



ARACHNE Research Network v2

User Guide

September 1, 2021

Odysseus Data Services, Inc.
245 First Street, Riverview II, 18th Floor
Cambridge MA 02142

Office: +1 (888) 550-9968 x701
Fax: +1 (339) 204-4044
contact@odysseusinc.com

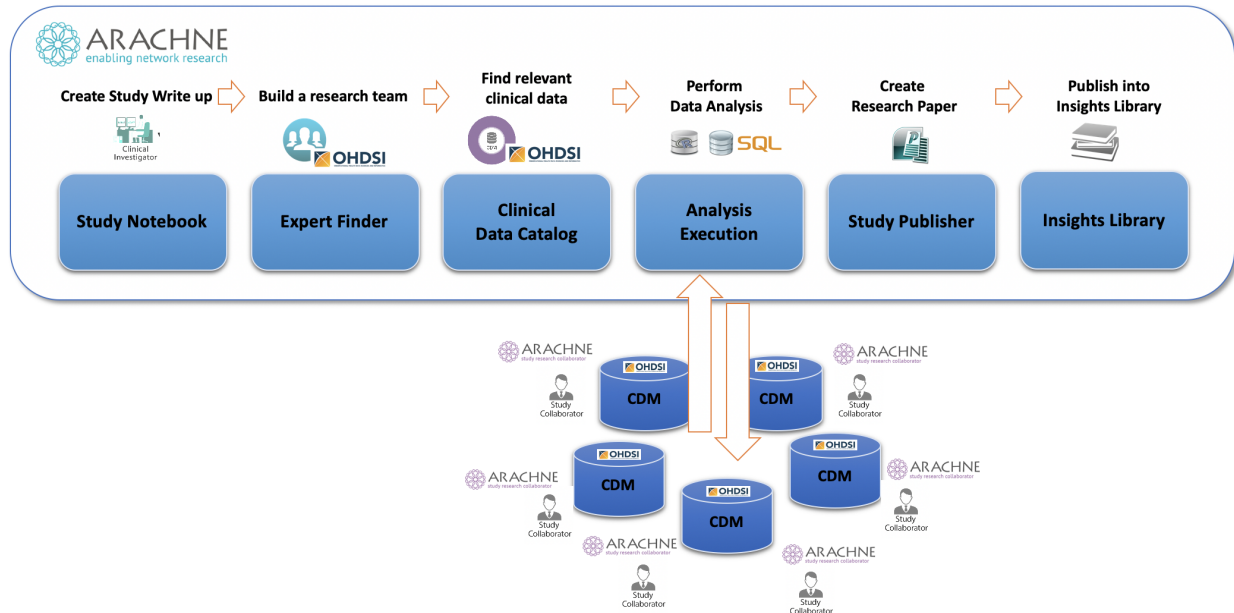
Contents

Overview	3
Glossary	3
ARACHNE User Roles	4
Lead Investigator	4
Contributor	4
Data Owner	4
ARACHNE Node Deployment Options	4
ARACHNE Components	6
ARACHNE Studies	6
Study	6
Study Roles	6
Finding Studies	6
New Study	7
Invite Study Participants	8
Enable Study Data Sources	8
Study Analysis Execution	10
ARACHNE Analysis	10
ATLAS (import)	10
Custom Analysis	10
Cohort Simple Counts (Example)	10
Import from ATLAS	10
Executing Analysis	11
Viewing Submission Results	12
Data Catalog	13
System Administration	14
Integration with A&A system	14

Setting up and Configuring Data Nodes	14
Configuring a New Data Source	15
Handling a Data Source	15
Configuring Integration with ATLAS	17
Analysis Preparation for Manual Submission	18
General Requirements	18
OHDSI Libraries in ARACHNE Execution Engine	18
Code Preparation	19
Package Installation Code	19
Database Connection Properties	20
Output Folder and Temporary Location	20
Preparing an Analysis Archive	21
Manual Submission on an ARACHNE Data Node	21

Overview

The ARACHNE Research Network platform enables collaborative federated studies across researchers in life sciences and healthcare organizations.



ARACHNE facilitates an end-to-end network study workflow orchestration, including collaborative study planning, data access requests, analysis execution requests and code sharing as well as sharing of the aggregated execution results. It offers the following features:

- Complete study lifecycle and workflow management.
- Data Catalog for all available Data sets.
- The assembly of a study team.
- The execution of analyses within an organization or across organizational boundaries using secure and compliant access to remote data.
- Exchange, store and annotate analysis code and results.
- Publication of study outcomes e.g. insights, evidence and conclusions, into the Insights Library.
- Remote job execution.
- Support for R, SQL of the OHDSI supported dialects and complex packaged analyses
- Integration with other OHDSI Platforms (ATLAS, ACHILLES).
- Full support for OMOP CDM data sources, including database level statistics (ACHILLES) in the Data Catalog.

Glossary

- **ARACHNE Central** – a shared environment to execute collaborative analytical studies (projects).
- **Data Node and Data Source**
 - **Data Node** is installed at the data site and is connected to one or more data sets via the ARACHNE Execution Engine.

- **Data Source** is registered in ARACHNE Data Catalog, which also allows adding custom metadata and ACHILLES reports
- **A virtual Data Source** that can be used to share code and results. Does not require installation. Local R or SQL environments are being used for analysis execution.
- **ARACHNE Execution Engine** is installed with ARACHNE Data Node and is being used to execute analyses (R-based) and return consistently structured aggregated results. Creates a clean environment with each execution
- **Study** – a project focused on a large analytical problem or hypothesis. Typically requires a study protocol, involves multiple collaborators as well as data sets. Has multiple phases – starting with feasibility, design, execution and ending with results dissemination and study write up.
- **Analysis** – a specific type of an analysis that is executed within a larger study

ARACHNE Editions

There two ARACHNE Editions available:

- Community Edition
- Enterprise Edition

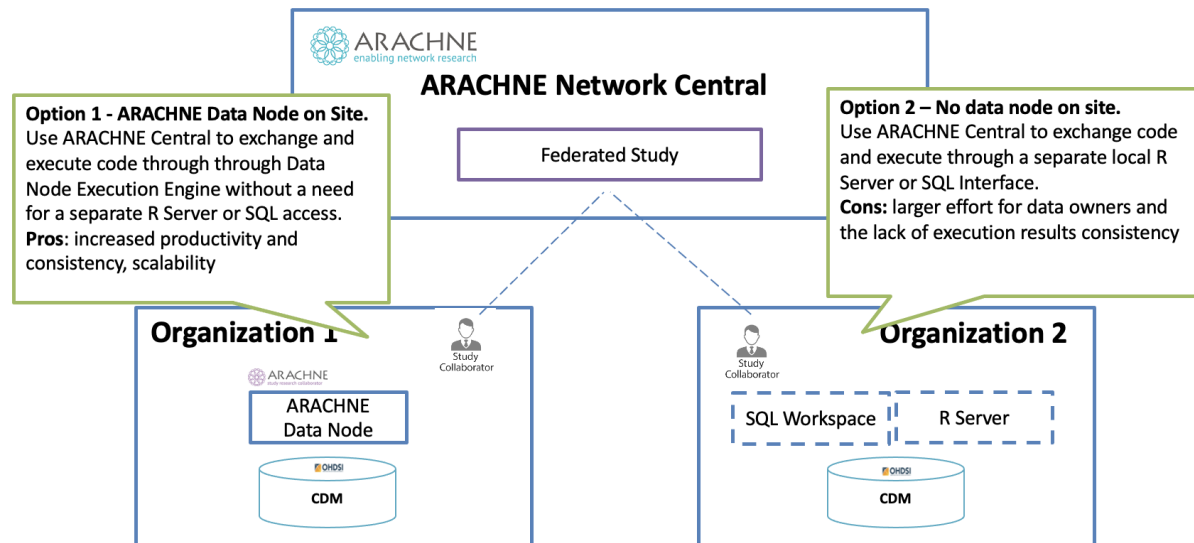
In addition to all features in the fully functional Community Edition, the Enterprise Edition also offers:

