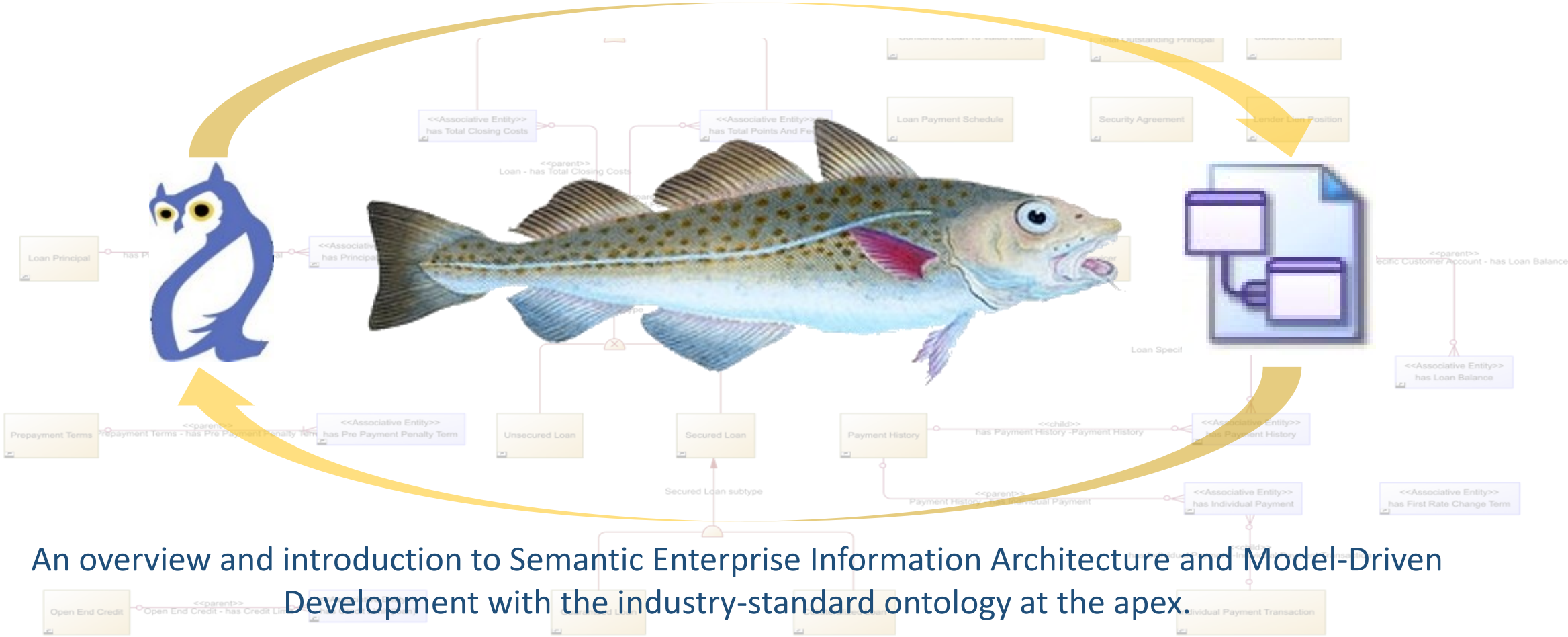
FIB
DM

Semantics for Extra Large Banks

The Configurable Ontology to Data Model Transformation (CODT)

UPDATED



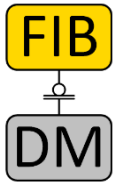
An overview and introduction to Semantic Enterprise Information Architecture and Model-Driven Development with the industry-standard ontology at the apex.

Your institution embraces RDF/OWL and the FIBO

You have, or are moving towards, a Semantic Technologies Center of Excellence (COE) and RDF (Triple) Stores.

FIBO
Financial Industry Business Ontology

You use and support the development of the industry-standard ontology.



You have licensed or downloaded and evaluated the FIBO data model.

ATLANTIC CODT

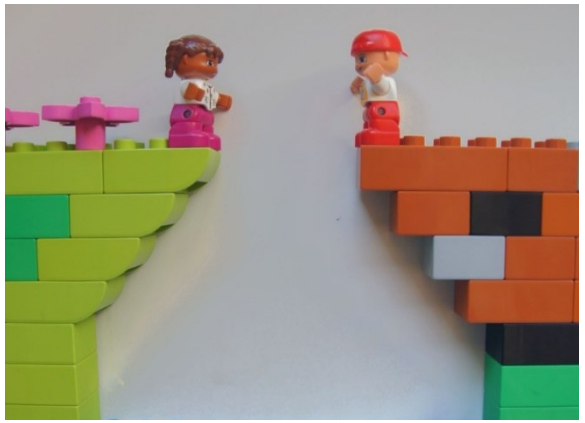
The CODT Patent (US12038939) enables full disclosure of the transformation technology.`

Finance key point

Semantic Center of Excellence (CoE) challenges

Many global banks already implemented, extended, and customized the industry-standard ontology.

They have highly qualified ontologists and data scientists.



However, 95% of the bank still runs on relational databases, using data models

Data Architects have the FIBO Data Model but can't leverage their Semantic CeO colleagues' work.

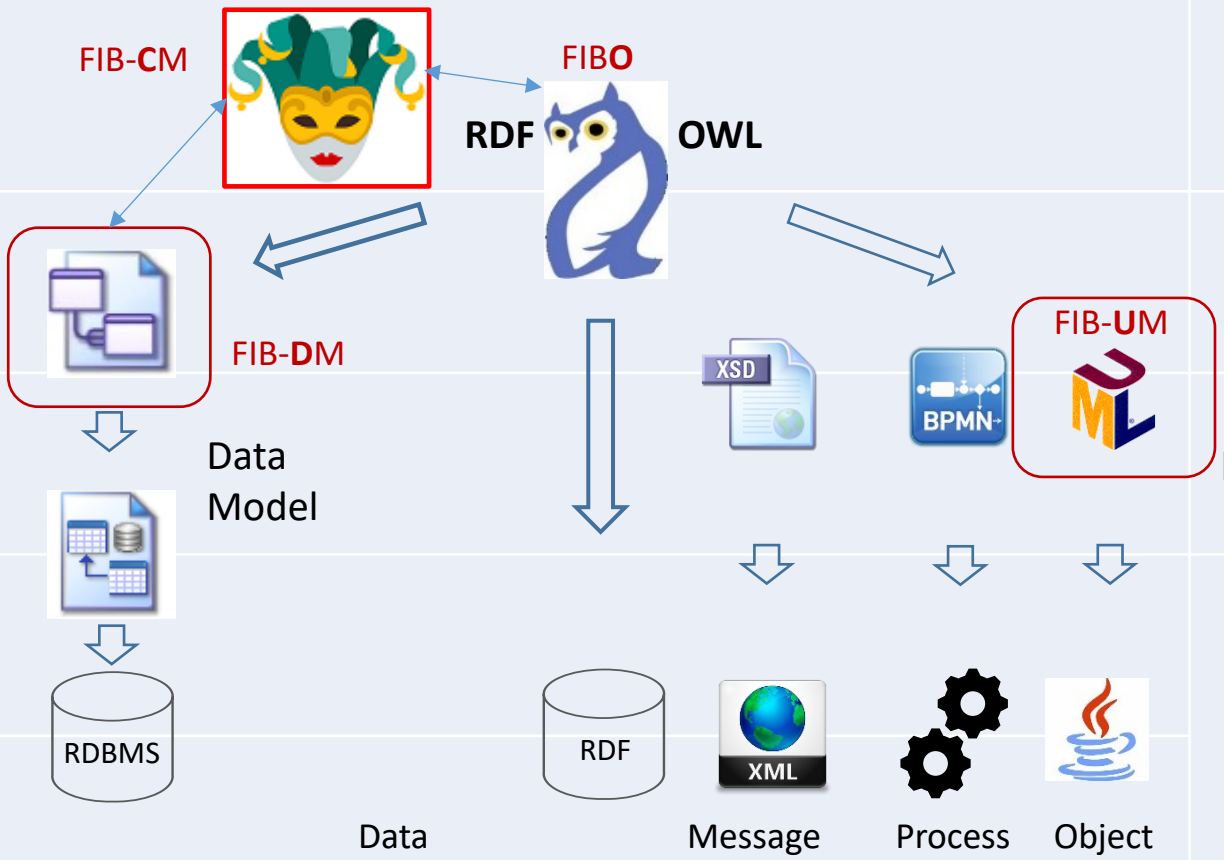
The risk is that Semantic implementations become yet another data silo, using a different language than the rest of the organization, impeding integration.

Finance key point

The Vision:

Semantic Enterprise Information Architecture (SEIA)

Use	Type		Level
Business	Conceptual		Enterprise
Design	Logical		Department
	Physical		
Development	Implementation		Project



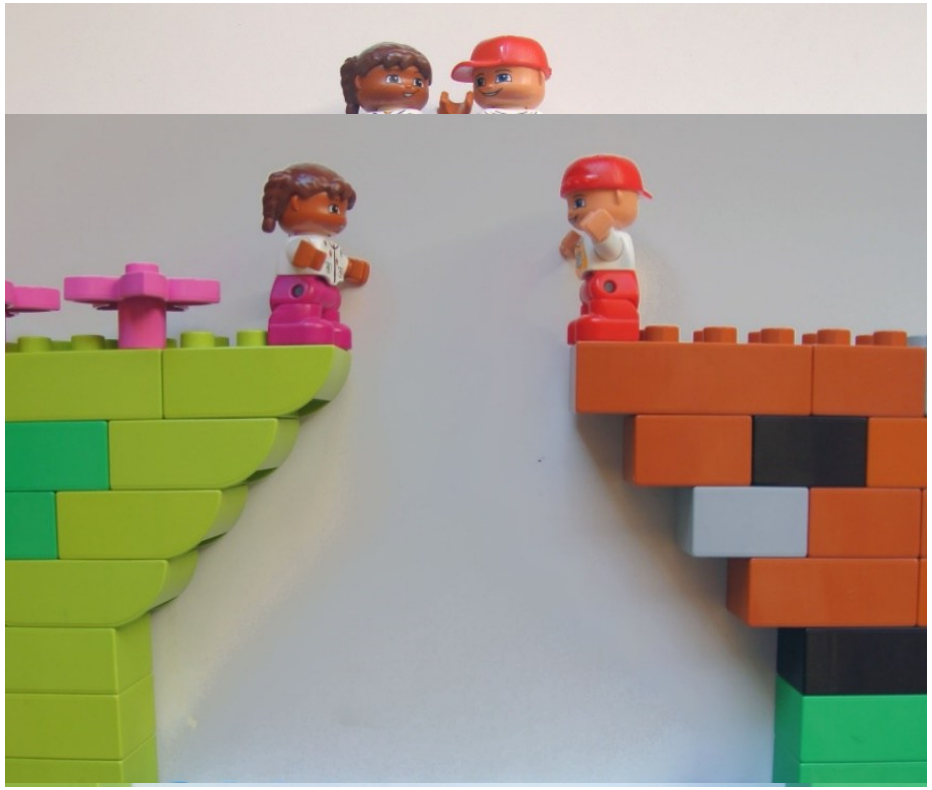
Finance key point

FIB-DM and CODT are the bridge across the chasm.

customized

OKG FIBO
Financial Industry Business Ontology

in



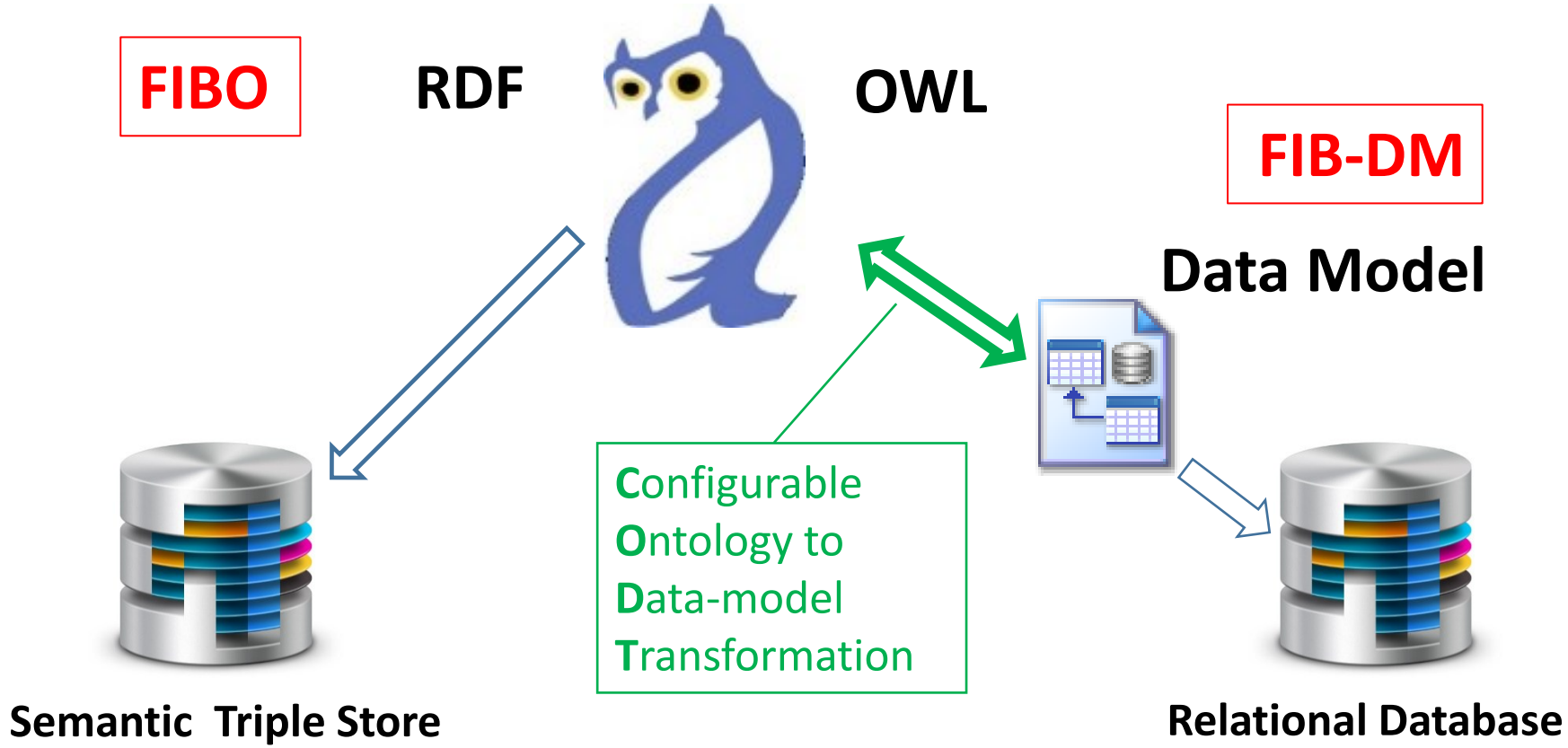
erwin

The Industry Standard is available in your Data Modeling tool.

Finance key point

The way:

Semantic Model-Driven Development (SMMD)



Finance key point

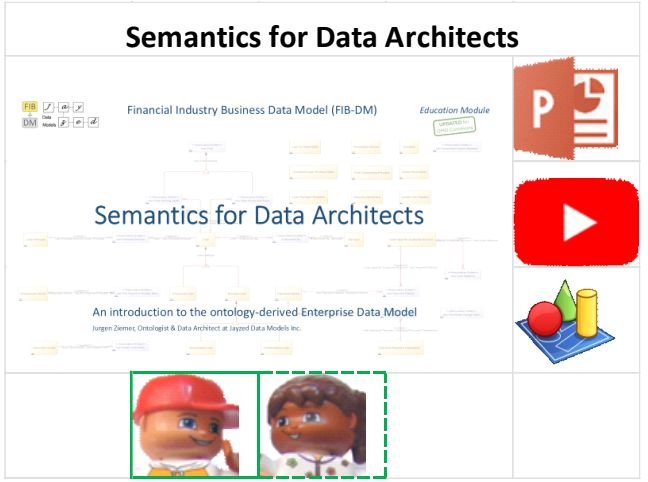
Asset size is a poor proxy for semantic sophistication

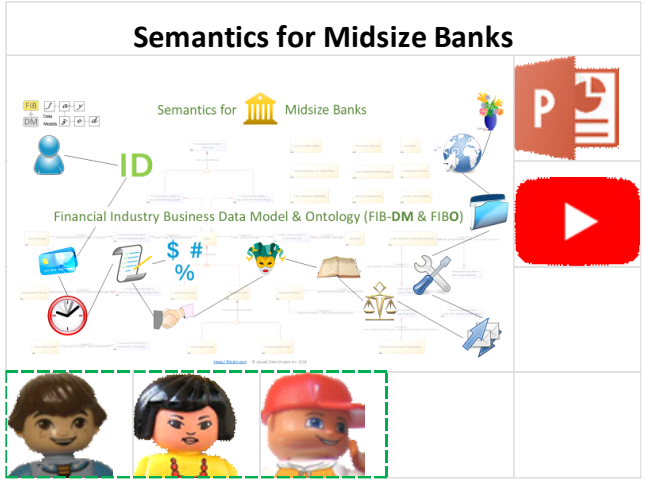
Semantics for Data Architects, the name of the first FIB-DM education resource, became a catchphrase.

FIB-DM on the EDMC website was for financial institutions with less than $200 billion in assets, hence Semantics for Midsize Banks.

However, some financial institutions, such as hedge funds, for example, are very advanced. Many midsize banks on FIB-DM are now building out ontology capabilities.

CODT is for Financial Institutions that use and extend FIBO; many, but not all, are very large banks.





Finance key point

Intended Audience & POC Team

Finance, management, or business stakeholder who has a working knowledge of Entity-Relationship and Ontology diagrams. You are authorized to sign non-disclosure and license agreements.

Ontologist with an in-depth understanding of the FIBO and in-house ontologies. You want to spread adaptation across your enterprise. You are well-versed in RDF/OWL and SPARQL.

Data Architect, with experience in Enterprise Reference models. You evaluated and want the industry-standard, FIB-DM. You are an expert in your Data Modeling Tool and its import functionality.

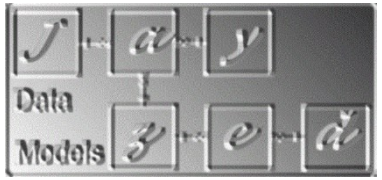
Developer / MS-Excel Power User experienced in VBA, Power Query, and the M-Language.

Finance key point

Inventor and Presenter

Jurgen Ziemer has 20 years of industry experience as a data architect and ontologist at leading Financial Institutions and service providers.

- Seven years as an IBM Software Group Consultant for the Banking and Financial Markets Data Warehouse (BFMDW) model at 45 banks in North America, Europe, and Asia.
- Implementing BFMDW at Citi and Deutsche Bank.
- Contributor, reviewer, and speaker at FIBO conferences



Jayzed Data Models Inc. is a US consulting company incorporated in 1999.

Jayzed holds the FIB-DM copyrights and is the designated assignee of the CODT Patent.

Jayzed Data Models
Accenture
Credit Suisse
IBM
Deutsche Bank
Citi
Reuters
German Stock Exchange

Finance key point

Atlantic is the way to Semantic EIA and MDD

FIB

Full

DM

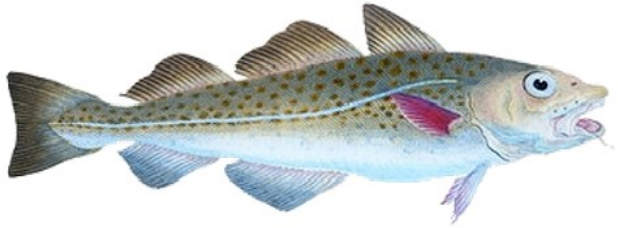
2025/Q4

release

3,173 entities

The world's largest data model.

ATLANTIC CODT



Configurable Ontology to Data model Transformation (CODT)

Finance key point

EDMC and OMG collaborate closely

EDM Association is the member-driven trade association dedicated to elevating data management and analytics as a strategic business priority. Founded in 2005 as the EDM Council, we provide best practices, standards and education to data and business professionals in our data-driven world. https://edmcouncil.org/about/

The Object Management Group® Standards Development Organization (OMG® SDO) is a global, open membership, non-profit consortium. Our members collaborate to craft technology standards that offer measurable value to a diverse range of vertical industries.
https://www.omg.org/

Finance key point

FIBO and OMG Commons

The Financial Industry Business Ontology (FIBO) defines the sets of things that are of interest in financial business applications and the ways that those things can relate to one another. In this way, FIBO can give meaning to any data (e.g., spreadsheets, relational databases, XML documents) that describe the business of finance.
https://edmcouncil.org/financial-industry-business-ontology/

Commons

The Commons Ontology Library provides a set of small ontologies designed to provide a useful set of modeling constructs that are reusable in different modeling and data deployment environments with minimal commitments.

OMG Commons is designed as a foundational or upper ontology, independent of the domain or industry.

The FIBO imports the OMG Commons ontologies, deprecating foundational classes in the Foundation module.

