Model: Financial Industry Business Data Model
Package: Contracts
Diagram: Foundation Agreements - Contracts
Author: Jurgen Ziemer, © Jayzed Data Models Inc.   Date: 2019-04-14
Version: 1.0 (FIBO 2018Q4) http://fib-dm.com

Financial Industry Business Data Model & Ontology (FIB-**D**M & FIB**O**)

Contract

Service Provider

has Effective Date Date

<<Associative Entity>>
has Effective Date

has Execution Date Date

Date

<<Associative Entity>>
has Execution Date

has Contract Party Swap Party

Swap Party

Contract subtype

Unilateral Contract

Mutual Contractual Agreement

Verbal Contract

has Contract Party Account Holder

Account Holder

has Contract Party Contract Party

Contract Party

Debtor

Promissory Note

ct Party subtype

is Confirmed By Written Contract

Registered Agent

Contract Principal

Contract Counterparty

Creditor

Contract Principal subtype

Contract Counterparty subtype

<<Associative Entity>>
confirms

is Confirmed By Contract

has Contract Party Debtor

<<Associative Entity>>
has Contract Party

has Contract Party Registered Agent

has Contract Party OTC Transaction Party

Contract Originator

Policyholder

is Mandated By Contract

Contract has Contractual Element

<<Associative Entity>>
mandates

Contractual Commitment is Mandated By

has Contract Party subtype

Contractual Element

<<Associative Entity>>
has Counterparty

has Counterparty General Partner

Counterparty Policyholder

Contractual Element subtype

has Counterparty Limited Partner

has Counterparty Limited Partner

Limited Partner

General Partner

Contract Terms Set has Part

<<Associative Entity>>
has Part

Contractual Commitment has Part

Contract Terms Set

Relationship Qualifier

has Contractual Element Con

Contractual Commitment

has Governing

Qualified By Relationship Qualifier

<<Associative Entity>>
qualifies

Contract Terms

Contractual Commitment subtype

Non Binding

Debt Terms

Derivative Transaction

Liability Apportionment Terms Set

Settlement

Equity Apportionment Terms Set

has Contractual Element Debt Terms

has Contractual Element Derivative Transaction Terms

has Contractual Element Liability Apportionment Terms Set

has Contractual Element Settlement Terms

subtype

<<Associative Entity>>
has Non Binding Terms

Element Conversion Terms

Conversion Terms

Equity Conversion Terms

Swap Terms

Transferable Contract

Contract Third Party

Contract Document

defines Terms For

<<Associative Entity>>
has Terms

<<Associative Entity>>
has Third Party

is Evidence For

supersedes

FIBO is the authoritative model of Financial Industry concepts, their definitions, and relations.

The Enterprise Data Management Council (EDMC) is the Global Association of over 200 Financial Institutions (FI).
- Data Management best practices
- Development and implementation of Data Standards.

EDMC members, mainly the large FI*, developed the Financial Industry Business Ontology (FIBO), a business conceptual model.
More than 1600 classes detail financial instruments, business entities and processes.

*The EDMC membership Tier A starts at $200 billion in assets under management. Midsize banks for FIB-DM licenses, and this document are banks with assets between $50 and $200 billion.

Everyone's midsize Bank (EMB) Data architecture team

What?

- Logical & Physical Data Modeling
- Data Management & integration
- Policies, rules, and standards
- Support for programs and projects

How?

- Data Modeling Tool
- *Vendor Data Model (s)*
- *Data Management Capability Assessment Model (DCAM)*

Next?

- *Looking at FIBO*
- *Ontologies*
- *Semantic technologies*
- *Industry Standards*

Finance key point

Recognized FIBO and Industry DM expert

Jurgen Ziemer
Ontologist and Data Architect
Greater New York City Area · 365 connections

"Jurgen was a **key participant** in our work on the Financial Industry Business Ontology (FIBO) - an open ontology about financial instruments, entities and contractual obligations. He is a skilled ontologist who understands the application of linked data and semantic technology. I've had him **speak to our industry** when I ran the Enterprise Data Management Council and relied on his expertise to advance our work on semantic standards." (Michael Atkin, Managing Director at the EDM Council)
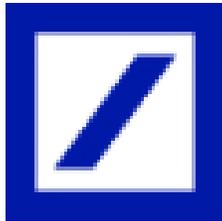
"Jurgen has taught my team and me so much about data, specifically ontologies, structures and standards. We started out as a group with no knowledge of ontologies, triple stores, RDF, OWL or industry standards like FIBO. **He trained my architects** (some of whom I'd now call ontologists) and he's been an excellent source of knowledge for all things data, especially new innovations in language and semantics. We've relied on him as our resident expert and I've loaned him out to other parts of the bank (who've also learned about semantics and ontologies). Jurgen was a great addition to our team, a great contributor to our work and I'd have him back whenever I can."
(Shannon Walker, Director at Deutsche Bank)

"Calling Jurgen a data modeler is a huge understatement. Jurgen's contribution to our work in GTS was foundational and invaluable. Part evangelist, part subject matter expert, part data modeler, and part strategist, Jurgen brings the force of his personality and vision to every assignment, which happens to be a very good thing for the enterprise. Jurgen is also very willing to contribute not only to the strategic agenda but also to the workaday agenda, creating work products which move the project forward. In the era of model-centric enterprise architecture, Jurgen can be a **game-changing** component to your strategy. Above and beyond professional qualifications, Jurgen is also a good **colleague and** a good **business partner**." (Vin Siegfried, SVP at Citi bank)

https://www.linkedin.com/in/jurgenziemer/

There is a chasm between semantic and conventional data management.
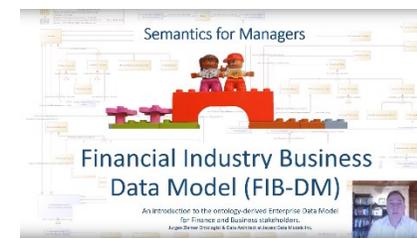
Large Financial Institutions (FI) already implemented FIBO.

The EDMC specified FIBO in Ontology Web Language (OWL).