- Connected Data Nodes and fully automated federated analysis execution, including approval mechanisms
- Creating and managing complex metadata for data sets in the Data Catalog
- Study Execution log (audit)
- Anti-Virus support for both documents and code
- Multi-tenant environment

ARACHNE Node Deployment Options

There are 2 deployment options in ARACHNE Platform

- 1) Installing ARACHNE Data Node on site
- 2) No installation of ARACHNE Data Node



With Option 1, the Data Node Owner has two choices:

- Manual - can download the analysis code, execute directly through Data Node and upload aggregated results back into ARACHNE Central. This option does guarantee consistency of results across executions.
- Automated (Enterprise Edition) - automated execution through Data Node, where Data owner:
 - receives a notification
 - approves/rejects execution
 - receives results notification
 - approves/rejects publishing of the aggregated results in ARACHNE Central.

This option does guarantee consistency of results across executions.

With Option 2, the Data Node Owner can download the analysis code, execute through a local site specific R environment and upload aggregated results back into ARACHNE Central. This option does not guarantee consistency and might have challenges with local R library configuration and compatibility.

Each data set has the following data access and execution policy settings:

Execution policy:

- 1) Manual - requires a Data Set owner to download code, executed through a local Data Node and upload results back (Community and Enterprise Editions)
- 2) Automated / Supervised (Enterprise Edition) - the data set owner must review and approve all execution requests as well as results to be published
- 3) Automated / Unsupervised (Enterprise Edition) - the execution will be automatic without any approval required

Access Policy:

- 1) Public - the data set will be added to the requesting study without approval required
- 2) Restricted - the Data Set Owner must approve a one time study request to use the data set in that study

ARACHNE Components

The core ARACHNE components are:

- Study Notebook – network study management, including management of studies, study teams, analysis execution, aggregated results and more
- Data Catalog – allows finding and inviting data sets available for research into studies
- Expert Finder – allows finding and inviting people available for research into studies

ARACHNE User Roles

Lead Investigator

Creates a study. Can add other collaborators and request data sets to join the study. Full study permissions, including setting all study attributes and creation and execution of analyses

Contributor

Invited to join a study by the study investigator and added when request is accepted. Cannot change study attributes. Able to create and execute analyses and see all analysis results

Data Owner

Automatically added when a data set use request is approved. Same permissions as Contributor but unable to see all analysis results but only results from the data that person is managing.

ARACHNE Studies

Study

ARACHNE Study allows researchers to collaborate on a network study, including:

- Create a new study and specify a study name, type, description, start date, end date and status
- Upload and manage study documentation, including study protocols, vocabulary codes, links to reference material and other artifacts
- Invite collaborators and manage a study team
- Invite and manage data sources
- Create and execute analyses (e.g. analytical packages)

Study Roles

There are 3 core study roles:

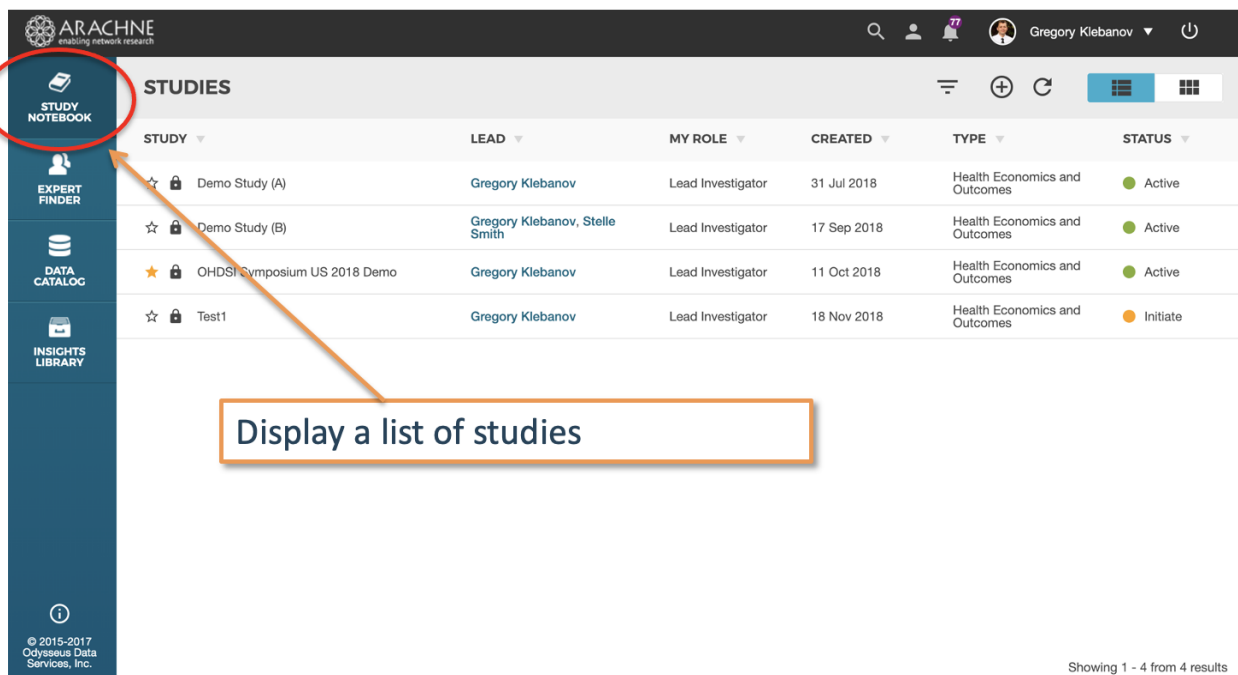
- Lead Investigator – there can be one or more lead investigators
- Contributor – there can be zero or more collaborators

- Data Set Owner – there can be zero or more data set owners

Action	Lead Investigator	Collaborator	Data Partner
Manage study attributes	Yes	No	No
Manage study participants, grant or change roles	Yes	No	No
Manage study documentation	Yes	Yes	No
Create and execute study analyses	Yes	Yes	No
Approve Analysis execution on Data	No	No	Yes (only own data set)
View Analysis results	Yes (after published)	Yes (before and after published)	Yes (only own data set)
Annotate Results	Yes (after published)	Yes (after published)	Yes (only own data set)

