Introduction to Federated Identity Management

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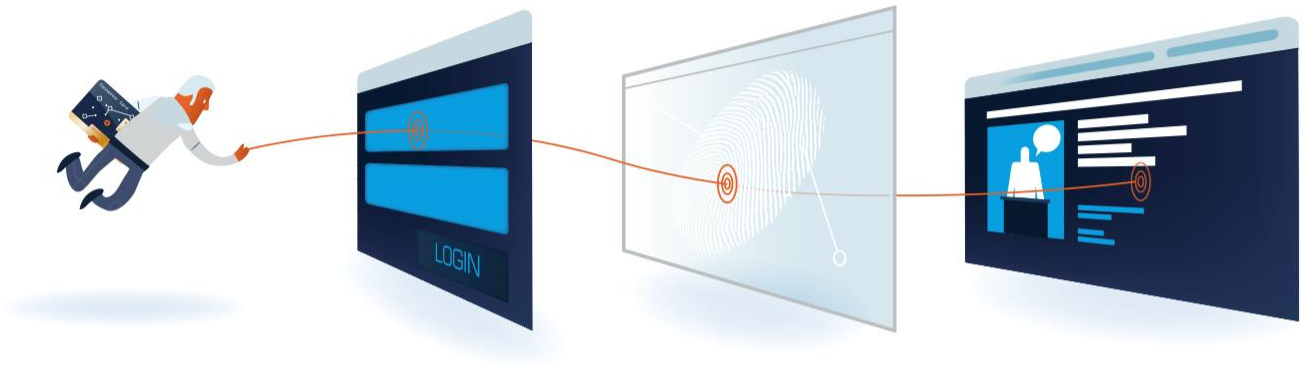
eduGAIN Training Team