OWL runs on specialized databases, RDF (triple) stores
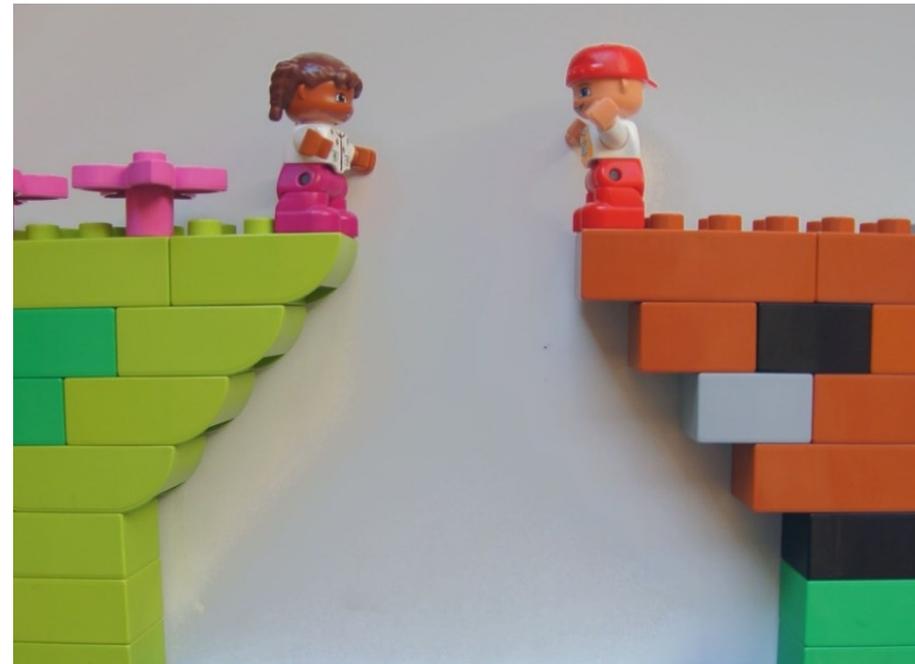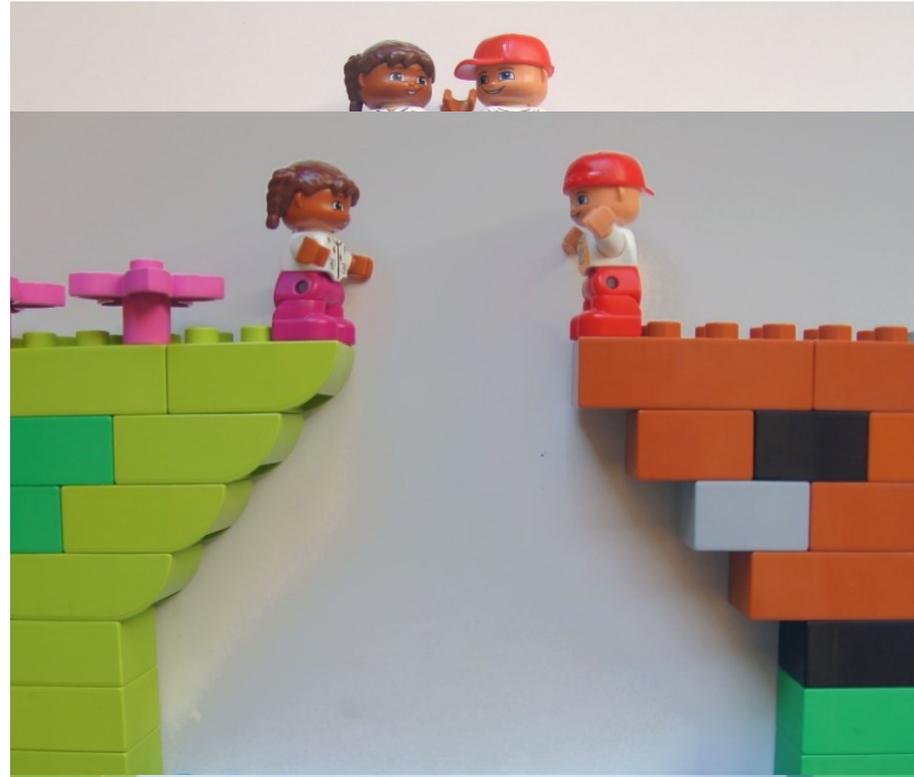

Mid-size banks face high barriers: Tooling, database systems, and human expertise.

OWL needs highly specialized ontologists.

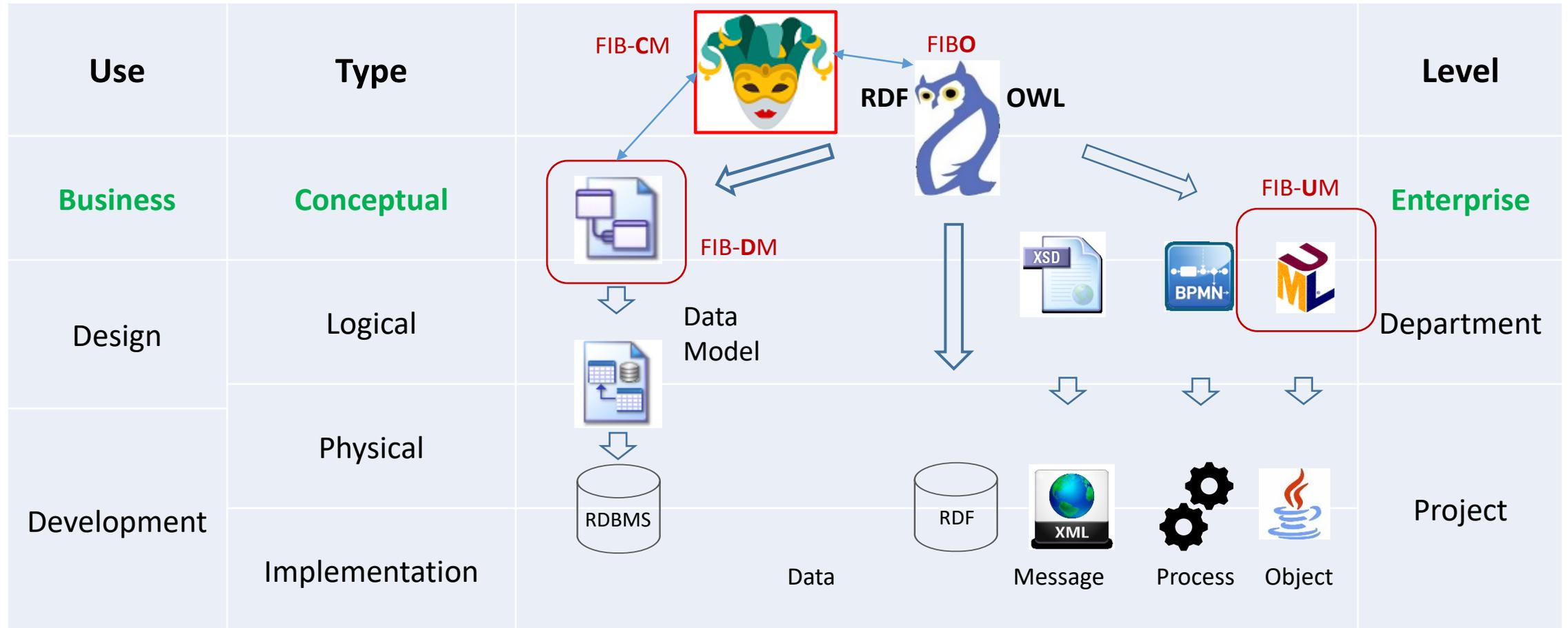IT-departments must still support and design relational databases. No midsize bank has an RDF-store in production

Finance key point

FIB-DM is the bridge across the chasm.

The Industry Standard is available in your Data Modeling tool.

Semantic Enterprise Information Architecture

Use	Type		Level
Business	**Conceptual**	FIB-**CM** → FIB**O** (RDF OWL) → FIB-**DM**	**Enterprise**
Design	Logical	Data Model · XSD · BPMN · UML	Department
Development	Physical		Project
Implementation	Implementation	RDBMS · Data · RDF · Message (XML) · Process · Object	

Semantic Model-Driven Development, common names, definitions and design patterns.

