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Deliverable DSA1.2/DSA1.3/DSA1.4: Pilots Results and Demonstrators

Deliverable DSA1.2/DSA1.3/DSA1.3

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Authors:	Licia Florio (GEANT), Arnout Terpstra (SURFNet), Simone Visconti (Reti)

Abstract

This brief document reports on the pilot results with the research communities, the e-infrastructures and on new use-cases that emerged during the AARC2 lifetime. Both DSA1.2, DSA1.3 and DSA1.4 are demonstrators; this document provides a very brief overview on where the results and the documentation can be found. In the context of this document and more in general of AARC2, research collaborations, research infrastructures or research communities are used interchangeably to refer to communities (either in the form or real legal entity or a virtual collaboration) that undertake research in a specific field.
E-infrastructures henceforth refer to EGI, EUDAT, GEANT and PRACE, organisations that offer infrastructure services for the benefit of different research collaborations.

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Executive Summary

The goal of the Pilots Service Activity (SA1) is to enable e-Science communities, e-Infrastructure and research infrastructures to implement, deploy and operate AAIs that follow the AARC Blueprint Architecture (AARC BPA). Prior to the start of a project, a number of communities were selected based on their use-cases and their expected ability to sustain in production the result on the pilot carried out in the AARC2 project. For interested research communities SA1 also offers support for service delivery pilots, which support research communities to design and choose an e-infrastructure provider that can deliver AAI services following the AARC BPA "as a service" model.

Contrary to what originally envisaged, it was not always possible to maintain a clear boundary between the pilots done to support research communities to deploy their community AAI based on the AARC results, interoperability pilots between e-infrastructures and more advanced use-cases. Instead a more integrated was followed, as indicated in the picture below.

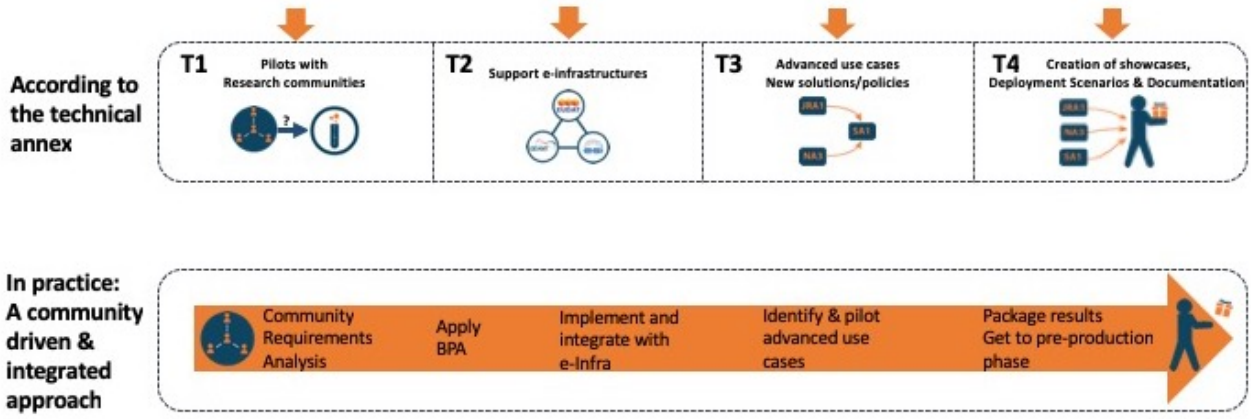

Figure 1: Pilots approach

There were in total 4 generic e-infrastructures (EGI, EUDAT, GÉANT and PRACE) and 9 research collaborations, as shown in the picture below.

Figure 2: Research and e-infrastructures that participated in the AARC2 Pilots

The tables below shows the results of the pilots. More information are available on the wiki: https://wiki.geant.org/display/AARC/AARC+Pilots.

Work is ongoing to finalise the documentation and to move the relevant content to the AARC website including testimonials.

