Version 1.1 - created from version 1 by Petr Holub 13th December 2021
Version 1.2 - created from version 1.1 by Zdenka Dudová 16th January 2022 (changed “connector” to “local component”)

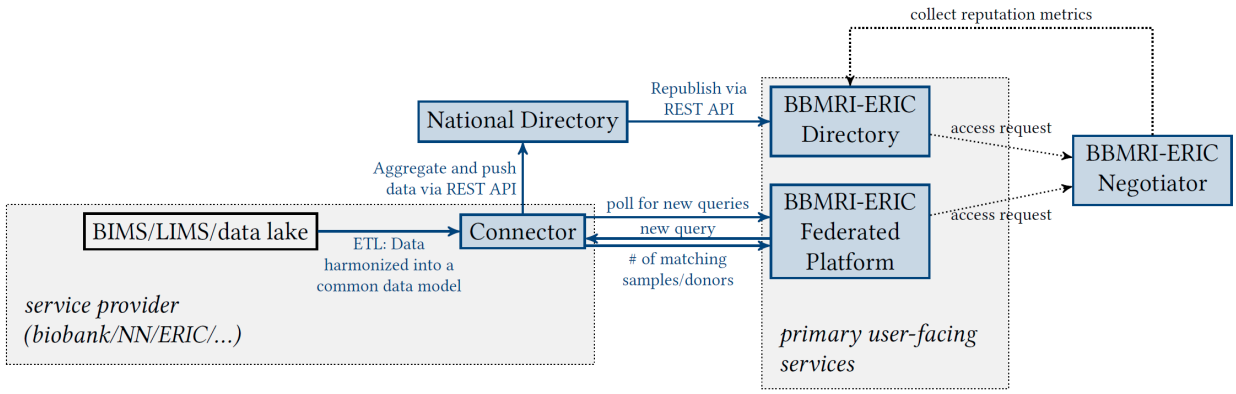
Federated Platform Strategy

BBMRI-ERIC is now procuring the federated platform solution with the following main aims:

- implementation of federated search for donors and samples based on rich clinical/genetic/sample data
- support of expedite data access
- support for federated data analysis

The platform shall support datafication of BBMRI-ERIC biobanks and the Research Infrastructure (RI) as a whole and support our participation in activities such as implementation of the Mission Cancer and European Health Data Spaces.

The federated platform will interface existing services of BBMRI-ERIC - namely the Directory and the Negotiator. The platform is expected to be able to update data in the Directory [on behalf of the given participating biobank and/or National Node], and to allow filing requests through the BBMRI-ERIC Access Policy/Procedure implemented by the Negotiator. The platform is not intended to replace the local IT solution of any biobank, but the platform will interface to the local IT solution using well-documented open interfaces. The federated platform will enable member country state's national strategies and thus support a hierarchical model in federated searches and federated data analyses. It shall enable biomedical research services provisioning at all hierarchical levels i.e. by biobanks, national coordinators and BBMRI-ERIC.
The same layered architecture applies to the whole IT ecosystem as well, including existing services such as the Directory and Negotiator services.



The federated platform is a part of a broader IT ecosystem, which has to be vendor-neutral and must allow different solutions to coexist based on standards for interoperability. This is particularly important for more advanced services such as the federated platform or different data analysis platforms, where we see potential for different competing solutions to be developed and used.

Background information. BBMRI-ERIC has supported development of the federated search solution as a part of the Common Service IT (CS IT) from 2015 until 2019. The implementation was led by DKFZ and mostly funded by the German Biobank Alliance and only partially funded by the CS IT, resulting in Locator service.[1] When the CS IT was reshaped in 2019/2020 based on the wishes of the BBMRI-ERIC NNs, this service was moved out of the CS IT mainly for the reason that given the budget constraints of the CS IT, it is important to concentrate more funding on development of the core services and leave the other services such as federated search or reference tools for biobanks to the initiatives of the NNs and their alliances.[2] Another reason is that there are also competing solutions implementing the federated search and different NNs had different preferences for them.

Call for tender. In early 2021, BBMRI-ERIC has issued a Call for Tender with the intention to speed up the datafication process of the RI. The Call for Tender preparation was preceded by organizing an IT Symposium, in order to get an overview of state-of-the-art solutions that might be candidates for such a pilot. The Symposium has clearly demonstrated there is a number of solutions that could compete in the tender, ranging from academic solutions (such as the Locator or UW Leaf) to commercial solutions (such as BC|Platform RQUEST and TriNetX). The purpose of the tender was to acquire a mature federated platform which would allow BBMRI-ERIC piloting before mid-2021. The piloting will focus on the several key areas: (1) cancer biobanks, (2) biobanks dealing with infectious diseases with particular focus on COVID-19, (3) rare disease biobanks. The goal of the pilot is to incorporate advanced biobanks from a substantial majority of BBMRI-ERIC member states into the pilot. Regardless of which solution is selected in the tender, the federated platform will be *run by BBMRI-ERIC* and any data will not leave BBMRI-ERIC and namely will not be shared with the technology provider of the federated platform. The local component is full within sovereignty of the biobank and the sample-level and donor-level data from the local component does *not* leave the biobank - only responses to requests leave the biobank (aggregate data) and aggregate descriptors may leave the biobank if the biobank chooses to use the local component to update the data in the National and BBMRI-ERIC Directory. The pilot explicitly considers vendor neutrality and avoiding vendor lock-in: it will be complemented by the restart of the Interoperability Forum in the CS IT, where the goal is to provide open standards for data exchange and querying in the federated platform, so that other solution providers, commercial or academic, can contribute to the platform.

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[1] https://samplelocator.bbmri.de/

[2] BBMRI-ERIC has promised development of the endorsement mechanism to allow various services nominated by the NNs to receive similar status of BBMRI-ERIC recommended services equivalent to the core services of the CS IT.

Timing.

- *Before mid-2021*, the pilot will start with a minimum of 5 biobanks which contributed to the CRC-Cohort from at least 5 different BBMRI-ERIC member states. The focus of the pilot will be on estimating costs of integration of advanced biobanks (those which have data in digital structured formats and which have qualified IT staff) from different national settings. This activity is expected to become part of the BBMRI-ERIC involvement in the cancer use case for the European Health Data Spaces.
- *Before end-2021*, the pilot will onboard advanced COVID-19 and rare disease biobanks, which are also highly motivated to provide the data/samples to the researchers. These efforts are strategically aligned with the BBMRI-ERIC participation in European Joint Programming for Rare Diseases (EJP RD) and in contributing to the development of COVID-19 Data Portal in EOSC-Life project.
- *In 2022*, we would seek to cover all member states in order to give opportunity to all the NNs to have their own experience with the onboarding process. We will aim to explore options how to stimulate co-existence of different solutions based on proceeding with the interface and API standardization via Interoperability Forum of the CS IT.