FIB-**C**M 15 concepts mnemonic icons, and abbreviations

70% of FIB-DM entities are a subtype of the concept entity

AA Autonomous Agent	**TIR** Thing in Role	**REF** Reference	**ARR** Arrangement	**LOC** Location
PRD Product	**SVC** Service	**AGR** Agreement	**DOC** Document	**COM** Commitment
CE Contractual Element	**LC** Legal Construct	**AC** Account	**TI** Time	**OCC** Occurrence
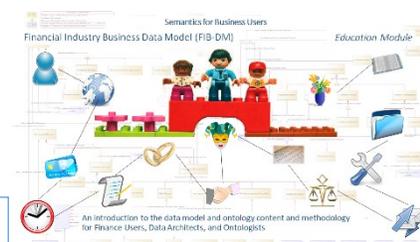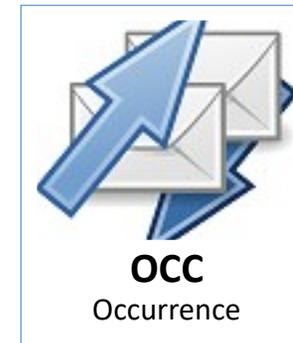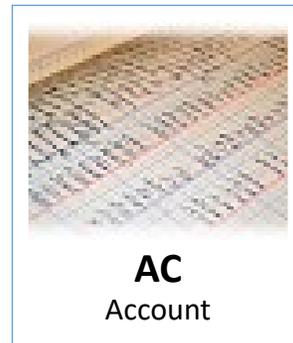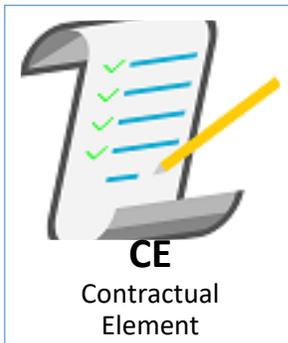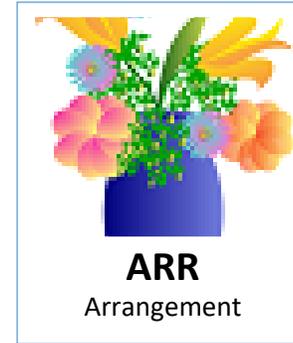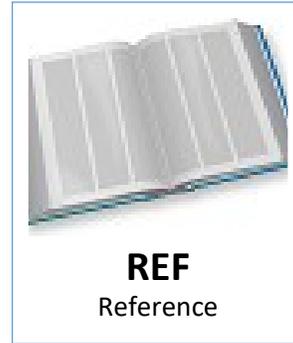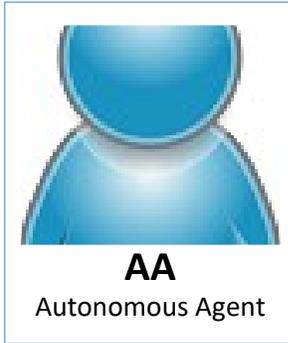
Enough to visualize design in user-friendly concept maps

The concepts and vocabulary directly derive from the data model.

Finance, Business User (MS-Visio)

Data Architect (Sparx EA)

Data Architect

The concepts and vocabulary directly correspond to the ontology.

Finance, Business User (MS-Visio)
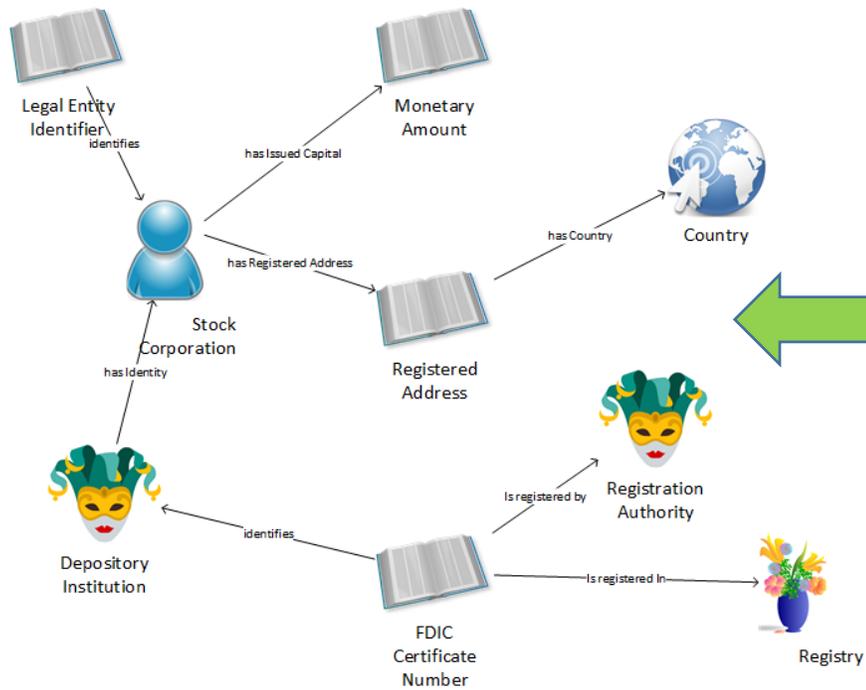
Ontologist (Protégé)
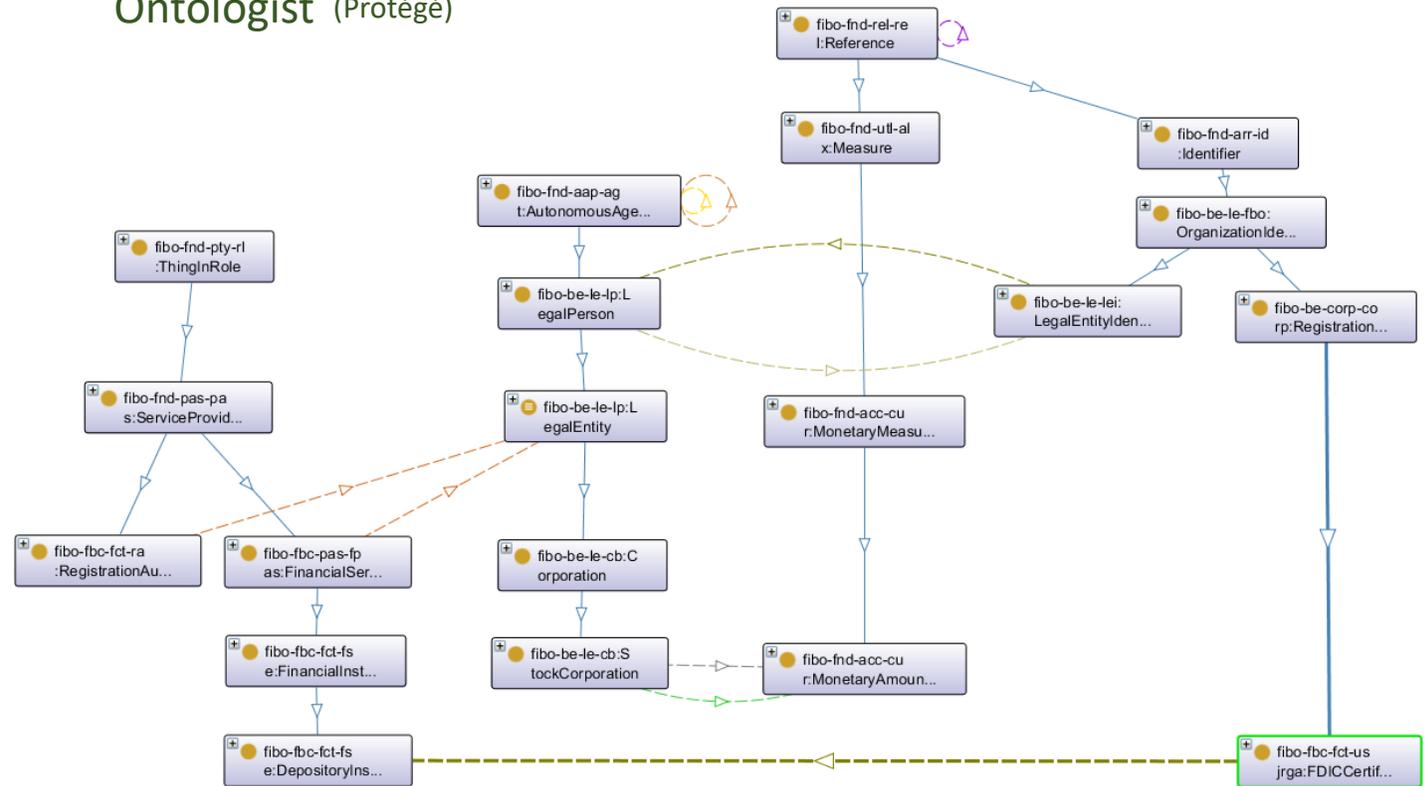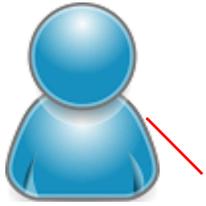
Guide to the Reference Sheets
Concept Name (Abbr.)

