DataMaster

a Plug-in for importing schema and data from databases into Protégé

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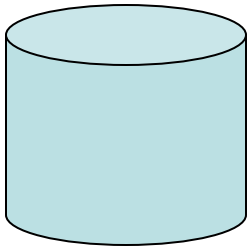
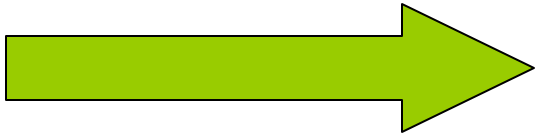
Background and Motivation

- The BioSTORM project
- Integration of multiple data sources
- Protégé plug-in available to the user community
- Use cases:
  - Ontology to Relational DB mapping
  - Import of DB content

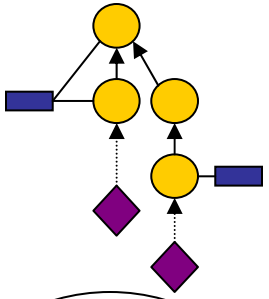
Functionality

DB





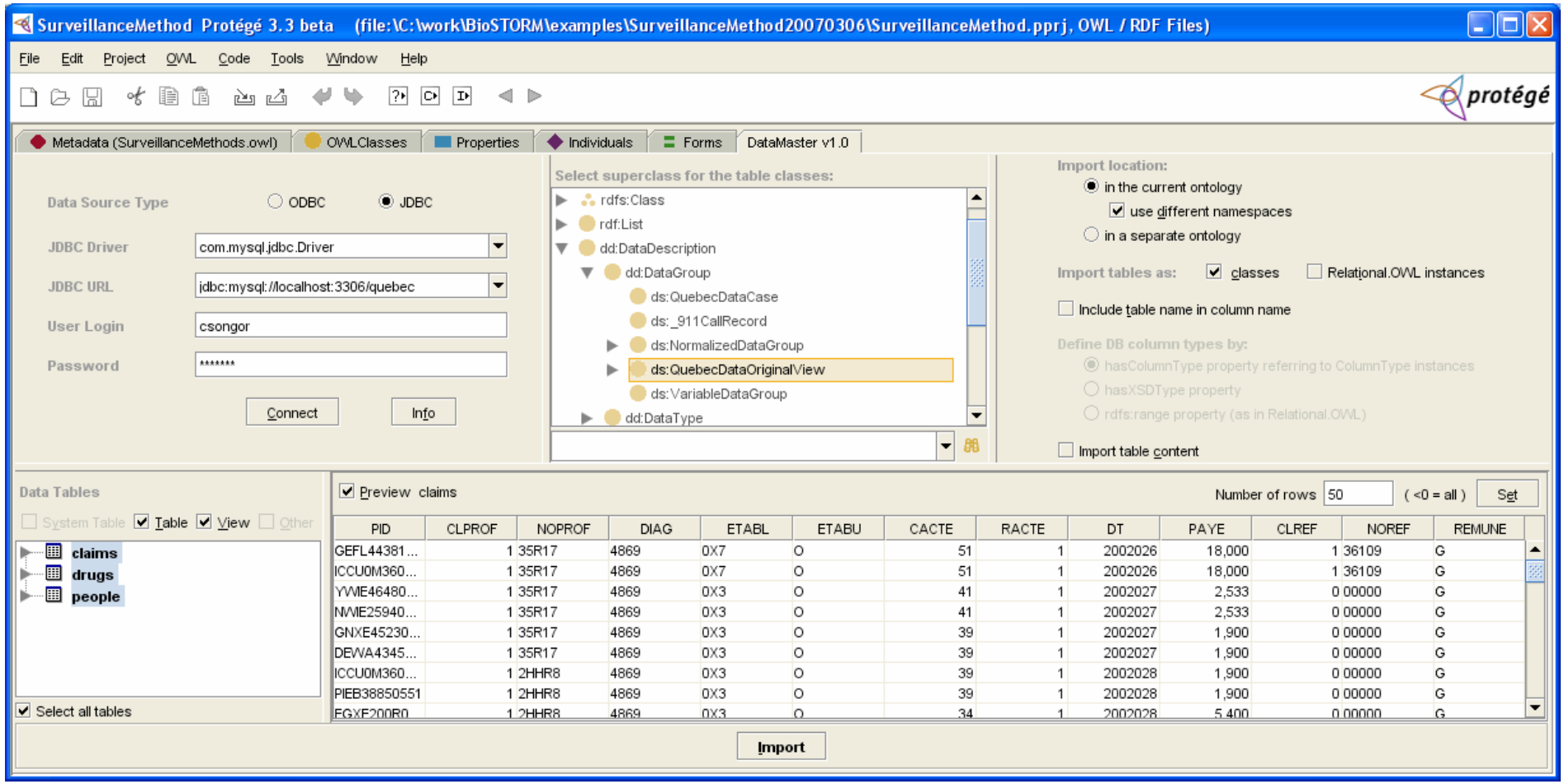
Ontology



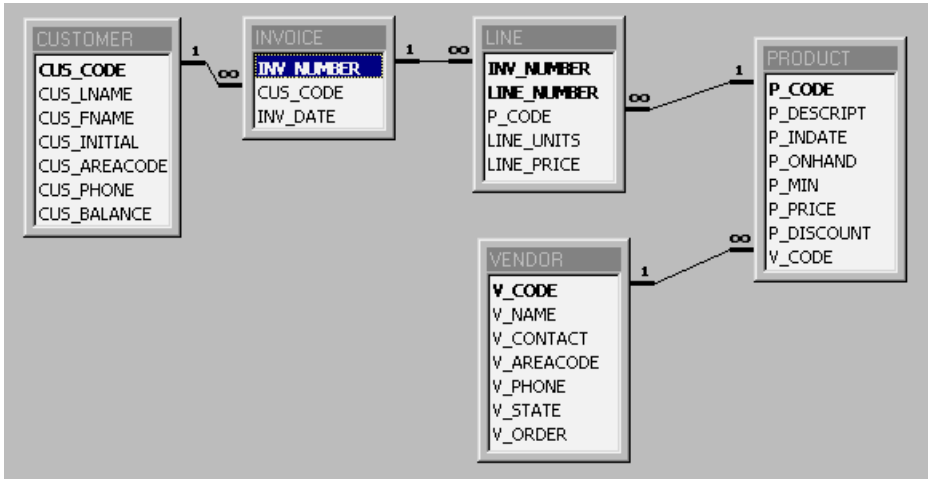
DB Schemas
DB Tables
Table Columns
Primary Keys
Foreign Keys

