semiodesk
EVERYTHING CONNECTS.

Improving Software Engineering with Ontologies

modom.io in the Field

by Moritz Eberl

Our Client

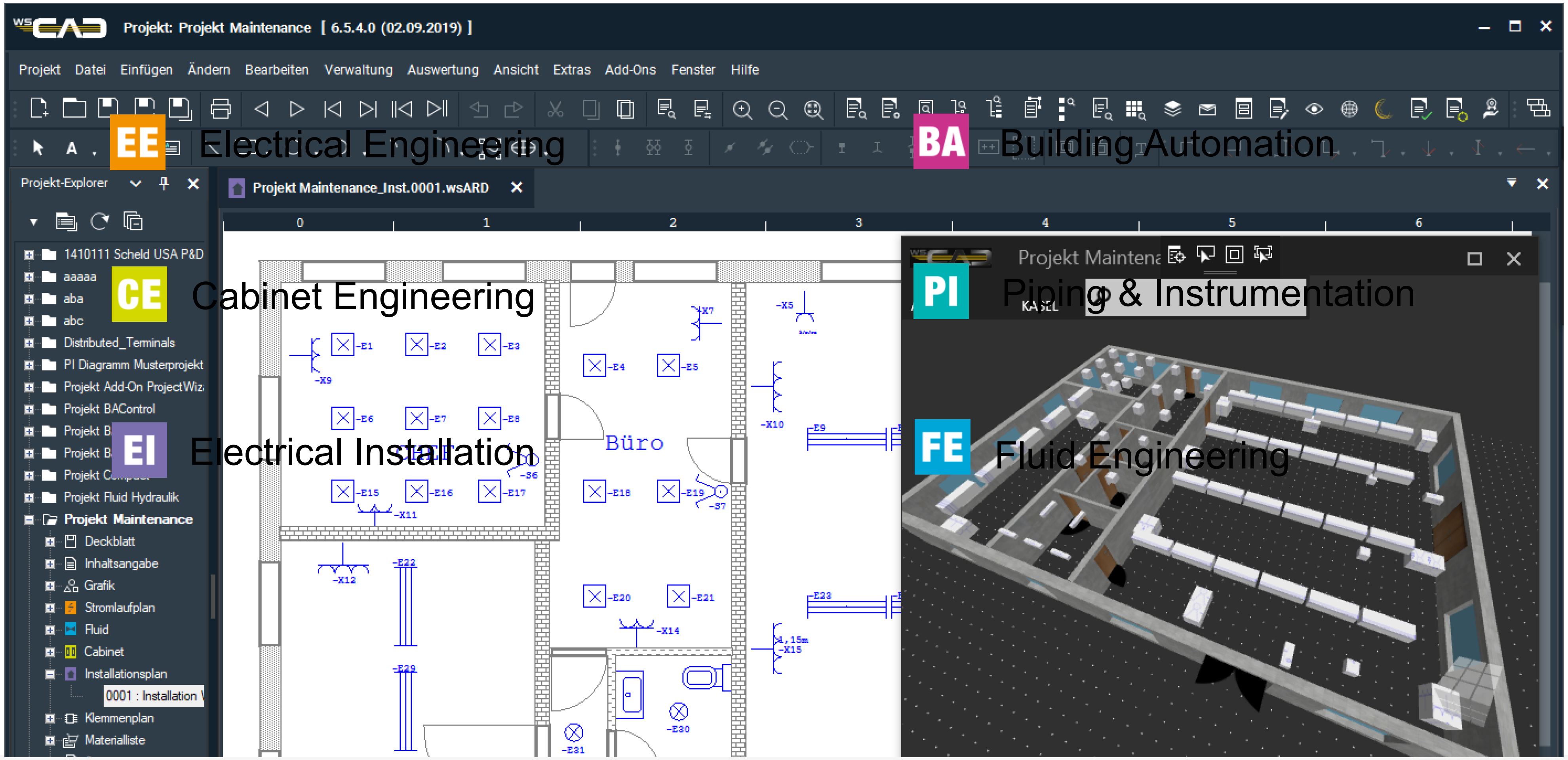
WSCAD

ELECTRICAL ENGINEERING

- CAD Solutions for Engineers
- Tools for Planning & Documenting
- Online Parts Platform
- 35.000 Customers