Icon

FIBO definition (cursive)

Explanation, examples and most important subtypes

Note: The FIB-DM website has fully scalable diagrams of the complete subtype hierarchies. Download the SVG files here:
https://fib-dm.com/financial-industry-business-concept-diagrams/

important **Subtypes**

Number subtype

Autonomous Agent

Autonomous Agent subtype

Person | Legal Person | Organization | Automated System
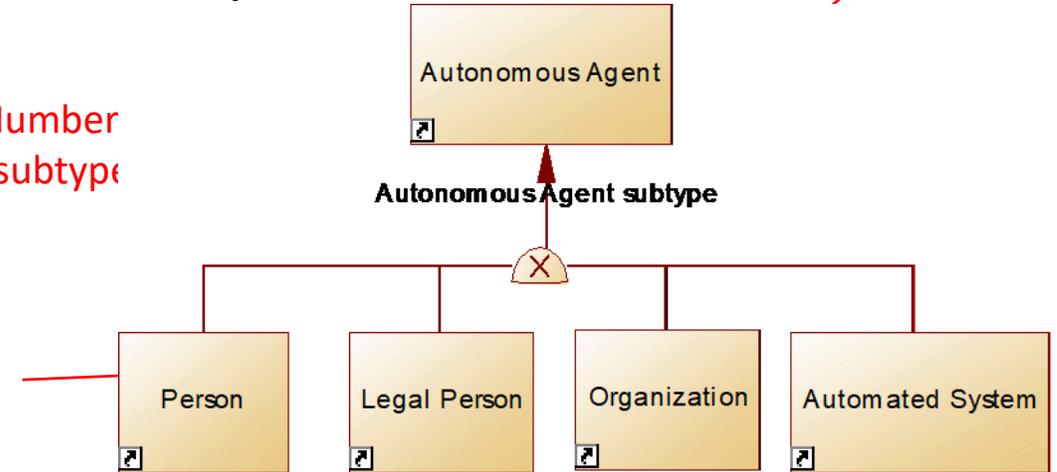
Explanation and examples of concept relationships

identifies

governs

classifies

has Identity

governs
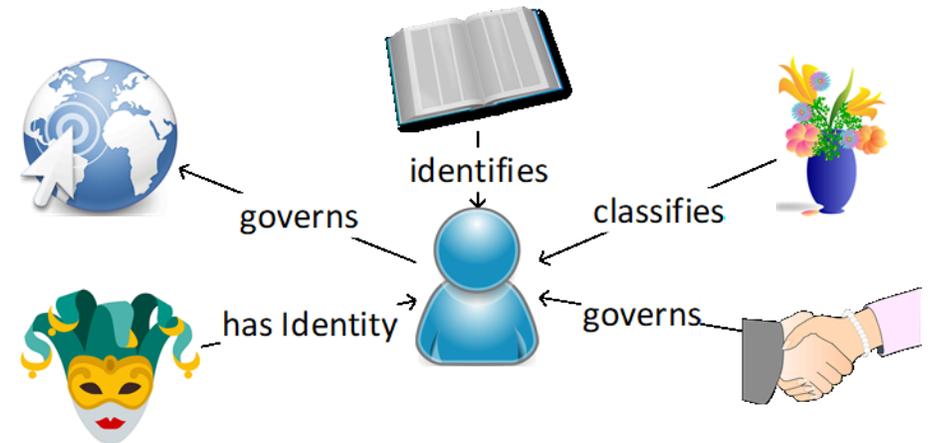
significant **Concept Relationships**

Finance key point
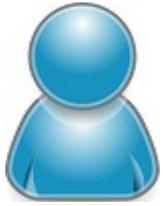
Autonomous Agent (AA)

An agent is an autonomous individual that can adapt to and interact with its environment.

- The Person is an intuitive subtype of an autonomous Agent. There can only be one record of You in an Autonomous Agent table.
- Likewise, there must be only one record of Legal Person with its subtype Legal Entity, Organization and Automated System.
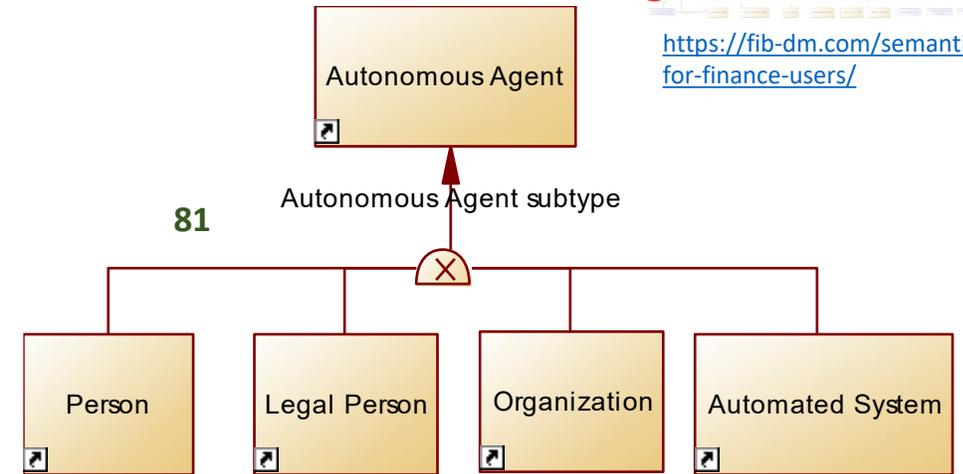
- Foremost, the Autonomous Agent is the identity for Things in Role. Your roles as an investor, borrower, guarantor, all converge to one person.
- IDs identify the AA.
- Various Arrangements classify the AA.
- Government Entities govern Locations, such as a country or municipality.
- In turn, Agreements govern certain Legal Entities and Organizations.