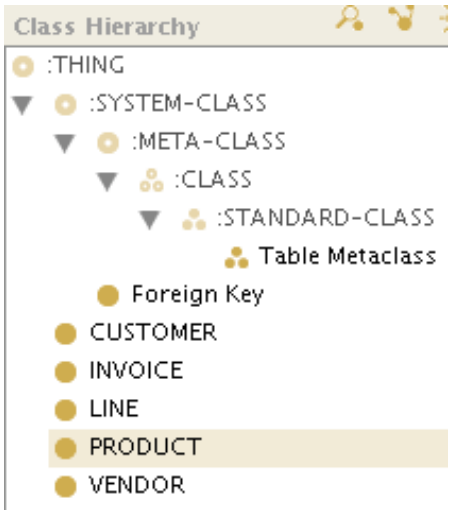
Classes
Slots/Properties
Instances

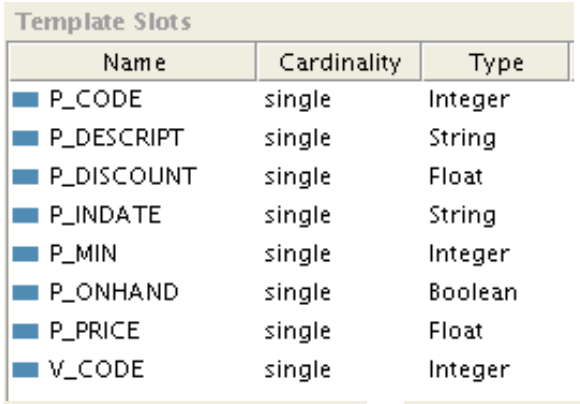
The DataMaster Plug-in

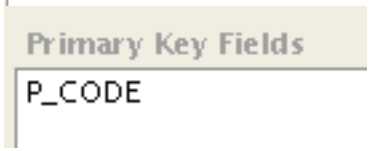


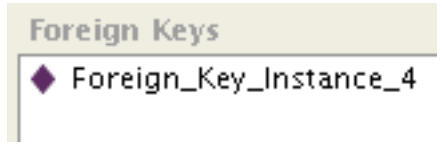
Import in Protégé Frames











Import in Protégé OWL

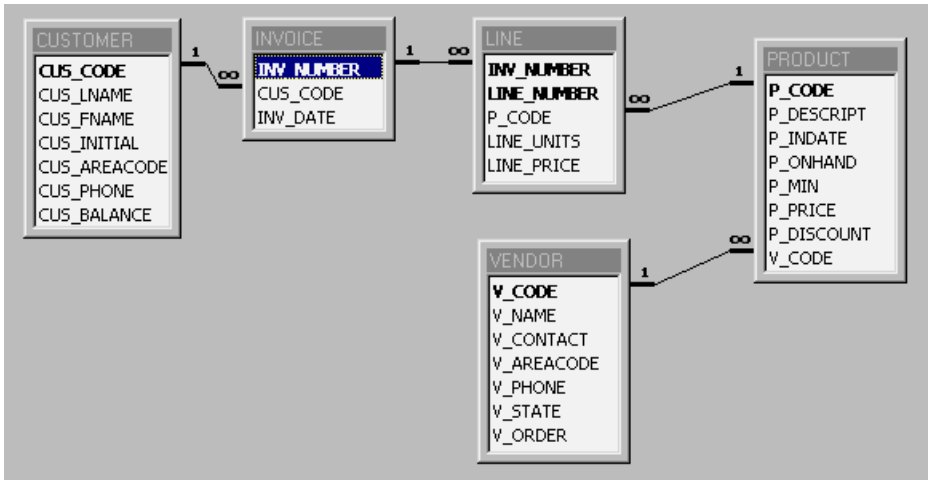
- 3 options for representing DB Tables
  - As OWL classes
  - As instances of Relational.OWL classes
  - As OWL classes, instances of Relational.OWL classes

Import in Protégé OWL

- Represent Tables as OWL Classes -

Namespace Prefixes

Prefix	Namespace
xsd	http://www.w3.org/2001/XMLSchema#
rdfs	http://www.w3.org/2000/01/rdf-schema#
rdf	http://www.w3.org/1999/02/22-rdf-syntax-ns#
owl	http://www.w3.org/2002/07/owl#
