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An OHDSI ATLAS Extension to Support Feasibility Requests in a Research Network

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Abstract. Checking the feasibility of real-world data to answer a certain research question is crucial especially in a multi-site research network. In this work we present an extension of the ATLAS user interface for the OMOP common data model that integrates into an existing national feasibility network and thus foster capabilities for future participation in international research studies.

Keywords. OHDSI, OMOP, feasibility requests, interoperability

1. Introduction

Before running studies in a research network on real world data (RWD) spread across different sites, it is crucial to evaluate whether the number of available medical records that fits specific criteria is sufficient to answer a research question. Those collaborative efforts are currently driven in Germany by the Medical Informatics Initiative (MI-I) [1]. The Observational Health Data Science and Informatics (OHDSI) [2] software ATLAS is a user interface for research analytics that can be used by a single site and connects against data stored in the Observational Medical Outcomes Partnership (OMOP) common data model (CDM). The importance of the OMOP CDM in research is continuously increasing over the past years [3]. Thus, this paper presents an enriched ATLAS functionality to support cross-site feasibility requests in the MI-I consortium Medical Informatics in Research and Care in University Medicine (MIRACUM) [4].

2. Methods

Based on an existing architecture to support cross-site data sharing of feasibility request [5] the OHDSI ATLAS functionality had to be extended to act as a central component that creates and distributes cohort definitions within this architecture. First, ATLAS was extended to extract information added by the central project proposal module ProSkive [6] to identify the address of a central broker needed to forward the exported cohort

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definition as SQL script including a unique identifier. Second an export function was created in the ATLAS user interface to automatically send the cohort definition as executable SQL statement to the centralized broker instance. Basic client authentication security that ensures trusted communication between a central ATLAS instance and the broker was also implemented. Hence, the Connector Component Federated Search (CC-FS) components at each MIRACUM site can pull SQL statements from the broker, executes them locally against OMOP databases and replies the number of available records from each participating site in the network.

3. Results

We added new cohort export capabilities to the ATLAS user interface and thus an integration of the ATLAS software into an existing cross-site data sharing infrastructure of the MIRACUM consortium was accomplished. This enriched the network to execute feasibility requests against harmonized RWD in the OMOP CDM. A proof of concept was conducted where we successfully demonstrated feasibility request delivery and execution across the network [7].

4. Discussion and Conclusion

With this work we allowed the MIRACUM consortium to run feasibility requests on the OMOP CDM. In a next step we utilize the solution for non-university hospitals in the digital progress hub MiHUBx [8]. This work is funded by the German Ministry of Education and Research (FKZ 01ZZ1801A/L and FKZ 01ZZ2101A).

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