Secure registrar identification & authorization

A future scenario

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Registrars self-service panel

typically used for

- provisioning of programmatic interfaces (EPP)
- manual management of clients domain names
- billing
- ..

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Password don’t cut it

- the dependency upon domain names increases
- the attackers are more sophisticated and persistent
- only a password between an attacker and potentially thousands of high-value domain names
- generally, the risks are too high
- risks has to be managed in a scalable, economically feasible and sufficiently secure way

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Alternatives to password

- registry-issued tokens
- national e-authentication (eID) scheme
- ...

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eIDAS

- EU regulation for national eID schemes
- very little focus on private-sector use of eID
- one step forward, two steps back
- national eID's may work nationally

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Registry-issued tokens

hard one-time (connected)
password token

hard one-time (air-gap)
password token

soft token in smart phone

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Registry-issued tokens

- Generally high costs for managing
- Should be tied to an individual (not a group)
- Users can handle one or two, not twenty

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A federated identity approach

> “A federated identity in information technology is the means of linking a person's electronic identity and attributes, stored across multiple distinct identity management systems”
>
> wikipedia

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In the registrar context

A registrar's representative, which can be securely identified by one registry, can be securely identified across all participating registries.

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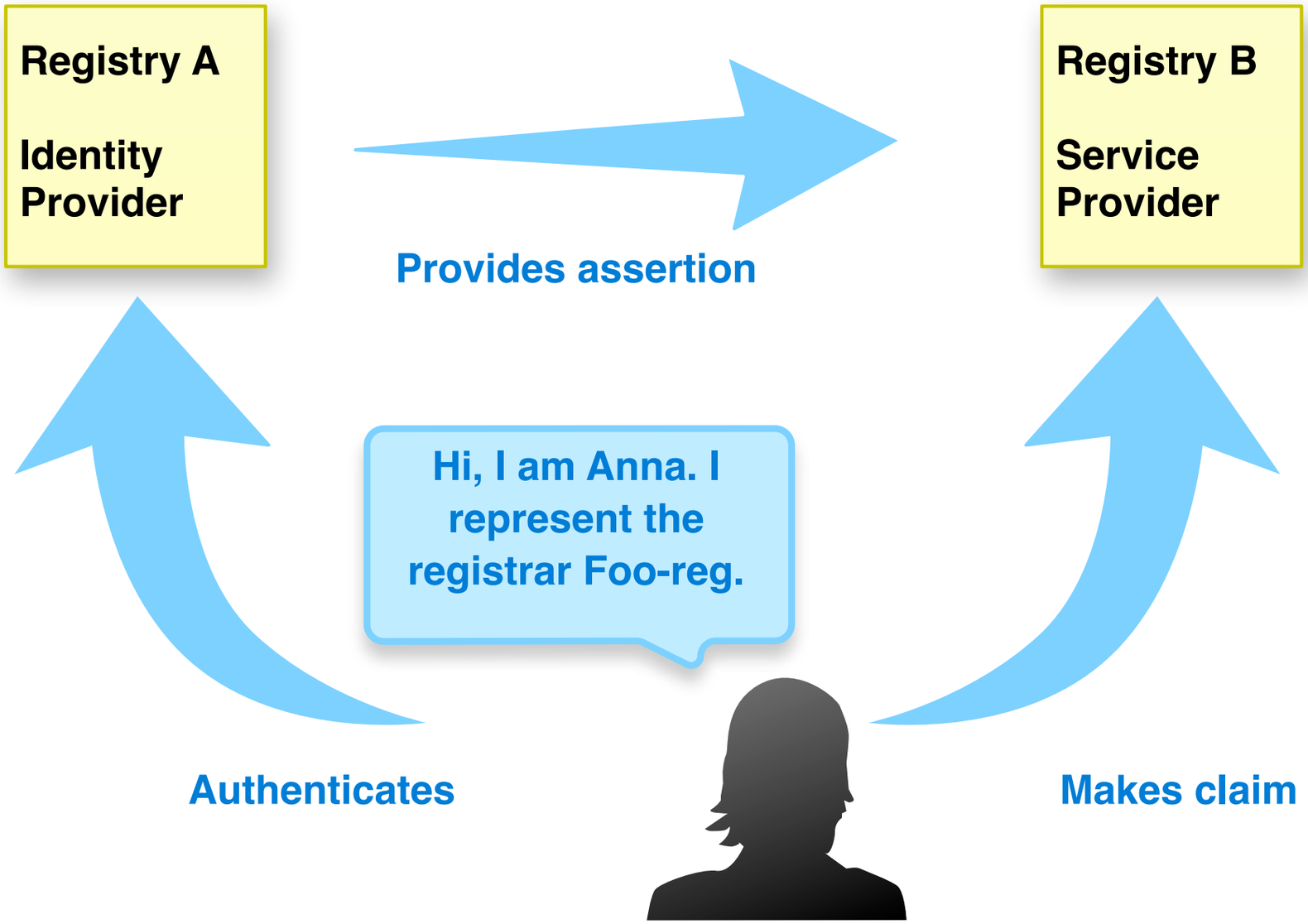
How does it work?