Finding Studies

To find all accessible studies, the user navigates to the Study Manager menu:



ARACHNE
enabling network research

STUDIES

STUDY	LEAD	MY ROLE	CREATED	TYPE	STATUS
★ Demo Study (A)	Gregory Klebanov	Lead Investigator	31 Jul 2018	Health Economics and Outcomes	Active
★ Demo Study (B)	Gregory Klebanov, Stelle Smith	Lead Investigator	17 Sep 2018	Health Economics and Outcomes	Active
★ OHDSI Symposium US 2018 Demo	Gregory Klebanov	Lead Investigator	11 Oct 2018	Health Economics and Outcomes	Active
★ Test1	Gregory Klebanov	Lead Investigator	18 Nov 2018	Health Economics and Outcomes	Initiate

Display a list of studies

Showing 1 - 4 from 4 results

The list displayed will show all studies that are accessible to the user:

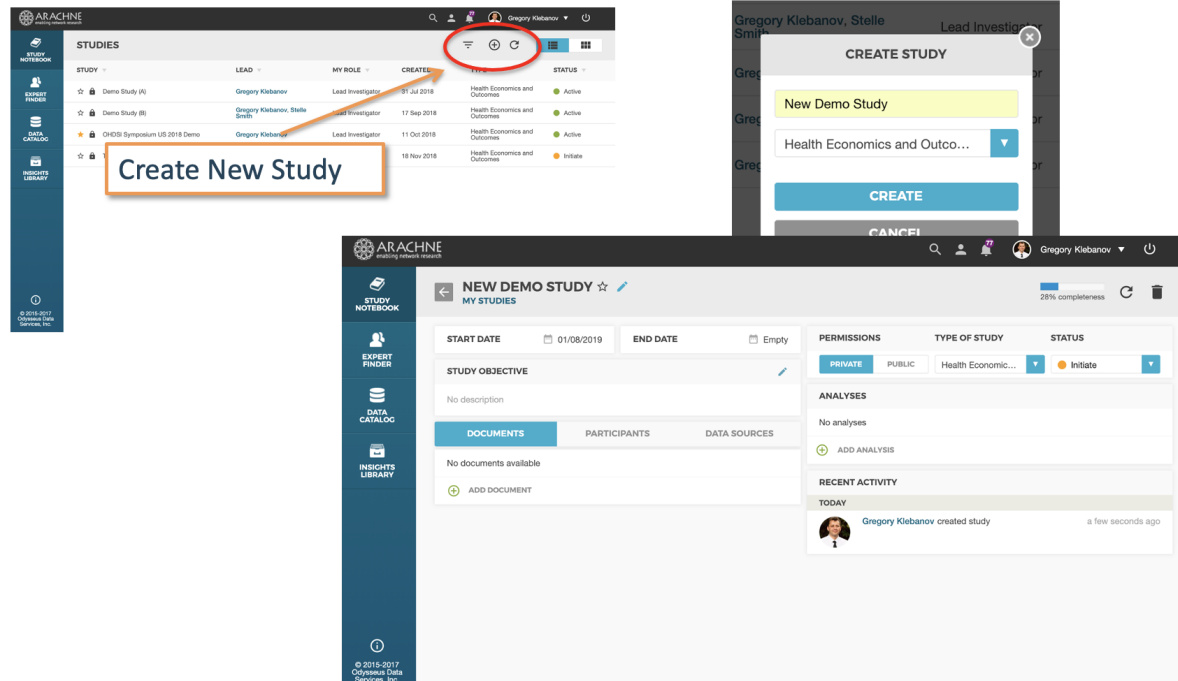
- Private studies will only be visible to user who is a part of the study.

- Public studies will be visible to all users within the same tenant.

The list can be filtered by other attributes, such as study type, security, favorite flag and other.

New Study

To create a new study, the user clicks the “Create new study” icon and then enters the desired study name and selects the study type from a predefined list (can be modified to fit the organizational needs).



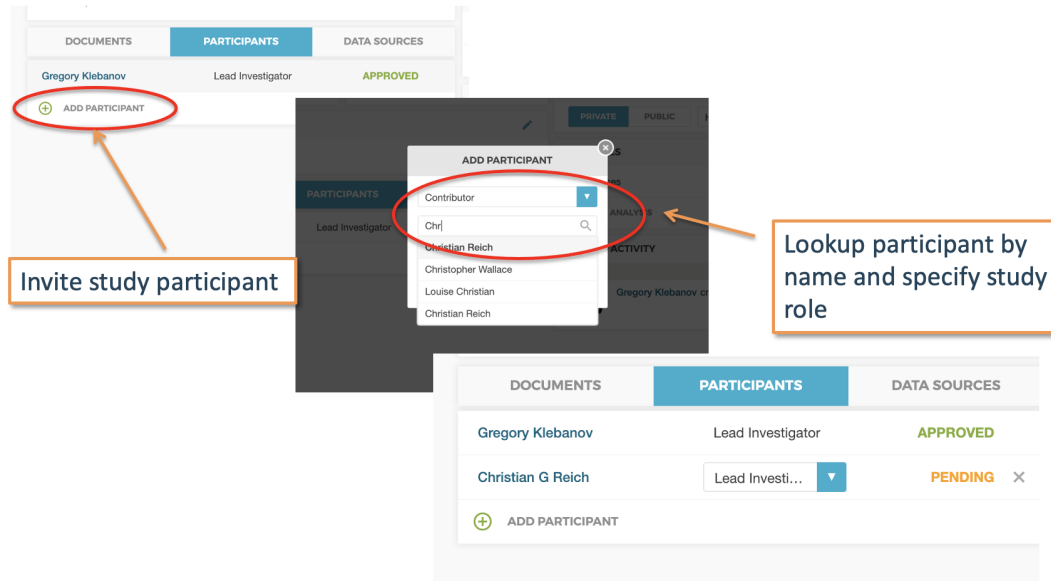
The empty study record is created where the author user is automatically assigned the “Lead Investigator” role. The study Lead Investigator (s) can then modify the following study attributes:

- 1) Name
- 2) Description
- 3) Start and end date
- 4) Upload and manage study documentation
- 5) Invite study collaborators and manage study team
- 6) Add data sources and manage a study data set collection

The study will also contain all study analyses, including code, execution log and results. Once study is completed, the study status can be set to completed and then archived.

Invite Study Participants

The Lead Investigator can invite others to join a study in various roles.



DOCUMENTS PARTICIPANTS DATA SOURCES

Gregory Klebanov Lead Investigator APPROVED

ADD PARTICIPANT

Invite study participant

ADD PARTICIPANT

Contributor

Chr...

