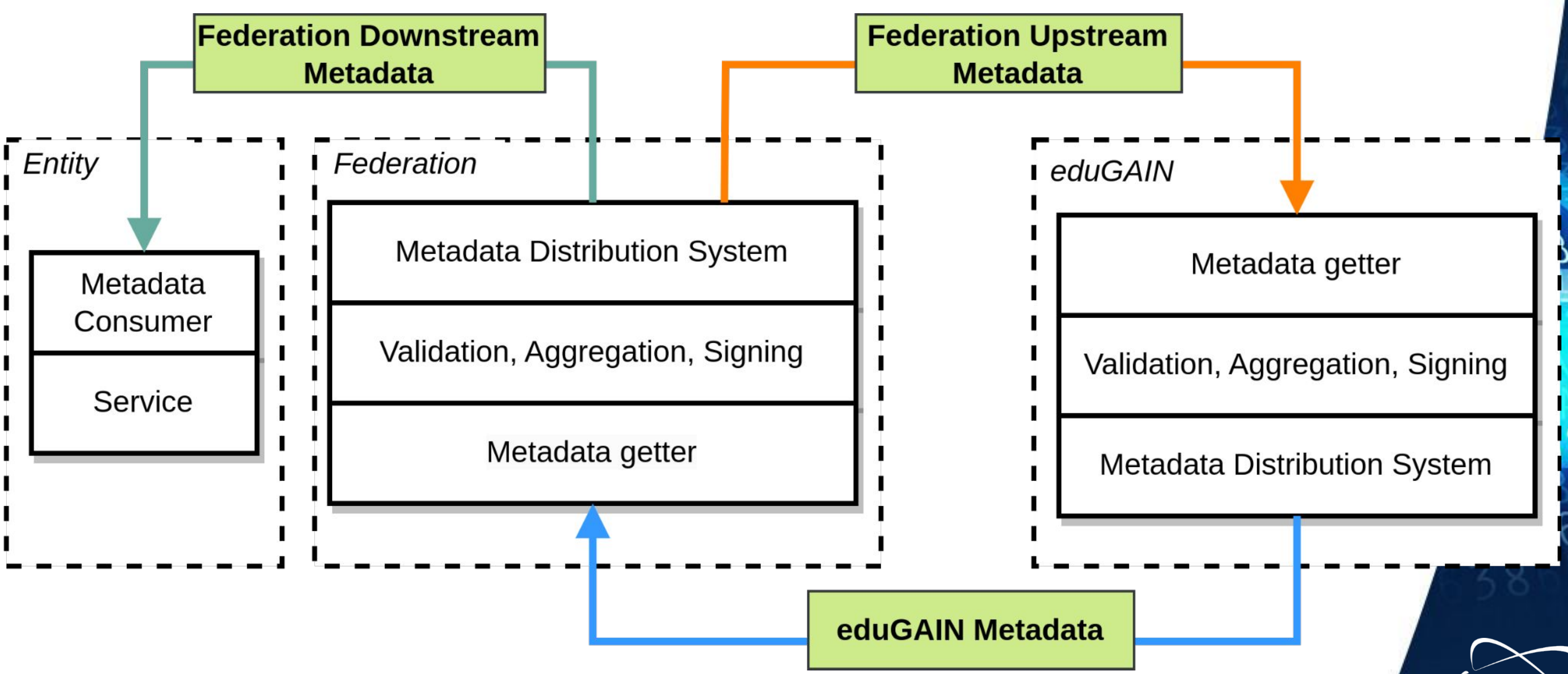
REFEDS Specifications

The mission of REFEDS (the Research and Education FEDerations group) is to be the voice that articulates the mutual needs of research and education identity federations worldwide. The group represents the requirements of research and education.