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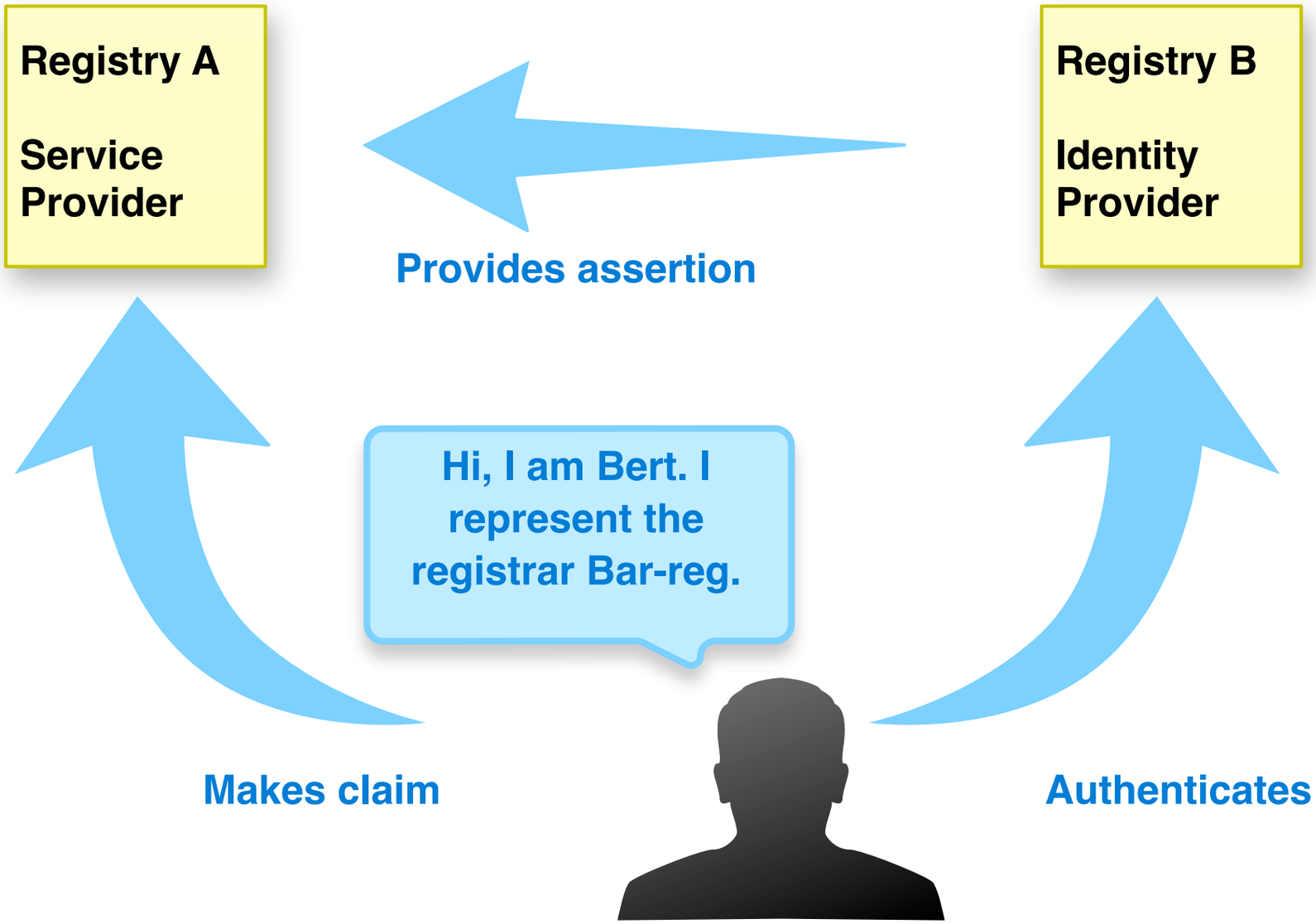
How does it work?