Christian Reich

Christopher Wallace

Louise Christian

Christian Reich

Lookup participant by name and specify study role

DOCUMENTS PARTICIPANTS DATA SOURCES

Gregory Klebanov Lead Investigator APPROVED

Christian G Reich Lead Investi... PENDING

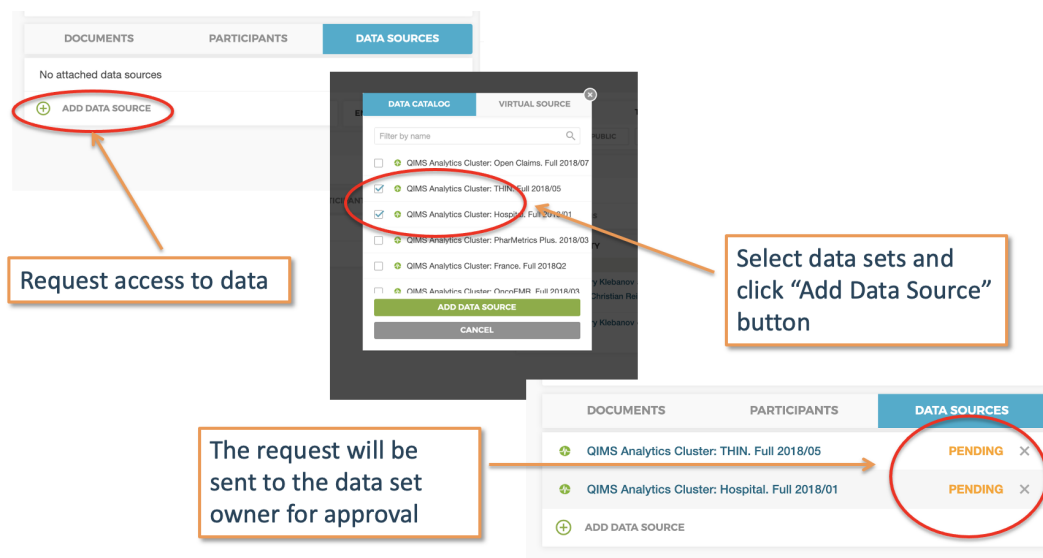
ADD PARTICIPANT

The user would click on “Participants” tab and click on “Add Participant” button and start typing a person’s name. The system will automatically provide suggested names to choose from. The Lead Investigator will choose the correct person and assign a study role. Additionally it is possible to specify a personalized message for an invitee.

The invited person will be shown in “Pending” status until the invitation is explicitly accepted or rejected.

Enable Study Data Sources

The Lead Investigator can invite new data sources (data sets) to join a study.



DOCUMENTS PARTICIPANTS DATA SOURCES

No attached data sources

ADD DATA SOURCE

Request access to data

DATA CATALOG VIRTUAL SOURCE

Filter by name

QIMS Analytics Cluster: Open Claims, Full 2018/07

QIMS Analytics Cluster: THIN, Full 2018/05

QIMS Analytics Cluster: Hospital, Full 2018/01

QIMS Analytics Cluster: PharMetrics Plus, 2018/03

QIMS Analytics Cluster: France, Full 2018Q2

QIMS Analytics Cluster: ChemoFMR, Full 2018/01

ADD DATA SOURCE

CANCEL

Select data sets and click “Add Data Source” button

DOCUMENTS PARTICIPANTS DATA SOURCES

QIMS Analytics Cluster: THIN, Full 2018/05 PENDING

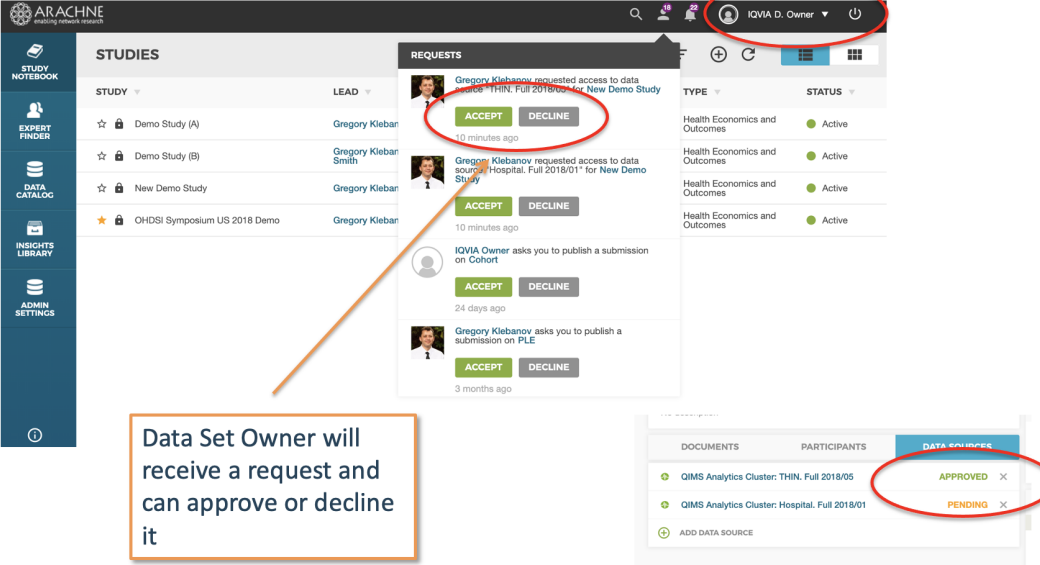
QIMS Analytics Cluster: Hospital, Full 2018/01 PENDING

ADD DATA SOURCE

The request will be sent to the data set owner for approval

The user clicks on the “Data Sources” tab, then on the “Add Data Source” button and starts typing the data source name. The system will automatically provide suggested data set names to choose from. The Lead Investigator will choose a correct data set, type the invitation description, and click the “Add Data Sources” button.

The invitation is received by the Data Set Owner(s), as set up in the system. The invited data set will be shown in “Pending” status until the invitation is explicitly accepted or rejected. If the data set access policy is set to Public, the data source is automatically added and is available.



The screenshot displays the ARACHNE web application interface. A 'REQUESTS' modal is open, showing three requests from Gregory Klebanov. The first two requests are for data source access, and the third is for publishing a submission. Each request has 'ACCEPT' and 'DECLINE' buttons. A red circle highlights the 'ACCEPT' button for the first request. An orange arrow points from a text box to the 'ACCEPT' button. In the background, the 'DATA SOURCES' table is visible, showing two entries with 'APPROVED' and 'PENDING' status indicators, which are also circled in red.

Data Set Owner will receive a request and can approve or decline it

Study Analysis Execution

ARACHNE Analysis

The ARACHNE Analysis is an analytical package that performs a certain type of descriptive or predictive analysis. Currently, ARACHNE supports the execution of any ATLAS-based or custom analysis.