dbs	http://www.dbs.cs.uni-duesseldorf.de/RDF/relational.owl#
db	http://biostorm.stanford.edu/db_table_classes?DSN=jdbc:mysql://localhost:3306/trade#



Asserted Hierarchy

- owl:Thing
  - db:ForeignKey
  - db:CUSTOMER
  - db:INVOICE
  - db:LINE
  - db:PRODUCT
  - db:VENDOR

For Class: db:PRODUCT

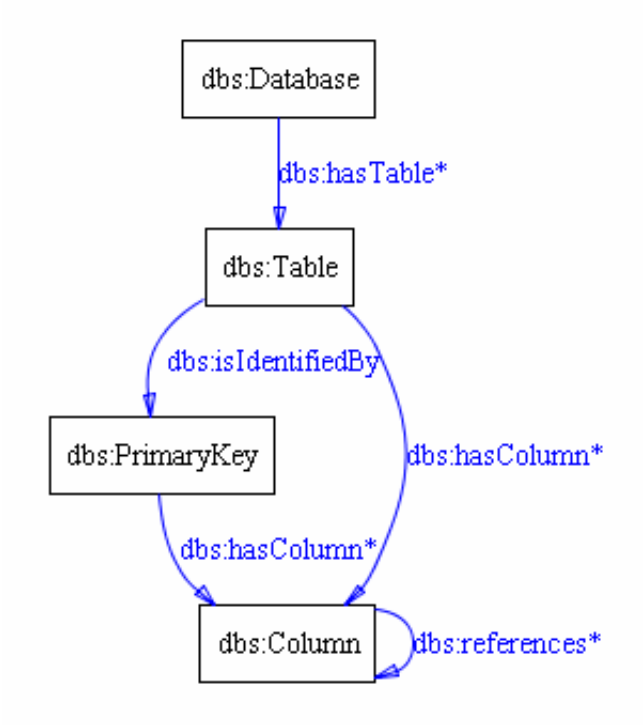
Property	
rdfs:comment	
db:hasForeignKeys	FK: PRODUC
db:hasPrimaryKeyFields	P_CODE
db:isBridgeTable	false

- db:PRODUCT.P_CODE (single int)
- db:PRODUCT.P_DESCRIPT (single string)
- db:PRODUCT.P_DISCOUNT (single float)
- db:PRODUCT.P_INDATE (single date)
- db:PRODUCT.P_MIN (single int)
- db:PRODUCT.P_ONHAND (single boolean)
- db:PRODUCT.P_PRICE (single float)
- db:PRODUCT.V_CODE (single int)

