The journey to knowing your users

Experiences on federated access and reaching reasonable LoA in the Puhuri-project

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Who are we?

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About Puhuri and LUMI
Food for thought

World’s 20 Happiest Countries in 2022

1. Finland
2. Denmark
3. Iceland
4. Israel
5. Netherlands
6. Sweden
7. Norway
8. Switzerland
9. Luxembourg
10. New Zealand
11. Austria
12. Australia
13. Canada
14. Ireland
15. United States
16. Germany
17. Belgium
18. Czech Republic
19. United Kingdom
20. Lithuania

Source: World Happiness Report
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8 of 20 are serviced by Puhuri
What is Puhuri

• A system to facilitate easy and efficient access to high-performance computing (HPC) and related services throughout Europe
• The key objective is to minimize the administrative costs of service providers while simultaneously improving the useability of these services
• To be achieved by establishing federated services for Authentication and Authorization Infrastructure (AAI) as well as resource allocation services
Why Puhuri?

Need to service LUMI

• Multi-stakeholder system (10 countries + JU)
• Each stakeholder allocates on the system
• Automatic population of the allocation table (e.g. grantfile in SLURM)
• Reporting to each stakeholder separately
• Dual-use designation
What is LUMI

- **LUMI**, one of the **EuroHPC pre-exascale** supercomputers, located at CSC’s data centre in Kajaani, Finland

- The supercomputer is hosted by the **ten European countries** of the LUMI consortium:
  - Finland, Belgium, the **Czech Republic**, Denmark, Estonia, Iceland, Norway, Poland, Sweden, and Switzerland

- Bringing together their unique expertise and experience, these countries together provide added value for the whole of Europe

- **Puhuri** provides seamless access to LUMI supercomputer and to other Resources used by the NeIC projects
So we need to know our users...

- Identity
- Access
- Utilization
- Cost
- Traceability
MyAccessID and Puhuri Access Management
MyAccessID serving the HPC community

Strive towards seamless user experience and ease of access

HPC community should focus on resource allocation and “outsource” user identification part
Support federation of euroHPC resources

Streamline user access
Unifi access policies as much as possible

Funnel requirements towards R&E federated identities
Implement solutions where R&E federated identities are not available or of sufficient quality
Initial requirements

Users: Researchers, industry, public sector

- Rely on the R&E federated identities in eduGAIN
- Enable existing community IdPs to connect
- Enable use of eIDAS
- Solution for industry and public sector
- Solution for users without federated identity

Authentication characteristics

- Enable Multi-factor authentication
- Enable SSH access to compute resources

Identity characteristics

- Minimum set of attributes
- Minimum identity proofing
PUHURI access management and MyAccessID

2020
- PUHURI 1 project start
- MyAccessID & PUHURI Design
- MyAccessID & PUHURI Pilot

2021
- LUMI Pilots
- Policy for Quality of Identities/LoA
- MyAccessID & PUHURI Production

2022
- LUMI General Availability
- Community coordination on LoA
- Implement policy on LoA

2023
- External Identity Vetting

2024
- MFA - Strong Authentication
Journey of the LoA Implementation
Level of Assurance implementation plan and... reality

Plan

- LUMI requirements translated into LoA
- LoA requirements socialised within LUMI consortium and wider

Reality

- Well accepted, half of the partners declared support by their federation already

<table>
<thead>
<tr>
<th>Year</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
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<td>Plan</td>
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<tr>
<td>Reality</td>
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Level of Assurance and Attribute Requirements

**Attribute requirements**
- Identifier
- Name
- email
- Affiliation
- Assurance
- Organisation

**Level of assurance requirements**

REFEDS Assurance Framework [https://wiki.refeds.org/display/ASS](https://wiki.refeds.org/display/ASS)

To insure sufficient **identity proofing and credential issuance, renewal, and replacement**
- [https://refeds.org/assurance/IAP/medium](https://refeds.org/assurance/IAP/medium); or
- [https://refeds.org/assurance/IAP/high](https://refeds.org/assurance/IAP/high)

To insure **identifier uniqueness**
- [https://refeds.org/assurance/ID/UNIQUE](https://refeds.org/assurance/ID/UNIQUE); or
- [https://refeds.org/assurance/ID/eppn-unique-no-reassign](https://refeds.org/assurance/ID/eppn-unique-no-reassign)