GÉANT GN5-2

eduGAIN training for ngREN
April 2025

Learning Objectives



01 What is Federated Identity Management?

02 What is a Federation?

03 What types of federation exist?

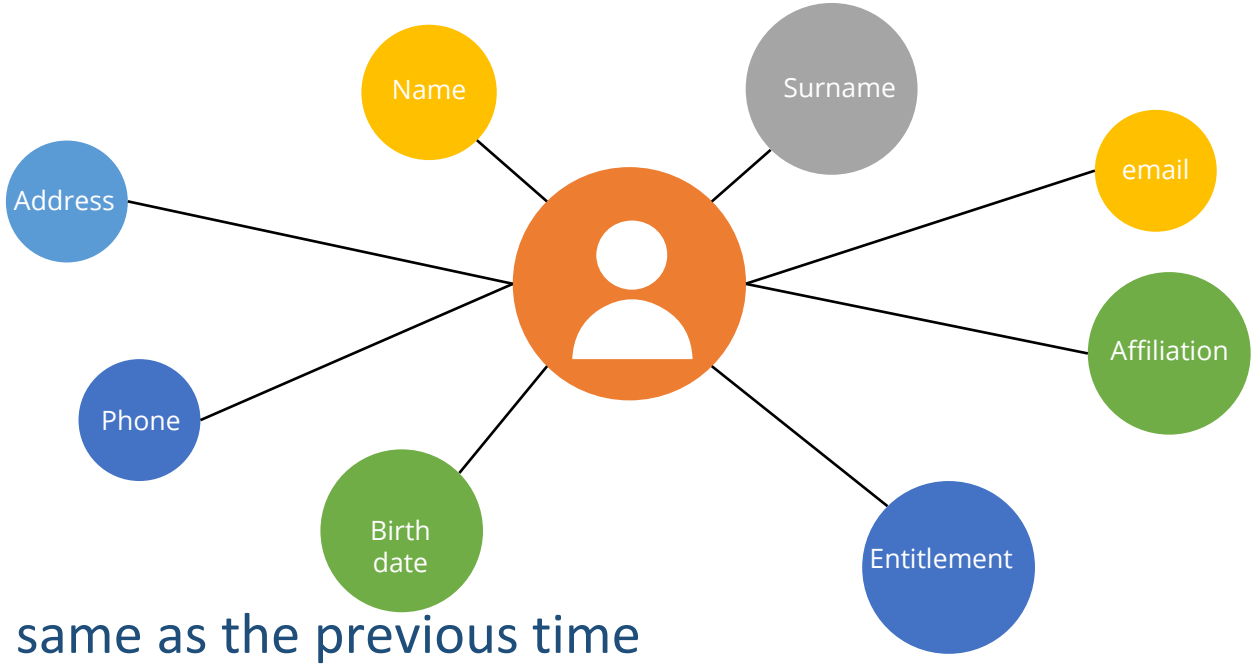
Identity Management processes

- Identification
- Authentication
- Authorization

Example

Digital Identity

- **Set of Attributes**

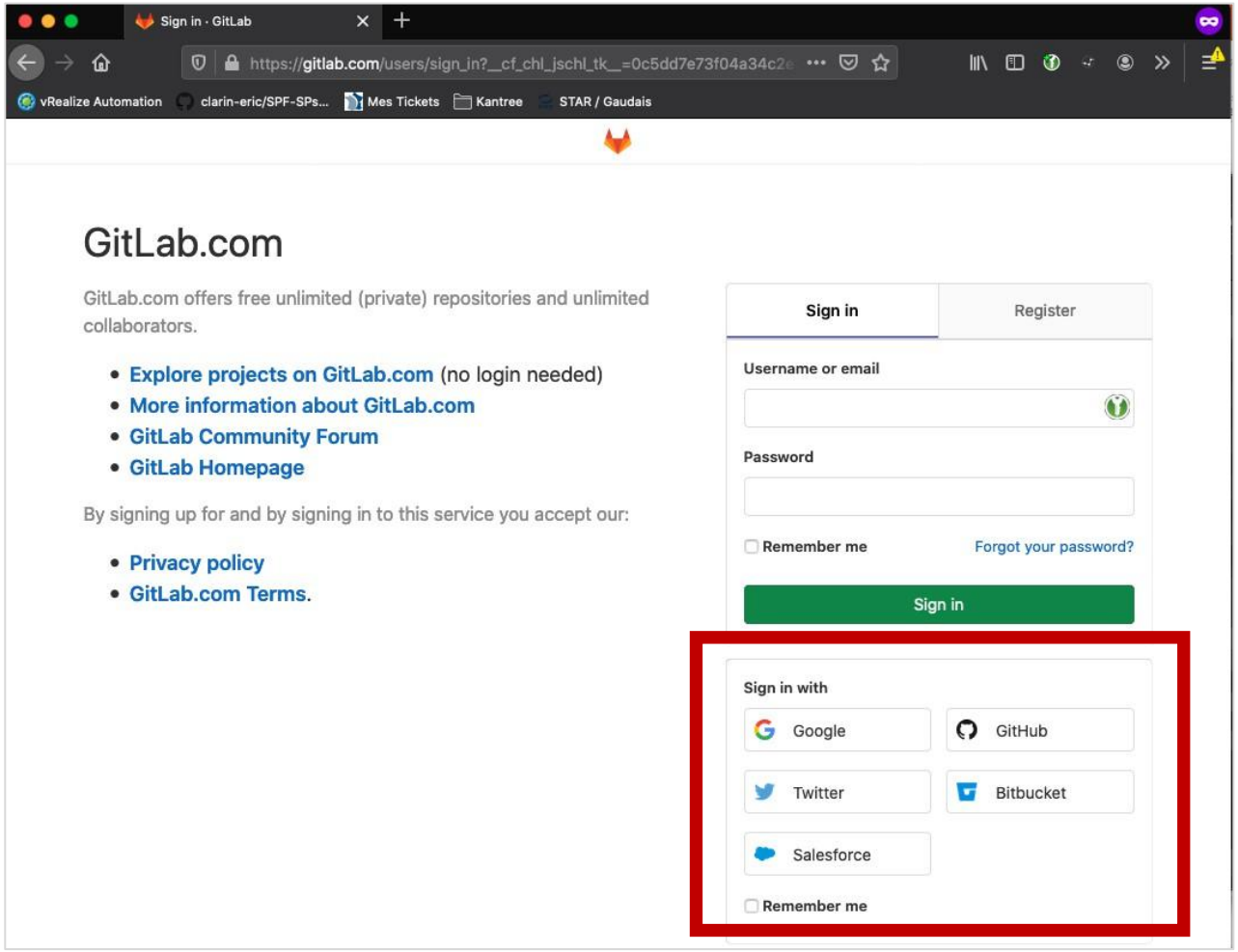


- Purpose:
  - **Identification**: Prove that subject is the same as the previous time
  - **Authorization**: Access decision based on attribute values, Identity or Role based access control
  - **Profile data**: Personalization, identification “for humans”, name, email address, etc.

Delegation of authentication

Why and How ?