Finance key point
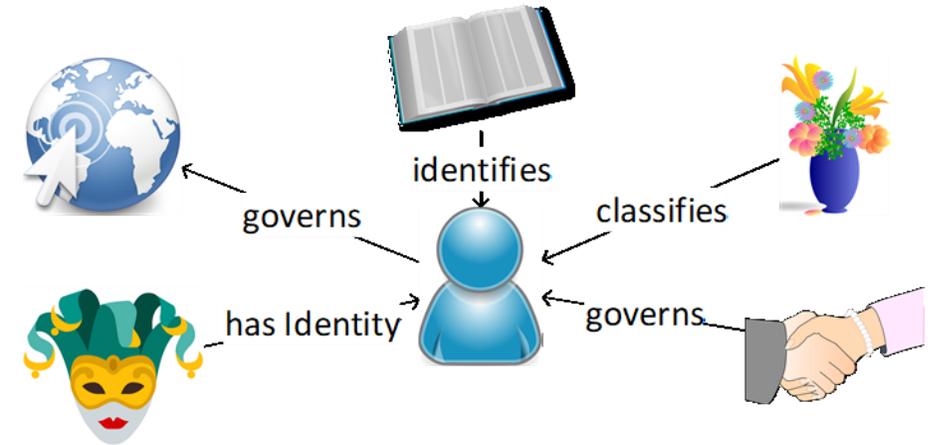
Barriers to leveraging FIBO for DA (stories)

Large New York Bank needs Schema for the new Security Master System, trying to leverage FIBO for Logical Data Model.

Challenge: Data Architects are not familiar with RDF/OWL and have no experience in Protégé or Topbraid
Manual workaround: Ontologist writes SPARQL queries to extract metadata into MS-Excel spreadsheets.

Update: **In September, the NYC bank downloaded the FIB-DM core.**

Connecticut Hedge Fund Ontology For SEC compliance needs a relational platform

Challenge: Converting operational ontology of some 200 FIBO and hedge fund specific classes
Manual workaround: Transcription of graphs into ERWin diagrams.

EMB

Challenge: Data Architects are not familiar with RDF/OWL and have no experience in Protégé or Topbraid
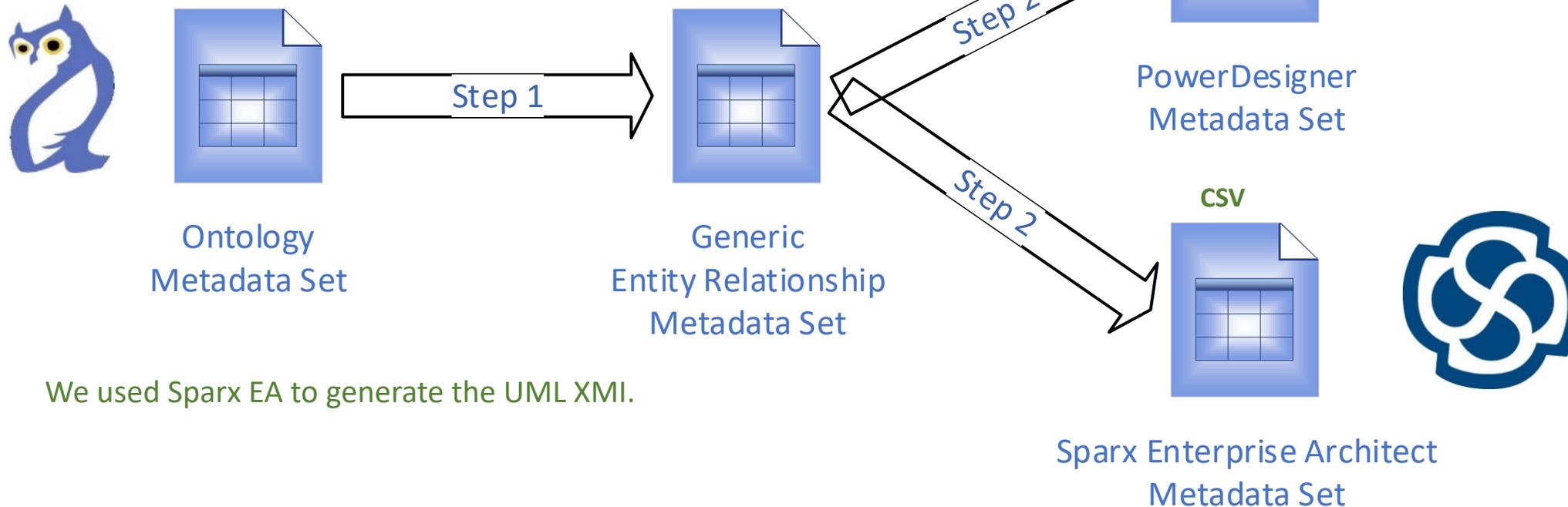Manual workaround: Manual transcription of ontology graphs into your data modeling tool. Copy & paste FIBO documentation.

Configurable Ontology to Data –Model Transformation (CODT)

Sparx imports Comma Separated Value, CSV files. To support the Class Model transformation, we add Sparx-specific metadata sets and the Step 2 transformation rules. Both tool-specific metadata sets source from the same generic EA.

XLSX

Ontology
Metadata Set

Step 1

Generic
Entity Relationship
Metadata Set

Step 2

PowerDesigner
Metadata Set

CSV

Step 2

We used Sparx EA to generate the UML XMI.

Sparx Enterprise Architect
Metadata Set

Domain ontology generates a perfect CDM

Semantics for Data Architects
Part 1: Industry standard based Semantic Enterprise Architecture, Ontology-derived Open Source model

Financial Industry Business
Data Model (FIB-DM)

An introduction to the ontology derived Enterprise Data Model.
Jurgen Ziemer Ontologist & Data Architect at Jayzed Data Models Inc.