[https://puhuri.neic.no/idp_integration/attributes/](https://puhuri.neic.no/idp_integration/attributes/)
Level of Assurance implementation plan and... reality

**Plan**
- LUMI requirements translated into LoA
- Regular coordination with federation operators
- MyAccessID warning message 1. March deadline

**Reality**
- 2021: Well accepted, half of the partners declared support by their federation already
- 2022: Well received, triggered internal discussion to adopt LoA in several federations
- 2023: LoA tracking shows about 15% adoption
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Tickets from users and identity providers

User of Alfa university reports that they “login as another user” => IdP was releasing duplicate user identifiers

A Boo University confirms that they can not release identifier uniqueness assurance as it is not supported by University’s policy

University of Foo had misconfigured assurance values that they were releasing and this was fixed

School University confirms that they can not release assurance information as they don’t maintain this information in the user identity

Moo University has a process of elevating assurance of individual user accounts, based on a request
Level of Assurance Implementation plan and... reality

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2021

2022

2023
MyAccessID (New) Warning Message

Dear Boo Wooo,

The digital identity provided by your organization when you log in to this service does not meet the required levels for assuring your identity.

During 2023 this will become a mandatory requirement for you to continue to access LUMI HPC resources. We are working on solutions for the level of assurance of your identity, and to speed up this process it would be helpful if you could send the information below to the indicated IT support for your organization.

If your organization cannot meet the requirements, you will be provided with an alternative to assure your identity and continued access. If so, this will be communicated to you in good time before the requirement is in effect.

To: support@example.idp.org

Subject: Request to support the required level of assurance for MyAccessID/LUMI EuroHPC

Dear Example IdP support,

For the users of our institution to access MyAccessID (entityID: https://proxy.myaccessid.org/metadata/backend.xml), our institution needs to release the required levels of assurance as it is described here: https://puhuri.neic.no/idp_integration/requirements-edugain/

It is important for the users of our institution to support this requirement as soon as possible, as services such as EuroHPC LUMI supercomputer are requesting that in order to trust the identity provider's information for legal reasons.

Thank you in advance,
Boo Wooo
**Level of Assurance implementation plan and... reality**

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- 2021: Well accepted, half of the partners declared support by their federation already
- 2022: Well received, triggered internal discussion to adopt LoA in several federations
- 2023: LoA tracking shows improvement 25% adoption
- LUMI reacts
- Users react
- LoA tracking shows about 15% adoption
European Identity Provider Attribute Release Statistics

- 187 IdPs
- 30 Countries
- 308 IdPs
- 1650 Users
- 27 LoA Med./High
- 78 LoA Med./High
Level of Assurance implementation plan and... reality

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- Start to work on alternative solution: Identity vetting

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Flow with external Identity Vetting

**Identity vetting phase**

- On eduID a user without an account would need to create an account and then do the Identity vetting
- That breaks the flow and users cannot continue to MyAccessID and the target-service
- Send to external identity vetting
- On successful response from eduID the accounts are linked
- Identity vetting information is stored

**Authentication phase**

- eduID.se (vetting function)
- IdP
- If assurance is not satisfied display possible actions for user:
  - Contact IdP to elevate LoA
  - eIDAS
  - external identity vetting
- DS
- Choose IdP:
  - institution
  - eIDAS

User with Identity with insufficient LoA tries to access a service behind MyAccessID
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**Reality**
- LUMI requirements socialised within LUMI consortium and wider
- LoA policy enforced

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- LUMI reacts
- LoA tracking shows improvement 25% adoption

2023
- Identity vetting through eduid.se implemented
Federation Operators Feedback

Likelihood of implementation
- From 100%,
- to We are getting there,
- to We need more incentives for IdPs to drive the adoption

Incentives for IdPs
- Need high profile SPs to request the LoA
- Make the LoA mandatory

How to help
- Quality documentation in one place
- Provide more information to nag the users
- Clear deadlines
Key takeaways
Conclusion

THE GOOD
- Federated access to resources is possible and desired
- Interesting possibilities with access to reasonable LoA
- Elevation of LoA is possible via identity vetting on top of the federated identity
- Federating resources makes for a scalable solution

THE BAD
- Low uptake on exposure of LoA
- The threat of losing access is too large a cannon

THE UGLY
- Hard to exert pressure to motivate IdPs to improve the release of LoA information
Thank you for attention!

Questions?

support@puhuri.io