ATLAS (via import)

ARACHNE can execute any study defined in ATLAS or custom analysis. The ATLAS analysis that are currently supported are:

- Cohort (Simple Counts) – execute and receive cohort counts
- Heracles (Characterization) – ATLAS legacy cohort characterization
- Cohort (Characterization) – full cohort characterization utilizing standard ATLAS features
- Incidence Rates (I-R)
- Treatment Pathways (TxPathways) - treatment pathway analysis
- Population Level Effect Estimation (PLE)
- Patient Level Prediction (PLP)

Custom Analysis

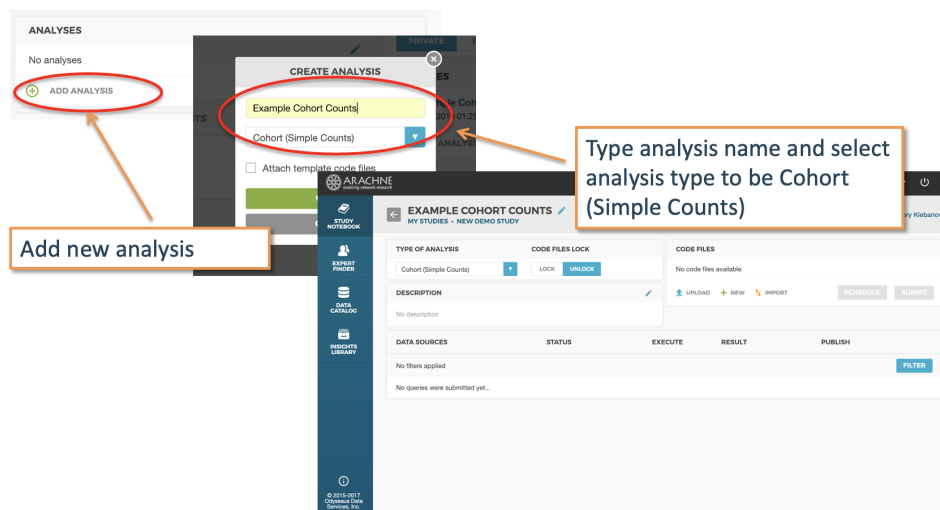
ARACHNE allows researchers to create and upload a custom R-based analytical package. The packages must be built following ARACHNE R-coding best practices (see below).

Cohort Simple Counts (Example)

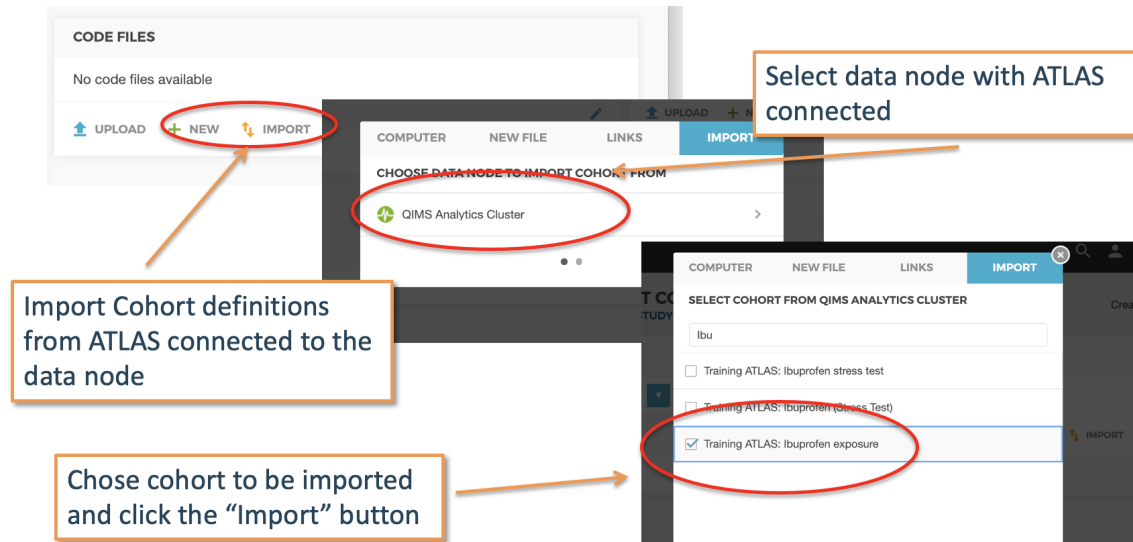
Import from ATLAS

The simple cohort count analysis will execute a cohort definition and obtain a single simple count back as a result. It is typically being used to run an initial study feasibility.

To create a simple count analysis, click on “Add Analysis” button and specify the type “Cohort (Simple Counts)”.



This will enable import from the ATLAS instance connected through one of the Data Nodes that participate in a study.



Alternatively, OHDSI-SQL can be uploaded into ARACHNE analysis directly with the help of the "Upload" button.

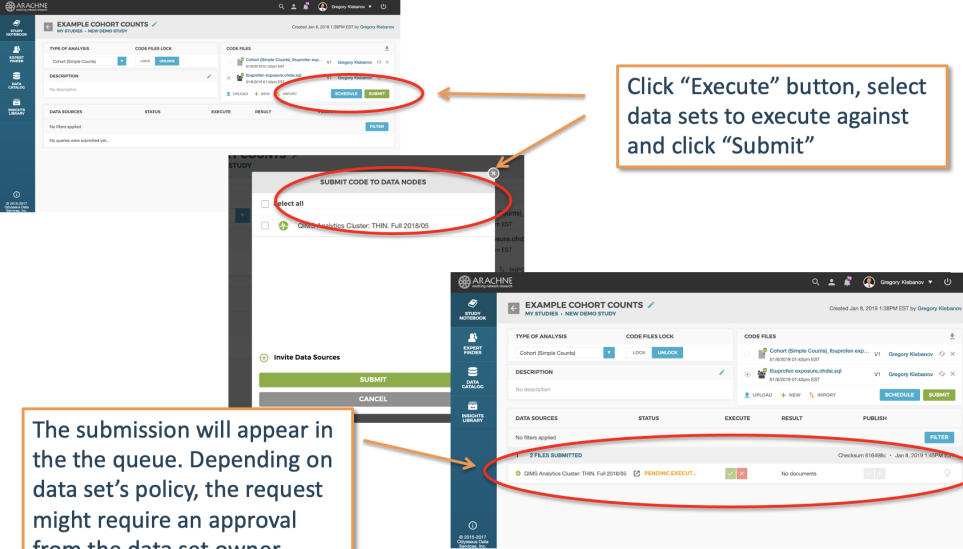
Executing Analysis

To execute a single analysis, the user clicks the "Submit" button, selects one or more data sources and clicks "Submit". The submission job will appear in the queue.

There is a possibility to filter the submissions after clicking on the "Filter" button:

- display those which were hidden
- by data sources
- by status

In ARACHNE Enterprise Edition, If the execution policy for the individual data set is set to "Supervised", the request to submit as well as results publishing will require a review and approval steps from one of the Data Set Owners. If the policy is set to "Unsupervised", the submission will continue without an approval step.



Click “Execute” button, select data sets to execute against and click “Submit”

The submission will appear in the the queue. Depending on data set’s policy, the request might require an approval from the data set owner

The screenshots show the ARACHNE interface. The first screenshot shows the 'EXAMPLE COHORT COUNTS' analysis setup with the 'Execute' button highlighted. The second screenshot shows the 'SUBMIT CODE TO DATA NODES' dialog with 'Select all' highlighted. The third screenshot shows the 'FILES SUBMITTED' table with a row for 'QIN6 Analysis Cluster: THIN, Full 2018/05' in a 'PENDING EXECUTION' state, with the 'Execute' button highlighted.