https://fib-dm.com/semantics-
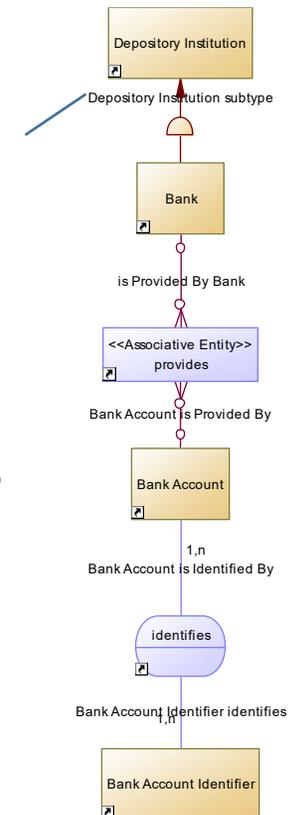for-data-architects/
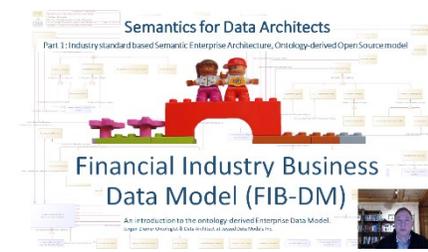
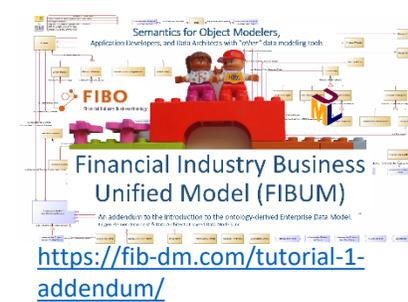Ontology graph, FIB**O**
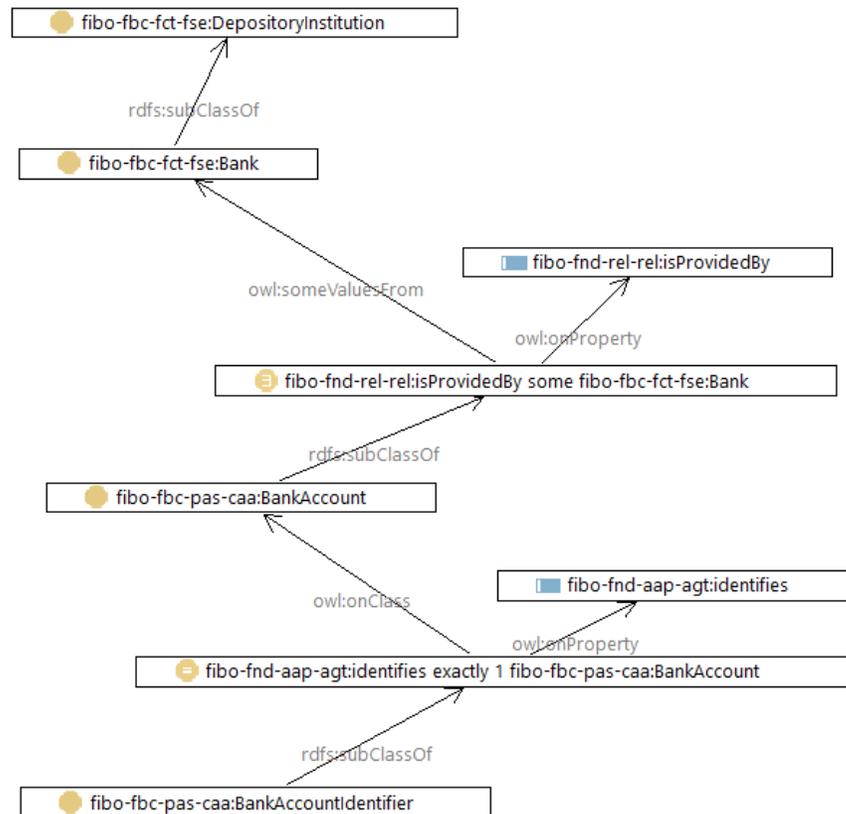
Conceptual Data Model, FIB-**D**M

This entity-relationship diagram is
the best representation of the Bank
Account, its provider, and ID.