Community	Links	Topics/Focus	Status
HELIX NEBULA THESCIENCECLOUD		Connecting services & Brokering Leverage the work done by AARC on policies and architectural blueprints Implementing Sirtfi Using eduGAIN	CONCLUDED
EISCAT 3D	EISCAT_3D AAI	Move away from IP based access towards federated AAI according to the AARC BPA	CONCLUDED
EPOS EUROPEAN PLATE OBSERVING SYSTEM	EPOS European Plate Observing System	Evolve current AAI towards one that is fully compliant with AARC BPA; support cross infra use cases with EGI/EUDAT/PRACE and delegated federated access (non-interactive) workflows	CONCLUDED
cta cherenkov telescope array	CTA Cherenkov Telescope Array	Initial implementation of Community IdP/SP proxy, Group/Role based access to resources, SIRTFI and CoCo/GDPR compliance	CONCLUDED
LifeWatch	LifeWatch AAI	Implementation of AAI according to the AARC BPA; access for citizen scientists	FINALISATION
CORBEL	CORBEL LifeSciences AAI	Inter compatibility, share a common AAI shaping according to the ideas in Elixir. Also focus on sustainability and operational aspects elixir INFRAFRONTIER BBMRI Biobanking and Biomolecular Resources Research Infrastructure instruct Integrating Biology	CONCLUDED
WLCG Worldwide LHC Computing Grid	WLCG Worldwide LHC Computing Grid	Implementation of IdP/SP Proxy, mainly to provide Token Translation Services to allow end users to login without the need of manually managing X.509 certificates	FINALISATION
LSC	LSC Ligo Scientific Collaboration	Implement AAI according to AARC BPA	FINALISATION
DARIAH AAI	DARIAH AAI	Implementing an AAI according BPA to allow communication between DARIAH and other infrastructures	CONCLUDED

Table 1: Overview of the pilots with the research communities

e-Infrastructure	Links	Topics/Focus	Status
EGI EUDAT	EUDAT-EGI pilot for cross-infrastructure access to resources	The technical integration of the EGI and EUDAT AAIs has started but we recognize that additional effort is needed to harmonise attributes and Level of Assurance (LoA) definitions. The team therefore continues to work on an earlier started joint proposal by AARC, EGI and EUDAT to harmonise the LoA of their identities for consumption by their internal services.	This pilot has been absorbed by the LS AAI pilot
EUDAT PRACE	EUDAT-PRACE pilot for cross-infrastructure access to resources	The high-level goal of this pilot is to achieve AAI interoperability between EUDAT and PRACE and to examine how Unity technology may be used to accomplish this task. The solution consists of two components. The first one is the automatic provisioning of accounts for selected PRACE users who authenticate with x.509 certificates. EUDAT accepts these certificates and PRACE users become registered users in the EUDAT authentication and authorisation service. This gives PRACE users access to non-x.509-based EUDAT services. The second component needs to synchronise these accounts with EUDAT data services using certificate credentials.	CONCLUDED
EGI	DARIAH AAI	Implementing a Proxy-Element according to the AARC BPA in the DARIAH AAI and enabling integration with EGI There are two consecutive and related pilots: 1. The DARIAH AAI will be extended with a proxy according to the AARC BPA. This proxy will be based on Shibboleth and enable further interoperability endeavors. 2. Based on the work from the first pilot, the goal of this pilot is to achieve interoperability between the DARIAH AAI and EGI. This will include harmonization of LoA and group membership expressions, according to the AARC recommendations.	CONCLUDED
GÉANT eduTEAMS		Two pilots: 1. eduTEAMS + EUDAT B2ACCESS 2. eduTEAMS + EGI CheckIn service	This pilot has been absorbed by the LS AAI pilot

Table 2: Overview of the pilots with the e-infrastructures.

1 LS-AAI Pilot: An Advanced Use-Case

In this paragraph, we provide some additional information on the LS-AAI pilot. This is considered an advance use-case for the following reasons:

- LS-AAI community is the first cluster of different research collaborations operating in the same field that agreed to have one centralised AAI to serve all of them;
- LS-AAI are the first one that agreed to outsource the operations of the AAI, whilst they will maintain control on the policies;
- LS-AAI asked the e-infrastructures (EGI, EUDAT and GÉANT) to design a solution that met their requirements and to operate them. They also agreed to use AARC as the neutral project to coordinate the pilot.