Example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Forgot your password?
Sign in
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Twitter
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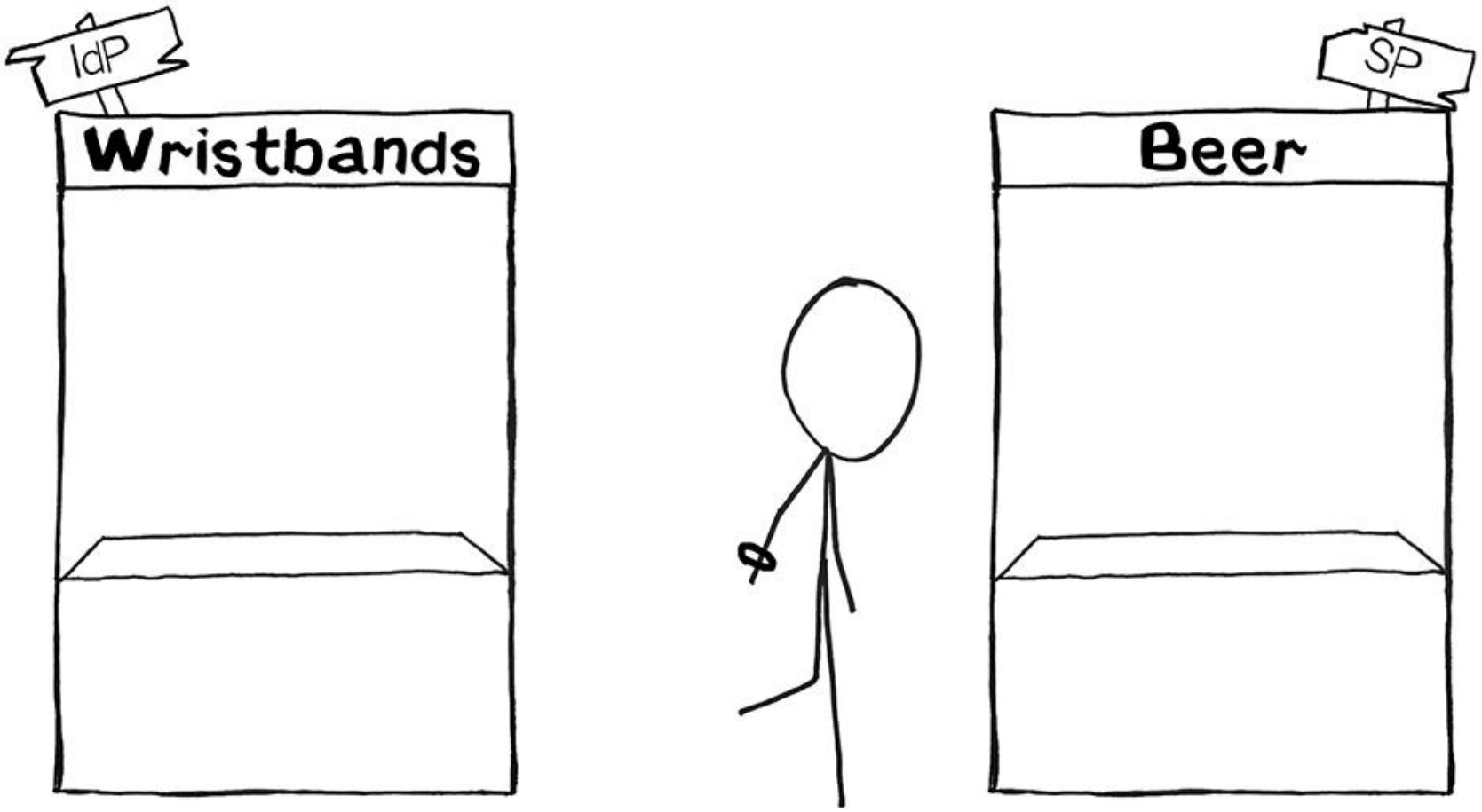
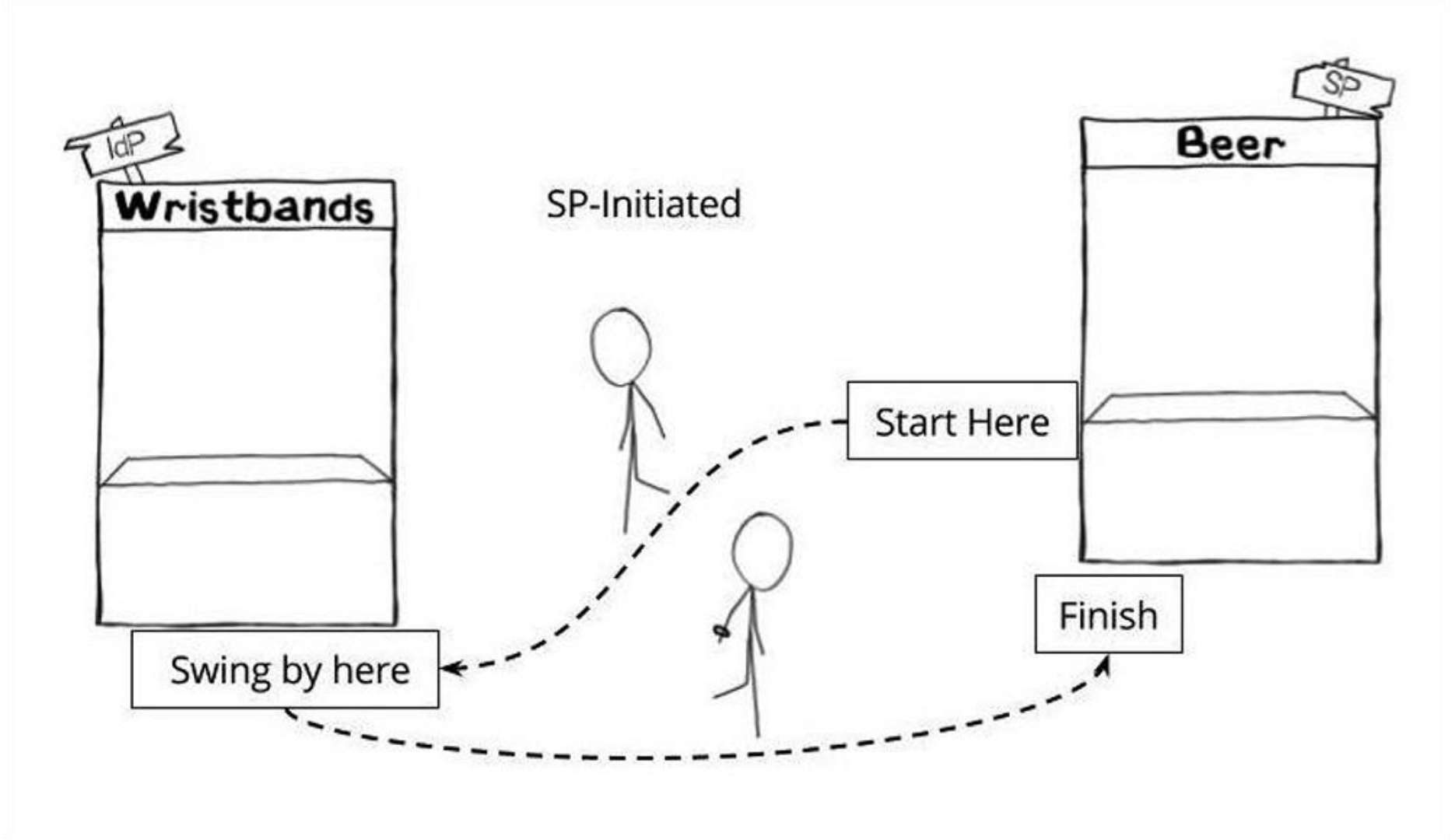
Salesforce
Remember me

