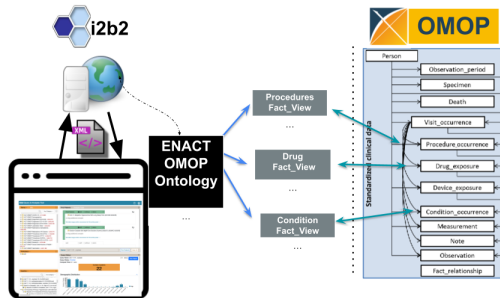


i2b2-on-OMOP With ENACT-OMOP Ontology v4.1

Design

Utilizing i2b2's reusable application programming interface (API), the OMOP data model is now supported. The ENACT-OMOP ontology queries OMOP table views that correspond to the OMOP table structure. The i2b2 query tool tables and ENACT-OMOP ontology are installed in a he OMOP data and the i2b2 application layer are loaded. With the ontology, it becomes possible to query OMOP tables using the i2b2 interface. The [design document](#) can be found [here](#).



Step 1: Acquire downloads

First, download the necessary components onto a computer that can connect to your target database and from which you can run SQL queries.

- Download i2b2.
 - Download and extract the new install zip package from "Download Binary Distribution" in the top section of <https://www.i2b2.org/software>
 - Determine if you need to install any additional required packages, such as Java JDK or Ant: [Chapter 2. Requirements](#)
 - If running less than i2b2 1.8, separately download the latest data package from GitHub <https://github.com/i2b2/i2b2-data> to get the ACT-OMOP ontologies.
- OMOP 5.4 DDL SQL Scripts: <https://github.com/OHDSI/CommonDataModel/tree/main/inst/ddl/5.4>
 - Either clone the repository or download the ETL scripts for your database platform.

Step 2: Install i2b2, with ACT-OMOP core tables, views, and ontologies.

- OMOP: If you will be creating a new OMOP database for this installation, then:
 - Run the OMOP 5.4 DDL SQL Scripts you downloaded in the last step, using a SQL client.
 - It is recommended to run the DDL, indices, and primary key scripts, but NOT the constraints scripts. This can cause problems during ETL.
- i2b2: You will be installing i2b2 as explained in the [installation guide](#). Follow the chapters in the installation guide, but see the notes in the next bullet on Chapter 3.
- [Chapter 3. Data Installation](#) requires special handling. All the steps in the installation guide should be followed except for the following changes in the CRC and Metadata sections:
 - You need to **select the act-omop project for Metadata and CRC**. Specifically, in [3.4.2 Set Database Properties \(CRC\)](#) and [3.7.2 Set Database Properties \(Metadata\)](#), edit the CRC db properties file to set db.project parameter to **act-omop**.

```
1 # This properties file defaults to Oracle, to use either Sql Server or PostgreSQL uncomment one of those and comment out the Oracle.
2 # Database setup parameters for Oracle
3 db.type=oracle
4 db.username=i2b2demodata
5 db.password=demouser
6 db.server=localhost:1521:xe
7 db.driver=oracle.jdbc.driver.OracleDriver
8 db.url=jdbc:oracle:thin:@127.0.0.1:1521:xe
9 db.project=act-omop
10
11 # Database setup parameters for SqlServer, uncomment to use and comment out Oracle
12 #db.type=sqlserver
13 #db.username=i2b2demodata
14 #db.password=demouser
15 #db.driver=com.microsoft.sqlserver.jdbc.SQLServerDriver
16 #db.url=jdbc:sqlserver://localhost:1433
17 #db.project=demo
18
19 # Database setup parameters for PostgreSQL, uncomment to use and comment out Oracle
20 #db.type=postgresql
21 #db.username=i2b2demodata
22 #db.password=demouser
23 #db.driver=org.postgresql.Driver
24 #db.url=jdbc:postgresql://localhost:5432/i2b2
25 #db.project=demo
26
```

- Instead of CRC install [step 3.4.4](#), drop the patient_dimension and visit_dimension tables from the database. For convenient reference, the correct steps 3.4.3-3.4.5 are summarized [here](#):

```
ant -f data_build.xml create_crcdata_tables_release_<version no>
FROM THE DATABASE: DROP PATIENT_DIMENSION; DROP VISIT_DIMENSION;
ant -f data_build.xml create_procedures_release_<version no>
ant -f data_build.xml db_demodata_load_data
```

The final ant script will create act-omop Views, which point to the OMOP tables, and loads the concept_dimension table with act-omop concepts data. The first two steps create the standard CRC tables and procedures.

- In 3.7.4, only load the regular data, not the identified data. Run the ant command:
ant -f data_build.xml db_metadata_load_data
 - This will execute the SQL scripts from the edu.harvard.i2b2.data\Release_<version no>\NewInstall\Metadata\act-omop\scripts\<db type> folder and:
 - Creates ACT-OMOP v4.1 Ontology metadata tables with indexes.
 - Loads the act-omop metadata
- Make sure i2b2 is configured for multiple fact tables by changing the appropriate entry in the database.
 - [3.11 Multiple Fact Tables](#)



Be sure to drop/rename PATIENT_DIMENSION and VISIT_DIMENSION tables before you run the db_demodata_load_data ant target.