Finance key point

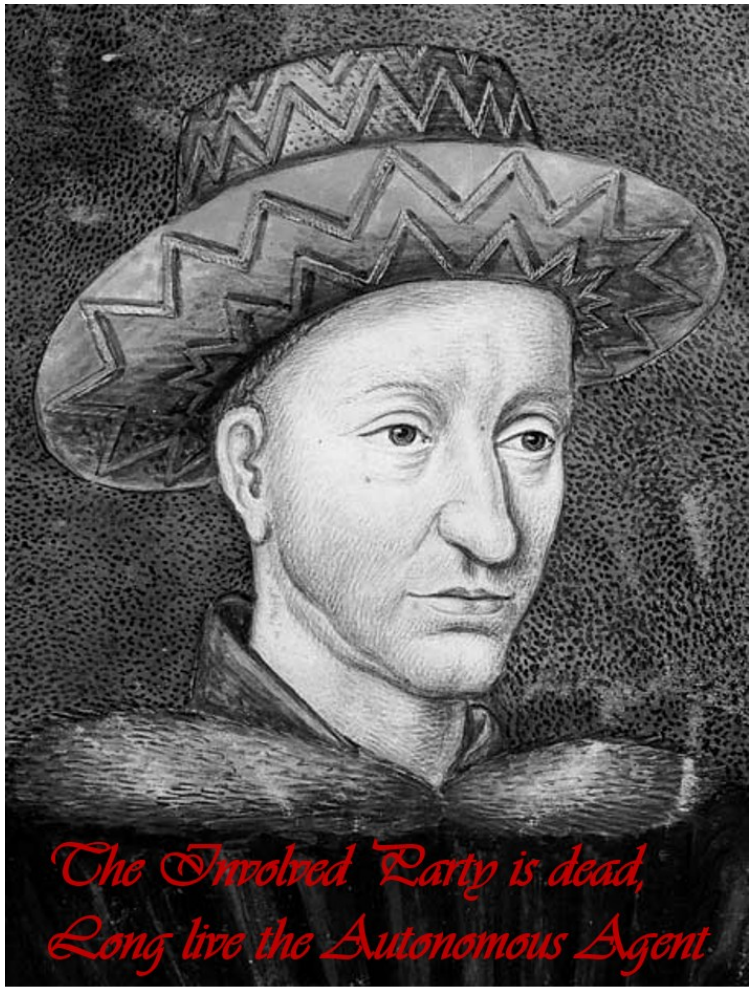
FIBO is more than a Knowledge Graph

The Council and its members correctly decided to define the business conceptual model in the Ontology Web Language (OWL) because of its superior semantics.

FIBO Conceptualization and Relations are **fully applicable for** lower-semantic taxonomies, concept maps, object-, and **data models**. FIB-DM is a perfect conceptual data model.
(https://fib-dm.com/ontology-class-and-data-model-entity-hierarchy/ and https://fib-dm.com/ontology-object-property-data-model-associative-entities/)

Finance key point

The FIBO is superior to vendor data models

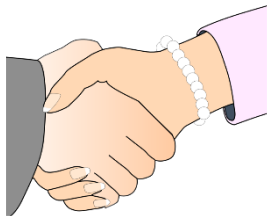


Almost six hundred years ago, Robert II d'Uzès proclaimed Charles VII King of France. Yet the "*Involved Party*" is still an ultimate supertype in numerous reference models and databases.

OMG Commons breaks the comingled entity into two fundamental concepts:

1. Agent (person or legal entity)
2. Role (customer, counterparty, borrower, employee …). One Agent, many Roles

The 15 concept mnemonic icons, and abbreviations



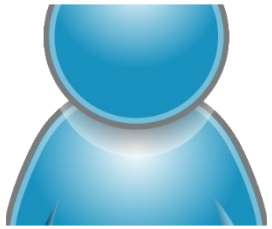
SIT
Situation

R
Role

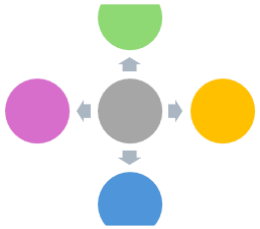
D
Designation

CST
Constituent

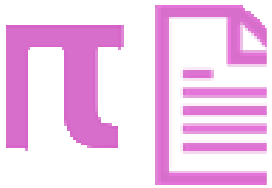
COL
Collection



A
Agent



ASP
Aspect



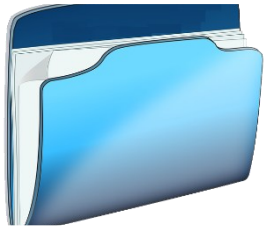
SP
Specification

ARR
Arrangement

M
Measure

OCC
Occurrence

TE
Temporal Entity



DOC
Document

SQ
Scalar Quantity

ACT
Account

The Fundamental concepts define the Open Banking scope: Registry (ARR), Network locations (LOC), new products and services, customer agreements, documents, accounts, an of course the API request (OCC) and their timestamps (TI).

The concepts are ultimate supertypes in the data model.

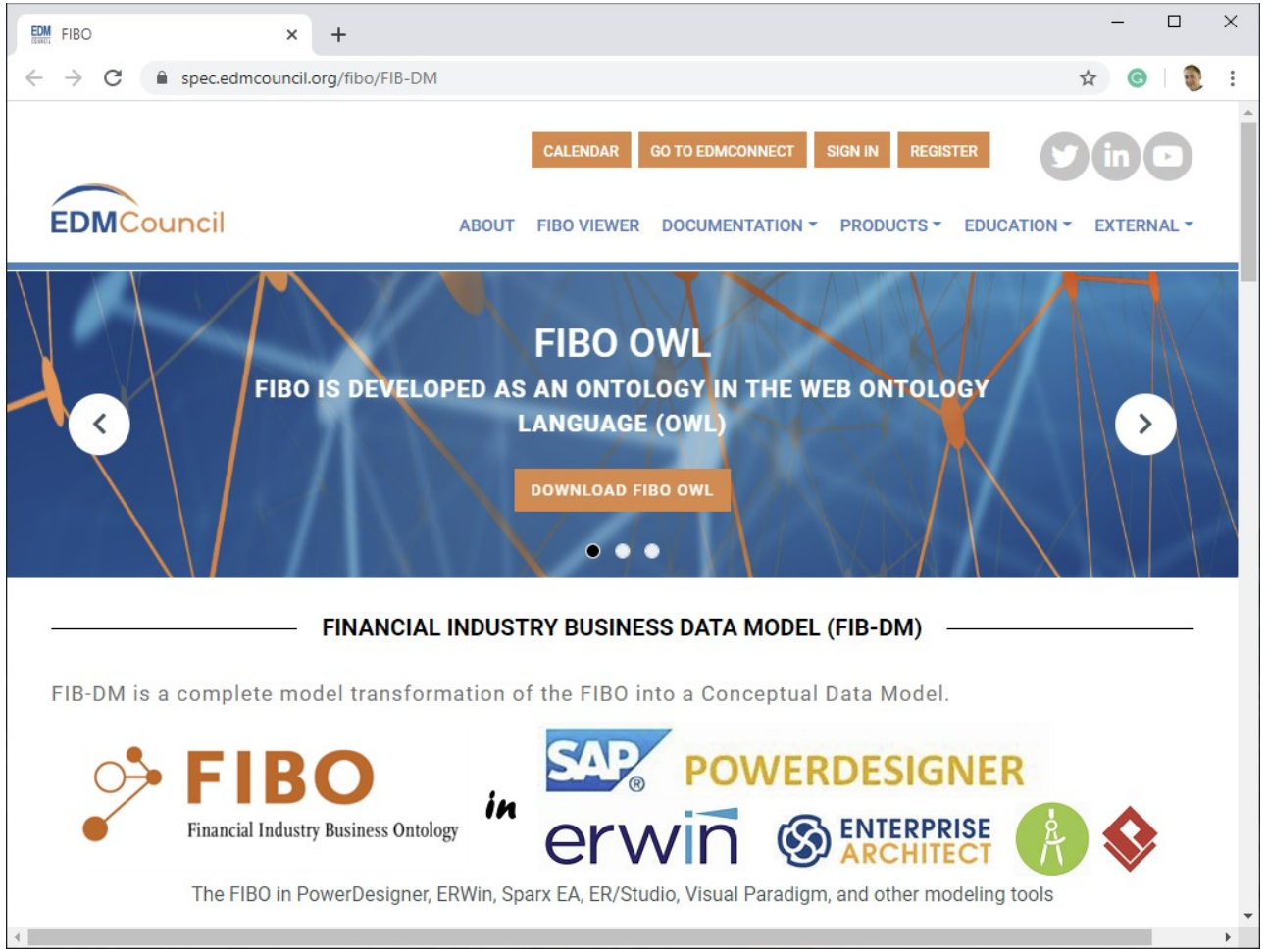
Finance user int

EDMC support and 3,500 data model downloads

"Many midsize EDMC members want to leverage the industry standard, but don't have ontology tooling, databases, and the human expertise inhouse yet."
(https://spec.edmcouncil.org/fibo/FIB-DM)

With FIB-DM, Data Architects no longer manually transcribe ontology graphs and copy and paste definitions. Three thousand five hundred users downloaded the Open-Source version of the FIBO Data Model.

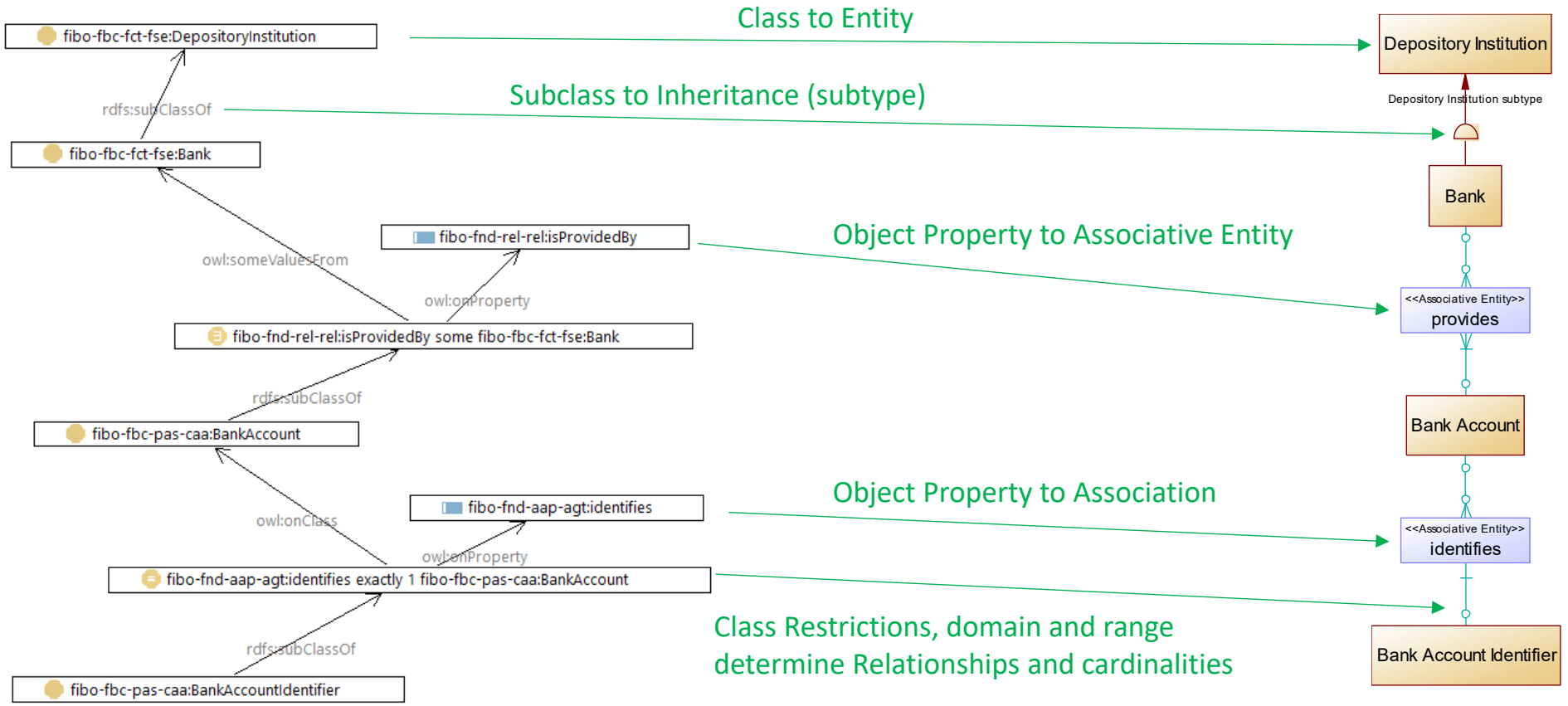
However, even with FIB-DM, Architects at larger Financial Institutions must still c&p their FIBO customizations and extensions manually.



Finance key point

Ontology-derived Data Model

Ontology graph | **Transformation/mapping** | **Conceptual Data Model**



CODT patent drawing FIG.1 System (removed numerals and added colors)

Current tooling imports are not fit for purpose

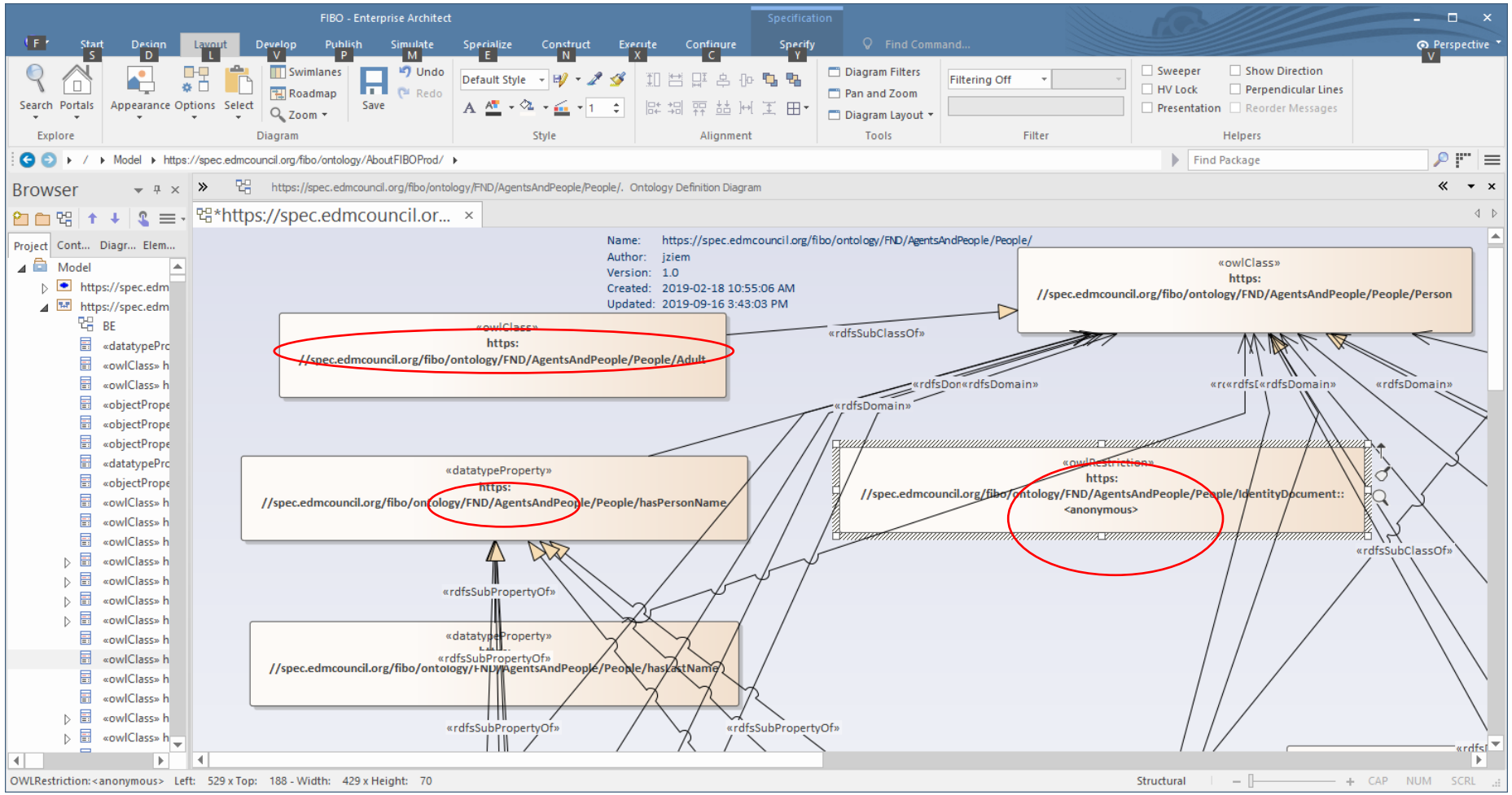
Data Modeling tools, such as Sparx EA and IBM IDA, have rudimentary import capabilities for RDF/OWL files. The imports are a one-click black box with no options or diagnostics.

URIs as entity names

Datatype properties become classes

Class restrictions become anonymous pseudo classes

No import of annotation properties



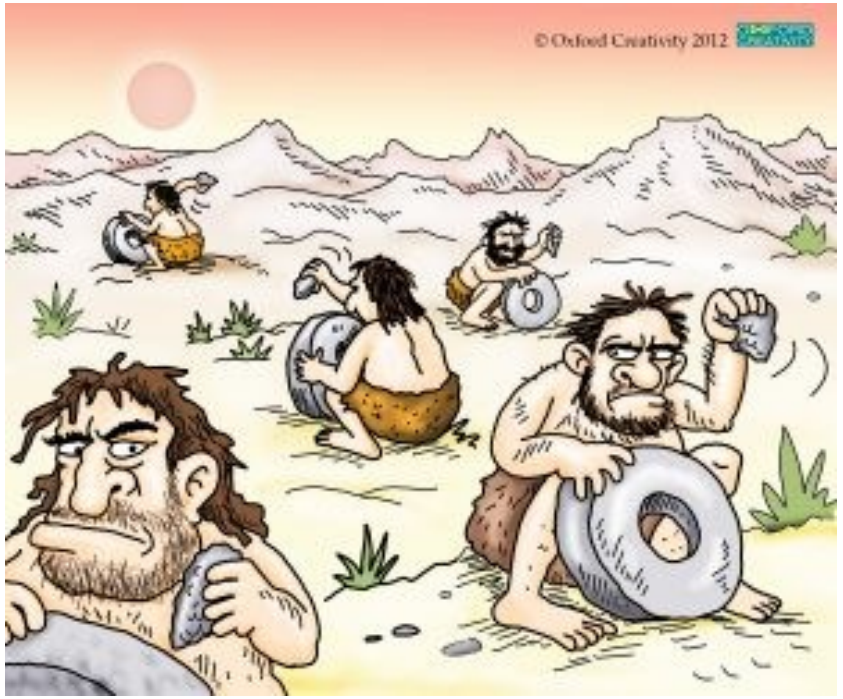
Data Architect Ontologist

The parsing approach is not scalable

Traditional transformations parse ontology files. They encounter elements of the ontology and create elements of the data model as they process the source files. The parsing approach reaches its limits with very large ontologies like the FIBO.

Per default, ontology object properties transform into data model relationships. This transformation loses Metadata for object properties with particular design patterns.

XLB and other large Financial Institution developed rudimentary transformations.



Compare FIB-DM to a vendor or in-house transformations of the FIBO and see the difference!

License the technology that created the industry-standard rather than DIY!

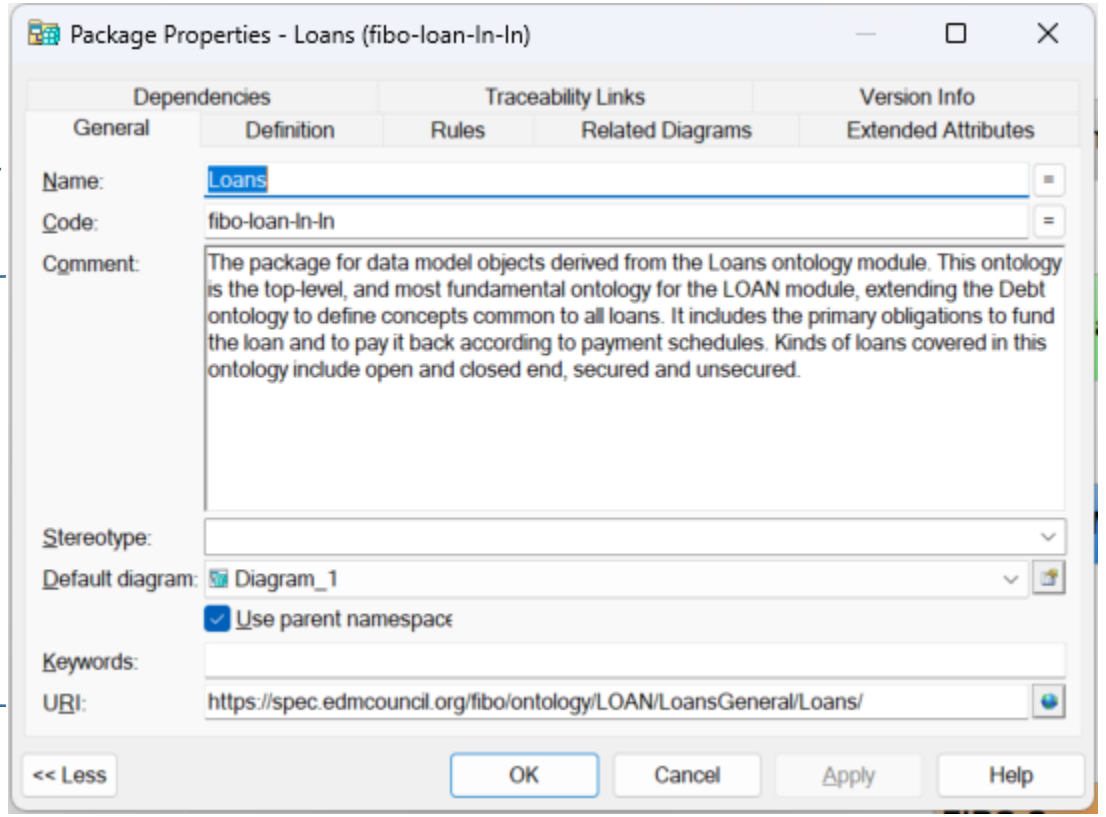
Outcome of the transformation: Package Properties

The Package Name is the rightmost string in the ontology namespace.

CODT transforms the ontology prefix as the unique code of the package.