Example in real life: Beer as a Service



Crédit: https://duo.com/blog/the-beer-drinkers-guide-to-saml

Example in real life: Beer as a Service



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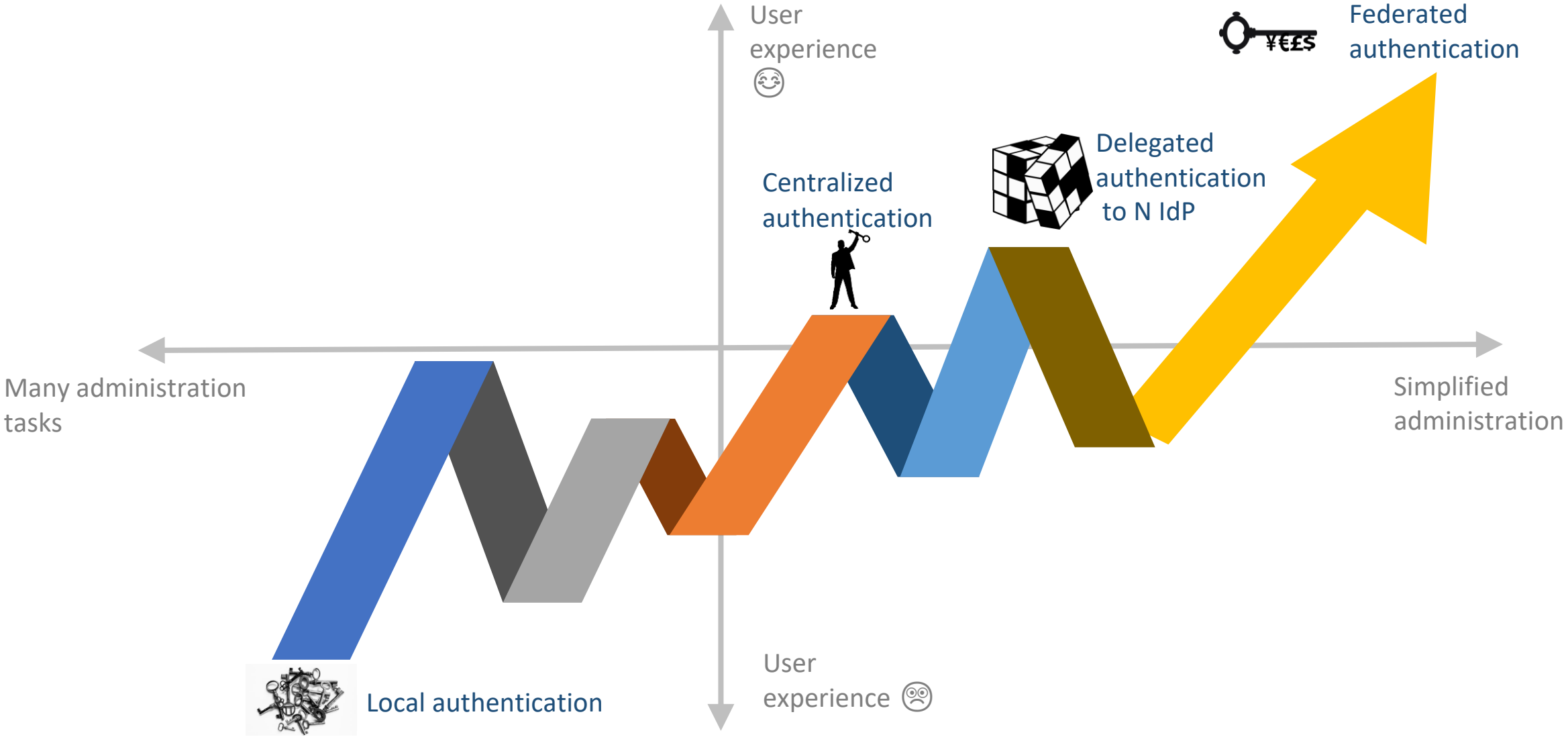
Different levels of Identity Management



Identity Federations are made of entities

Identity Provider (IdP) ~ Home organization (HO)

Service Provider (SP) ~ Relying Party (RP)

Discovery Service (DS)

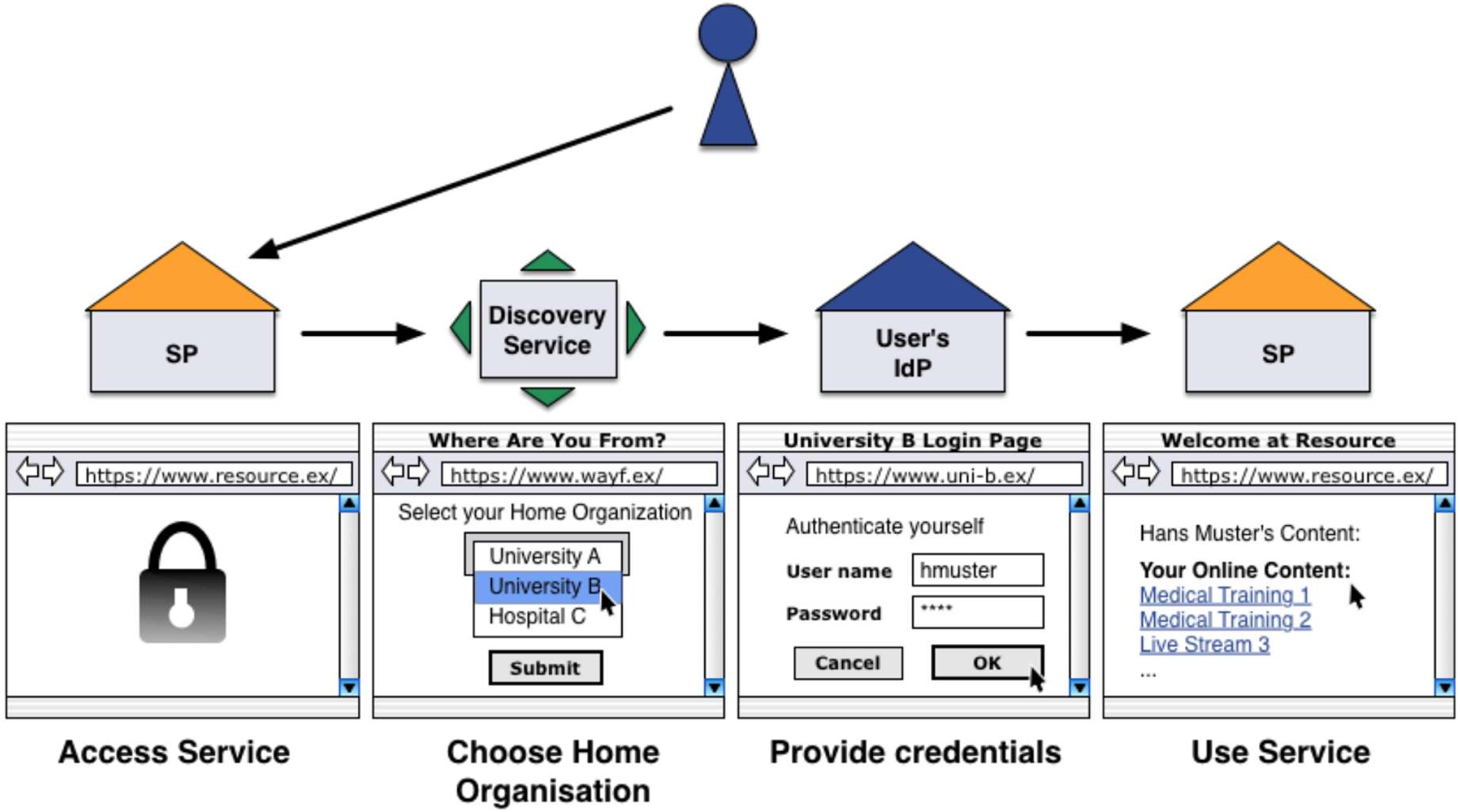
Identity Providers and Service Providers are collectively called **entities**

Identity Federations are built on trust

- Use of a protocol (SAML, OIDC, CAS, etc.)

