Bringing a Titan to a New Organization

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Background

The OMOP Vocabulary and Atlas are challenging constructs for any organization new to OHDSI to learn. Aside from OMOP CDM adoption and utilization, the overhead of training users on the nuances of these tools can be a major barrier for many organizations, particularly those in which their technology platform differs from those supported by OHDSI. Here, we share change management and technical experiences bringing Atlas to our department and promoting it as a standard method for real world evidence generation.

Methods

Leveraging observational data newly modeled into OMOP CDM v5.3.1, we began a new project, Titan, to improve study asset accessibility and evidence generation efficiency via Atlas. With Databricks as our data warehouse, we modified the SqlRender package to enable the OHDSI tools to produce Spark SQL by studying the Databricks and Spark reference material. These translation patterns were mostly straightforward, however, custom programmatic logic for handling SQL inserts and table creation commands was required to work around Spark SQL limitations. Spark logic in WebAPI was added to handle these types of commands.

An early pilot trained a focus group of 10 users new to OHDSI tools virtually. The lessons were adapted from The Book of OHDSI chapters, OHDSI YouTube videos, and EHDEN Academy courses and curated to focus on user-submitted and organizationally strategic study questions.

Based on early pilot feedback, enhancements to Atlas study asset tagging, versioning, search results' prevalence, and study asset collaboration were developed in partnership with Odysseus, Inc.

Results

Spark SQL modifications in SqlRender[1] produced appropriate SQL commands and queries generated by Atlas/WebAPI, Achilles, and DataQualityDashboard.

The 10 early pilot users authored over 200 concept sets, 30 cohort definitions, and 15 cohort characterizations over the course of two months. All users reported positive feedback on the experience, as they for the first time had a convenient way to create medical code lists with better sensitivity and to create and characterize cohorts.

Trainings were well received, as the Book of OHDSI provided a useful overview of the ecosystem to a group of non-technical epidemiologists, and the videos provided step-by-step directions on the various analytic features. Focusing on study questions from users helped to inspire engaged discussion. Users did report difficulties in understanding the OMOP Vocabulary, particularly when comparing the code coverage in their existing medical code lists against analogous Atlas concept sets. Further comparisons of medical code coverage and real-world prevalence between the OMOP Vocabulary against other vocabulary ontologies is planned.

The new Atlas enhancements (Figures 1, 2) will be launched to a larger pilot in late Summer 2021. The

versioning and tagging will allow 100+ users to use Atlas as an organized repository of real-world data study assets. These enhancements, along with the Spark SQL logic in SqlRender, will be submitted to the OHDSI community for consideration as they are non-proprietary and could improve the usability of the platform for other OHDSI sites.

Figure 1: Tagging of a concept set with site-architected tag groups and values.

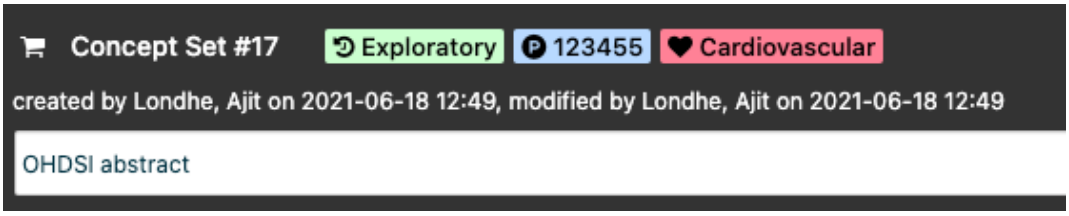
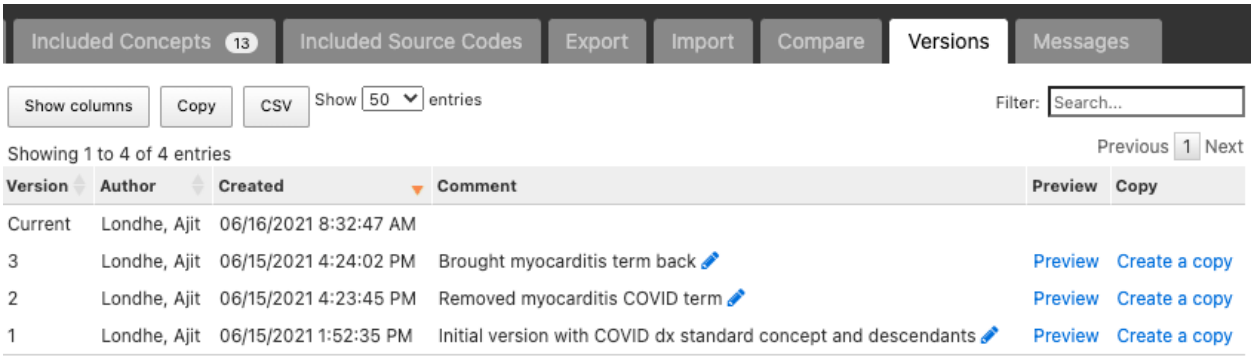


Figure 2: Versioning of assets allows for traceability and annotation of all prior changes to the asset. Prior versions can be previewed, can be used to overwrite the current version, or copied to a new asset.



Conclusion

For organizations new to OHDSI, change management and effective training is critical. Leveraging existing training modules is useful but tailoring it to the organization helps to make this somewhat unorthodox method to evidence generation more approachable. As OHDSI is open-source, organizations should feel empowered to introduce enhancements if they can benefit their users, as most likely the enhancements can benefit the broader community.

If using technology not traditionally supported by the OHDSI tools, it is important to closely study the logic used in SqlRender and the reference material from the database platform to ensure that the right translation patterns are leveraged. With these considerations in mind, a deployment of Atlas and other OHDSI tools is possible for any organization seeking to improve evidence generation efficiency.

References/Citations

1. Martijn Schuemie and Marc Suchard (2021). SqlRender: Rendering Parameterized SQL and Translation to Dialects. Pull Request "Adds Spark dialect (without updated SqlRender JAR file)" https://github.com/OHDSI/SqlRender/pull/248