Note: All ontology classes, properties with the prefix `fibo-fnd-agr-agr` become model objects of the Agreements package.

The URI is the Uniform Resource Identifier of the ontology. It is a traceability link to the source of the model object.



The second part of this overview shows how CODT extracts properties, transforms and add them to the data model.

Package Annotations

Package annotations derive from FIBO / OMG ontology annotation properties.

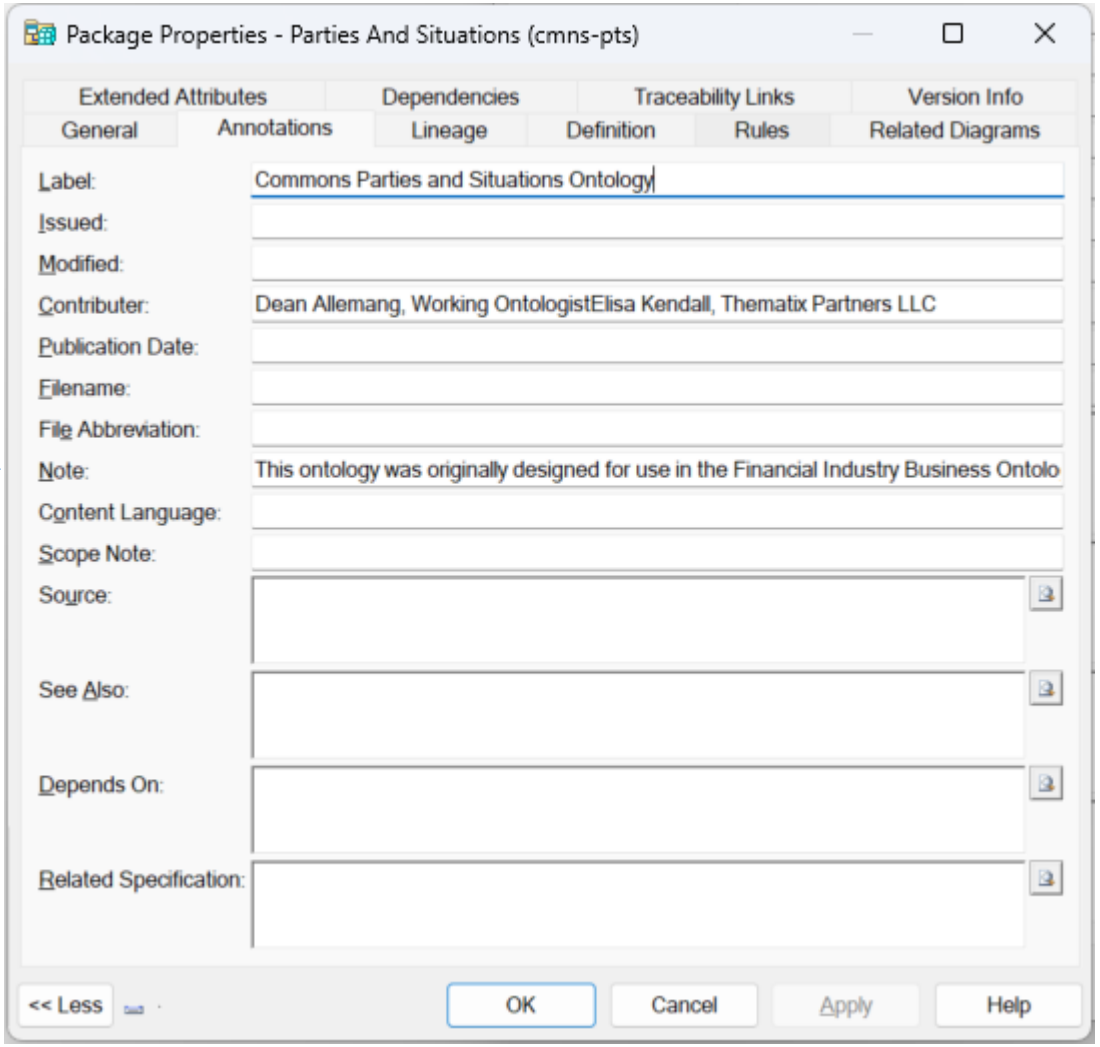
The CODT table shows annotation properties and the number of ontologies (i.e., FIB-DM packages) with documentation.

annotation_property	Count
dcterms:license	191
rdfs:label	191
skos:changeNote	182
dcterms:abstract	179
cmns-av:copyright	179
fibo-fnd-utl-av:hasMaturityLevel	155
dcterms:contributor	22
skos:note	15
rdfs:seeAlso	14
sm:contentLanguage	12
sm:copyright	12
skos:scopeNote	12
sm:filename	12
sm:fileAbbreviation	11
dcterms:issued	9
sm:fileAbstract	8

We see that most packages have a label.

OMG Commons Parties & SiOMG Commons Parties & Situations also provides the contributors with a note.

License, change note, copyright, and maturity level are on the Lineage tab.



Package Lineage

The ontology namespace provides the Resource Name of the data model package, which is configured as a prefix for all entities in the package.

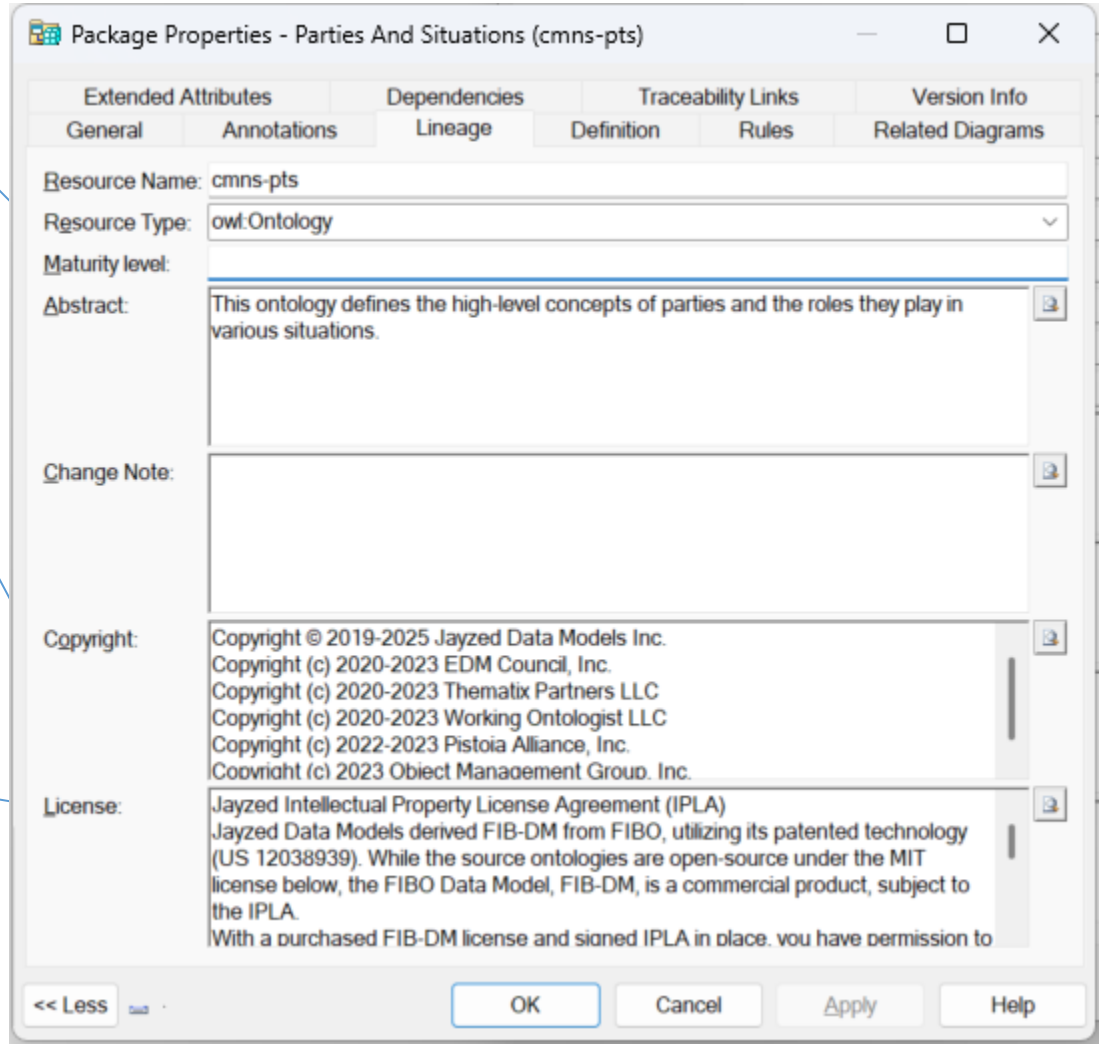
All OMG Commons packages have an abstract.

The copyright box lists the Jayzed FIB-DM copyright and all copyright notices in the source ontology.

The depicted data model license for the full commercial version is your IPLA. The open-source version is licensed under the GPL 3.0. The ontologies are licensed under the MIT open-source License (scroll down).

https://jayzed.com/license-agreement/
https://opensource.org/licenses/GPL-3.0
https://opensource.org/licenses/MIT

The open-source licenses and the Jayzed IPLA require that all derived works include the license and copyright notices.
In other words, please make sure to include the notes in your FIB-DM migrations to other tools, generated logical, physical, object models, and all metadata extracts.



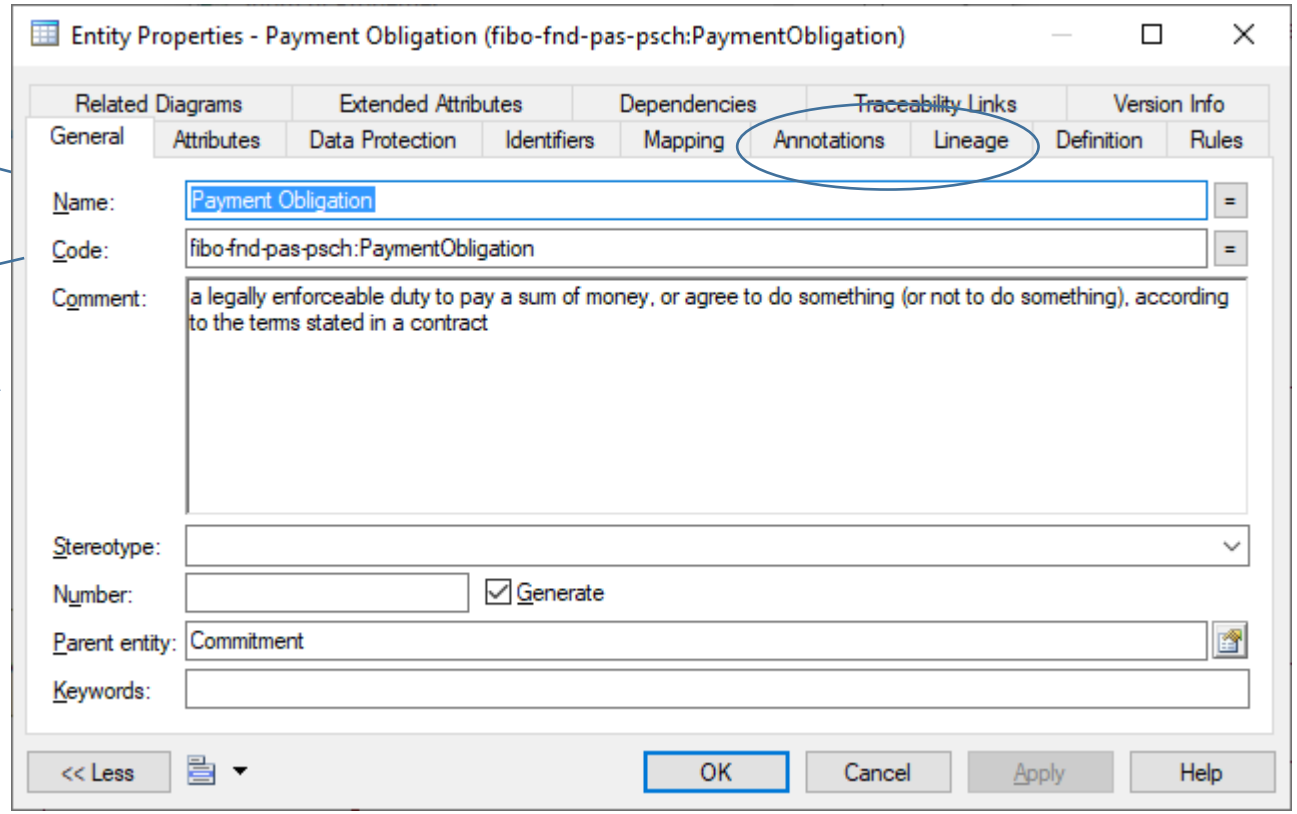
Entity properties

The Name is the ontology class *Localname,* converted from Camel Case to LDM naming convention (capitalized with space between words).

The Code transforms from the ontology class *Prefix*: *Localname*.

The Comment populates from the class annotation RDFS comment and SKOS definition.

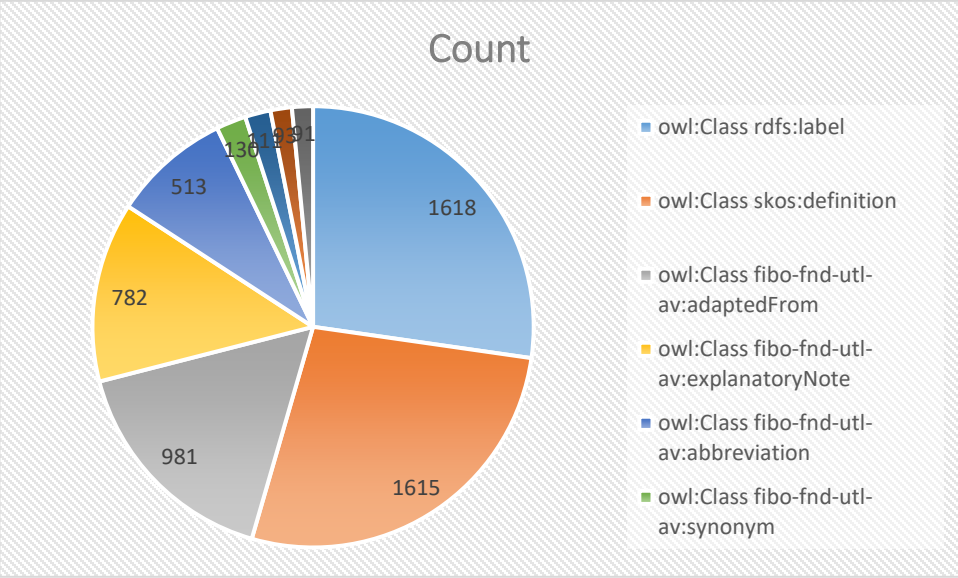
There are two particular tabs for ontology derived data models, Annotations and Lineage.

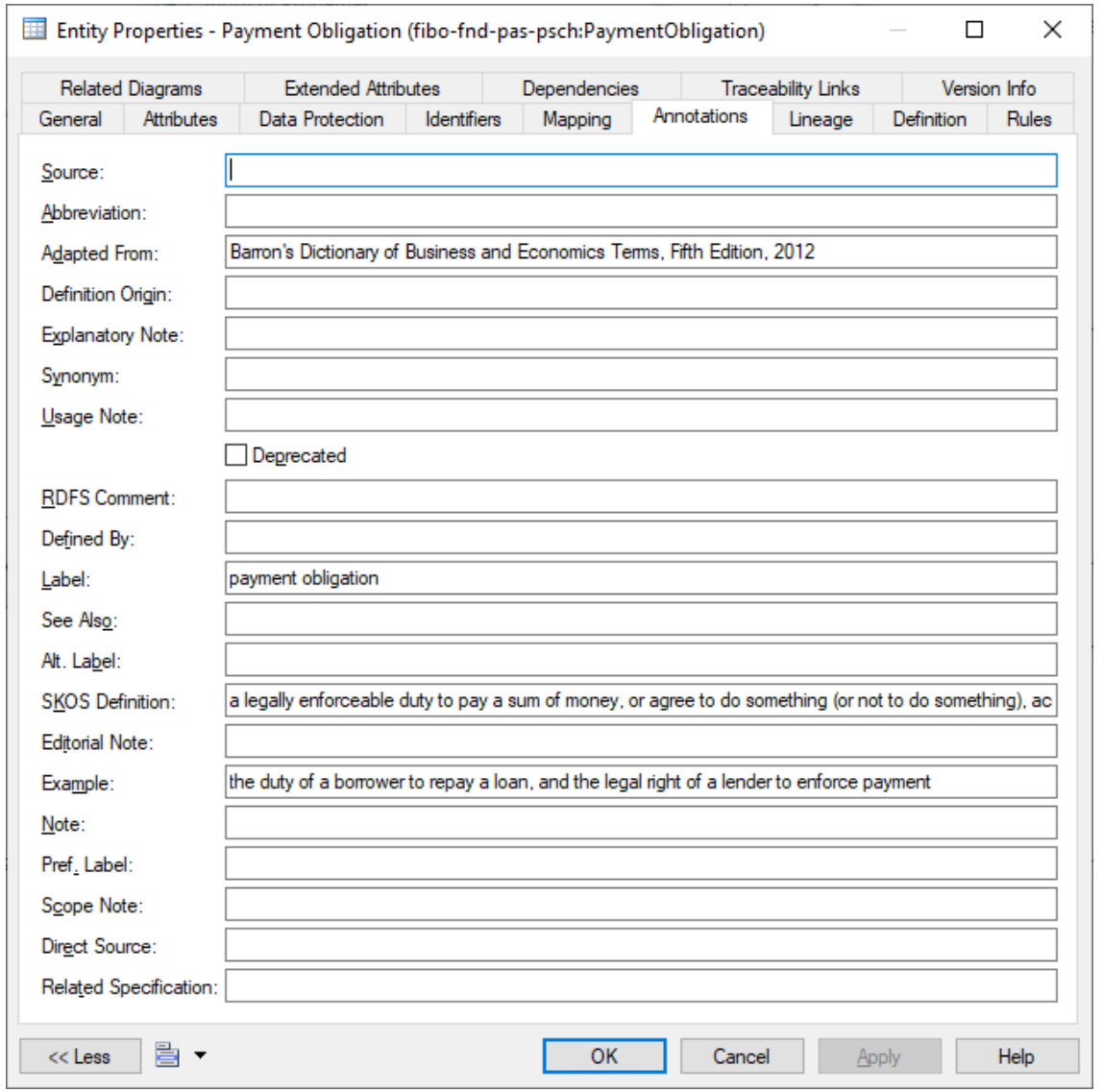


Entity annotations

FIBO has extensive documentation captured in annotation properties.

The chart shows the number of classes with annotated documentation.





Data Architect

Ontologist

Entity lineage

The Lineage tab captures ontology metadata of the source class. The extended attributes provide traceability into the ontology and preserve semantics beyond the entity-relationship model.

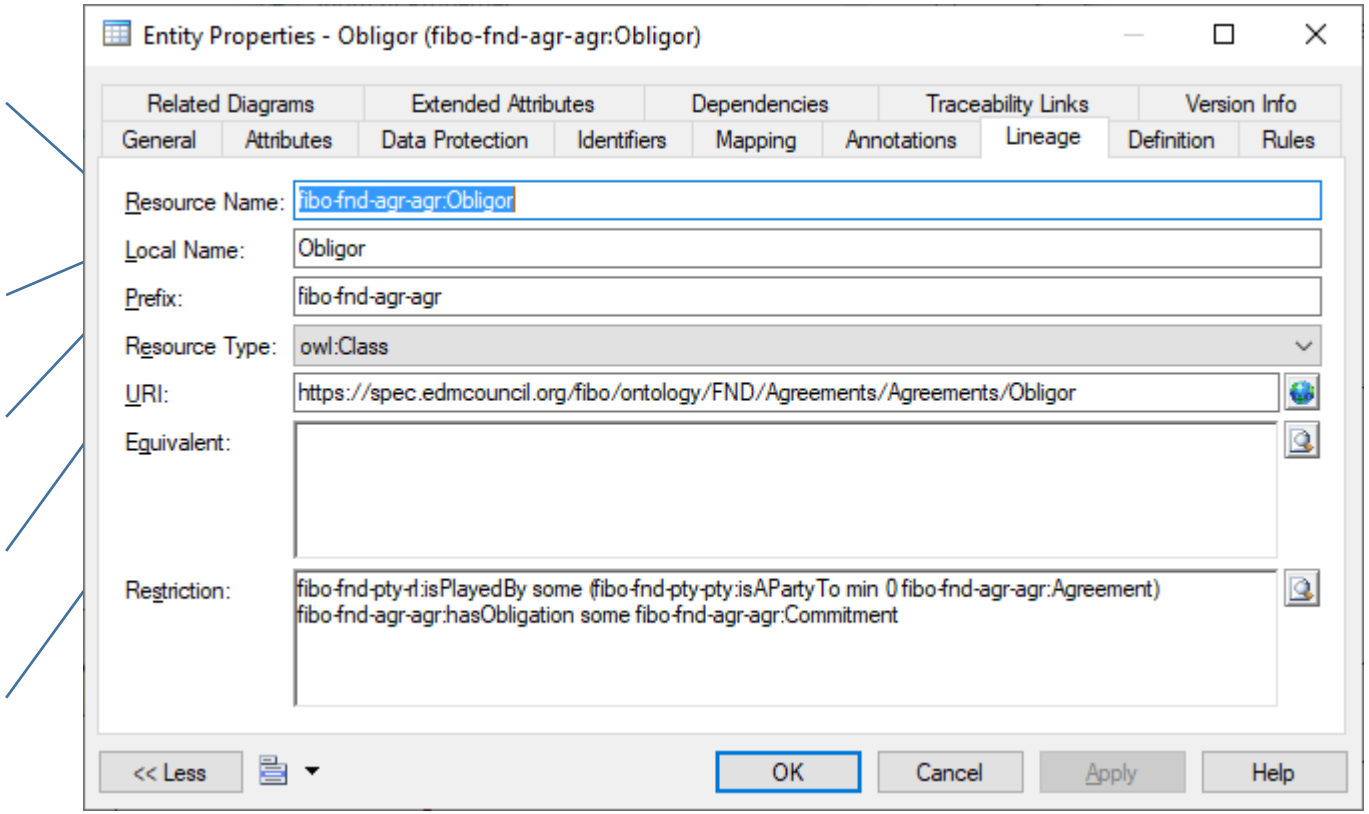
The Resource Name is class *Prefix* and *Localname*. FIB-DM uses the resource name as the entity code, but you can generate your codes in the modeling tool.