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How does it work?

- Each participating registry provides a trusted authentication and authorization service to the federation
- A registrars employees would use one of these services to authenticate to any participating registry

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From a registrars' perspective

- Will select one registry which can identify and vouch for its employees
- At least one individual will go through a process to prove authority for representing the registrar (Authorized Representative)
- This individual can then add co-workers for different roles

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From the registries' perspective

- Will implement a common policy ("trust framework") for identification and authorization
- Maintains a database over verified registrars, co-workers and authorizations
- Authenticates users and issues tickets ("assertions") upon requests from other participants in the federation

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How are the registrars' Authorized Representatives identified?

- Can use a national eID scheme to determine the authority to represent the registrar, or
- May perform proofing of identity and authority conforming to the requirements of the trust framework, to issue their own credentials.

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The Registrar's Authorized Representative

- Once authority has been verified, can add co-workers to different roles (only), using a **Security Control Panel** provided by the registry
  - co-workers can be provided two-factor tokens through the Authorize Representative, or
  - co-workers may use the national eID scheme
- Is accountable for the co-workers

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Security Control Panel

- Used by the registrars Authorized Representative for
  - Management of role assigments
    - Used to issue and revoke co-workers **tokens**
- The registry will only have to verify the identity and authority of one or two individuals, provides scalability