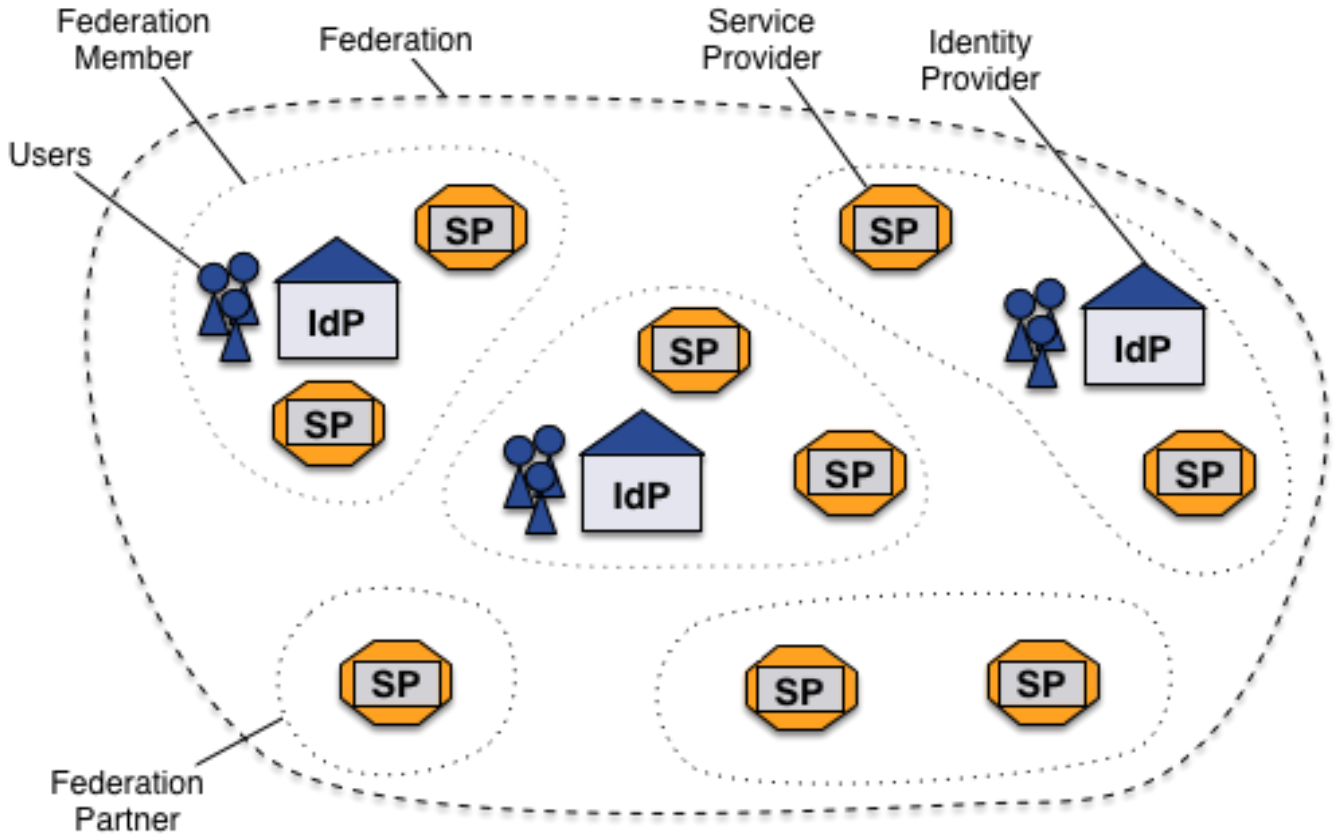
- Trust can be built in several ways:
  - Via agreement between SP/IdP administrators (bilateral relationship)
  - Via a trusted third party (federation)

A simple authentication flow



What is an Identity Federation?

An Identity Federation is a collection of organizations that agree to interoperate under a certain rule set.



What do Identity Federations do?

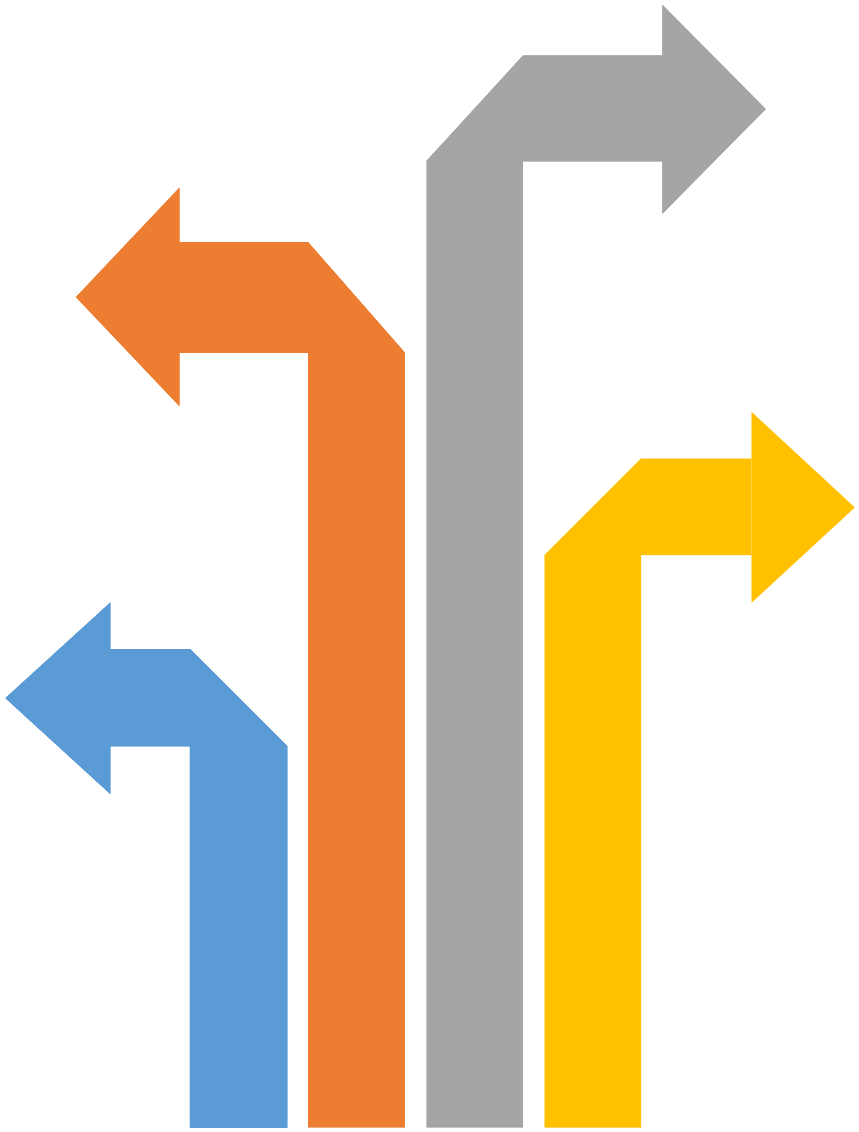
- Maintain the list of entities
- Define policies, rules and legal frameworks
- Operate a central Discovery Service and test infrastructure
- Provide self-service Registry
- Provide hosted entities
- Provide tools for guest access
- Developing custom tools for the community
- Guidelines and deployment instructions to operate services in the federation
- Helpdesk to assist with deploying services and debugging issues
- Workshops and Trainings