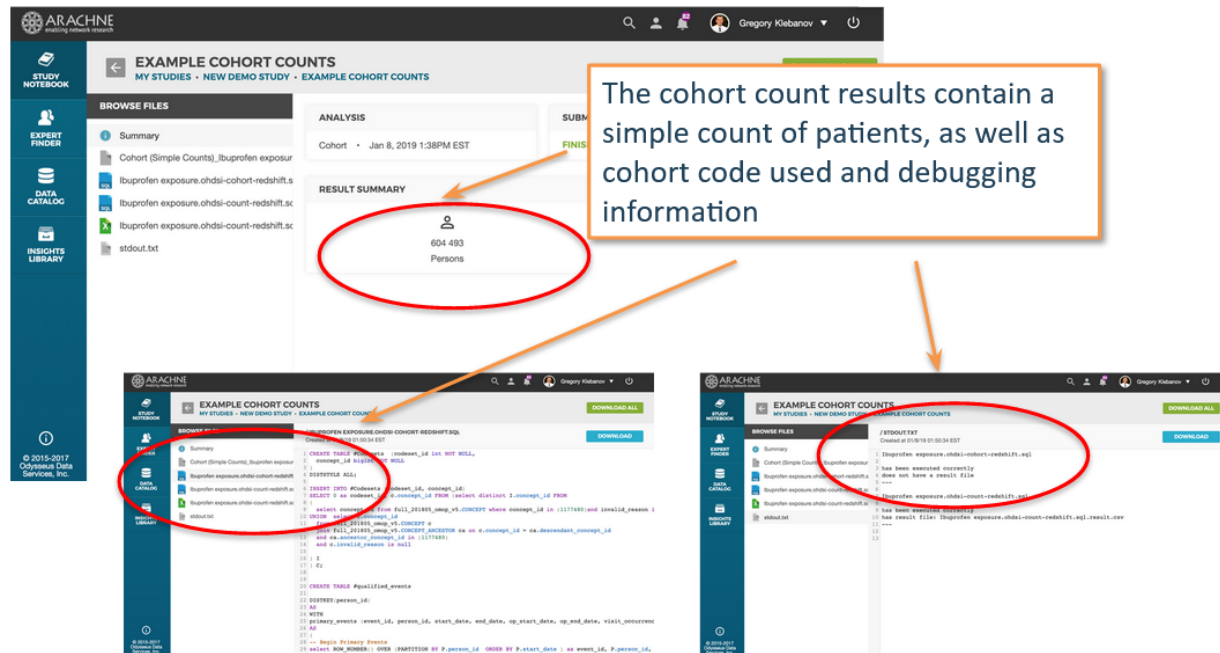
In ARACHNE Community Edition, the Data Nodes are configured in disconnected mode and the execution is always manual.

To execute the analysis submitted, the Data Node owner will follow a simple 3 step process:

- Once request is received, the Data Set Owner downloads code submitted from ARACHNE Central
- The Data Set Owner logs into the local ARACHNE Data Node and submits downloaded code for execution
- Once executed, the Data Set Owner uploads and attaches execution results back to ARACHNE Central (there is a green “+” button available for that which opens the “Add result files” popup dialogue) and clicks the “Publish” button

Viewing Submission Results

When the analysis execution results have been published, they become available for review by clicking on the respective link in the “Result” column.



The cohort count results contain a simple count of patients, as well as cohort code used and debugging information

The tree view on the left side allows a user to watch each result file in particular. There is the “Summary” item after clicking on which the main display area gets a bunch of summarization details which differ depending on the type of the analysis being executed.

There is an ability to download all files as a ZIP archive or each file one by one. It is not possible to change the submission result files not to break the integrity principles.

Read more about cohorts in the Book Of OHDSI

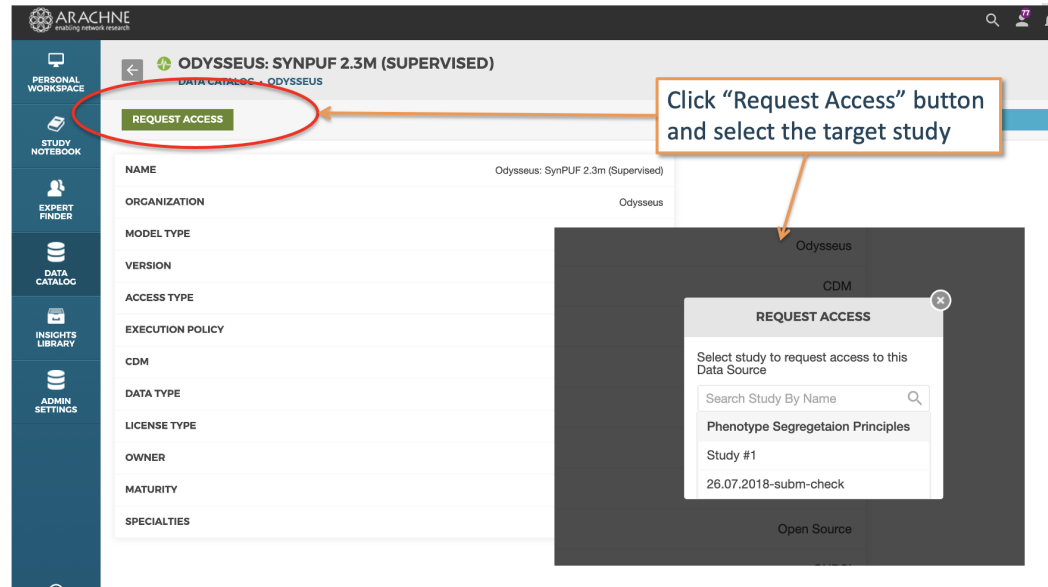
<https://ohdsi.github.io/TheBookOfOhdsi/Cohorts.html>

Data Catalog

ARACHNE Central has a built-in Data Catalog where all available data sets are registered and where the user can find and invite data sets to be a part of the study.

The Data Catalog does NOT store any patient level data and allows data set owners to control access to ACHILLES reports as well as to set policies to control the ability to execute studies on remote data sets.

The Data Catalog interface allows discovery of data sets by keyword search or by navigating through facets.



Once the data set is found, it can be invited to participate in a study.

The ARACHNE Data Catalog provides means for integration with other external Data (Database) Catalogs, for example the one developed in EHDEN (EHDEN Database Catalog) or EMIF Data Catalog.

The Data Catalog in ARACHNE Enterprise Edition allows describing data sets, including tagging with various standard and custom metadata attributes. The Data Catalog allows data set owners to upload OHDSI ACHILLES full database level characterization reports

System Administration

Platform Security Overview

In ARACHNE, the Role Based Access Controls (RBAC) are implemented to ensure access to studies and data as well as actions can be controlled.

ARACHNE Platform has been built to ensure sensitive data can be encrypted in flight and at rest.