The LS-AAI pilot resulted in a collaboration among the three e-infrastructures which led to the following architecture:

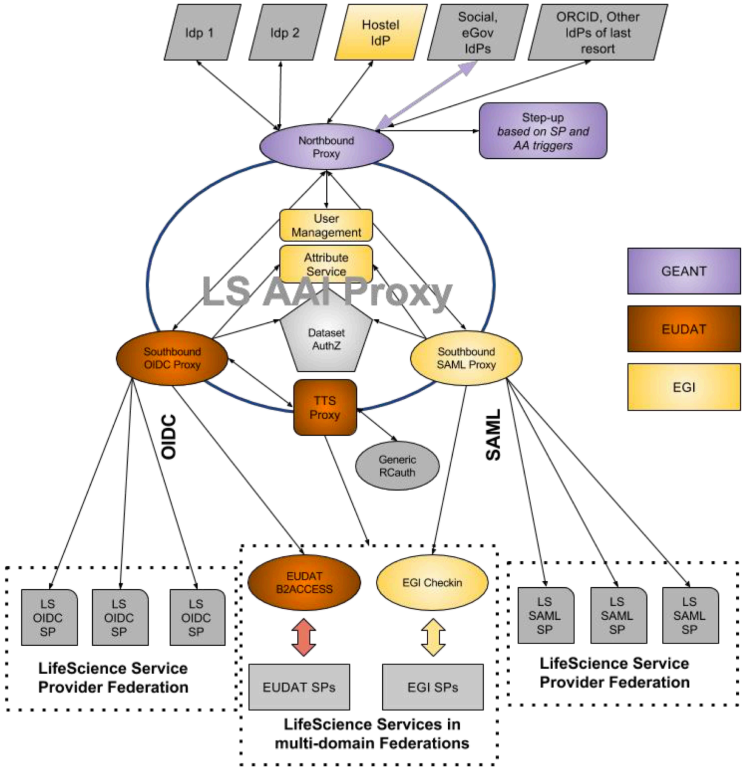

Figure 3: LS-AAI pilot architecture

The AARC piloted demonstrated that:

- The BPA is scalable and can be deployed in different scenarios, in this case three operators take care of different components;
- The proposed architecture is technically feasible;
- And that their intentions to outsource the AAI operations can be fulfilled.
- There is a general willingness to collaborate among the LS-AAI communities and the e-infrastructures;
- The policy aspects are challenging and require time and effort to get the buying in of all the various parties.

2 Conclusions

Each community shares the desire to have an AAI for their users and services according to the AARC BPA. In fact, the BPA and the related policies and guidelines have been a tremendous enabler for research collaborations. In the context of the AARC2 pilots, only one research community (LS-AAI) has explicitly requested to have their AAI operated by the e-infrastructure providers. This community aggregates thirteen different research infrastructures in the Life-science field. Some of these communities had already experience in operating production AAIs, therefore they could leverage their experience in clearly scoping the requirements both on technical as well as operational aspects. They came to the conclusion that running an AAI is not their core business and that it would be more meaningful and future-proof to outsource the AAI operations to existing e-infrastructures. The AARC pilot has successfully demonstrated their model and has laid the foundations for their next generation AAI. This work will continue outside the AARC project, within the EOSC-life project that started in March 2019. The valuable lessons learned in the AARC pilots have proven to be crucial for their next steps.

Whilst LS-AAI is most organised group, we have witnessed more patterns emerging where different research collaborations are exploring whether to outsource their AAIs following the LS-AAI model.

It is important to note that each research community is responsible for ensuring the sustainability of the AAI resulted from the AARC2 pilots. More about this is covered in DNA1.3.

So far, SA1 demonstrated that the AARC BPA is a very flexible architecture that can adjust to fit different community use cases very well. The BPA can be deployed in different ways, for instance by one entity operating all components or different components can be outsourced (i.e. group management system) and even the proxy can be operated in a multi-operators manner as demonstrated by the LS-AAI pilot. The operations of the various components require however skilled expertise.