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

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

Contractual Date: 28-02-2019
Actual Date: Error! Reference source not found.
Grant Agreement No.: 730941
Work Package: SA1
Task Item: 1,2,3
Lead Partner: GARR, GRNET and EGI
Document Code: DSA1.2/DSA1.3/DSA1.4
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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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The research leading to these results has received funding from the European Community’s Horizon2020 Programme under Grant Agreement No. 730941 (AARC2)
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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 AAI 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.

<table>
<thead>
<tr>
<th>Community</th>
<th>Links</th>
<th>Topics/Focus</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>EISCAT_3D AAI</td>
<td>Move away from IP based access towards federated AAI according to the AARC BPA</td>
<td>CONCLUDED</td>
<td></td>
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<tr>
<td>EPOS European Plate Observing System</td>
<td>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</td>
<td>CONCLUDED</td>
<td></td>
</tr>
<tr>
<td>CTA Cherenkov Telescope Array</td>
<td>Initial implementation of Community IdP/SP proxy, Group/Role based access to resources, SIRTFI and CoCo/EDPR compliance</td>
<td>CONCLUDED</td>
<td></td>
</tr>
<tr>
<td>LifeWatch AAI</td>
<td>Implementation of AAI according to the AARC BPA; access for citizen scientists</td>
<td>FINALISATION</td>
<td></td>
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<tr>
<td>CORBEL LifeSciences AAI</td>
<td>Inter compatibility, share a common AAI shaping according to the ideas in Elixir. Also focus on sustainability and operational aspects</td>
<td>CONCLUDED</td>
<td></td>
</tr>
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<td>WLCG Worldwide LHC Computing Grid</td>
<td>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</td>
<td>FINALISATION</td>
<td></td>
</tr>
<tr>
<td>LSC Ligo Scientific Collaboration</td>
<td>Implement AAI according to AARC BPA</td>
<td>FINALISATION</td>
<td></td>
</tr>
<tr>
<td>DARIAH AAI</td>
<td>Implementing an AAI according BPA to allow communication between DARIAH and other infrastructures</td>
<td>CONCLUDED</td>
<td></td>
</tr>
</tbody>
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Table 1: Overview of the pilots with the research communities
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.