The Lab metadata tables should have data in the C_METADATAXML column in order for the lab values to be queryable from UI

If the C_METADATAXML is missing from the source ontology Lab metadata file, you can load the values from the standard i2b2-ACT Lab metadata table.



The CPT4 ontology table is not included with i2b2 due to AMA restrictions on redistribution of CPT code information. Contact the ACT team to get a copy if your institution is an AMA member.

Step 3: Advanced Users - Create Project

If an OMOP project will coexist with an i2b2 project, set up an i2b2 OMOP project pointing to the i2b2-OMOP database that you just configured.

[6.6.0. Guide to creating a new project with the admin tool.](#)

Verify the Ontology is displayed and queryable from the webclient

Notes

Both the ACT-OMOP Ontology tables, views and data is available under edu.harvard.i2b2.data\Release_<version no>\NewInstall\Metadata\act-omop folder.

i2b2 > edu.harvard.i2b2.data > Release_1-7 > NewInstall > Metadata

Search Metadata

Name	Date modified	Type	Size
act	5/31/2022 6:01 PM	File folder	
act-omop	1/20/2023 8:50 AM	File folder	
demo	5/31/2022 6:01 PM	File folder	
scripts	5/31/2022 6:02 PM	File folder	
data_build	5/30/2022 5:35 PM	XML Document	10 KB
db.properties	5/30/2022 5:35 PM	PROPERTIES File	2 KB

The scripts are in this folder:

> i2b2 > edu.harvard.i2b2.data > Release_1-7 > NewInstall > Crcdata > scripts

Name	Date modified	Type
act	5/31/2022 6:04 PM	File fold
act-omop	1/20/2023 8:10 AM	File fold
demo	5/31/2022 6:03 PM	File fold
procedures	5/31/2022 6:04 PM	File fold
clean_i2b2data_tables	5/30/2022 5:35 PM	SQL Text
crc_create_datamart_oracle	5/30/2022 5:35 PM	SQL Text
crc_create_datamart_postgresql	5/30/2022 5:35 PM	SQL Text
crc_create_datamart_sqlserver	5/30/2022 5:35 PM	SQL Text
crc_create_query_oracle	5/30/2022 5:35 PM	SQL Text
crc_create_query_postgresql	5/30/2022 5:35 PM	SQL Text
crc_create_query_sqlserver	5/30/2022 5:35 PM	SQL Text
crc_create_uploader_oracle	5/30/2022 5:35 PM	SQL Text
crc_create_uploader_postgresql	5/30/2022 5:35 PM	SQL Text
crc_create_uploader_sqlserver	5/30/2022 5:35 PM	SQL Text
expression_concept_demo_insert_data	5/30/2022 5:35 PM	SQL Text
expression_obs_demo_insert_data	5/30/2022 5:35 PM	SQL Text
pft_insert_data	5/30/2022 5:35 PM	SQL Text
pft_sqlserver_insert_data	5/30/2022 5:35 PM	SQL Text

These are the ACT-OMOP ontology tables.

ACT_ICD10CM_DX_V41_OMOP
ACT_ICD10PCS_PX_V41_OMOP
ACT_ICD9CM_DX_V41_OMOP
ACT_ICD9CM_PX_V41_OMOP
ACT_HCPCS_PX_V41_OMOP
ACT_MED_ALPHA_V41_OMOP
ACT_MED_VA_V41_OMOP
ACT_LOINC_LAB_PROV_V41_OMOP
ACT_LOINC_LAB_V41_OMOP
ACT_SDOH_V41_OMOP
ACT_VITAL_SIGNS_V41_OMOP
ACT_VISIT_DETAILS_V41_OMOP
ACT_COVID_V41_OMOP
ACT_DEM_V41_OMOP
ACT_ICD10_ICD9_DX_V41_OMOP
ACT_RESEARCH_V41_OMOP
ACT_VAX_V41_OMOP
ACT_ZIPCODE_V41_OMOP

These are the ACT-OMOP views:

```
EMPTY_VIEW; * this is actually an empty table
CONDITION_VIEW;
DRUG_VIEW;
MEASUREMENT_VIEW;
OBSERVATION_VIEW;
PROCEDURE_VIEW;
COVID_LAB_VIEW;
PATIENT_DIMENSION;
VISIT_DIMENSION;
DEVICE_VIEW;
CONDITION_NS_VIEW;
DRUG_NS_VIEW;
MEASUREMENT_NS_VIEW;
OBSERVATION_NS_VIEW;
PROCEDURE_NS_VIEW;
DEVICE_NS_VIEW;
VISIT_NS_VIEW;
```

- ETL OMOP data
 - This is a site-specific process, but OHDSI's WhiteRabbit tool can help: <https://github.com/OHDSI/WhiteRabbit>