The Localname is the rightmost string in the Resource Name and URI.

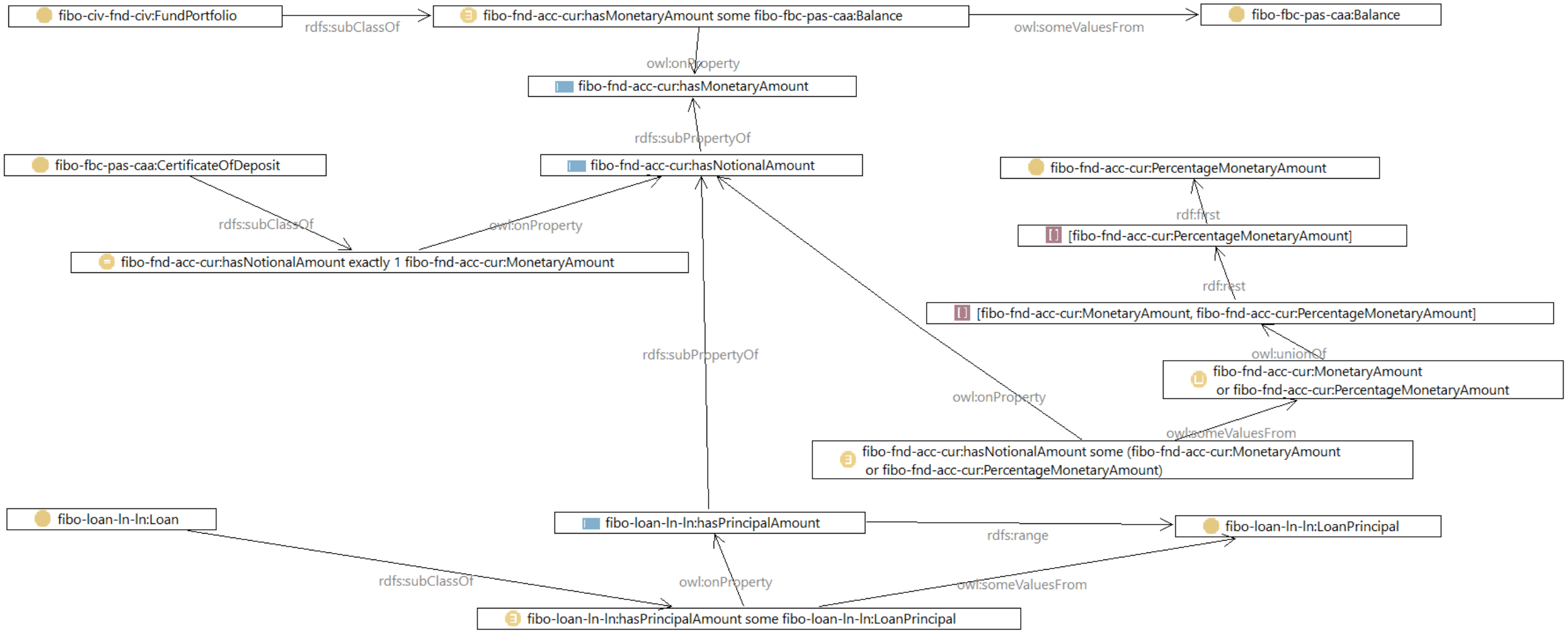
The Prefix is an abbreviation of the URI defined in the ontology.

The Uniform Resource Identifier of the class is a link to the FIBO source ontology.

Restriction and Equivalent class axioms formulate OWL semantics.

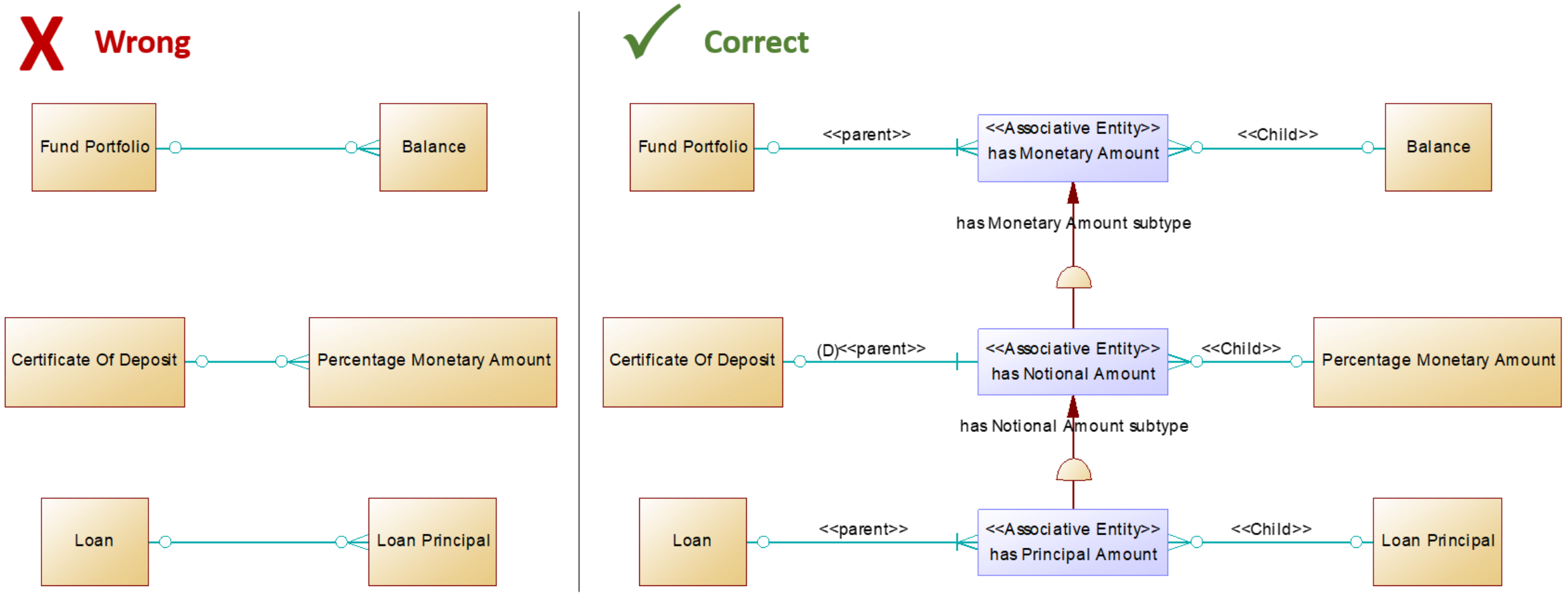


Complex FIBO patterns (e.g. sub-properties) …



Data Architect

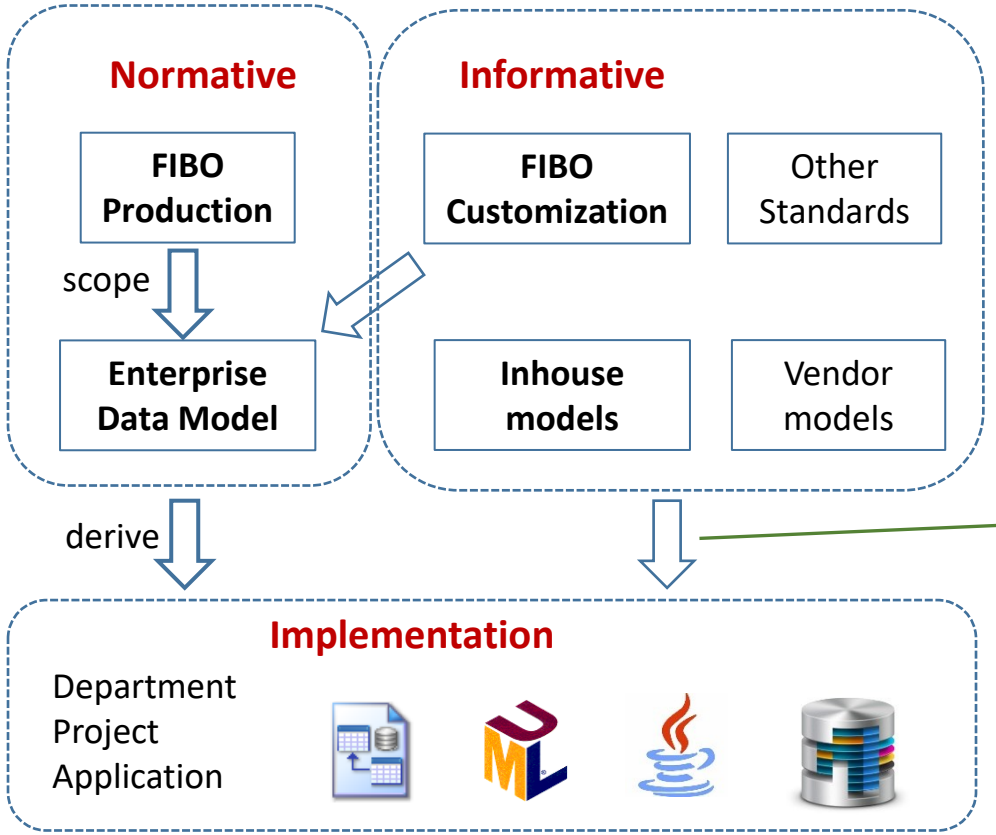
Require a sophisticated data model transformation



See the article of issues resolved for many-to-many relationships, closure axioms, hierarchies, incomplete and inverse object properties.
(https://fib-dm.com/ontology-object-property-data-model-associative-entities/)

FIBO, vendor and in-house models for SEIA

We adhere to the industry-standard

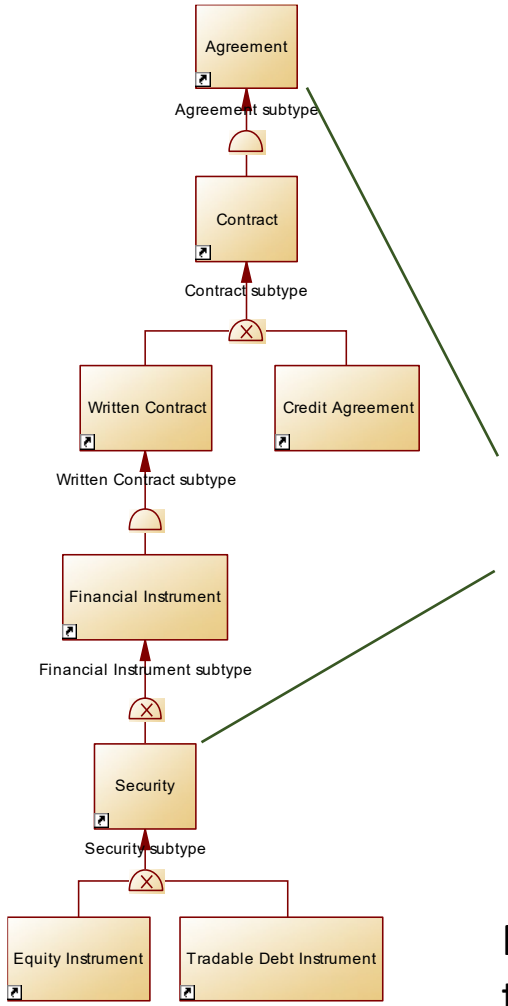


We consult other models

Our method is to derive

Our goal is leverage

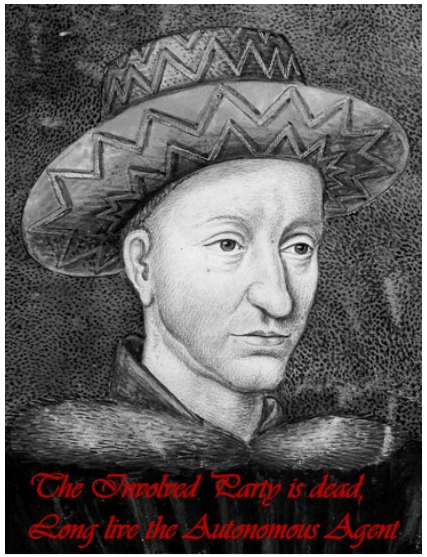
DAs, merge in your vendor and inhouse models



Your vendor model has excellent value. Keep it and harvest the content!

Adhere to the industry-standard 15 concepts and their subtype hierarchies
Adopt the FIBO/FIB-DM names and definitions

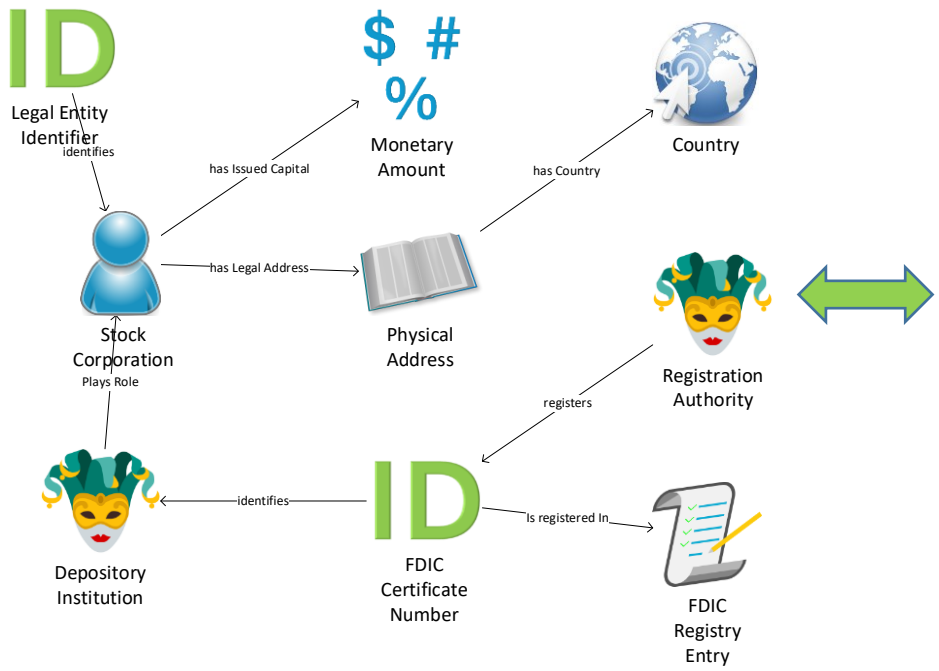
1. Identify indirect entity matches, synonyms
2. Identify direct entity matches, beware of homonyms
3. Merge entities that are not already in FIB-DM, identify the appropriate supertype.
4. Merge attributes from your vendor model.

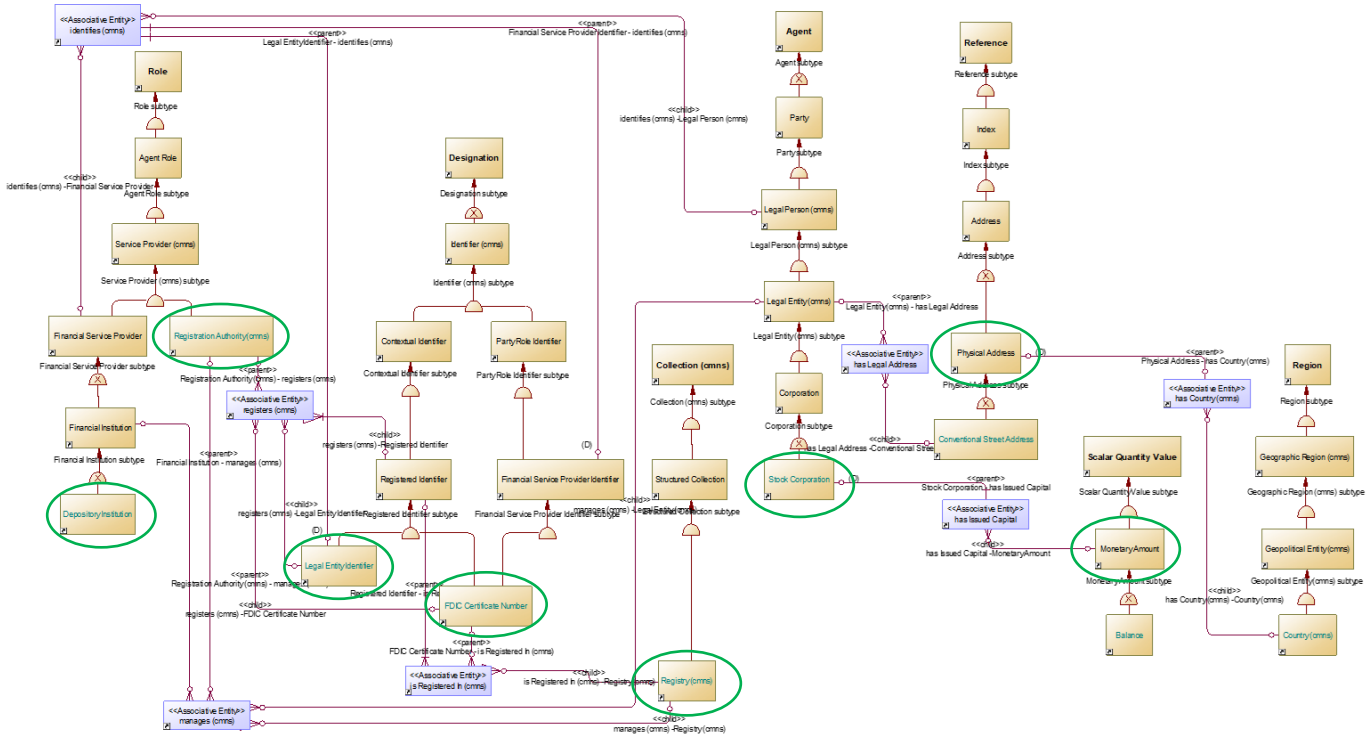


Robert's advice

Note that the FIBO Data Model correctly defines Financial Instruments as a subtype of the Contract, an Agreement – not a Product as some Vendor model do.

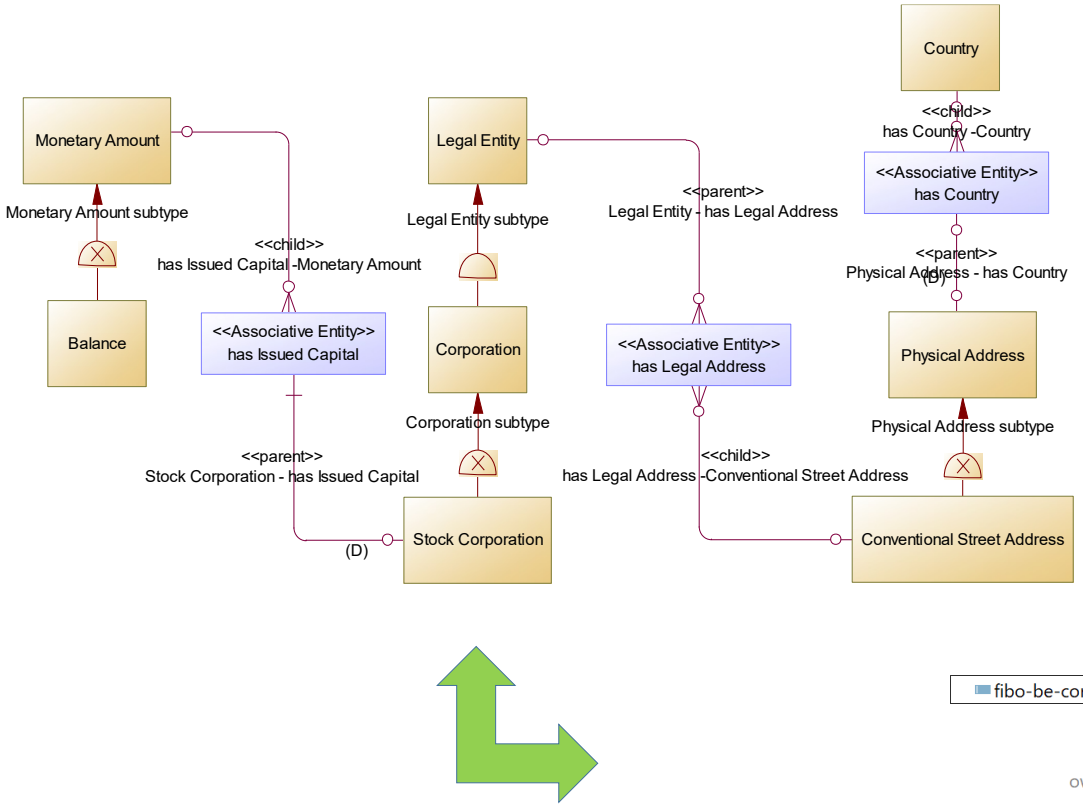
The concept maps, FIB-CM, link to the data model.