≅

There are no missing and no superfluous
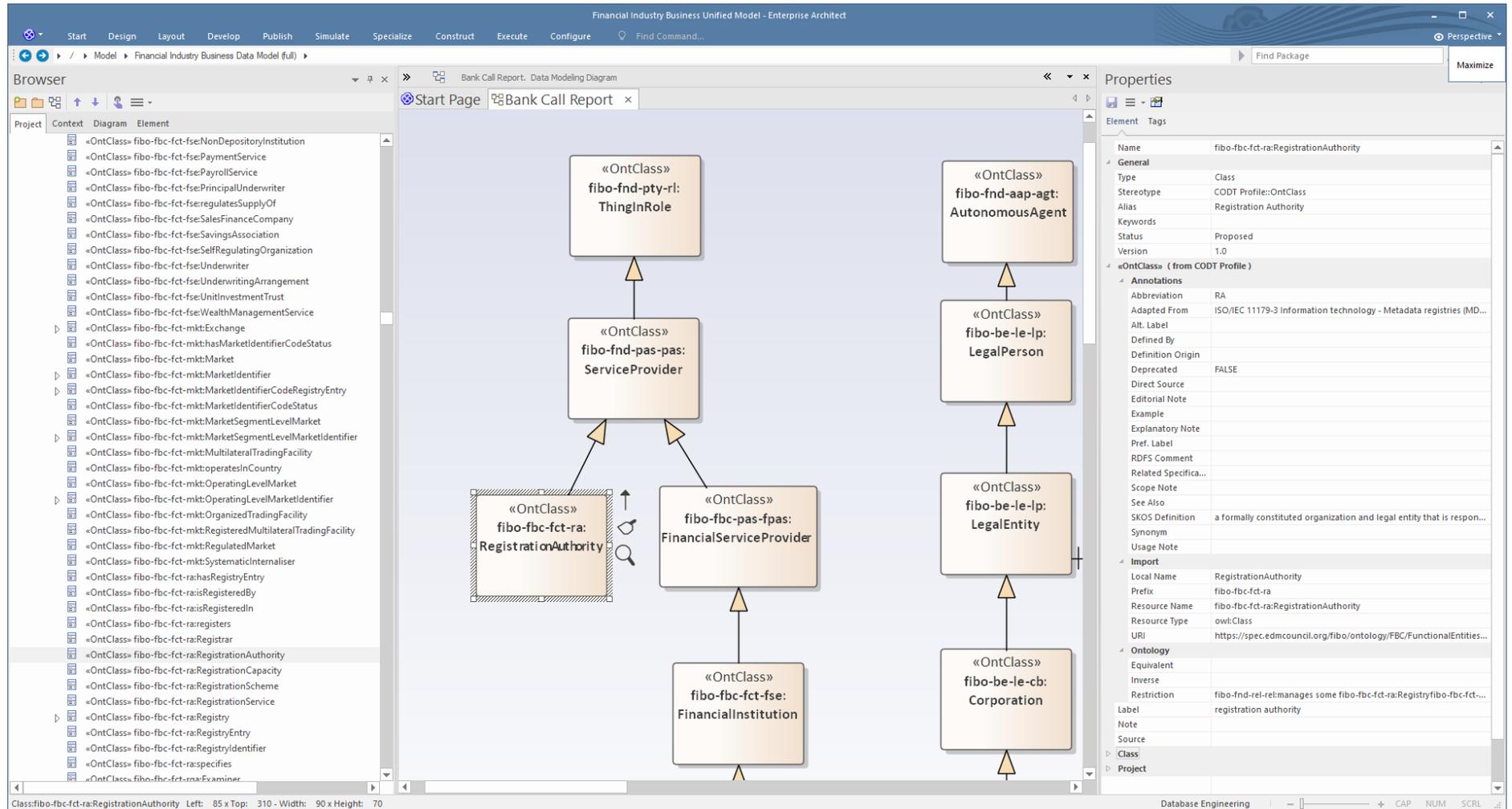entities and relationships in the design.
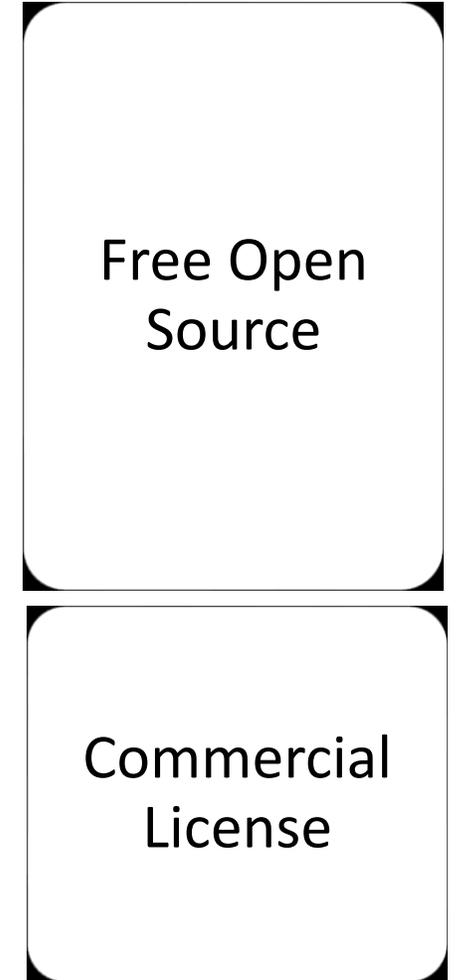
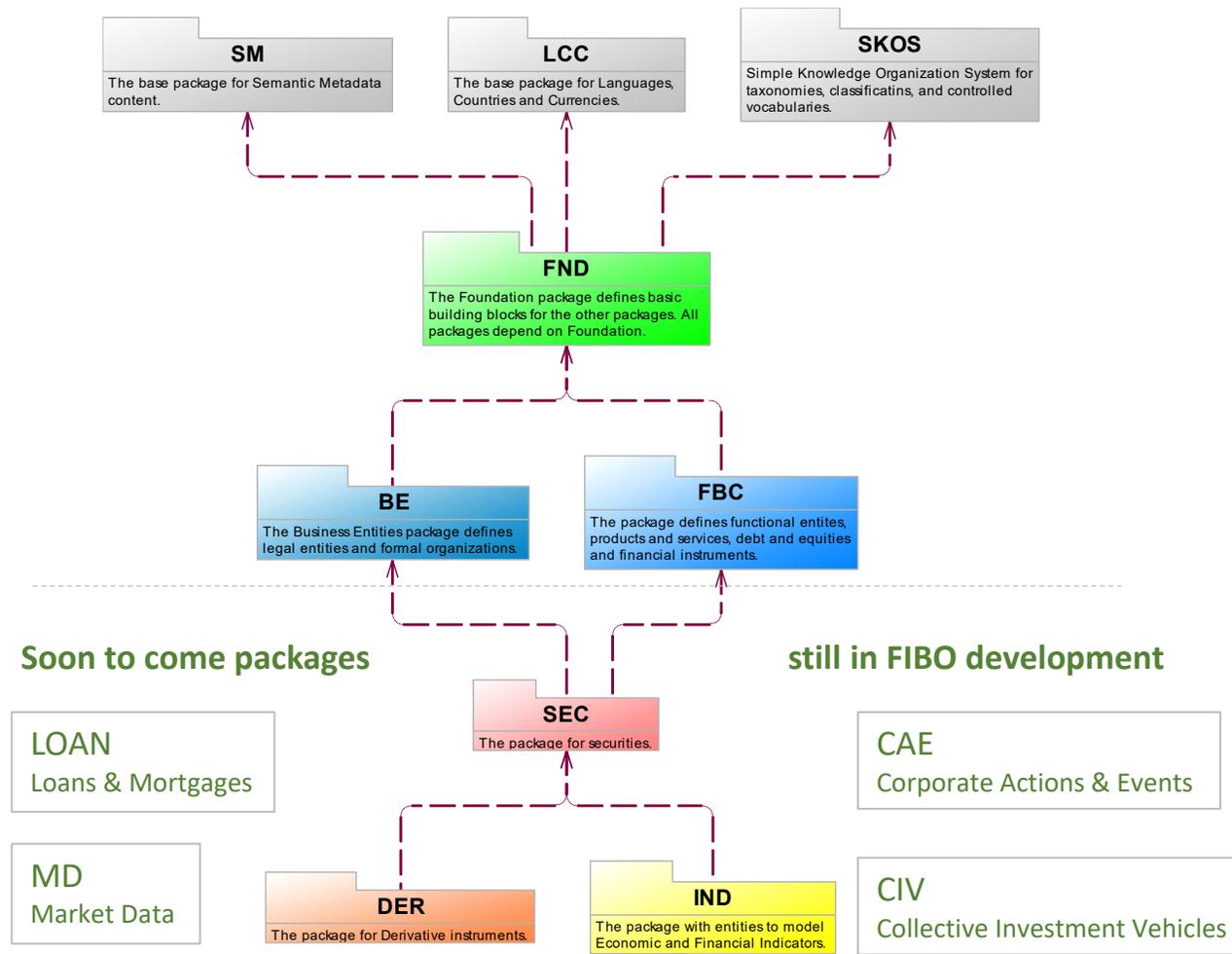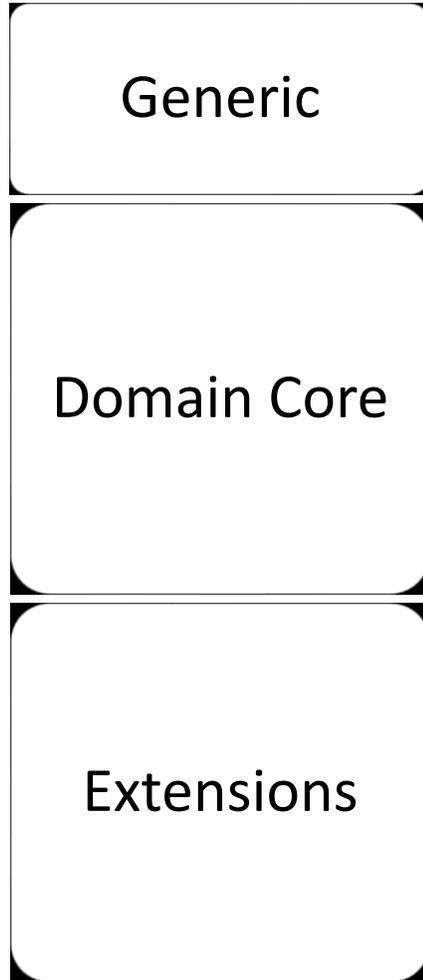# The FIBO in Sparx Enterprise Architect

The packages in the browser reflect the FIBO module structure.

Notice the property tags with complete FIBO documentation and lineage.