A Federation Operator is an organization that operates an identity federation.

Benefits that the Federated Identity Management brings

Reduces work

Provides current data

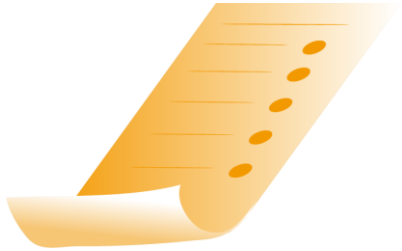


Insulates from compromised service

Minimizes attack surface area

Interoperability

Technical	Legal	Others
• Supported protocols • User authentication mechanisms • User attribute specifications • Accepted X.509 server certificates	• Membership agreement or contract • Federation operation policies • Requirements on identity management practices	• Common/best operational practices

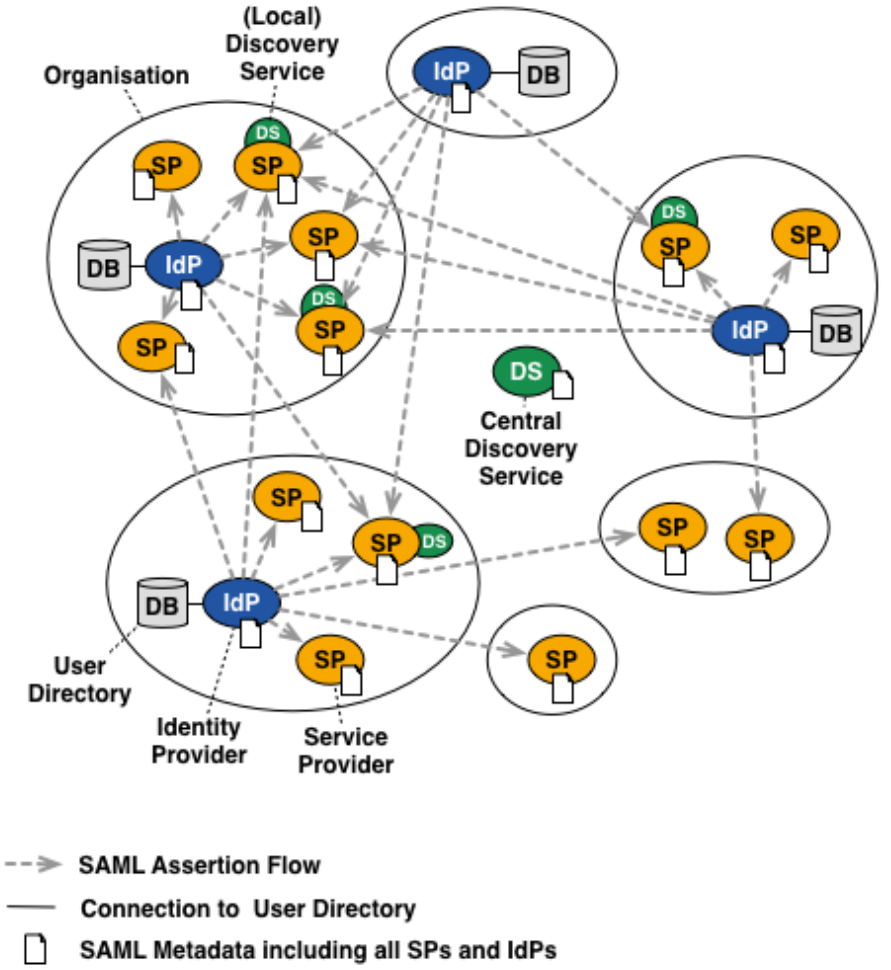


Common Identity Federation Architectures

- Full mesh federations
- Hub & Spoke with distributed login
- Hub & Spoke with central login