Import in Protégé OWL

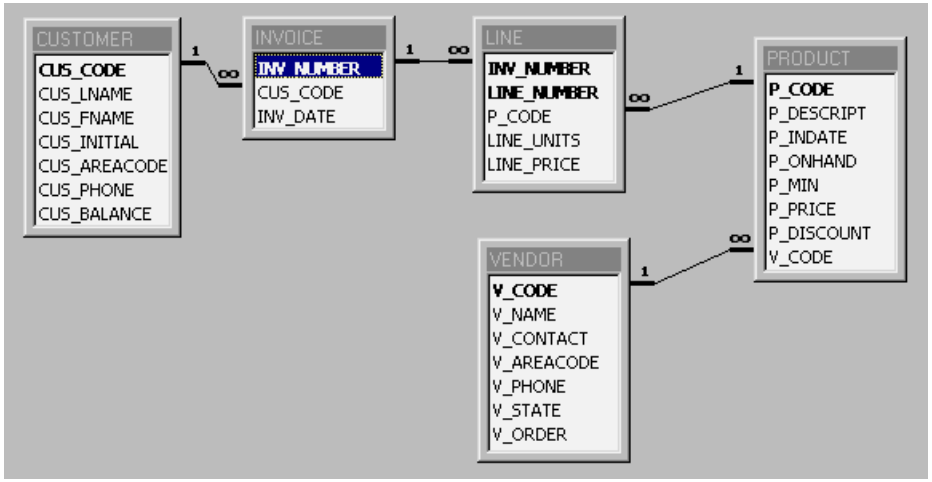
- using the Relational.OWL ontology -

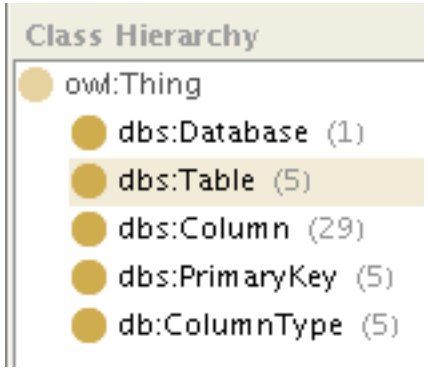
- The Relational.OWL ontology:

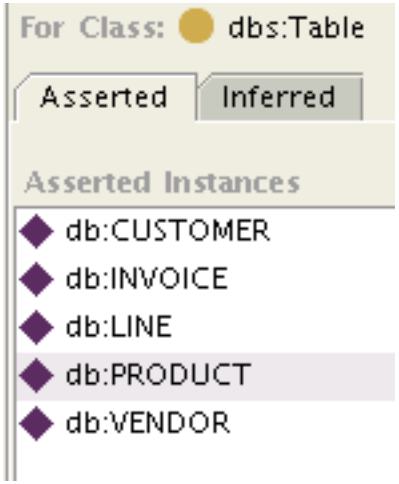


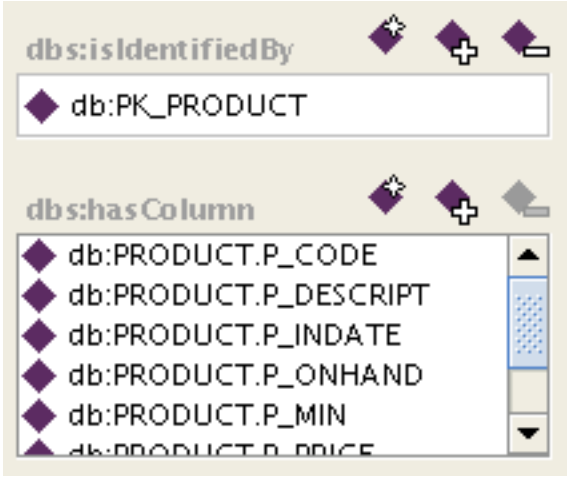
Import in Protégé OWL

- Represent Tables as instances of Relational.OWL classes -



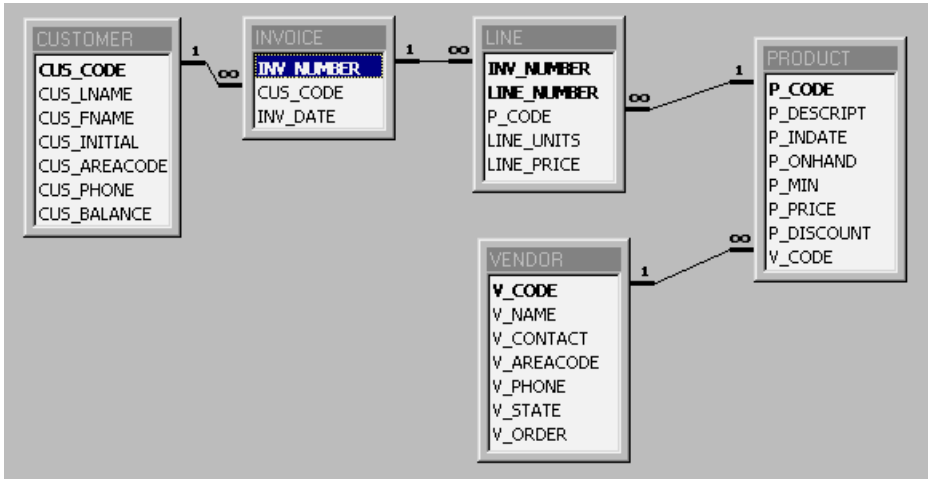


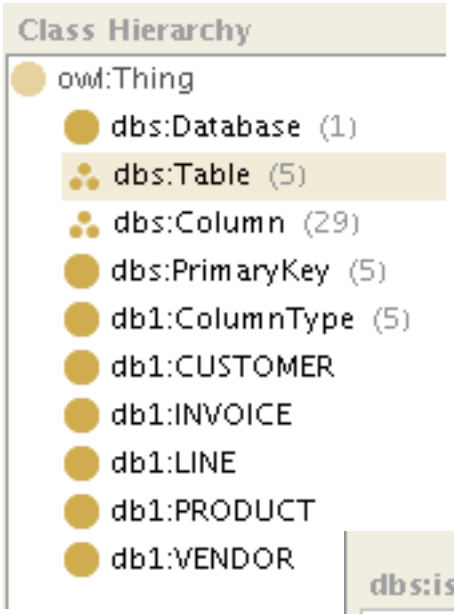


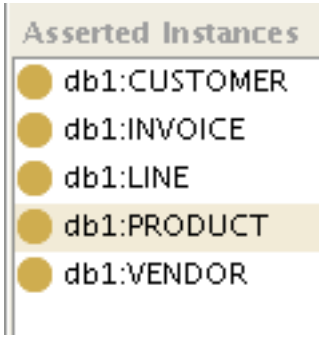


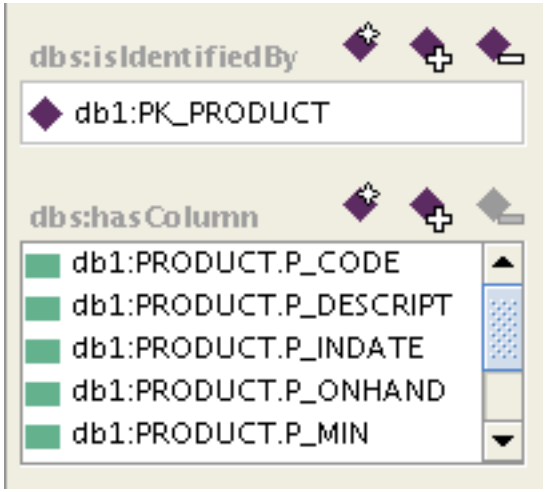
Import in Protégé OWL

- Represent Tables as classes AND Relational.OWL instances -









DB Concept Representations

Ontology / Database	Protégé Frames	Protégé OWL		
		Type I	Type II	Type II
DB Schema	-	Implicitly by namespace	*Database* class inst.	*Database* class inst.
DB Table	Class	Class	*Table* class instances	*Table* meta-class inst.
Table Column	Template slots	Datatype Properties	*Column* class inst.	Inst. *Column* meta-prop.
Primary Key	*Primary Key Fields* slot	-	*PrimaryKey* class inst.	*PrimaryKey* class inst.
Foreign Key	*Foreign Key* instances	*ForeignKey* instances	*references* property	*references* property

Conclusions

- DataMaster: A plug-in available as part of the Protégé distribution
- Works with Protégé Frames and Protégé OWL
- Imports schema (and data) from DB
- Multiple import options
- Intuitive user interface