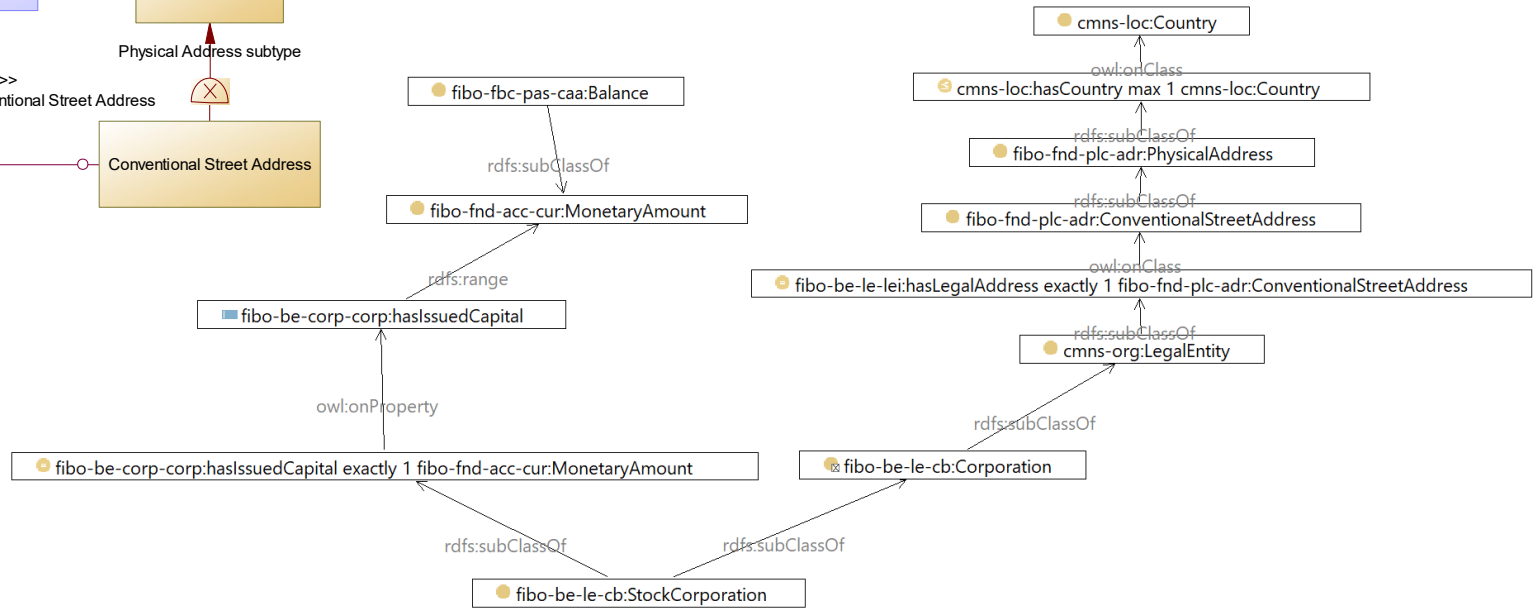


https://fib-dm.com/semantics-for-finance-users/

Ontology and Data Model in sync



Beyond owl:ObjectProperty range and domain, the ontology transformation infers data model relationships from class restrictions (here, OMG Commons Legal Entity)



FIB-DM General Public 3.0 vs. Customer License

Topic	Detail	Your current General Public License 3.0	Your upgrade Jayzed Customer License
FIBO Release		**2018/Q4**	**2024/Q4**
Domain		**Public**	**Private**
Distribution	Original FIB-DM	encouraged	prohibited
	Your FIB-DM derived works	**Open Source**	**Private, not applicable**
Number of Entities		**1029**	**3,173**
Normative	Foundation	✓	✓
	Business Entities	✓	✓
	Finance, Business & Commerce	✓	✓
	Securities	X	✓
	Derivatives	X	✓
	Indexes & Indicators	X	✓
Informative	LOANS	X	✓
	Funds	X	✓
	Corporate Actions	X	✓
	Market Data	X	✓
	Business Processes	X	✓
Resources	PowerPoints	X	✓
	Videos	X	✓
	Whitepapers	X	✓

Open Source license requires you, to **copyleft**, that is to license your derived models to the **public**.

With a commercial license, you keep FIB-DM extensions **private**.

Likewise, for the public, **all Education materials are subject to copyright**

With a commercial license, you are **free to modify, translate, edit, and even lift off images and diagrams** as long as they remain within your organization.

Finance key point

Financial Industry Business Data Model - summary

- Most comprehensive Enterprise Reference model with 3,173 entities
- Superior Design of a Semantic Data Model
- Extensive documentation of the industry-standard ontology
- Full lineage to the ontology
- Semantic Enterprise Information Architecture
  - Same names, definitions, and design patterns across the enterprise
  - The ontology at the apex includes business-friendly concept maps, derived data, and object models.
  - Unifies semantic and conventional data management

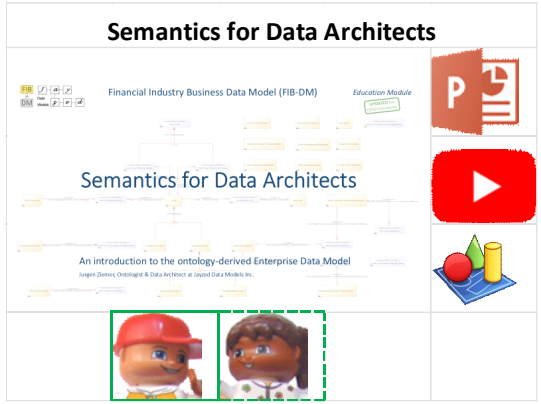
Finance key point

Transparency for your FIB-DM evaluation

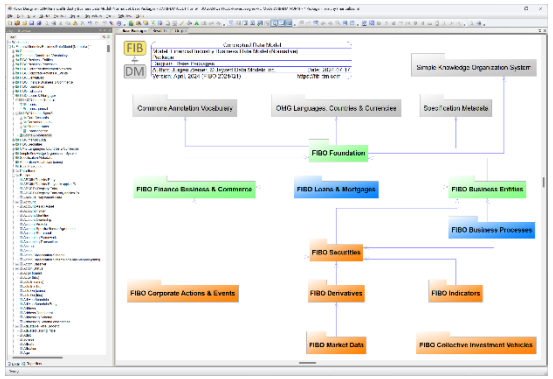
FIB Core DM

Open Source

[Explore](#) the PowerDesigner Model



[Study](#) the Education resources



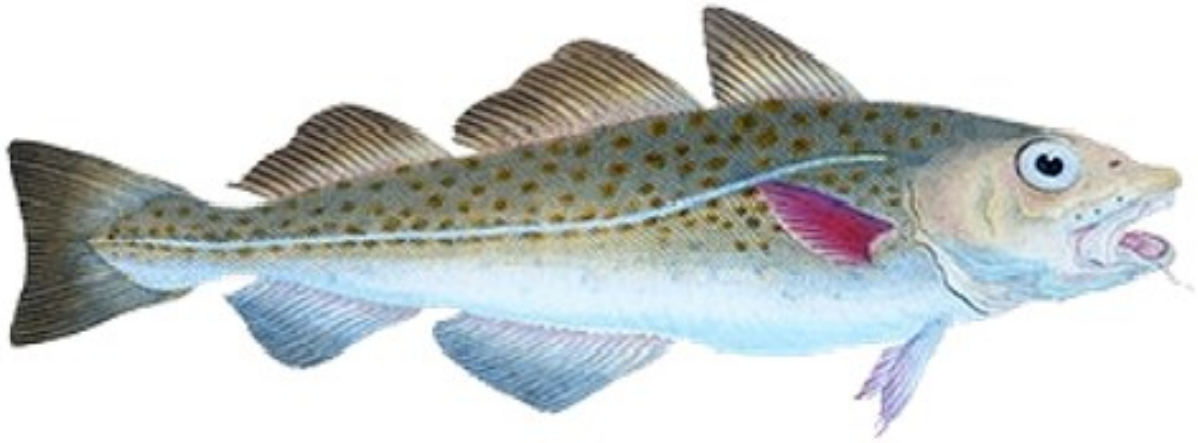
[Examine](#) the 2024/Q4 Full Model content

[Review](#) license, maintenance, and pricing

Finance key point

Version 1.0 Atlantic: CODT meets MS-PowerQuery

ATLANTIC CODT



MS-Excel, PowerQuery, and the M-language

The patented technology that created the FIBO Data Model

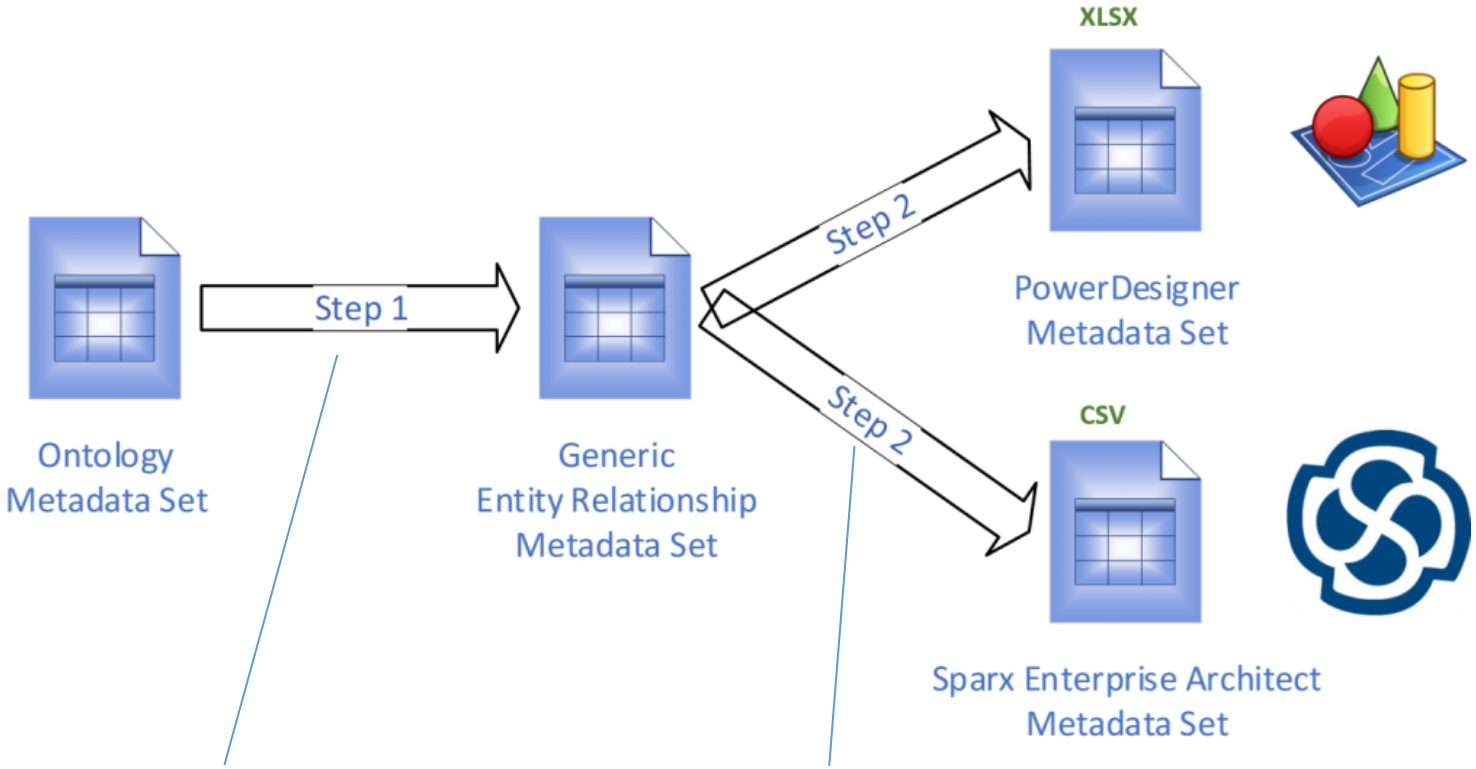
The old OWL file-parsing-approach doesn't produce usable data models. It can't cope with very large ontologies.

The new ETL approach creates high-quality models. The technology is fully scalable and configurable.

Metadata Sets (MDS) are keyed records that hold properties for all objects in a model.

- Ontology metadata sets hold the record **extracted** from the ontology platform
- Entity-Relationship metadata sets **transform** ontology into ER.
- PowerDesigner (or another tool) metadata sets are ready to **load** into the data modeling tool.

Metadata sets are the novel approach.



Metadata Sets are metadata stored in data sets.

Similar to system tables on a relational database, CODT metadata sets are isomorphic representations of ontology, entity-relationship, and data modeling tool-specific metadata.

The transformation is a two-step process:

Transform Ontology Metadata into generic Entity-Relationship metadata

Transform the Generic ER into Tool specific metadata.

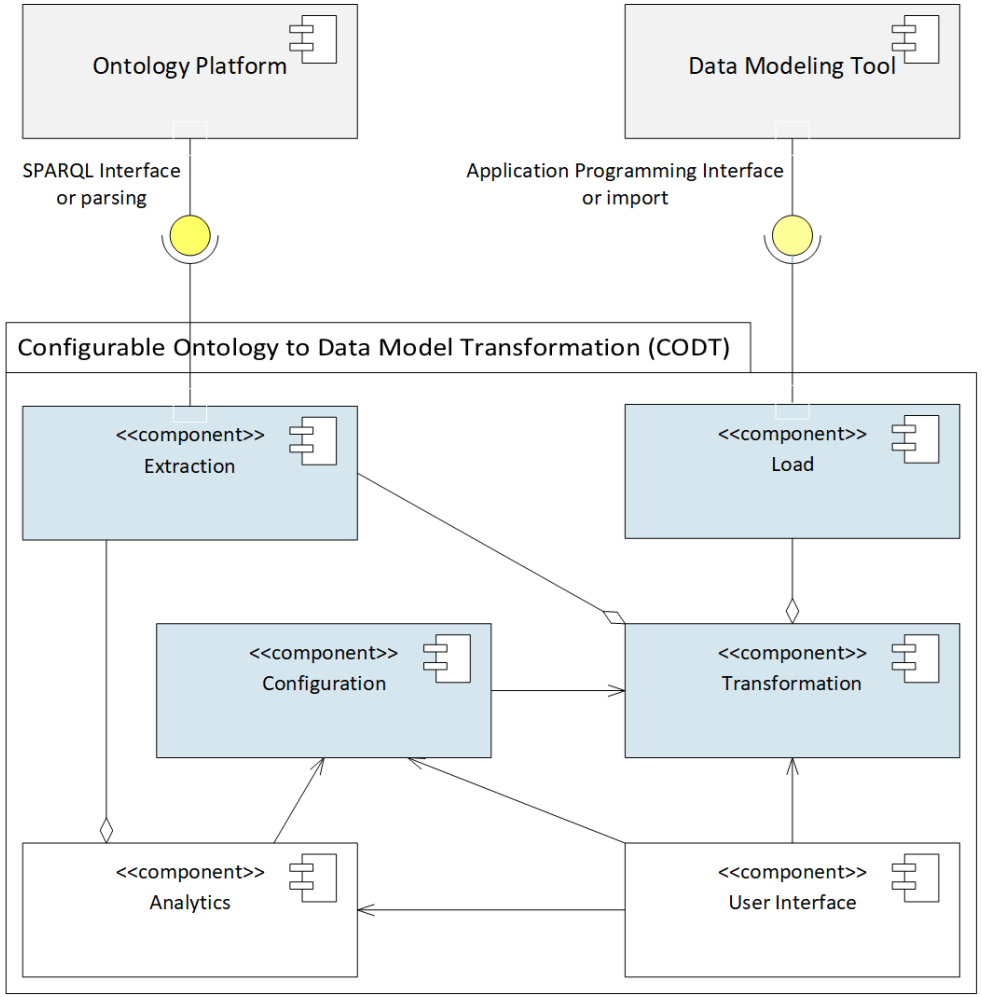
The same generic ER Metadata Set is the source for both PowerDesigner and Sparx EA metadata sets.

System overview

Microsoft Excel is the tool of choice to view and analyze tabular data, and every data architect has Excel and knows how to use it.
Hence, MS-Excel is not only a fast prototyping tool for the CODT Metadata Sets but also makes the transformation easy to deploy.

Component	Metadata Set	Excel Workbook
Extraction	Ontology Metadata	Ontology MDS.xlsx
Transformation	Generic ER Metadata	Entity Relationship MDS.xlsx
Load	PowerDesigner	PowerDesigner MDS.xlsx

Any platform and programming language can implement the system, metadata sets, and method.

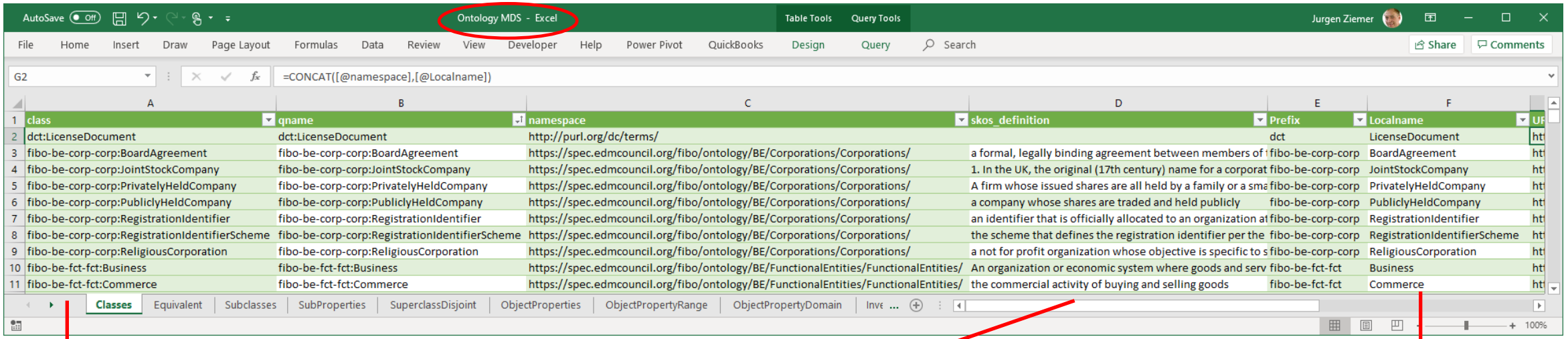


CODT patent drawing FIG.2, System (in color, numerals removed for clarity)

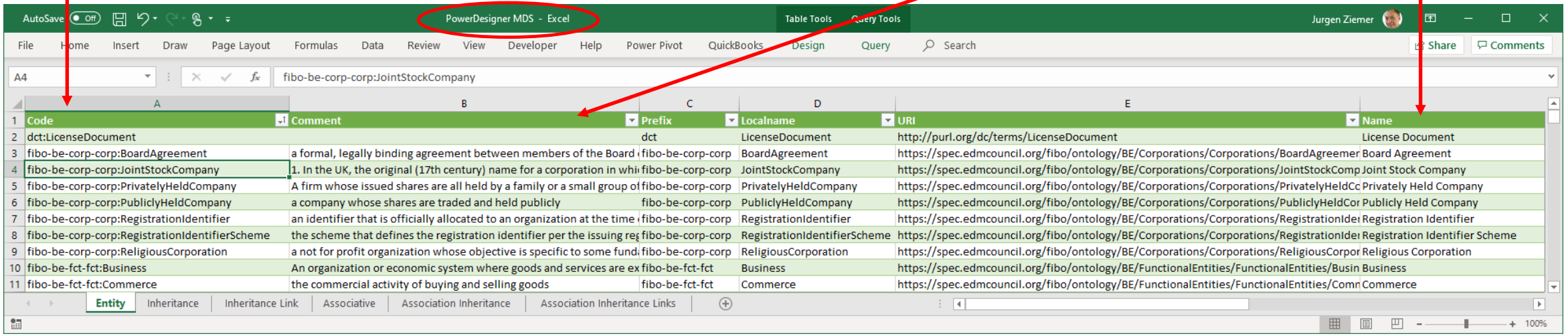

Data Architect

Ontologist

Ontology class to data model entity – a journey



class	qname	namespace	skos_definition	Prefix	Localname
dct:LicenseDocument	dct:LicenseDocument	http://purl.org/dc/terms/		dct	LicenseDocument
fibo-be-corp-corp:BoardAgreement	fibo-be-corp-corp:BoardAgreement	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	a formal, legally binding agreement between members of	fibo-be-corp-corp	BoardAgreement
fibo-be-corp-corp:JointStockCompany	fibo-be-corp-corp:JointStockCompany	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	1. In the UK, the original (17th century) name for a corporat	fibo-be-corp-corp	JointStockCompany
fibo-be-corp-corp:PrivatelyHeldCompany	fibo-be-corp-corp:PrivatelyHeldCompany	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	A firm whose issued shares are all held by a family or a sma	fibo-be-corp-corp	PrivatelyHeldCompany
fibo-be-corp-corp:PubliclyHeldCompany	fibo-be-corp-corp:PubliclyHeldCompany	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	a company whose shares are traded and held publicly	fibo-be-corp-corp	PubliclyHeldCompany
fibo-be-corp-corp:RegistrationIdentifier	fibo-be-corp-corp:RegistrationIdentifier	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	an identifier that is officially allocated to an organization at	fibo-be-corp-corp	RegistrationIdentifier
fibo-be-corp-corp:RegistrationIdentifierScheme	fibo-be-corp-corp:RegistrationIdentifierScheme	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	the scheme that defines the registration identifier per the	fibo-be-corp-corp	RegistrationIdentifierScheme
fibo-be-corp-corp:ReligiousCorporation	fibo-be-corp-corp:ReligiousCorporation	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	a not for profit organization whose objective is specific to s	fibo-be-corp-corp	ReligiousCorporation
fibo-be-fct-fct:Business	fibo-be-fct-fct:Business	https://spec.edmcouncil.org/fibo/ontology/BE/FunctionalEntities/FunctionalEntities/	An organization or economic system where goods and serv	fibo-be-fct-fct	Business
fibo-be-fct-fct:Commerce	fibo-be-fct-fct:Commerce	https://spec.edmcouncil.org/fibo/ontology/BE/FunctionalEntities/FunctionalEntities/	the commercial activity of buying and selling goods	fibo-be-fct-fct	Commerce