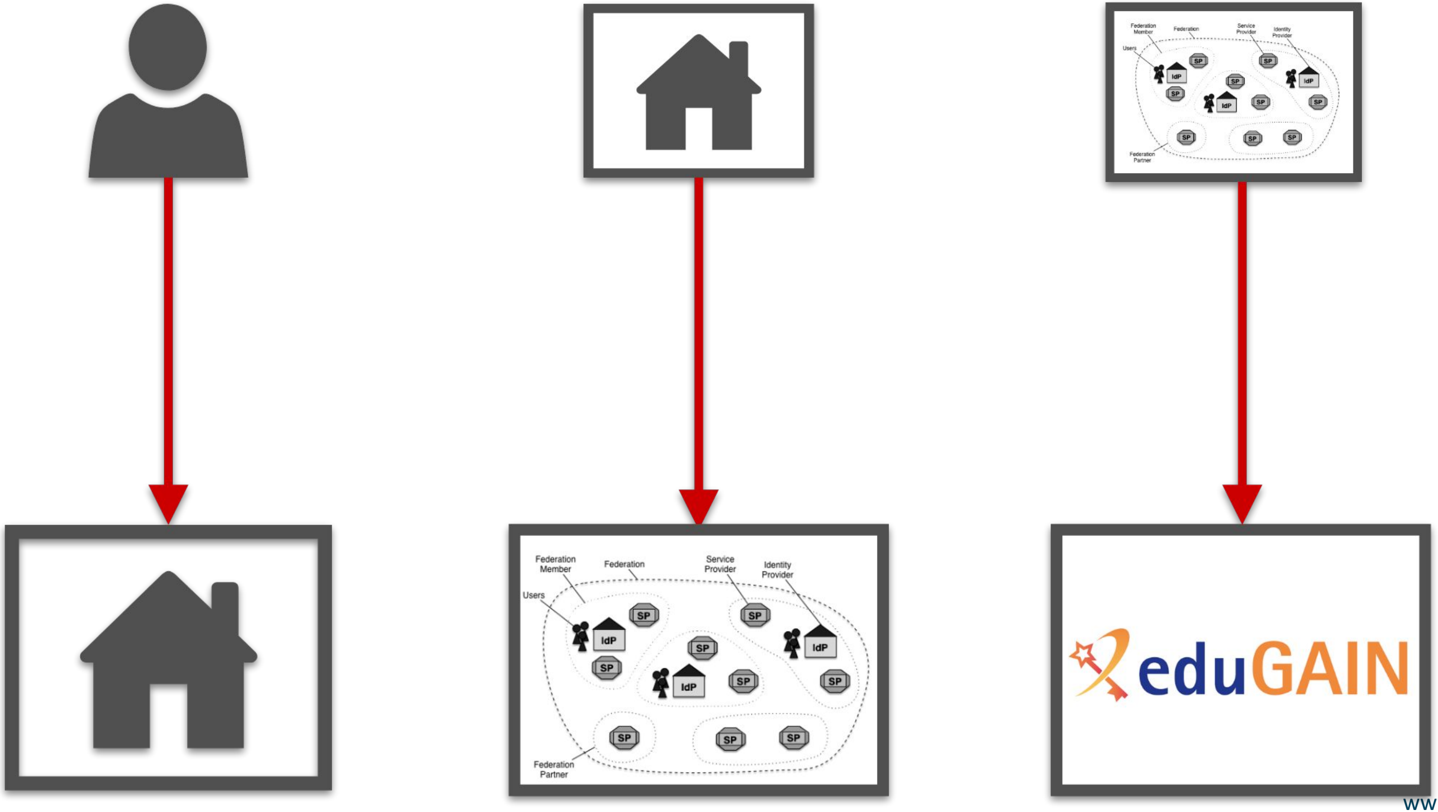
Research and Scholarship (R&S) v1.3	Entity Category
Hide From Discovery v.1	Entity Category
Anonymous Access v.2	Entity Category
Pseudonymous Access v.2	Entity Category
Personalized Access v.2	Entity Category
MFA Profile v.1.2	Profile
SFA Profile v.1	Profile
Security Contact	Metadata Extension
Sirtfi v1 & v2	Entity Attribute
Error Handling v.1	Profile
Baseline Expectations v.1	Framework
Assurance v.2	Framework
Code of Conduct v.2	Entity Category and Best Practice

https://refeds.org/specifications

eduGAIN SAML Metadata Creation and Distribution


Federation Downstream Metadata
Federation Upstream Metadata
Entity
Metadata Consumer
Service
Federation
Metadata Distribution System
Validation, Aggregation, Signing
Metadata getter
eduGAIN
Metadata getter
Validation, Aggregation, Signing
Metadata Distribution System
eduGAIN Metadata