During the execution of analysis, a two-step review process allows data owners to review code and results before they are shared with a wider study team.

ARACHNE Enterprise Edition allows integration with Anti-Virus software that is monitoring presence of viruses or malware in study documents as well as code.

Integration with A&A system

ARACHNE Central and ARACHNE Data Node allow multiple types of integrations with A&A providers, including:

- Active Directory (AD)
- LDAP
- Google IAP

The users can also be stored in the ARACHNE internal databases.

Setting up and Configuring Data Nodes

The how-to detailed guidelines to set an ARACHNE Data Node up using Docker on different operating systems are available on the following links:

- [https://github.com/OHDSI/ArachneNodeAPI/wiki/DataNode-Setup-with-Docker-\(Mac-or-Linux\)](https://github.com/OHDSI/ArachneNodeAPI/wiki/DataNode-Setup-with-Docker-(Mac-or-Linux))
- [https://github.com/OHDSI/ArachneNodeAPI/wiki/DataNode-Setup-with-Docker-\(Windows\)](https://github.com/OHDSI/ArachneNodeAPI/wiki/DataNode-Setup-with-Docker-(Windows))

Configuring a New Data Source

The “CDM Data Sources” listing displays data sources being configured in the system so far. To add a new data source, click the “+” button and provide input into the “Create data source” dialogue form displayed:

- Data Source Name - a unique name
- DBMS type - one of currently supported database dialects
- Connection string - check your database JDBC driver notation rules, for example, jdbc:postgresql://<host>:<port>/<database> for a PostgreSQL database
- CDM schema name - OMOP CDM data schema
- Username and Password - credentials to access the database
- Target schema, Result Schema, Cohort Target Table - OMOP CDM settings expected by analytical packages during their execution

Handling a Data Source

There is a possibility to edit the data source’s configuration with the appropriate edit button or delete the entity if it is no longer needed.

CDM DATA SOURCES						⊕	↺
NAME ▼	DBMS TYPE ▼	DATABASE ▼	CDM SCHEMA ▼	MODEL			
 synpuf_110k	PostgreSQL	jdbc:postgresql://host:port	/synpuf_110k	cdm_531	CDM	EDIT CATALOG	ACHILLES  

With the “Edit catalog” button an administrator is redirected to the ARACHNE Central where they could make any necessary updates in the “Data Catalog” which are associated with the data source being configured.

The “Achilles” button navigates to the form where the regeneration and re-importing processes of ACHILLES reports is possible to initiate. The administrator should be aware of the fact that the processes execution take time depending on the database size

×

CREATE DATA SOURCE

GENERAL

Name of data source*

DBMS Type*

Connection string*

CDM schema name*

Username*

Password*

CDM SETTINGS

Target Schema

Result Schema

Cohort Target Table

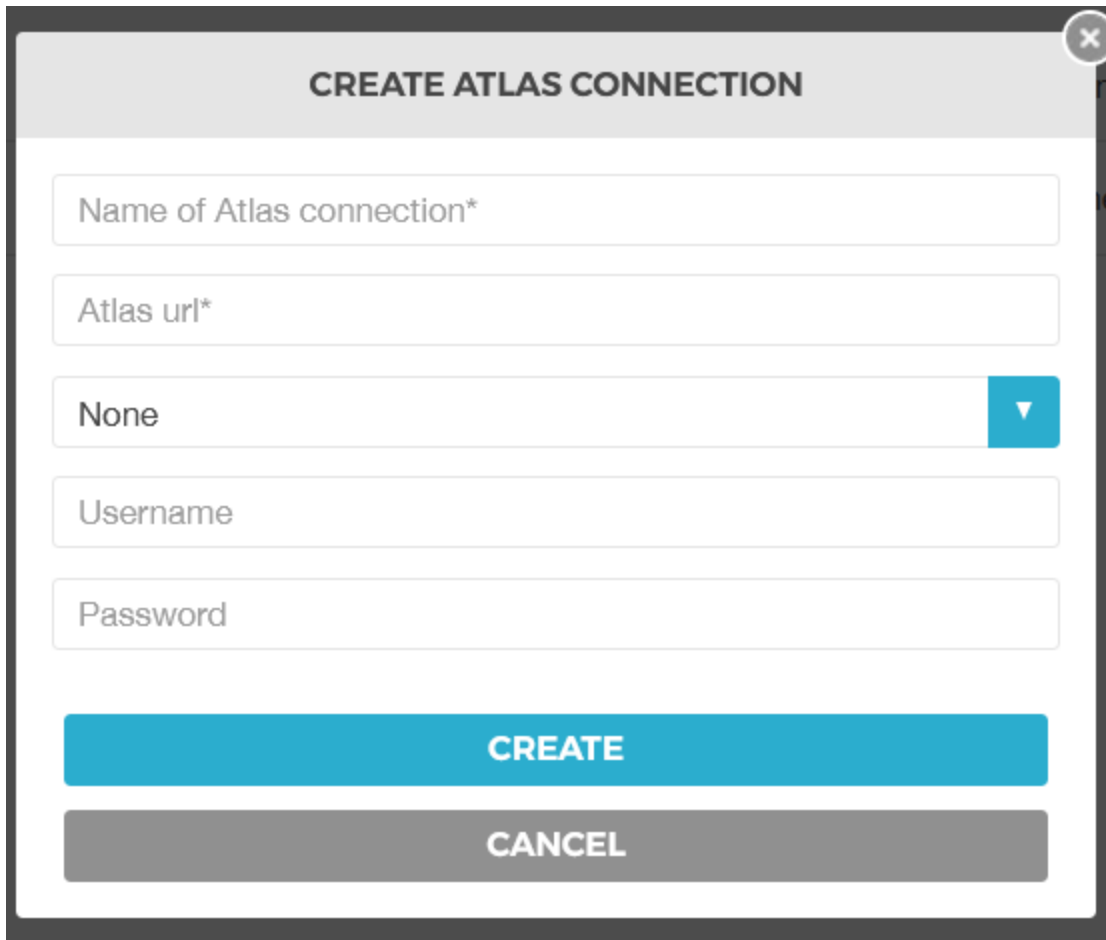
CREATE

CANCEL

Configuring Integration with ATLAS

The “ATLASES” listing displays ATLAS/WebAPI integrations being defined. To add a new one the respective “+” button should be clicked. Then the appropriate form should be filled with the required attribute values:

- Name of Atlas connection - to distinguish between different integrations
- Atlas URL - the ATLAS/WebAPI connection URL, for instance, https://<host>/WebAPI
- One of authentication methods
 - Database
 - LDAP
 - Google Access Token



Later on any of the ATLAS integrations can be edited, pinged for availability or deleted with the help of the appropriate buttons.