Code	Comment	Prefix	Localname	URI	Name
dct:LicenseDocument		dct	LicenseDocument	http://purl.org/dc/terms/LicenseDocument	License Document
fibo-be-corp-corp:BoardAgreement	a formal, legally binding agreement between members of the Board	fibo-be-corp-corp	BoardAgreement	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/BoardAgreemer	Board Agreement
fibo-be-corp-corp:JointStockCompany	1. In the UK, the original (17th century) name for a corporation in whi	fibo-be-corp-corp	JointStockCompany	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/JointStockComp	Joint Stock Company
fibo-be-corp-corp:PrivatelyHeldCompany	A firm whose issued shares are all held by a family or a small group of	fibo-be-corp-corp	PrivatelyHeldCompany	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/PrivatelyHeldCc	Privately Held Company
fibo-be-corp-corp:PubliclyHeldCompany	a company whose shares are traded and held publicly	fibo-be-corp-corp	PubliclyHeldCompany	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/PubliclyHeldCor	Publicly Held Company
fibo-be-corp-corp:RegistrationIdentifier	an identifier that is officially allocated to an organization at the time	fibo-be-corp-corp	RegistrationIdentifier	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/RegistrationIde	Registration Identifier
fibo-be-corp-corp:RegistrationIdentifierScheme	the scheme that defines the registration identifier per the issuing re	fibo-be-corp-corp	RegistrationIdentifierScheme	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/RegistrationIde	Registration Identifier Scheme
fibo-be-corp-corp:ReligiousCorporation	a not for profit organization whose objective is specific to some fund	fibo-be-corp-corp	ReligiousCorporation	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/ReligiousCorpor	Religious Corporation
fibo-be-fct-fct:Business	An organization or economic system where goods and services are ex	fibo-be-fct-fct	Business	https://spec.edmcouncil.org/fibo/ontology/BE/FunctionalEntities/FunctionalEntities/Busin	Business
fibo-be-fct-fct:Commerce	the commercial activity of buying and selling goods	fibo-be-fct-fct	Commerce	https://spec.edmcouncil.org/fibo/ontology/BE/FunctionalEntities/FunctionalEntities/Comn	Commerce

Data Architect

Ontologist

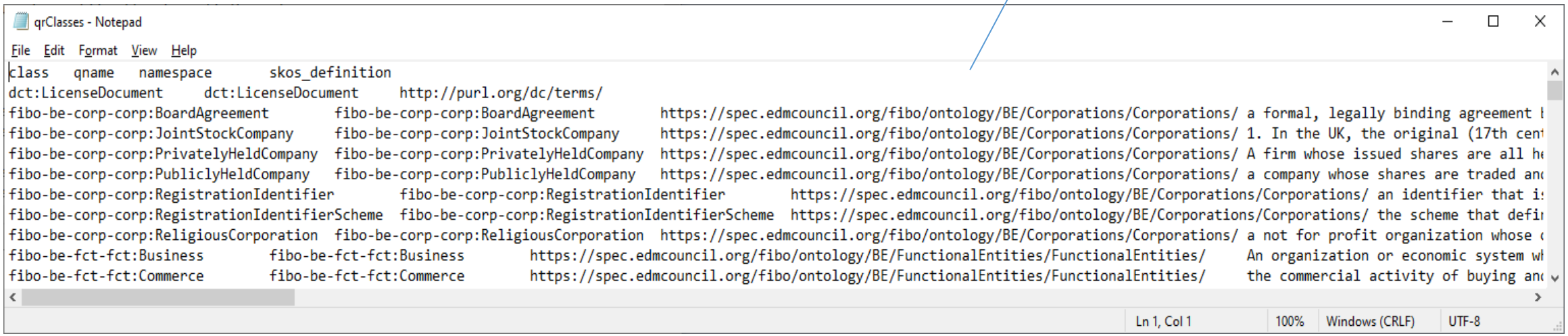
https://fib-dm.com https://codt.net

Extraction with SPARQL queries

```
# Owl Classes.rq
SELECT ?class ?qname ?namespace ?skos_definition
WHERE {
        ?class a owl:Class .
        BIND(afn:namespace(?class) AS ?namespace) .
        FILTER (smf:isBound(?namespace) ).
        BIND (smf:qname(?class) AS ?qname ) .
        OPTIONAL { ?class skos:definition ?skos_definition}
        FILTER (?class NOT IN (owl:Nothing, owl:Thing))
}
```

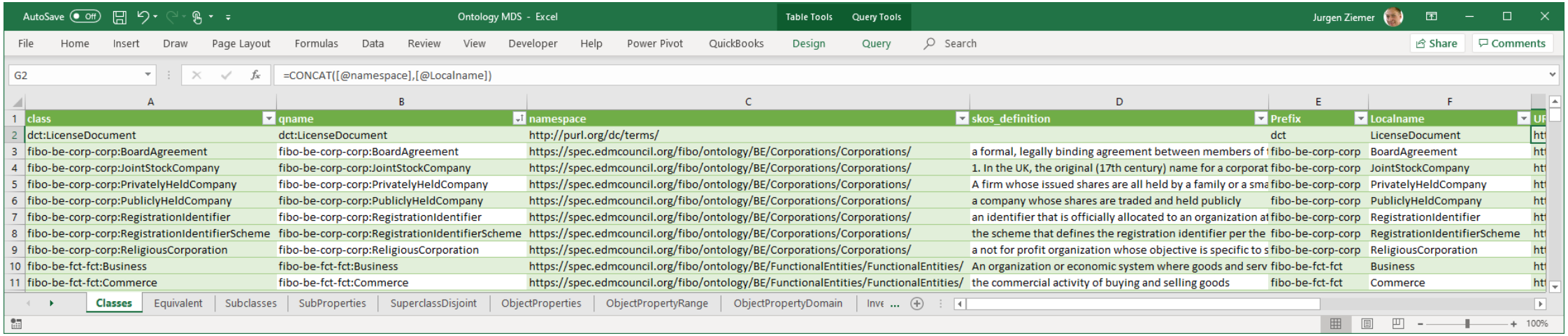
The SPARQL query selects Class, qualified name, namespace, and definition, filtering out unnamed classes.

The result set is a CSV file..



Extraction: CSV result set into Ontology MDS

The ontology metadata workbook imports the raw extract and performs simple format conversions from the raw result set.



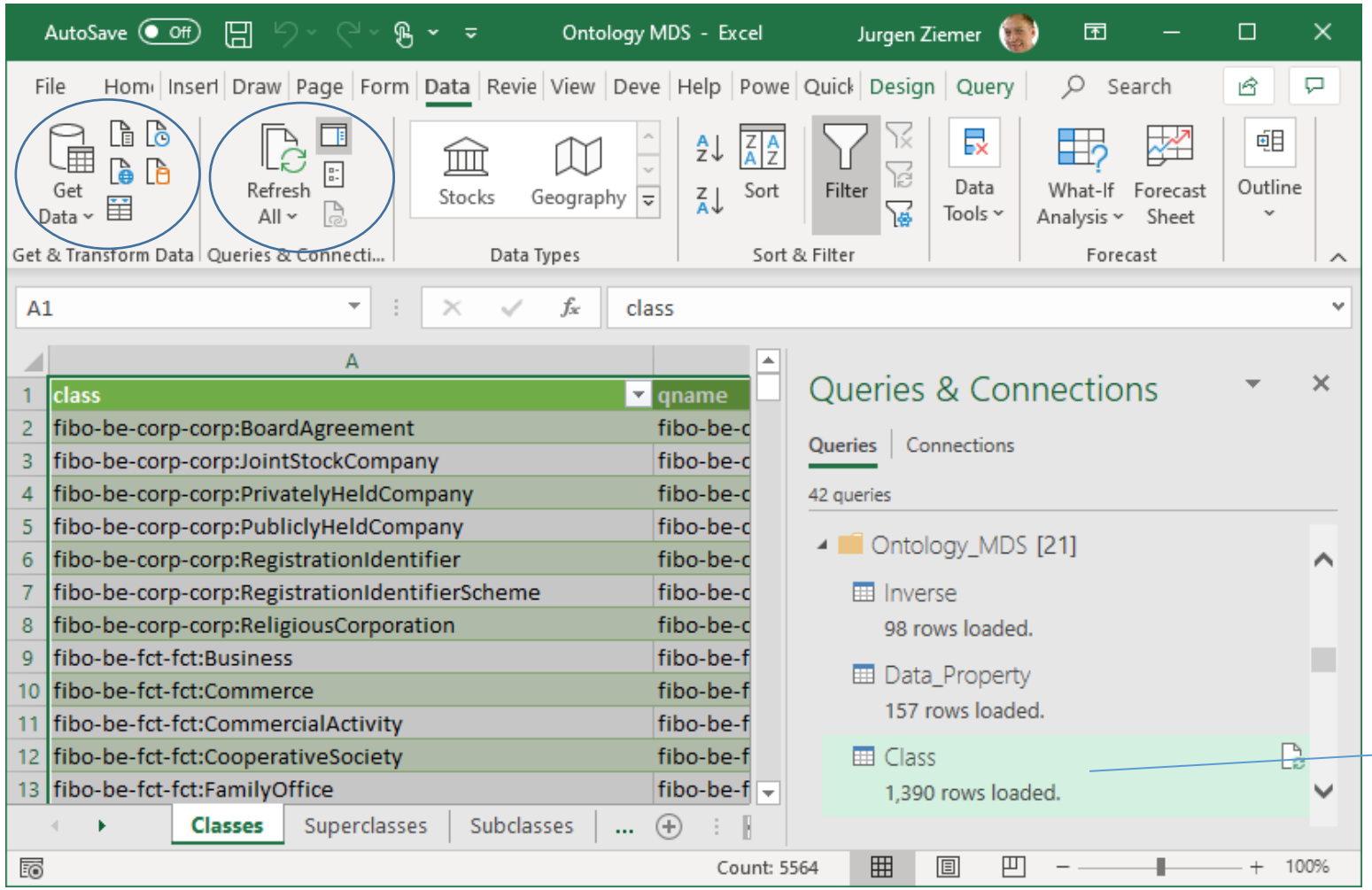
class	qname	namespace	skos_definition	Prefix	Localname	UR
dct:LicenseDocument	dct:LicenseDocument	http://purl.org/dc/terms/		dct	LicenseDocument	htt
fibo-be-corp-corp:BoardAgreement	fibo-be-corp-corp:BoardAgreement	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	a formal, legally binding agreement between members of t	fibo-be-corp-corp	BoardAgreement	htt
fibo-be-corp-corp:JointStockCompany	fibo-be-corp-corp:JointStockCompany	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	1. In the UK, the original (17th century) name for a corporat	fibo-be-corp-corp	JointStockCompany	htt
fibo-be-corp-corp:PrivatelyHeldCompany	fibo-be-corp-corp:PrivatelyHeldCompany	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	A firm whose issued shares are all held by a family or a sma	fibo-be-corp-corp	PrivatelyHeldCompany	htt
fibo-be-corp-corp:PubliclyHeldCompany	fibo-be-corp-corp:PubliclyHeldCompany	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	a company whose shares are traded and held publicly	fibo-be-corp-corp	PubliclyHeldCompany	htt
fibo-be-corp-corp:RegistrationIdentifier	fibo-be-corp-corp:RegistrationIdentifier	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	an identifier that is officially allocated to an organization at	fibo-be-corp-corp	RegistrationIdentifier	htt
fibo-be-corp-corp:RegistrationIdentifierScheme	fibo-be-corp-corp:RegistrationIdentifierScheme	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	the scheme that defines the registration identifier per the	fibo-be-corp-corp	RegistrationIdentifierScheme	htt
fibo-be-corp-corp:ReligiousCorporation	fibo-be-corp-corp:ReligiousCorporation	https://spec.edmcouncil.org/fibo/ontology/BE/Corporations/Corporations/	a not for profit organization whose objective is specific to s	fibo-be-corp-corp	ReligiousCorporation	htt
fibo-be-fct-fct:Business	fibo-be-fct-fct:Business	https://spec.edmcouncil.org/fibo/ontology/BE/FunctionalEntities/FunctionalEntities/	An organization or economic system where goods and serv	fibo-be-fct-fct	Business	htt
fibo-be-fct-fct:Commerce	fibo-be-fct-fct:Commerce	https://spec.edmcouncil.org/fibo/ontology/BE/FunctionalEntities/FunctionalEntities/	the commercial activity of buying and selling goods	fibo-be-fct-fct	Commerce	htt

We have the Class, Qualified Name, Namespace, the CODT configured main descriptive annotation property, Prefix, Localname, and FIBO URI. Other Excel tabs, ontology metadata sets for Object Properties, Domain, Range, Sub-class, and Sub-property.

Data Architect

Ontologist

Excel Power Queries extract into the MDS



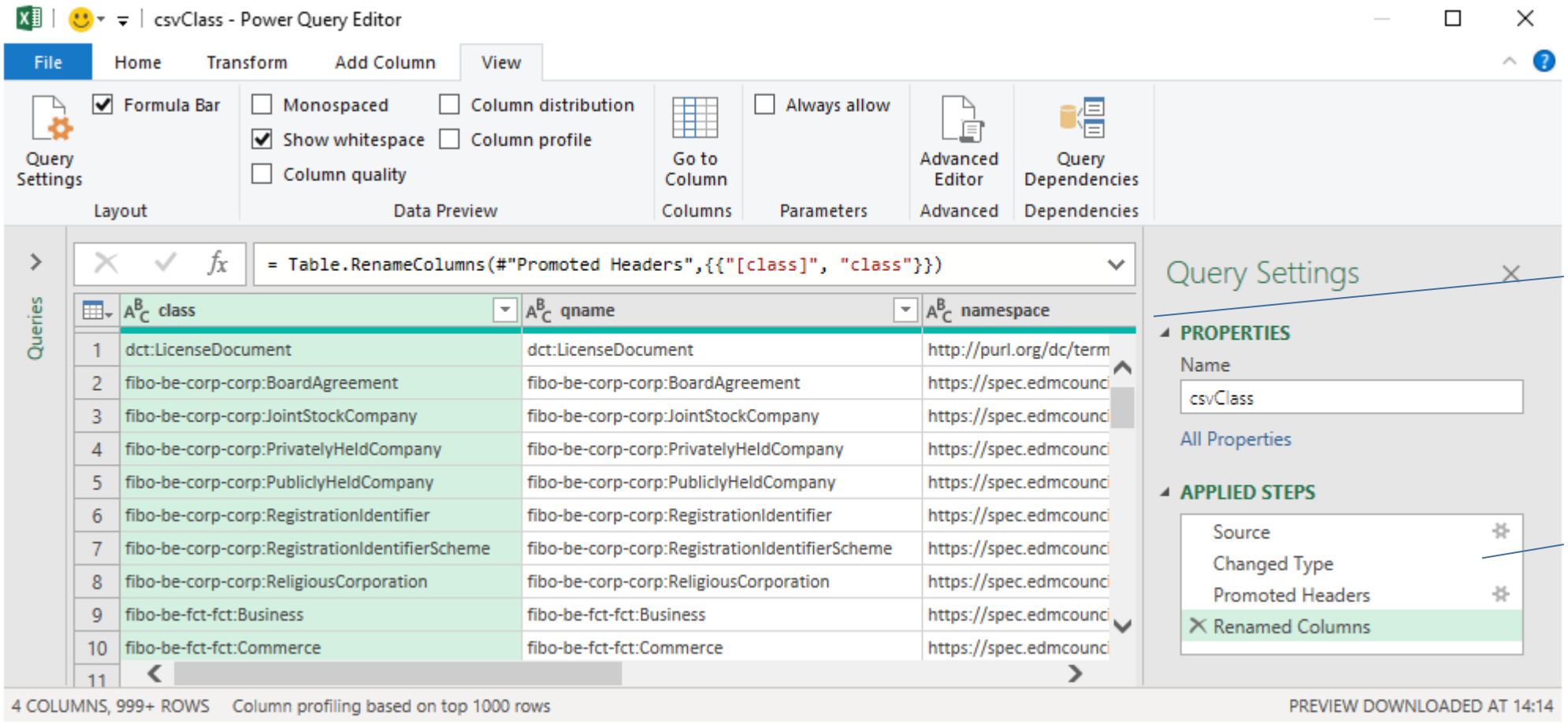
Get Data opens Excel Power Query Ribbon.

The Metadata Sets are self-populating - every worksheet has query.

We can refresh (=load) individual or all metadata sets.

The Queries & Connections pane shows the load status (any errors) and the number of records in the MDS.

Transparent transformation rules



Metadata preview

Transformation rules

Data Architect

Ontologist

4GL Query and transformation language

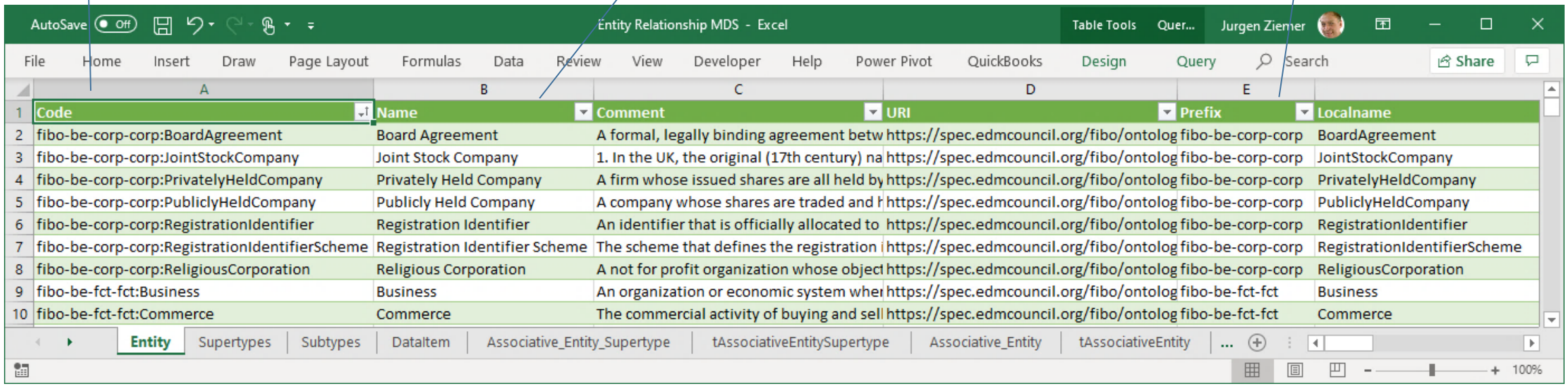
The data source is the raw SPARQL query result set.

Transformation (1): Entity-Relationship MDS

Entity Code is the Class QName

A formula transforms the Localname into an entity name per the naming convention:
`=UnCamel([@Localname])`

Prefix and Localname split the code



	A	B	C	D	E	
1	Code	Name	Comment	URI	Prefix	Localname
2	fibo-be-corp-corp:BoardAgreement	Board Agreement	A formal, legally binding agreement betw	https://spec.edmcouncil.org/fibo/ontolog	fibo-be-corp-corp	BoardAgreement
3	fibo-be-corp-corp:JointStockCompany	Joint Stock Company	1. In the UK, the original (17th century) na	https://spec.edmcouncil.org/fibo/ontolog	fibo-be-corp-corp	JointStockCompany
4	fibo-be-corp-corp:PrivatelyHeldCompany	Privately Held Company	A firm whose issued shares are all held by	https://spec.edmcouncil.org/fibo/ontolog	fibo-be-corp-corp	PrivatelyHeldCompany
5	fibo-be-corp-corp:PubliclyHeldCompany	Publicly Held Company	A company whose shares are traded and h	https://spec.edmcouncil.org/fibo/ontolog	fibo-be-corp-corp	PubliclyHeldCompany
6	fibo-be-corp-corp:RegistrationIdentifier	Registration Identifier	An identifier that is officially allocated to	https://spec.edmcouncil.org/fibo/ontolog	fibo-be-corp-corp	RegistrationIdentifier
7	fibo-be-corp-corp:RegistrationIdentifierScheme	Registration Identifier Scheme	The scheme that defines the registration i	https://spec.edmcouncil.org/fibo/ontolog	fibo-be-corp-corp	RegistrationIdentifierScheme
8	fibo-be-corp-corp:ReligiousCorporation	Religious Corporation	A not for profit organization whose object	https://spec.edmcouncil.org/fibo/ontolog	fibo-be-corp-corp	ReligiousCorporation
9	fibo-be-fct-fct:Business	Business	An organization or economic system wher	https://spec.edmcouncil.org/fibo/ontolog	fibo-be-fct-fct	Business
10	fibo-be-fct-fct:Commerce	Commerce	The commercial activity of buying and sell	https://spec.edmcouncil.org/fibo/ontolog	fibo-be-fct-fct	Commerce

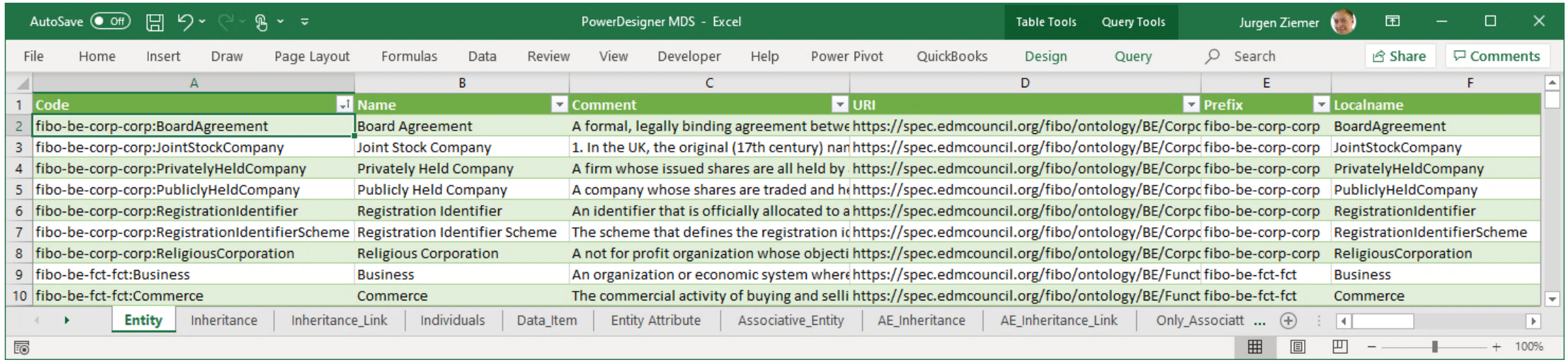
A Power Query with the Ontology MDS as its source populates metadata.