eduGAIN Trust Flow

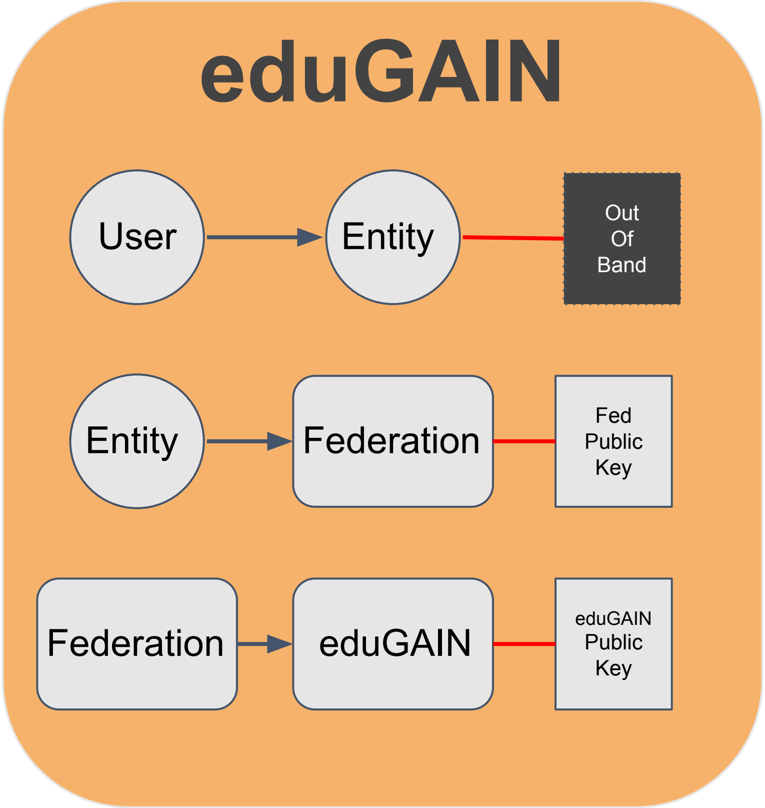


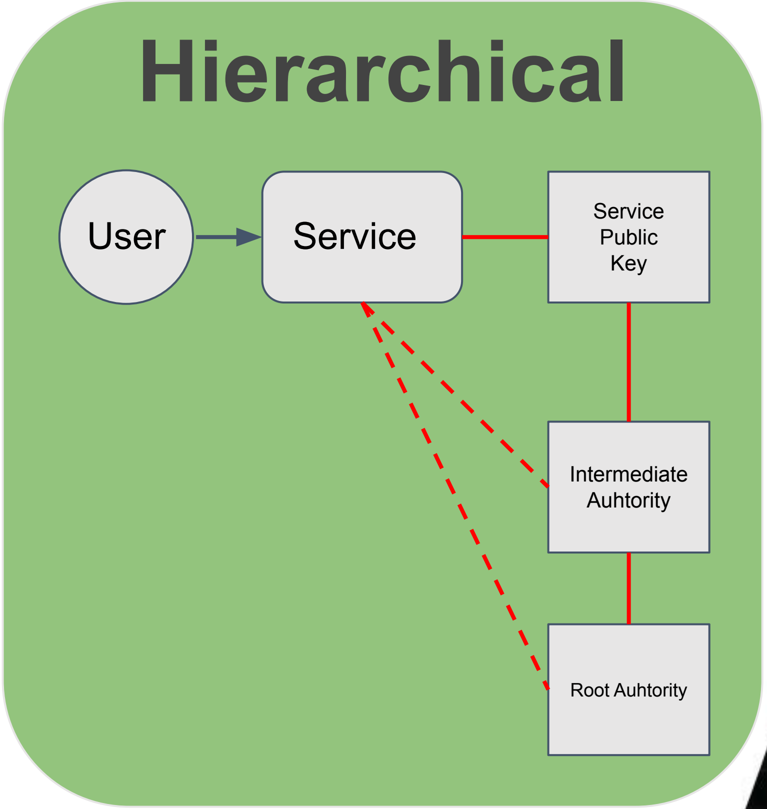
Users trust Home Organisation

HomeOrgs trust Federations

Federations trust eduGAIN

eduGAIN vs Hierarchical Trust Flow