ATLASES				⊕	↺
NAME ▲	VERSION ▼	URL ▼			
QA	2.10.0	https://i <host>	/WebAPI	🔍	✎
Test	2.11.0	https://i <host>	/WebAPI	🔍	✎

Analysis Preparation for Manual Submission

Before an analysis is executed on ARACHNE Data Node with the help of ARACHNE Execution Engine a few guidelines should be followed. They are described in more details in the following sub-chapters

General Requirements

- Analysis code should be written in SQL or R or their combination
- You should have an entry point file which will contain your analysis' starting code
- It is recommended to use the OHDSI templates and follow the project structure as you can observe in <https://github.com/ohdsi-studies> repository
- the SQL code should be written in **OHDSI SQL dialect**

This resource

<https://ohdsi.github.io/TheBookOfOhdsi/SqlAndR.html#implementing-the-study-using-sql-and-r> might be helpful

OHDSI Libraries in ARACHNE Execution Engine

ARACHNE Execution Engine is designed to work in a fully isolated environment without an Internet connection. It means that it will **not** install any new libraries or other versions if you set it in your code. You should build your analysis based on the OHDSI library versions* below (as of September 2021) :

Library Name	Version
Cyclops	3.1.2
ParallelLogger	2.0.2
BigKnn	1.0.1
CohortMethod	4.2.0
DatabaseConnector	4.0.2
EmpericalCalibration	2.1.0
FeatureExtraction	3.1.1
OhdsiRTools	1.10.0
SqlRender	1.7.0
OhdsiSharing	0.2.2
ROhdsiWebApi	1.2.0
CohortDiagnostics	2.1.0

MethodEvaluation	2.1.0
PatientLevelPrediction	4.3.10

** These libraries are being updated and maintained on an ongoing basis. There is a solution that will allow an automated build as required by study is currently being developed and is expected to be implemented by 2022.*

Code Preparation

When an analysis code has been downloaded from one of studies available on <https://github.com/ohdsi-studies> or downloaded directly from ATLAS, the typical folder structure is the following:

Name
.gitignore
.Rbuildignore
.Rprofile
DESCRIPTION
documents
extras
CodeToRun.R
PackageMaintenance.R
HydraConfig.json
inst
man
NAMESPACE
R
readme.md
test.Rproj

The entry point script to configure an analysis is usually found by this location: extras/CodeToRun.R

A copy of CodeToRun.R might be created and named as Main.R and put to the study's root folder (next to readme.md, test.Rproj in the example above), this file will need some adjustments to be properly understood by an ARACHNE Data Node and ARACHNE Execution Engine

Package Installation Code

The file Main.R being created earlier should be extended at its very beginning with the following lines which in runtime will install an R project as an R package:

```
setwd("./")
tryCatch({
  install.packages(file.path("."), repos = NULL, type = "source", INSTALL_opts=c("--no-multiarch"))
})
```

```
}, finally = {})
```

Database Connection Properties

As the next step, the database connection properties must be configured. An ARACHNE Data Node will have a datasource connection configured already, thus all connection details will be available as the environment variables:

- DBMS_TYPE - the OMOP CDM database dialect
- CONNECTION_STRING - a connection string to reach the database
- DBMS_USERNAME - a username to access the database
- DBMS_PASSWORD - the username's password
- DBMS_SCHEMA - an OMOP CDM schema name (including vocabularies)
- RESULT_SCHEMA - a result schema name
- TARGET_SCHEMA - a target schema name for the analysis output
- COHORT_TARGET_TABLE - a name of the cohort table for the analysis output
- JDBC_DRIVER_PATH - a path to a JDBC driver

Having all these parameters all necessary connection details are obtained with the following lines of code:

```
dbms <- Sys.getenv("DBMS_TYPE")
connectionString <- Sys.getenv("CONNECTION_STRING")
user <- Sys.getenv("DBMS_USERNAME")
pwd <- Sys.getenv("DBMS_PASSWORD")
cdmDatabaseSchema <- Sys.getenv("DBMS_SCHEMA")
resultsDatabaseSchema <- Sys.getenv("RESULT_SCHEMA")
cohortsDatabaseSchema <- Sys.getenv("TARGET_SCHEMA")
cohortTable <- Sys.getenv("COHORT_TARGET_TABLE")
driversPath <- (function(path) if (path == "") NULL else path)( Sys.getenv("JDBC_DRIVER_PATH") )

connectionDetails <- DatabaseConnector::createConnectionDetails(
  dbms = dbms,
  connectionString = connectionString,
  user = user,
  password = pwd,
  pathToDriver = driversPath
)
```

Output Folder and Temporary Location

In most cases the output folder is configured for the analysis results. Its location is defined first and then created in the current working directory. The analysis results are archived and returned as a ZIP file. In R the output folder can be defined and then created with the following lines:

```
outputFolder <- file.path(getwd(), 'my_results')  
dir.create(outputFolder)
```

If a temporary location is necessary for processing, the R code example below references such a temporary folder and then having it created:

```
tmpFolder <- '/tmp/my_tmp_folder'  
dir.create(tmpFolder)
```

Preparing an Analysis Archive

After all steps above have been passed all files and folders from the study folder should be selected (including the Main.R file being added and adjusted) and archived as a ZIP file. This archive will be provided to an ARACHNE Data Node for its further execution by ARACHNE Execution Engine

R-Code best practices

- Do not hardcode local path, use relative path from working directory with `getwd()`
- Do not install external packages - ARACHNE comes with all default OHDSI packages. In case of missing non-OHDSI packages, attach the package as .tar.gz to analysis and install it from the file instead of downloading it from the network since external traffic could be blocked the site's firewall
- Avoid creating permanent tables for calculations - use Temp tables instead to avoid issues with concurrency
- Code SQL in OHDSI.SQL standard and translate + render it using OHDSI/SqlRender
- Execute SQL by using OHDSI/DatabaseConnector
- When possible, do calculations in SQL vs. R - in most cases that's more performant

OHDSI.SQL template conventions

@cdm_database_schema – OMOP CDM schema
@vocabulary_database_schema – OMOP Vocabulary schema
@target_database_schema – ATLAS Results schema
@target_database_schema.@target_cohort_table – cohort table

Manual Submission on an ARACHNE Data Node

The “Submissions” listing contains the submissions being created and executed earlier. To create a new one the “Create submission” should be clicked. A popup dialog will be opened with the option to upload the ZIP file being prepared earlier. There are a few mandatory attributes to fill in (the system will attempt to prepopulate some of the attributes based on the ZIP archive file uploaded):

- Entry Point - the Main.R file being created and adjusted earlier
- Data Source - a target OMOP CDM data source on which an analysis to be executed
- Analysis - a name to distinguish the analyses

- Type - one of the supported analyses types
- Study - an optional study name

CREATE SUBMISSION

FILES IN ARCHIVE

SEPARATE FILES

Add files in archive

BROWSE

OR

Drag and drop file

Only *.zip files will be accepted.

Entry Point*

▼

Data Source*

▼

Analysis*

Type*

▼

Study

CREATE

CANCEL

After clicking on the “Create” button an ARACHNE Data Node will send the analysis provided for an execution. When the execution is ready, the results will be available for download by clicking on the “Download” button in the respective listing row. Then the results can be uploaded to ARACHNE Central following the process being mentioned in the “Executing Analysis” sub-chapter