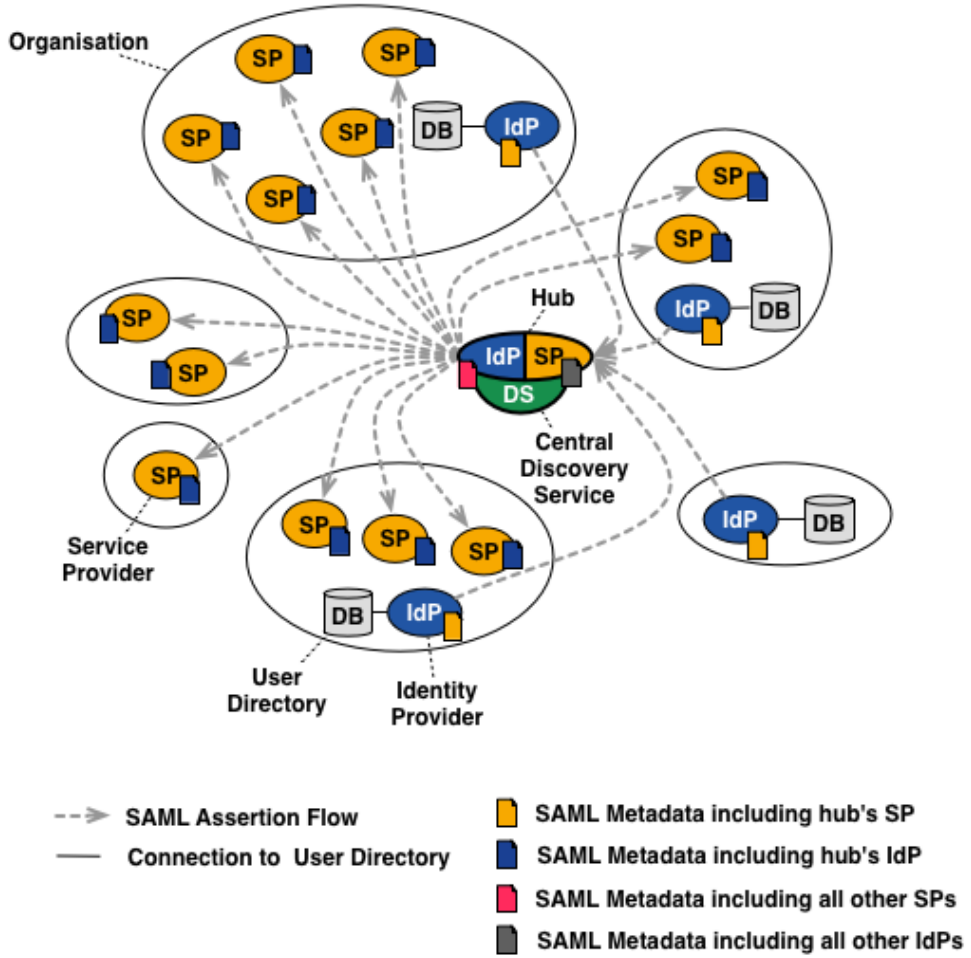
Full Mesh Identity Federation

- Entities are distributed
- There is no need for a central component



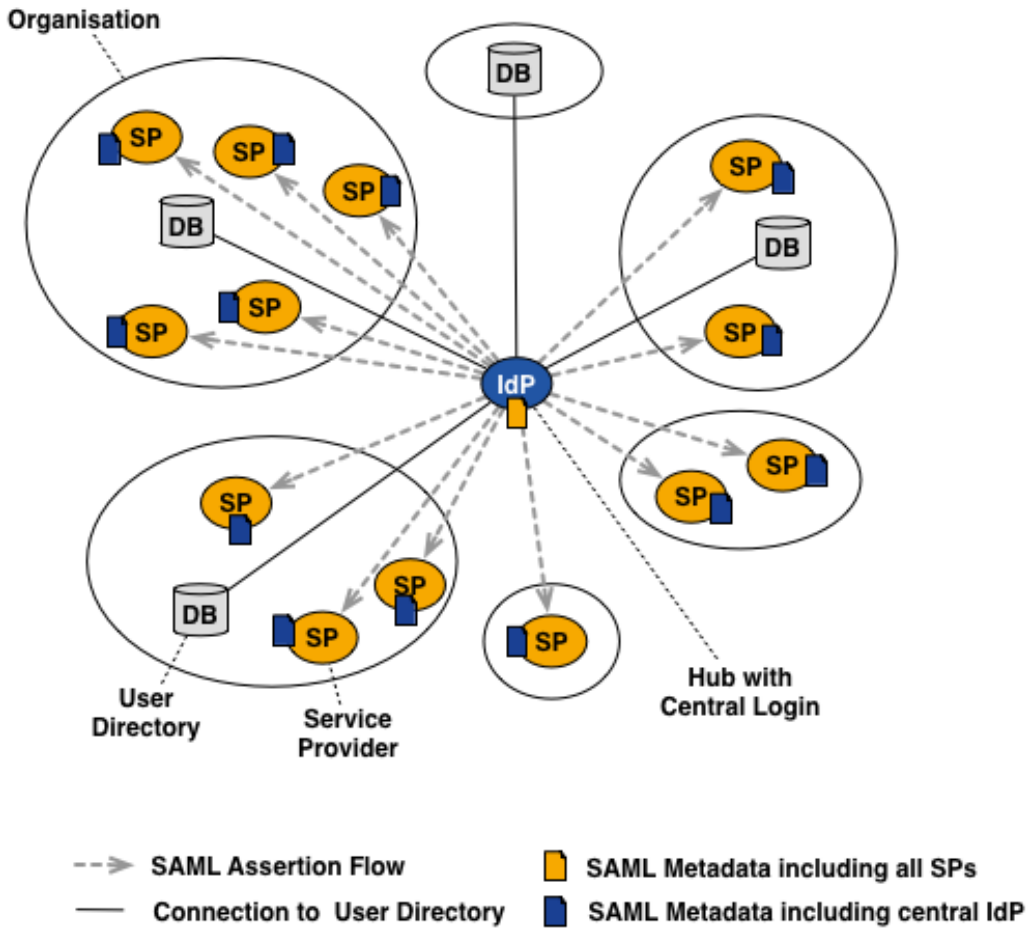
Hub-and-Spoke Identity Federation with distributed login

- Central hub: an SP for IdPs, an IdP for SPs
- Each organization still operates their own Identity Provider
- Central hub = Central Discovery Service