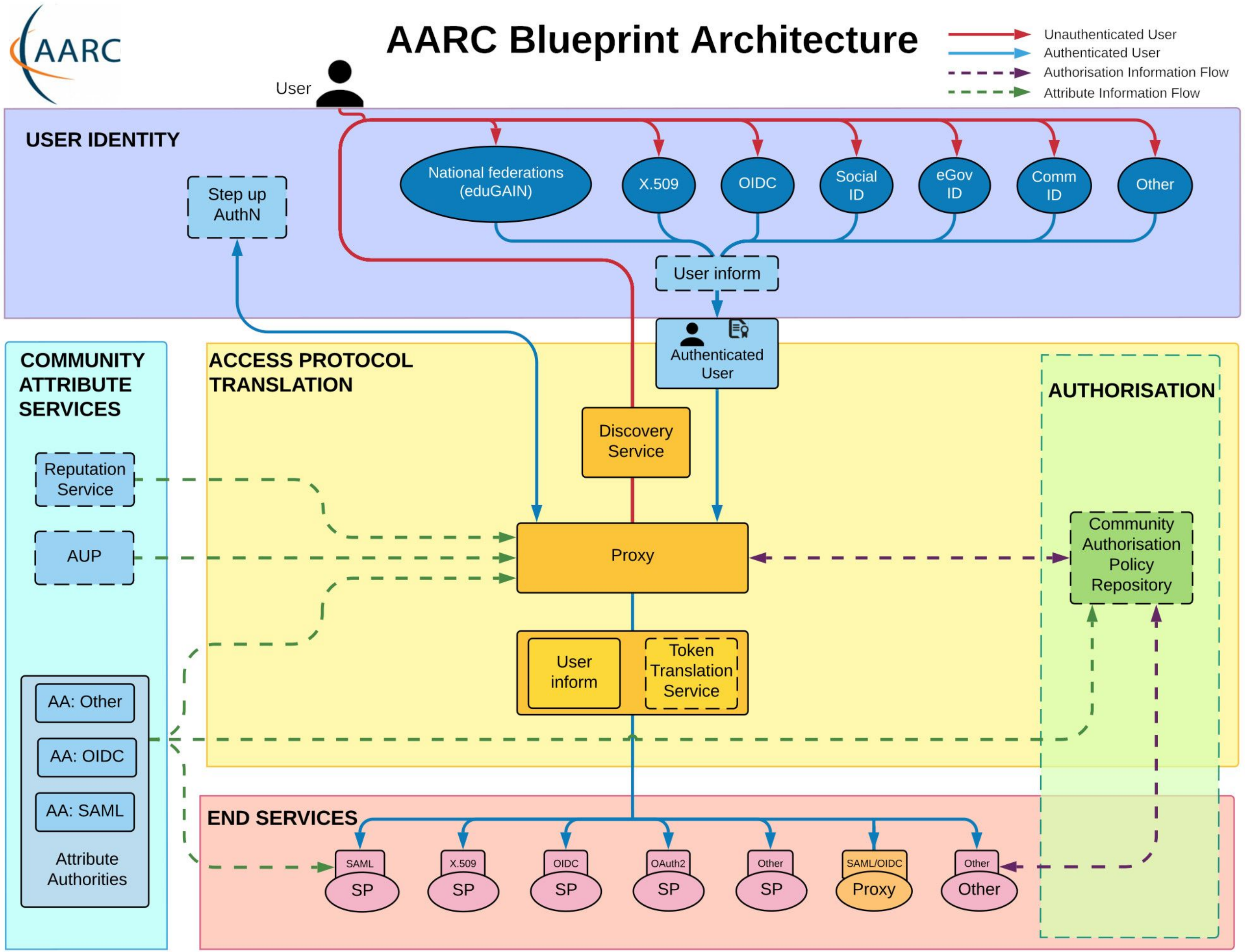




AARC Blueprint Architecture

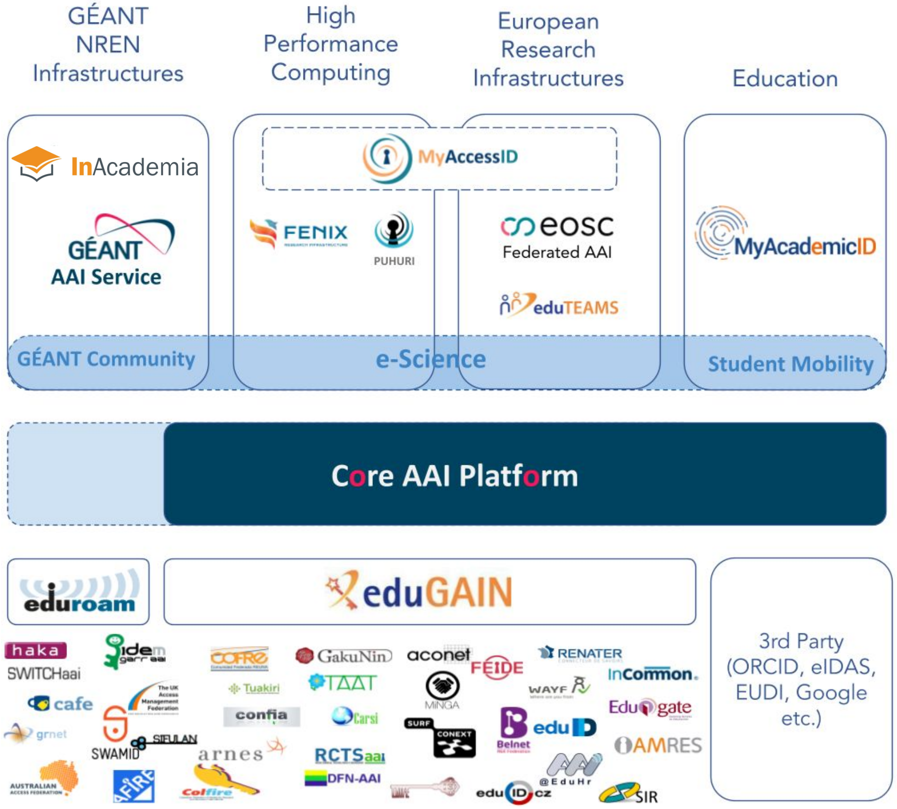
- Blueprint for Research Infrastructure (RI) AAIs

- RI AAI Specifics:
  - Manage roles and membership attributes that are in context of that research project
  - Connect specific SPs in context of that collaboration via one AAI Proxy
  - Integrate IdPs not available in context of eduGAIN