Data Architect

Ontologist

Transformation (2): Tool-specific MDS

The second transformation step converts the generic Entity-Relationship into a data modeling tool-specific metadata set. In this case, PowerDesigner can directly import this MDS.

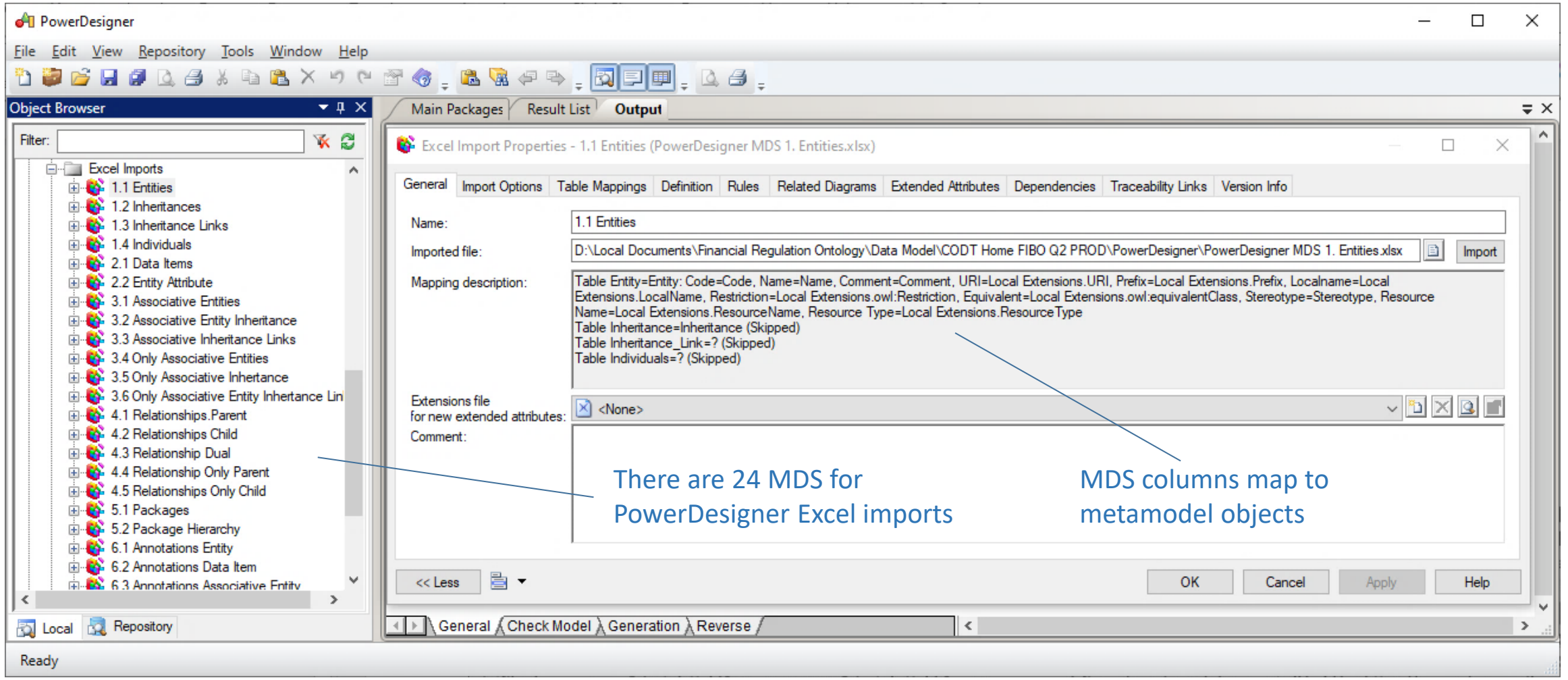


	A	B	C	D	E	F
1	Code	Name	Comment	URI	Prefix	Localname
2	fibo-be-corp-corp:BoardAgreement	Board Agreement	A formal, legally binding agreement betwe	https://spec.edmcouncil.org/fibo/ontology/BE/Corpc	fibo-be-corp-corp	BoardAgreement
3	fibo-be-corp-corp:JointStockCompany	Joint Stock Company	1. In the UK, the original (17th century) nar	https://spec.edmcouncil.org/fibo/ontology/BE/Corpc	fibo-be-corp-corp	JointStockCompany
4	fibo-be-corp-corp:PrivatelyHeldCompany	Privately Held Company	A firm whose issued shares are all held by	https://spec.edmcouncil.org/fibo/ontology/BE/Corpc	fibo-be-corp-corp	PrivatelyHeldCompany
5	fibo-be-corp-corp:PubliclyHeldCompany	Publicly Held Company	A company whose shares are traded and he	https://spec.edmcouncil.org/fibo/ontology/BE/Corpc	fibo-be-corp-corp	PubliclyHeldCompany
6	fibo-be-corp-corp:RegistrationIdentifier	Registration Identifier	An identifier that is officially allocated to a	https://spec.edmcouncil.org/fibo/ontology/BE/Corpc	fibo-be-corp-corp	RegistrationIdentifier
7	fibo-be-corp-corp:RegistrationIdentifierScheme	Registration Identifier Scheme	The scheme that defines the registration ic	https://spec.edmcouncil.org/fibo/ontology/BE/Corpc	fibo-be-corp-corp	RegistrationIdentifierScheme
8	fibo-be-corp-corp:ReligiousCorporation	Religious Corporation	A not for profit organization whose objecti	https://spec.edmcouncil.org/fibo/ontology/BE/Corpc	fibo-be-corp-corp	ReligiousCorporation
9	fibo-be-fct-fct:Business	Business	An organization or economic system where	https://spec.edmcouncil.org/fibo/ontology/BE/Funct	fibo-be-fct-fct	Business
10	fibo-be-fct-fct:Commerce	Commerce	The commercial activity of buying and selli	https://spec.edmcouncil.org/fibo/ontology/BE/Funct	fibo-be-fct-fct	Commerce

For entities, the transformation is a simple copy of the Entity-Relationship MDS.

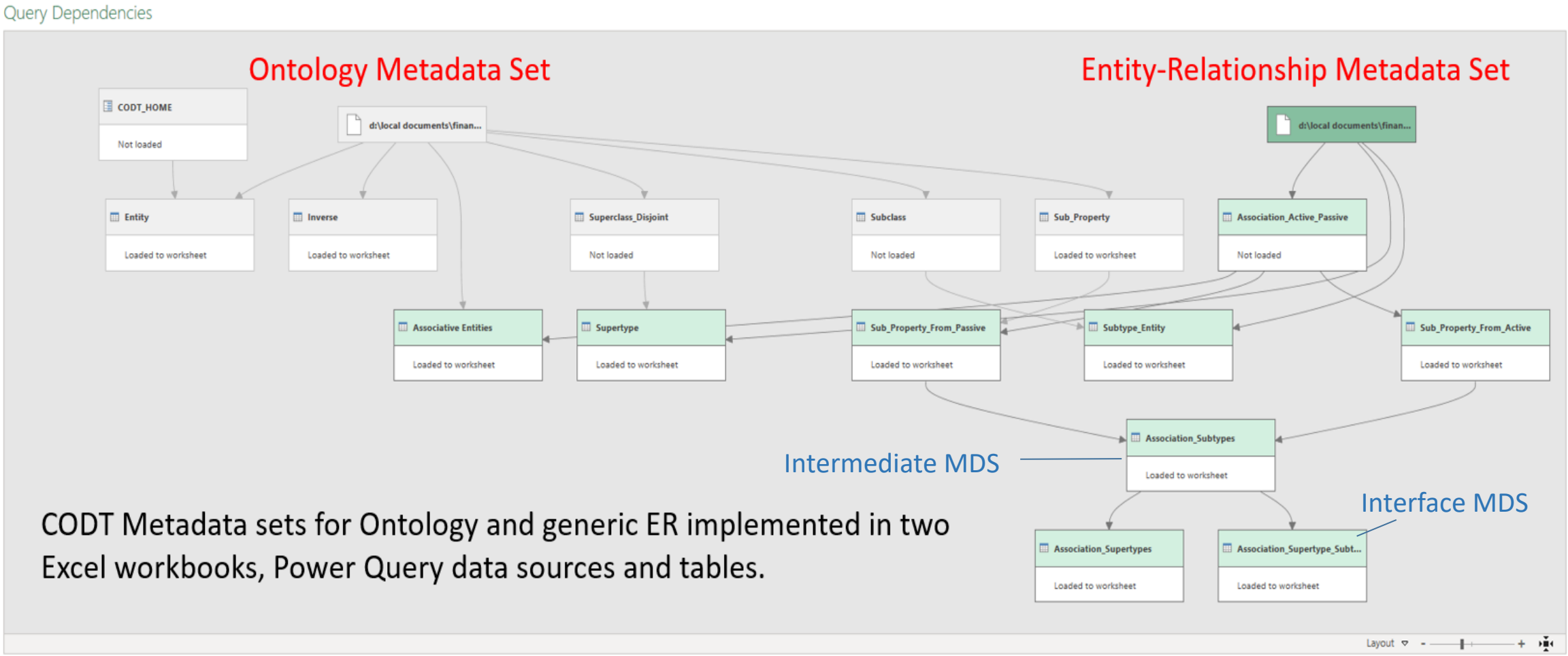
Data Architect

Load: The data modeling tool imports the MDS



Data Architect

Stacked queries and ETL master the complexity

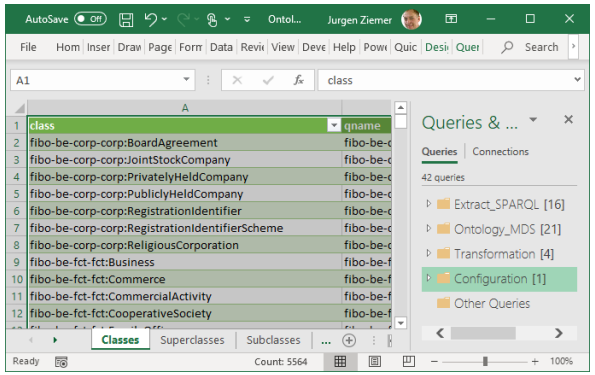


Data Architect

Ontologist

https://fib-dm.com https://codt.net

CODT Excel Power Query Statistics



The MDS folder holds queries that provide the interface for metadata sets in the next transformation step.

MS Excel	Worsheets	Power Queries
Ontology MDS	36	44
Entity Relationship MDS	80	84
PowerDesigner MDS	26	30
Total	**142**	**158**

SPARQL queries	**18**
PowerDesigner Excel imports	**25**

CODT is a white box, an open book. The Excel version software fully discloses all worksheets, queries, and VBA code.

New users and operators can generate with a single click, using default configuration settings.
As a Data Architect, you use CODT as an ETL and development platform, diagnosing results and tweaking transformation rules for your modeling and naming standards.

VBA developers may secure the data sheets, fully automate Extract and Load, or port the application to the ETL environment.

Data Architect

CODT Embodiments

The CODT license includes the right to use protected intellectual property, metadata sets, and algorithms.
For full production SEIA, you can automate interfaces, and encode the patented embodiments below.

Implementation Embodiments								
Ontology Source			Transformation System			Data Model		
Type	**Subtype**	**Extraction**	**OS**	**Application type**	**User Interface**	**Data Model Type**	**Modeling Tool**	**Tool Interface**
Ontology platform	Development Platform	SPARQL	MS Windows	MS-Excel	White Box	Conceptual	Power Designer	Import
	RDF Store, Semantic Endpoint					Logical	Sparx EA	
RDF/OWL files	Local	Parser	Unix	ETL	Guided	Physical	Other	API
	World Wide Web			Program		Object		

CODT patent Table 14, Embodiments (color added for clarity)

Create a connection to your RDF Store and run the queries in a batch.

Move CODT server-side.

Hold the metadata sets on your RDBMS. Transform with your ETL tooling rather than M.

Create a UI for operators and configuration wizards

Generate other models

Load directly using your data modeling tool or repository API

Finance key point

Reverse mode embodiment, claims 10 & 16

The CODT Metadata Sets are bi-directional.
CODT can reverse-engineer ontologies from Data Models!

Extract → **T**ransform → **L**oad → RDF OWL

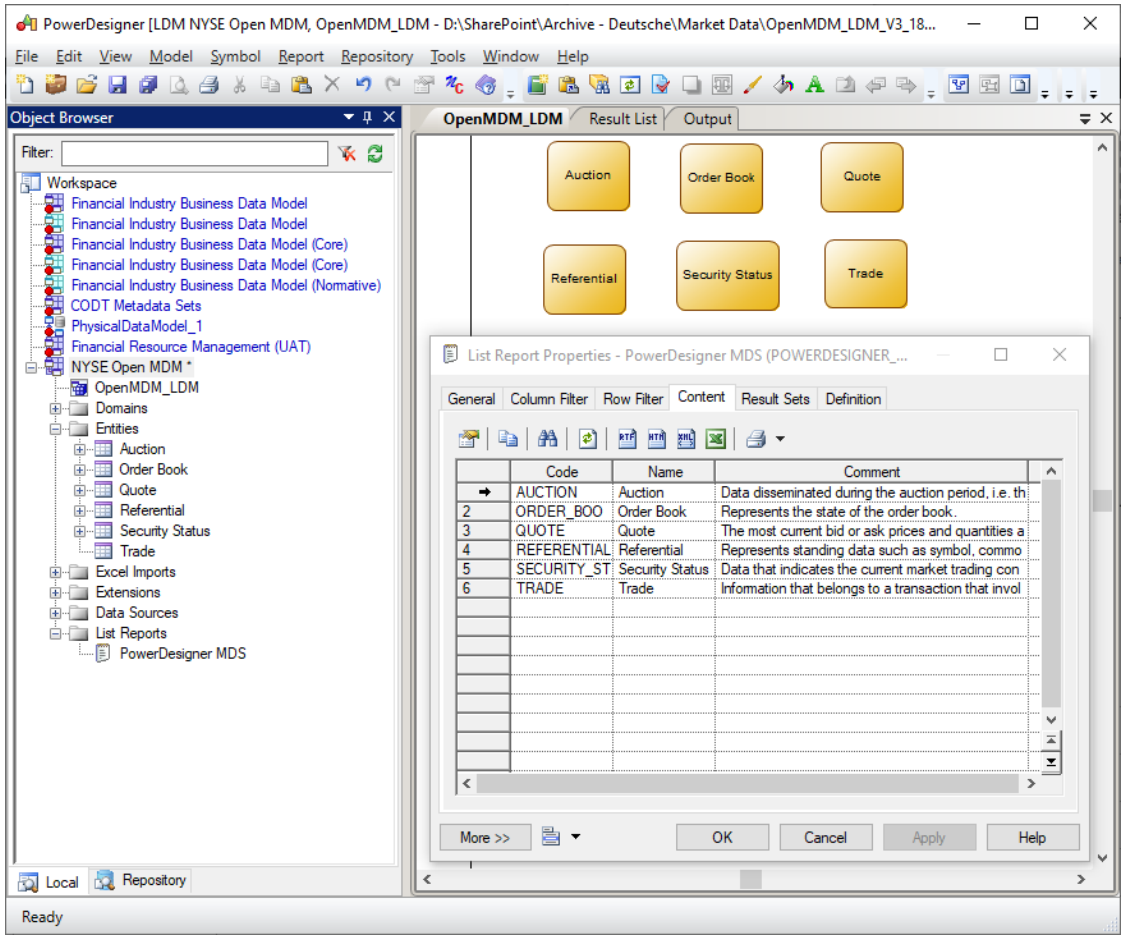
1. The Data Modeling generates List Reports matching the Data Modeling tool-specific MDS.
2. The Power Query populates the Metadata sets, performing basic data cleansing.

The Entity-Relationship Metadata Sets populate from tool-specific metadata set.

1. The Ontology MDS populates from the Entity-Relationship MDS.
2. Power Queries and formulas break the data set down into triples.
3. We load in triples into the ontology platform, using SPARQL CONSTRUCT or bulk insert.

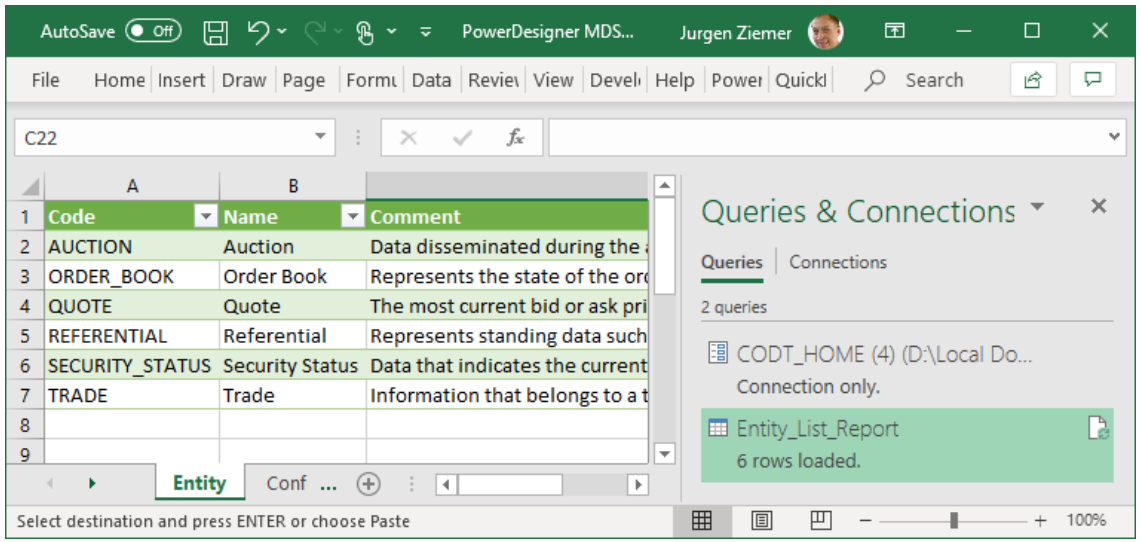
Finance key point

Reverse example: Extract from PowerDesigner



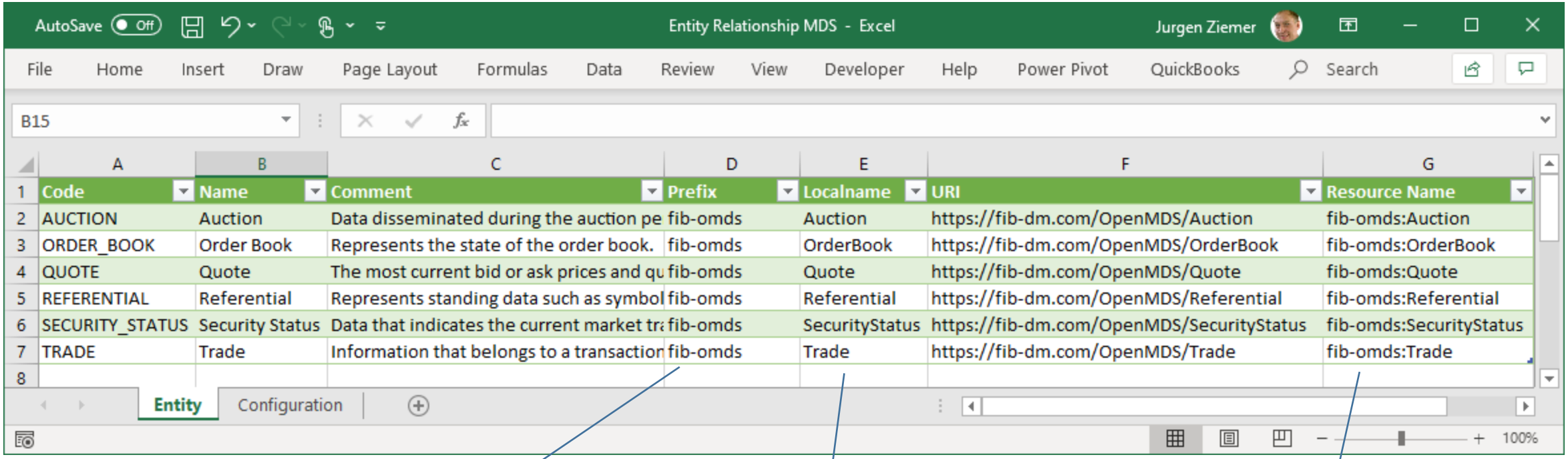
Our example is Logical Data Model created from the New York Stock Exchange's OpenMAMA messaging API.