Data Architect
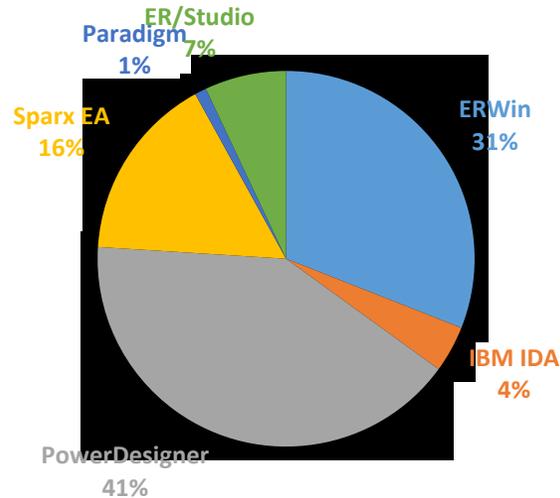
FIBO/FIB-DM modules/packages

Generic

Domain Core

Extensions

SM
The base package for Semantic Metadata content.

LCC
The base package for Languages, Countries and Currencies.

SKOS
Simple Knowledge Organization System for taxonomies, classificatins, and controlled vocabularies.

FND
The Foundation package defines basic building blocks for the other packages. All packages depend on Foundation.

BE
The Business Entities package defines legal entities and formal organizations.

FBC
The package defines functional entites, products and services, debt and equities and financial instruments.

Soon to come packages

still in FIBO development

SEC
The package for securities.

LOAN
Loans & Mortgages

CAE
Corporate Actions & Events

MD
Market Data

DER
The package for Derivative instruments.

IND
The package with entities to model Economic and Financial Indicators.

CIV
Collective Investment Vehicles

Free Open Source

Commercial License

Version, support & maintenance

FIB-DM DATA MODELING TOOLS

As of November 10, 2010:
143 Downloads (form submissions)

Most downloads are from Banks and Investment Companies on ERWin and PowerDesigner.
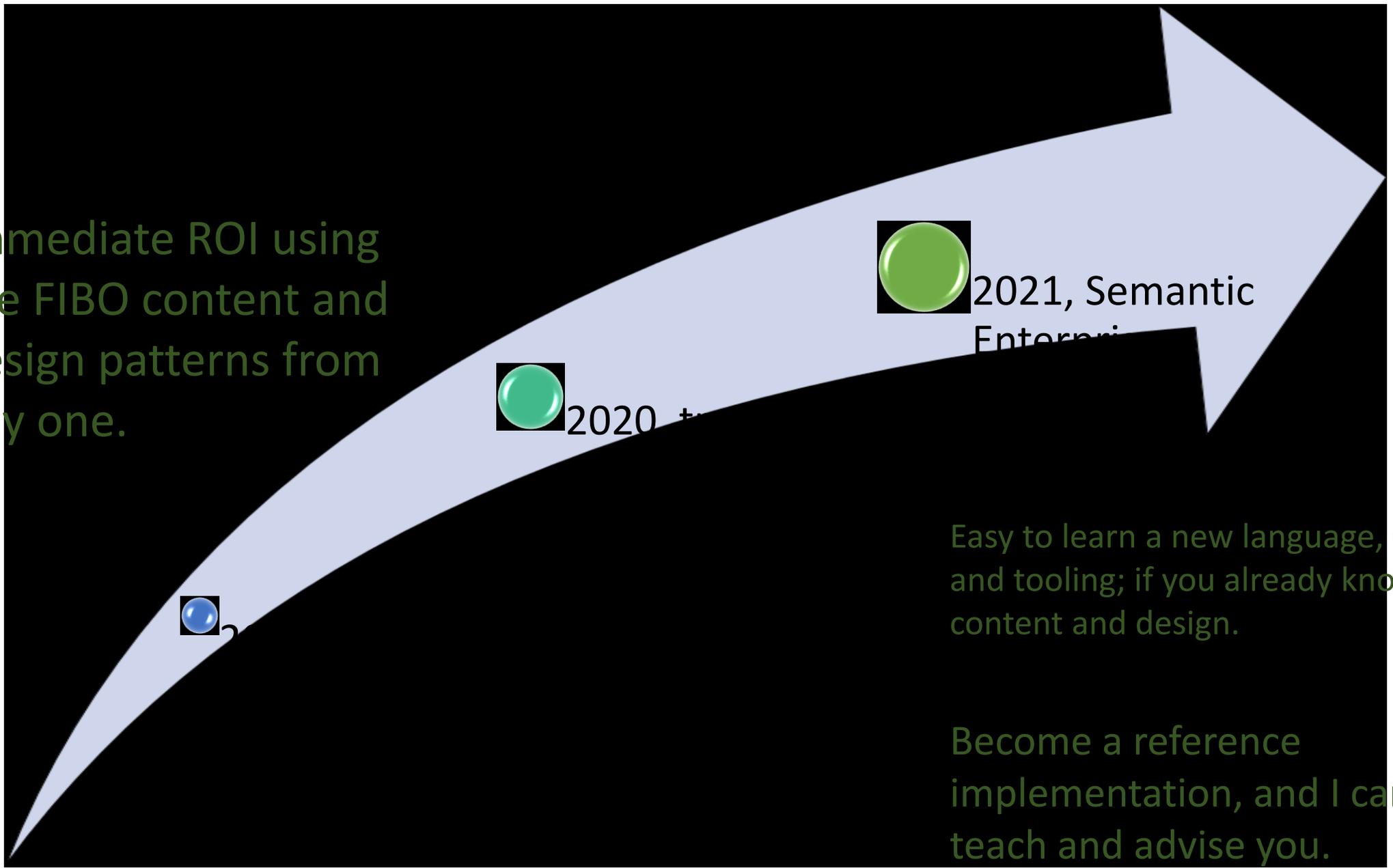
16% of FIB-DM users are on Sparx EA.

FIB-DM has a major annual release, following the EDM Council FIBO Production schedule.
There are interim model upgrades when new ontology modules release into production.
Licensees with maintenance contracts get the FIB-DM version six weeks after the FIBO release.
The current FIB-DM version is as of FIBO Q4 Production, released in January 2019.
The next major release comes in February/March 2020.

Finance key point

Pa

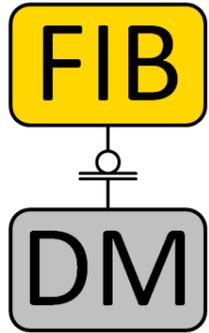Immediate ROI using the FIBO content and design patterns from day one.

2021, Semantic Enterpri...

2020, t...

Easy to learn a new language, OWL and tooling; if you already know the content and design.

Become a reference implementation, and I can teach and advise you.

Further reading and watching

The FIB-DM website
- scalable SVG diagrams of the complete subtype hierarchies
  https://fib-dm.com/financial-industry-business-concept-diagrams/
- Diagrams of the Concept Maps
  https://fib-dm.com/financial-industry-business-concept-relationships/

Follow the FIB-DM LinkedIn page for news, updates, and to read and share comments.
https://www.linkedin.com/showcase/fib-dm/

Watch FIB-DM Education videos on YouTube.
https://www.youtube.com/c/fibdm

Education path, visual guide to FIB