Core AAI Platform

Supporting GÉANT, e-Science and Student Mobility



GÉANT NREN Infrastructures

High Performance Computing

European Research Infrastructures

Education

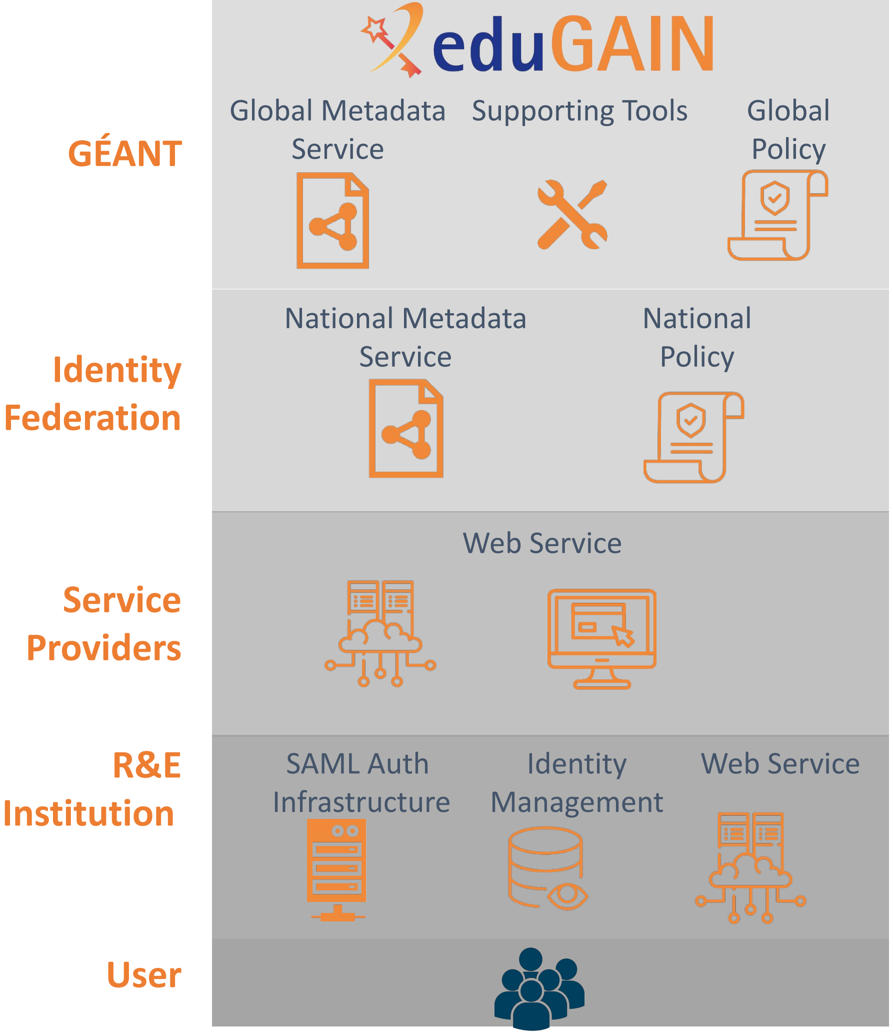
GÉANT Community

e-Science

Student Mobility

Core AAI Platform

3rd Party (ORCID, eIDAS, EUDI, Google etc.)



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eduGAIN

Global Metadata Service

Supporting Tools

Global Policy

Identity Federation

National Metadata Service

National Policy

Service Providers

Web Service

R&E Institution

SAML Auth Infrastructure

Identity Management

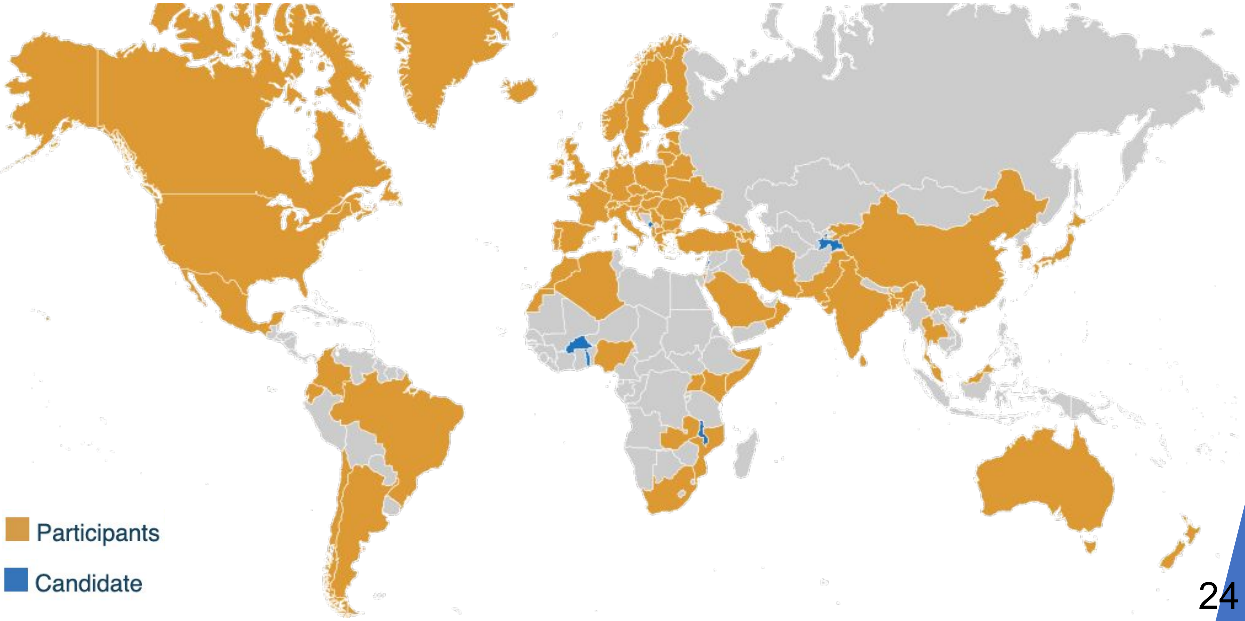
Web Service

User

Enables federated access (i.e. with the users’ institutional credentials) to thousands of services in eduGAIN for users belonging to R&E institutions in eduGAIN

eduGAIN

Service uptake



79

Identity Federations

5500+

Identity Providers

3580+

Service Providers

Thank you

Any questions?

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