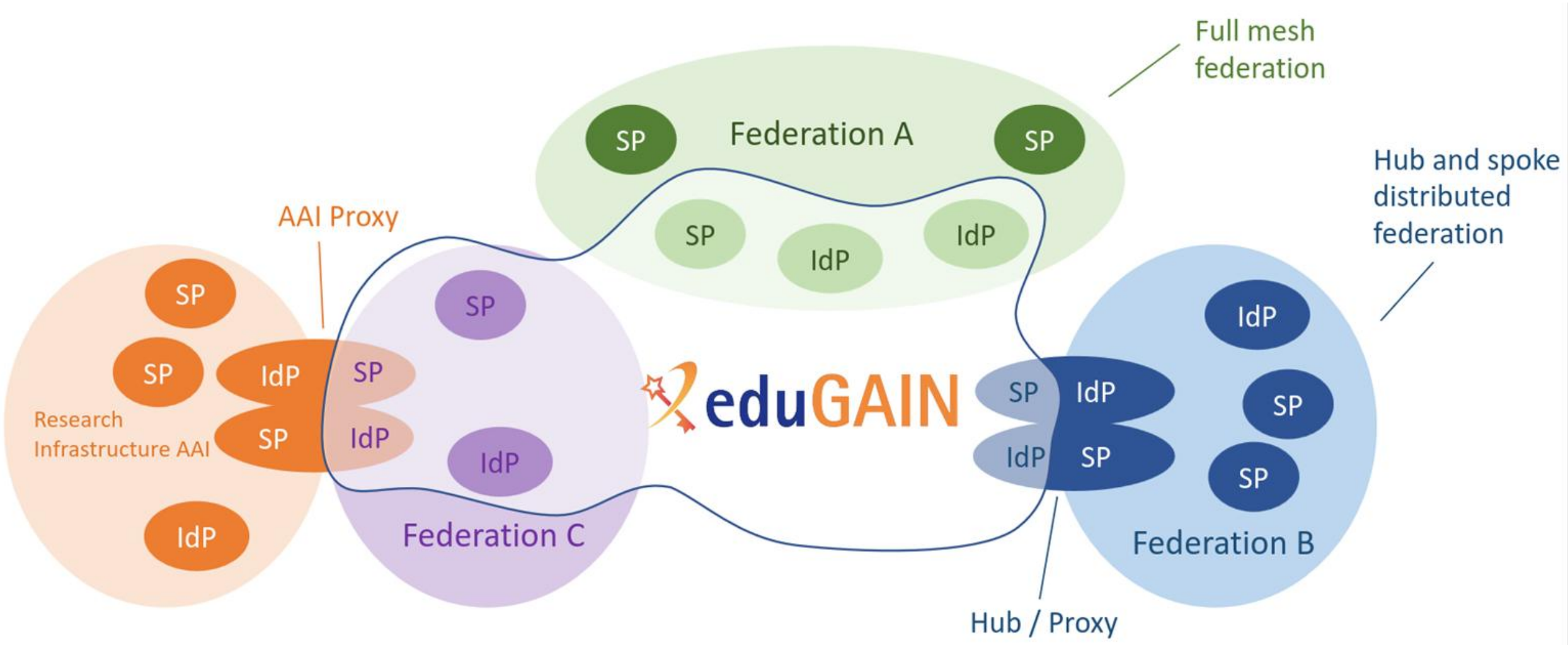


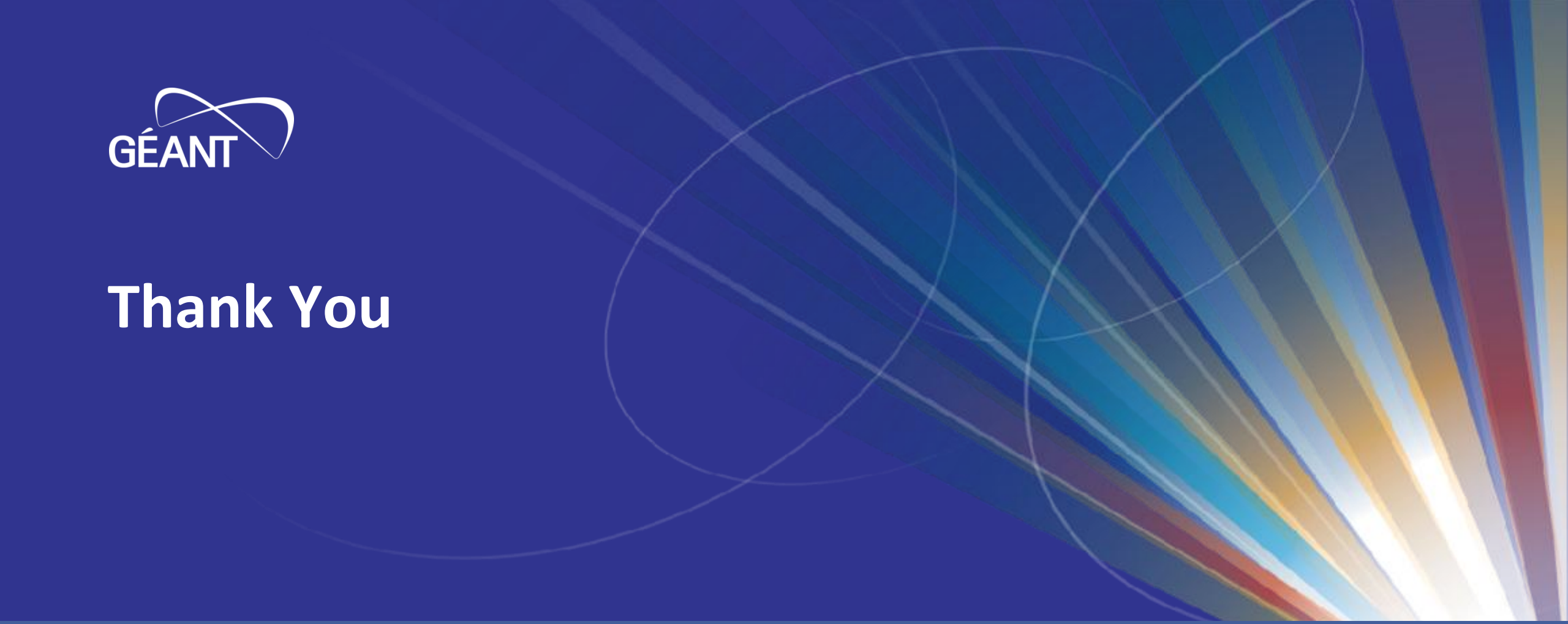
Hub & Spoke Identity Federation with central login

- A special case in the sense as there is only one single Identity Provider in the federation



eduGAIN is interfederation





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