AAI Comparison
Comparison of Authentication and Authorization e-Infrastructures for Research

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Some Facts about GÉANT and Context

• GÉANT is name of project and organisation
• Built, operates, extends European research backbone network
• Connecting 50 million users at 10'000 institutions across Europe
• Not only the network! Operates also services like eduroam and eduGAIN, piloting Moonshot

• Enabling Users Task:
  • Since 2013 part of GÉANT project
  • Objective: Help research communities to make use of authentication and authorisation infrastructures (AAI)
  • Task members: Federation Operators of national AAI (experts)
Scenario

• You are technical architect of a research community
• Your community is distributed
• Increasing number of services that need authentication & authorisation
• Your job is to find a solution
• You want to focus on research and not reinvent the wheel

• You start googling...
You find ...

- International *general-purpose* authentication and authorisation infrastructures (AAI), services and technologies available for research and education.

(Moonshot)
... and Likely to Get Lost
The Problem

- As a "newbie" it's hard to figure out some of the basic info about these infrastructures, services and technologies
  - (It's also hard even if you are not a newbie anymore)
  - Talking to all representatives of these infrastructures is time-consuming and they often fail to explain things in easy terms

- How to learn about pros and cons without testing all of them?
  - Operators of one AAI often don't look beyond one's own nose

- Do they differ? After all they all provide some authentication and authorisation features. They can't be so different... can they?
Differences in Type
Differences in Technologies

• SAML 2 supported by almost all
  • But different profiles
    e.g. for STORK and eduGAIN

• Hub-like e-Infrastructures like EUDAT (or e.g. the upcoming ELIXIR AAI) can easier support new protocols.
More Differences...

- Architecture

- Coverage

- Login Flows

Services, Governance, financing, technical features ... and many more
Wouldn't it be nice if ...

... there was an overview about the different general-purpose AAI s available to research and education?

Yes it would, but where to get that?

Documents in similar context but with different goals:

• "AARC Deliverable DJRA1.1: Analysis of user community and service provider requirements", October 2015, Christos Kanellopoulos et al. **Goal**: “provide a requirement analysis from research communities regarding AAI”

• "Advancing Technologies and Federating Communities: A Study on Authentication and Authorisation Platforms For Scientific Resources in Europe", SMART-Nr 2011/0056, **July 2012**, Licia Florio et al. **Goal**: "evaluate the feasibility of delivering an integrated Authentication and Authorisation Infrastructure" and make "recommendations for the delivery of an integrated AAI"
Motivation and Goal

• **Document should:**
  - Provide a general overview about AAI's
  - Answer a few relevant key questions from a research community perspective
  - Highlight AAI's advantages and disadvantages
  - Identify opportunities to collaborate/interconnect AAI's

• **Operators of AAI to get more familiar with other AAI's**
  - This hopefully will lead to increased collaboration and interconnection between AAI's
  - One example is EUDAT that already uses most technologies of other AAI's and relies on some of them as supplier
• Started by GÉANT Enabling Users task
• Task members mostly NREN staff familiar with eduroam, eduGAIN and Moonshot
• Based on feedback from our work with research communities a structure with a few key questions was created
• Plan:
  1. Internal author completes and answers questions for given AAI ✓
  2. Internal reviewer checks information on described AAI ✓
  3. Invite experts from described AAI to verify/correct information

1 and 2 more difficult than expected, even for people already familiar with AAIs! Imagine how difficult it must be for researchers getting familiar with AAI.
Key Questions about each AAI - Part 1

For each AAI, answers to the following questions?

• Introduction
  • What is it?
  • What does it do?
  • Does it provide anything else besides authentication and authorisation function? (mostly relevant for e-Infrastructures)

• History and Current Status
  • When was it created and by whom?
  • What’s the current coverage/numbers of countries, organisations and users?

• Intended Audience
  • For whom is it operated primarily?
  • Further eligible intended audiences (who else could be using it)?
  • For whom is it suited?
Key Questions about each AAI - Part 2

• Operation and Governance
  • Who operates it?
  • Who controls and governs it?
  • Where to get support from?

• Business Model
  • How is it financed?
  • How sustainable is it?

• Underlying Technology
  • What protocols and technologies are used?
  • How does the architecture look like?
  • How does the login flow typically look like?

• Major Benefits
• Limitations
• How to Join
Findings (so far)

• To understand the basics of a single AAI is non-trivial.
  • EGI.eu has good web site but try searching for "VOMS" (or concept behind it) on egi.eu

• It's not that easy to compare apples and bananas in a structured format 😊
  • e-Infrastructures (with more than just AAI functionality) vs services vs technologies. E.g. Moonshot is "only" a technology but was included because by quite a few people it is perceived as an infrastructure.

• Even seemingly easy facts (how many users/services/authentications?) are difficult to quantify for some AAIs

• Reliable basic information is hard to find sometimes (still up-to-date? authoritative content? info about project or platform?) even for people familiar with one AAI. Guess how difficult it is for researchers familiar with no AAI.
Help Complete and Correct EGI Information

- Current state of AAI Comparison document: Draft
  - Some more expert reviews needed
  - Link to document (will also point to final version): [swit.ch/aai-comparison](http://swit.ch/aai-comparison)
  - Anticipated publication date: Beginning December
  - Please have a look at document, comment and correct.
  - Especially EGI section *is* was missing information and review (thanks to Peter Solagna who edited quite some text yesterday!)
  - Are there more general-purpose AAIs?

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What is an e-Infrastructure anyway?

• Many definitions 😊

• "e-Infrastructure refers to a combination and interworking of digitally-based technology (hardware and software), resources (data, services, digital libraries), communications (protocols, access rights and networks), and the people and organisational structures needed to support modern, internationally leading collaborative research [...]."
(Source http://www.rcuk.ac.uk/research/xrcprogrammes/otherprogs/einfrastructure/)