The PowerDesigner Entity list report has Code, Name, and Comment. The PowerDesigner MDS sources the list report



Transform in the Entity-Relationship MDS

The Metadata Set populates from the PowerDesigner Entity MDS



	A	B	C	D	E	F	G
1	Code	Name	Comment	Prefix	Localname	URI	Resource Name
2	AUCTION	Auction	Data disseminated during the auction pe	fib-omds	Auction	https://fib-dm.com/OpenMDS/Auction	fib-omds:Auction
3	ORDER_BOOK	Order Book	Represents the state of the order book.	fib-omds	OrderBook	https://fib-dm.com/OpenMDS/OrderBook	fib-omds:OrderBook
4	QUOTE	Quote	The most current bid or ask prices and qu	fib-omds	Quote	https://fib-dm.com/OpenMDS/Quote	fib-omds:Quote
5	REFERENTIAL	Referential	Represents standing data such as symbol	fib-omds	Referential	https://fib-dm.com/OpenMDS/Referential	fib-omds:Referential
6	SECURITY_STATUS	Security Status	Data that indicates the current market tra	fib-omds	SecurityStatus	https://fib-dm.com/OpenMDS/SecurityStatus	fib-omds:SecurityStatus
7	TRADE	Trade	Information that belongs to a transaction	fib-omds	Trade	https://fib-dm.com/OpenMDS/Trade	fib-omds:Trade
8							

Prefix and URI are configuration settings matching the designated prefix and namespace of the ontology

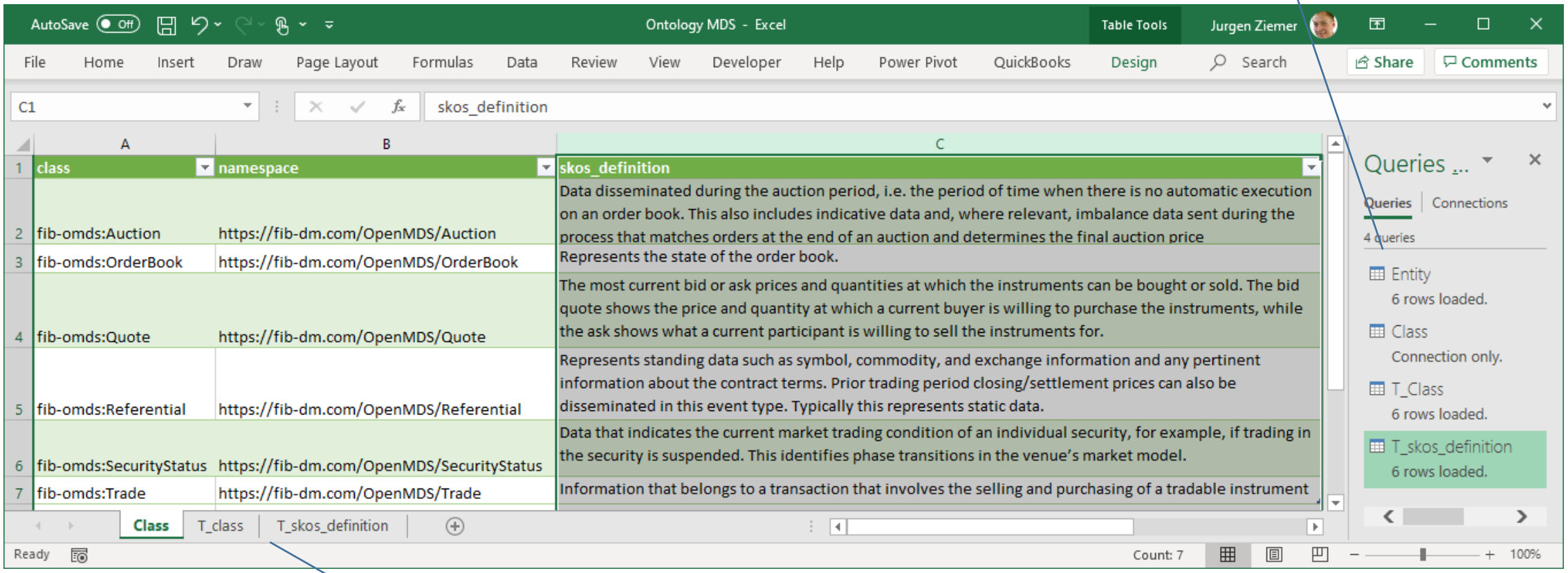
The Entity Name transforms to Localname with a Camel Code string function

The Resource Name is a concatenation of Prefix, delimiter, and Localname

Finance key point

Load into ontology

A query populates the Class metadata set from the Entity MDS



	A	B	C
1	class	namespace	skos_definition
2	fib-omds:Auction	https://fib-dm.com/OpenMDS/Auction	Data disseminated during the auction period, i.e. the period of time when there is no automatic execution on an order book. This also includes indicative data and, where relevant, imbalance data sent during the process that matches orders at the end of an auction and determines the final auction price
3	fib-omds:OrderBook	https://fib-dm.com/OpenMDS/OrderBook	Represents the state of the order book.
4	fib-omds:Quote	https://fib-dm.com/OpenMDS/Quote	The most current bid or ask prices and quantities at which the instruments can be bought or sold. The bid quote shows the price and quantity at which a current buyer is willing to purchase the instruments, while the ask shows what a current participant is willing to sell the instruments for.
5	fib-omds:Referential	https://fib-dm.com/OpenMDS/Referential	Represents standing data such as symbol, commodity, and exchange information and any pertinent information about the contract terms. Prior trading period closing/settlement prices can also be disseminated in this event type. Typically this represents static data.
6	fib-omds:SecurityStatus	https://fib-dm.com/OpenMDS/SecurityStatus	Data that indicates the current market trading condition of an individual security, for example, if trading in the security is suspended. This identifies phase transitions in the venue's market model.
7	fib-omds:Trade	https://fib-dm.com/OpenMDS/Trade	Information that belongs to a transaction that involves the selling and purchasing of a tradable instrument

Triple, "T_" metadata sets break down the class record into subject, predicate, and object.

The triple match the SPARQL SELECT joins

subject	predicate	object
fib-omds:Auction	rdf:type	owl:Class
fib-omds:OrderBook	rdf:type	owl:Class
fib-omds:Quote	rdf:type	owl:Class
fib-omds:Referential	rdf:type	owl:Class
fib-omds:SecurityStatus	rdf:type	owl:Class
fib-omds:Trade	rdf:type	owl:Class

```
# Owl Classes.rq
SELECT ?class ?qname ?namespace
?skos_definition
WHERE {
  ?class a owl:Class .

OPTIONAL {
  ?class skos:definition ?skos_definition}

}
```

subject	predicate	skos_definition
fib-omds:Auction	skos:definition	Data disseminated during the auction period, i.e. the period of time when there is no automatic execution on an order book. This also includes indicative data and, where relevant, imbalance data sent during the process that matches orders at the end of an auction and determines the final auction price
fib-omds:OrderBook	skos:definition	Represents the state of the order book.
fib-omds:Quote	skos:definition	The most current bid or ask prices and quantities at which the instruments can be bought or sold. The bid quote shows the price and quantity at which a current buyer is willing to purchase the instruments, while the ask shows what a current participant is willing to sell the instruments for.
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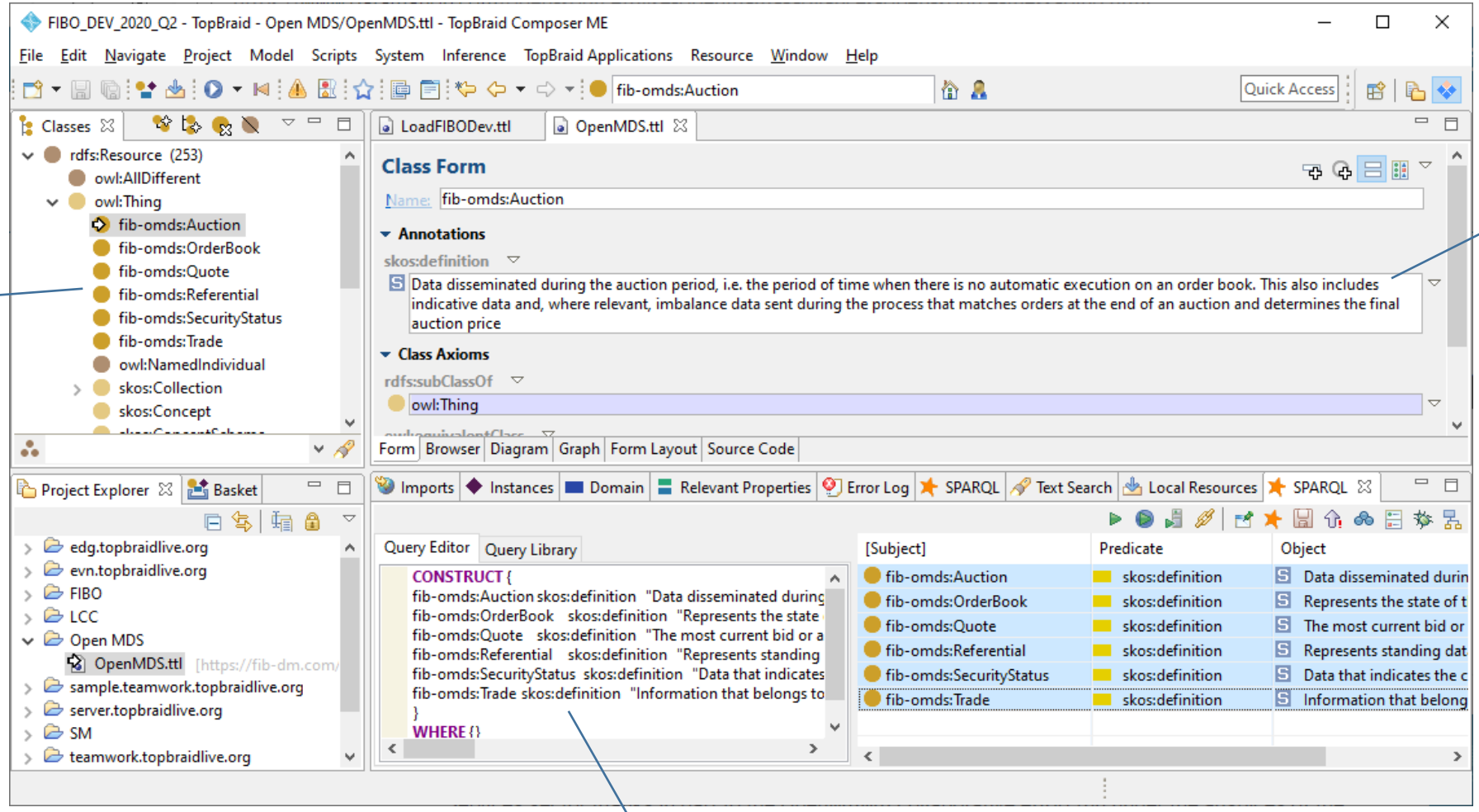
fib-omds:Trade	skos:definition	Information that belongs to a transaction that involves the selling and purchasing of a tradable instrument

Assert the triple in the Ontology Platform



Loaded Classes

Definitions

SPARQL CONSTRUCT

Ontologist

Bi-directional model transformation enables SEIA

We **generate** data models from industry/domain and our proprietary ontologies. Design conceptual models in RDF/OWL.

FIB**O**

Industry

In-house

ATLANTIC CODT

FIB-**D**M

Enterprise

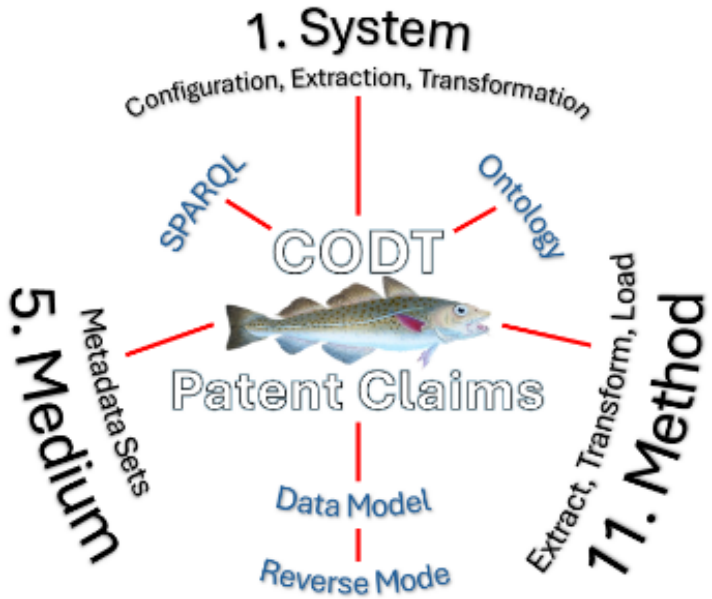
Project

We **reverse-engineer** our data models to extend the enterprise and project ontologies.

Ontologist

US Patent & Trademark Office publication

With 23 drawings, 19 tables, and 35 pages of specification, the patent fully discloses the invention.



https://fib-dm.com/patent/

Sixteen claims comprehensively cover the method, system, non-transitory storage medium, and all embodiments.

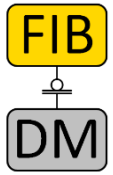
The patent protects CODT licensees and generated models, including FIB-DM.

Finance key point

License Agreement

- FIB-DM licensees can purchase CODT as an add-on.
- New users can license the FIB-DM + CODT bundle.

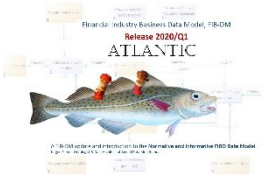
- (There is no standalone CODT license.)
- Jayzed already holds the copyright to the FIBO Data Model.



- Software deliverables are the MS-Excel CODT Workbooks.
- The site license doesn't limit the number of users.

- You are free to modify the software and to create new models for internal use.
- Just like your FIB-DM license, you must keep derived models confidential.

- Educational resources are included.



- The license covers the intellectual property.

- You are free to modify, translate, edit, and even lift off images and diagrams as long as they remain within your organization.

- You are free to leverage metadata sets, queries, formulas and algorithms disclosed in source code, and the specification for internal development.
- You must not share CODT embodiments.

Finance key point

Pricing

Licenses are priced for institution size, using your EDM Council membership tier as a segment.

Line of Business	Metric	Tier A	Tier B	Tier C
Sell Side	Consolidated Capital	$10B+	$500M-$10B	<$500M
Buy Side	Assets under Management	$200B+	$50B-$200B	<$50B
Custody	Assets under Custody	$1,000B+	$100B-$1,000B	<$100B

https://fib-dm.com/full-data-model-upgrade/

The add-on price for existing FIB-DM licensees is two-thirds of the price of your data model license, around $40,000 for a Tier B bank. The bundle price for new users is 1.5 times the standalone FIB-DM.

Central Banks, Multilateral Lenders, and other qualifying financial institutions get the Tier C price irrespective of asset size.

Finance key point

Proof of Concept (POC) - overview

The Proof of Concept is an offer to try, test, and evaluate CODT

Scope	SEIA is a significant enterprise transformation.
	FIB-DM already proves that CODT creates the superior data model.
Objective	To prove that CODT works for your FIBO extensions.
	Test the application
	Evaluate the Intellectual Property
Materials	MS-Excel Workbooks
	Education materials
	Patent (for Legal and Compliance to assess)
Training & Support	Two Days Training (online video conference)
	Three Days support (emails and calls)

Finance key point

Assemble your Proof of Concept Team

Management, Finance, or business sponsor. You are authorized to sign non-disclosure and license agreements.

Ontologist with an in-depth understanding of the FIBO and in-house ontologies. You adapt the queries to your SPARQL dialect and produce the raw ontology metadata .

Data Architect, with experience in Enterprise Reference models. You configure CODT to match your naming standards, and load metadata sets into the data modeling tool

Developer / MS-Excel Power User experienced in VBA, Power Query, and the M-Language. You can troubleshoot complex formulas and queries, and explore technical embodiments.

Finance key point

Proof of Concept – technical preparation

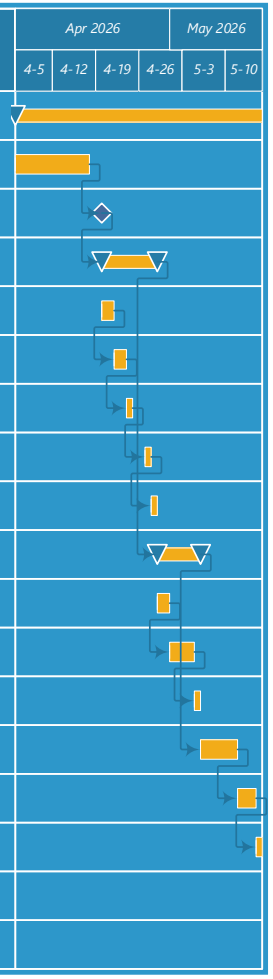
- Power PC (32 GB Ram), Windows 10 (64 bit), MS Excel, and MS PowerQuery
- Ontology Platform with SPARQL Query User interface: Topbraid Composer, Protégé, or RDF-Store/Semantic Endpoint.
- SAP PowerDesigner (PD) data modeling tool. If you have ERWin or other modeling tools, use PD trial first and import the data model. Later, you may customize CODT to import into your tool.

FIBO
Financial Industry Business Ontology

- The FIBO is loaded in your Ontology Platform. Before the POC, try the Entity Query and reproduce the raw metadata extract.
- Your proprietary ontology should be an extension of the FIBO. Make sure to include FIBO modules and to define a prefix for your namespaces.
  E.g.: `@prefix br-bank-model: <http://bankontology.com/br/Bank_model.ttl#>`
- The Entity Query must return FIBO alongside your classes with a prefix.

Proof of Concept typical six-week timeline

ID	Task Name	Start	Finish	Duration
1	**CODT POC**	**2026-04-06**	**2026-05-28**	**39d**
2	Preparation	2026-04-06	2026-04-17	10d
3	Lick-off	2026-04-20	2026-04-20	0d
4	**Hands-on training**	**2026-04-20**	**2026-04-28**	**7d**
5	Entity end-to-end	2026-04-20	2026-04-21	2d
6	Associations	2026-04-22	2026-04-23	2d
7	Data Property	2026-04-24	2026-04-24	1d
8	Packages	2026-04-27	2026-04-27	1d
9	Annotations	2026-04-28	2026-04-28	1d
10	**Transform FIBO**	**2026-04-29**	**2026-05-05**	**5d**
11	Extract Ontology Matadata	2026-04-29	2026-04-30	2d
12	Transform E/R Metadata	2026-05-01	2026-05-04	2d
13	Load into DM tool	2026-05-05	2026-05-05	1d
14	Transform Your Extensions	2026-05-06	2026-05-11	4d
15	Explore Configurations	2026-05-12	2026-05-14	3d
16	Explore embodiments	2026-05-15	2026-05-19	3d
17	Wrap-up	2026-05-20	2026-05-21	2d
18	POC Complete	2026-05-22	2026-05-22	0d



Two weeks are for introduction into CODT and transforming the FIBO as a POC.

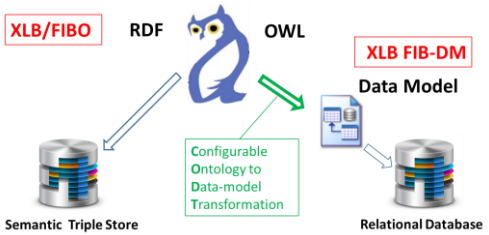
We repeat the transformation exercise, adding your proprietary ontologies.

You can explore configuration changes and other embodiments

Finance key point

Summary and conclusion

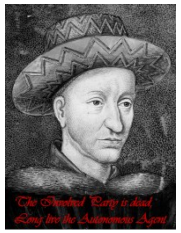
The Semantic COE must not become another silo.



Our vision is Semantic Enterprise Information Architecture (SEIA).

The FIBO is the industry standard.

FIBO
Financial Industry Business Ontology



FIB
DM

FIB-DM is the superior industry-standard Data Model.

CODT leverages the ontology for Data Management

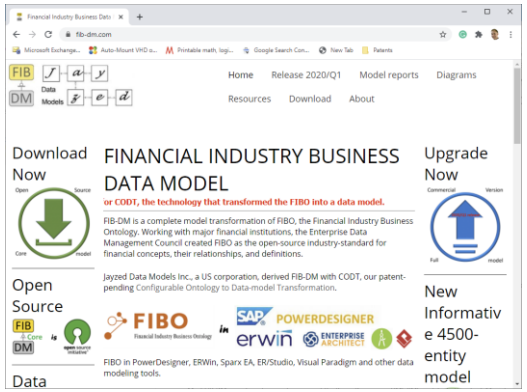
Copyrights and Patents protect your investment.

Finance key point

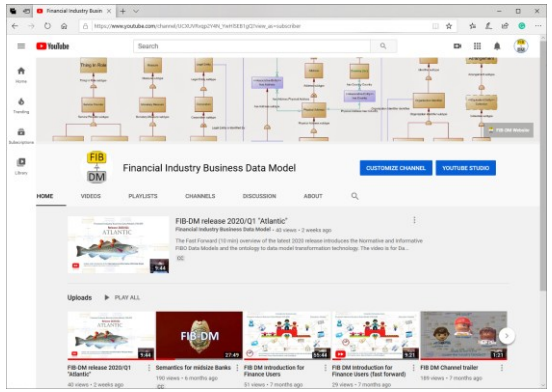
Next step: Discuss a CODT POC

Send an email to jziemer@jayzed.com, “CODT POC” to have an overview and discussion with your Q&A. You need a team and executive sponsor to sign off on NDAs.

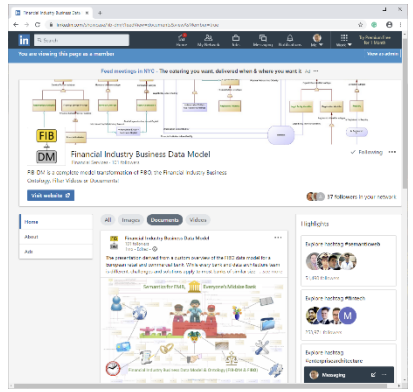
Find further resources on the FIB-DM website, the YouTube Education Channel and follow the LinkedIn showcase for news, updates, and discussion.



https://fib-dm.com/



https://www.youtube.com/c/fibdm



https://www.linkedin.com/showcase/fib-dm/

Finance key point