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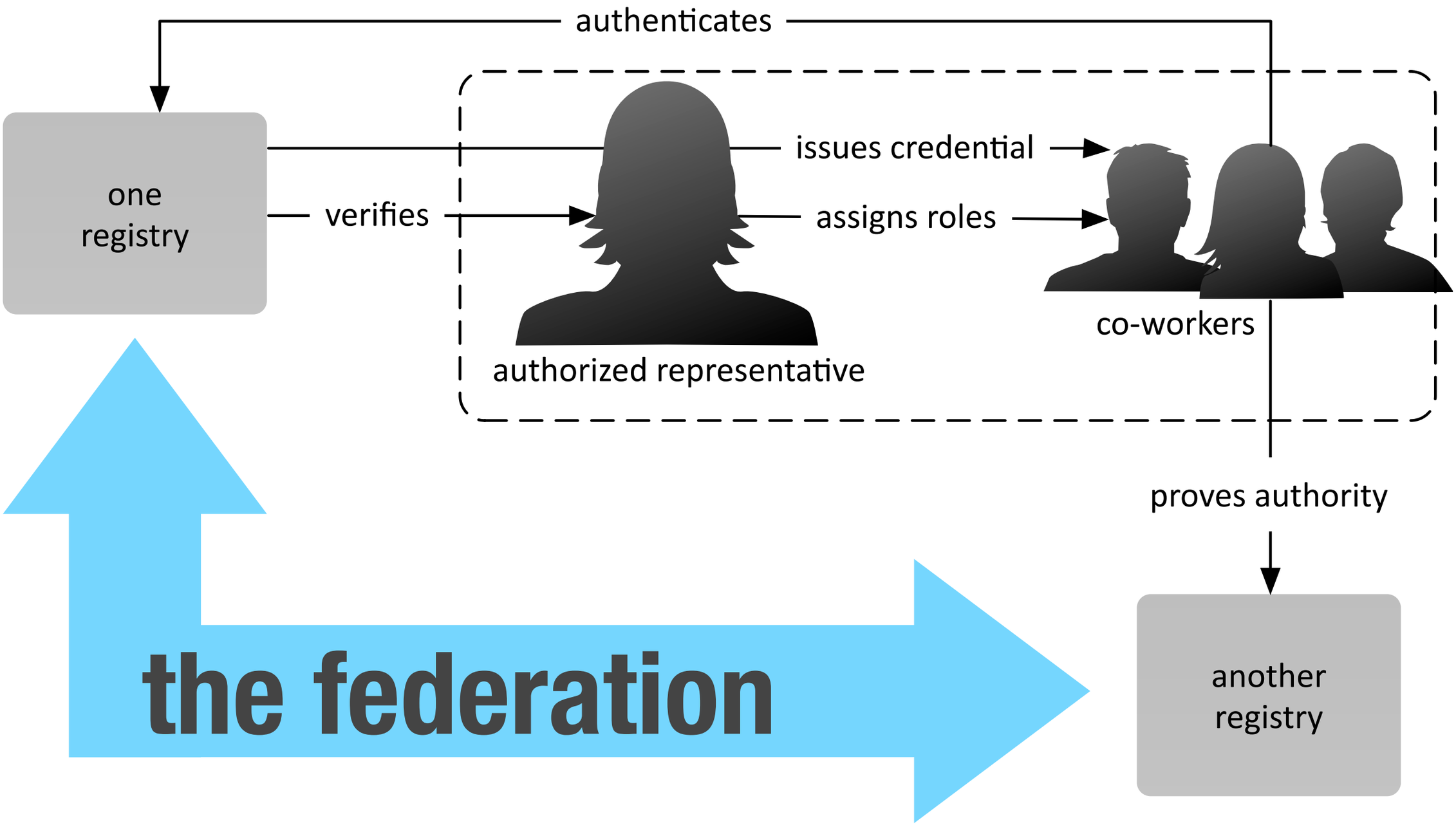
authenticates
one registry
verifies
issues credential
assigns roles
authorized representative
co-workers
proves authority
the federation
another registry

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Scalability and convenience

- Only the Authorized Representative requires proofing
- All other identities can be issued instantly through the Authorized Representative
- The registrar will be able to select the registry which can most conveniently verify the Authorized Representative
- More than one registry provides freedom of choice

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Catches?

- Has this technology been proven to work?
- Is it expensive?
- Does it provide protection of personally identifiable information?
- Will it work with the new EU regulation (eIDAS)?
- What about registrars outside of Europe?

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Liability?

- Each registry will be liable to follow the policy (the “trust framework”)
- If the protocol is followed, that party is not liable for damages incurred
- The federation does not free the relying registry from responsibility to act upon suspicious activity

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What needs to be done?

- A trust framework
- Technical specs
- Agreement upon a pre-defined set of roles
- Joint development of the registrar identification and authorization system (“RIAS”)

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RIAS?

- Provides interface for Authorized Representative to manage co-workers roles
- Holds and maintains the identity and authorizations database
- Ties two-factor tokens to co-workers
- Identifies registrars co-workers and issues assertions
- (optionally) Integrates with national eID structure

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RIAS could be the same system instantiated across all federation members, with minor adaptions.

- **Guarantees interoperability**
- **Significantly reduces costs for development and testing**
- **Can be extensively tested for security vulnerabilities and quality assurance**
- **Reduces lead-time**

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fredrik@kirei.se

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