Available Technologies

EI Electrical Installation



Projekt: Projekt Maintenance [6.5.4.0 (02.09.2019)]
Projekt Datei Einfügen Ändern Bearbeiten Verwaltung Auswertung Ansicht Extras Add-Ons Fenster Hilfe
EE Electrical Engineering
BA Building Automation
Projekt-Explorer
Projekt Maintenance_Inst.0001.wsARD
CE Cabinet Engineering
EI Electrical Installation
PI Piping & Instrumentation
FE Fluid Engineering
1410111 Scheld USA P&D
aaaaa
aba
abc
Distributed_Terminals
PI Diagramm Musterprojekt
Projekt Add-On ProjectWiz
Projekt BAControl
Projekt Fluid Hydraulik
Projekt Maintenance
Deckblatt
Inhaltsangabe
Grafik
Stromlaufplan
Fluid
Cabinet
Installationsplan
0001 : Installation
Klemmenplan
Materialliste
Büro

That‘s a lot of Domains

- Many different Standards
- Numerous Vendors with different Solutions
- Knowledge spread through the Company

Challenges

- Developers are specializing on certain domains

Risks:

Decreased Agility

Knowledge Loss

Challenges

- Developers are specializing on certain domains
- Coordination Overhead

Risks:

Uneccessary Meetings

Slower Development

Challenges

- Developers are specializing on certain domains
- Coordination Overhead
- Existing Application

Risks:

Implicit Knowledge

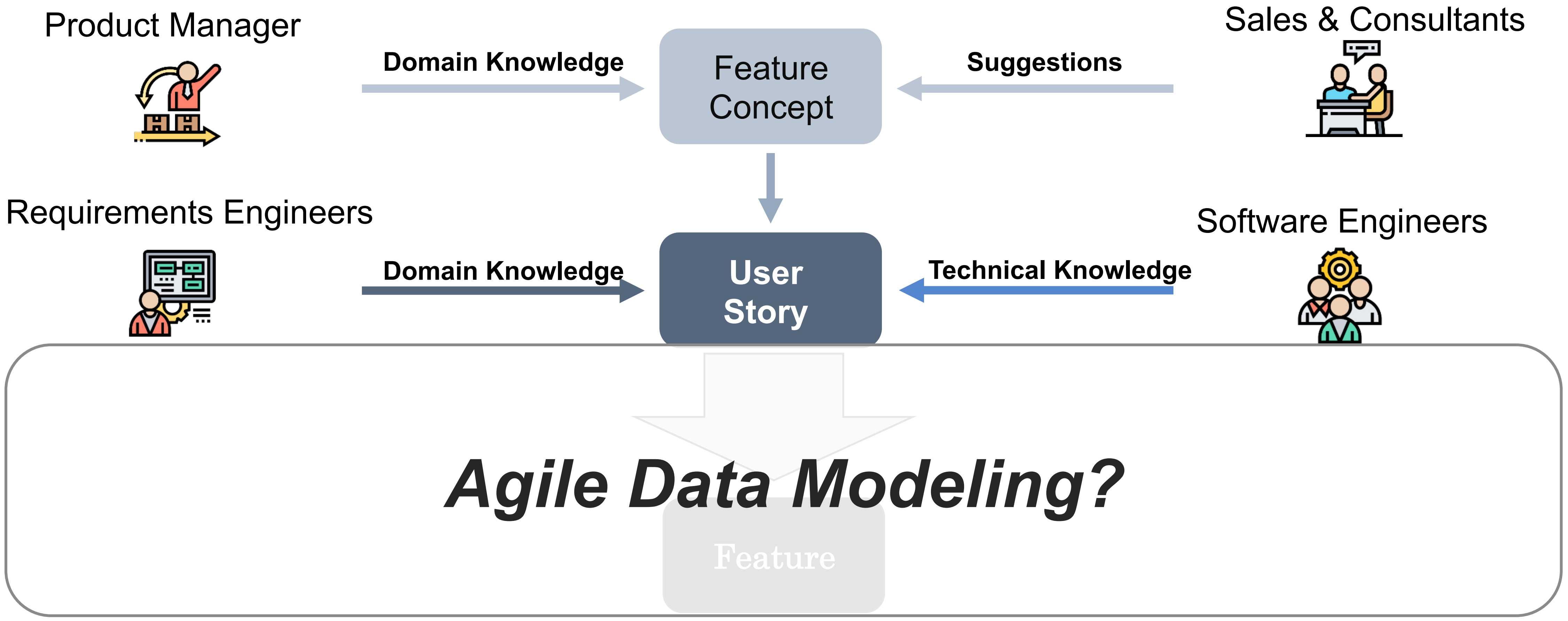
Feature Duplication

Goals:

How to meet these challenges?

- Consolidated Data Modeling
- Defined Modeling Processes
- Documentation
- Internationalization

Current Process



Agile Data Modeling?

Possible Solutions

Conventional

- UML Modeling
- Wiki Documentation
- Manual adaptation to code

Problems:

- No single source of truth
- High Maintenence
- Internationalization problematic
- Provenance Data

Possible Solutions

Semantic

- Create Model in an Ontology
- Protégé as Tool
- Versioning through Git
- Manual adaptation to code

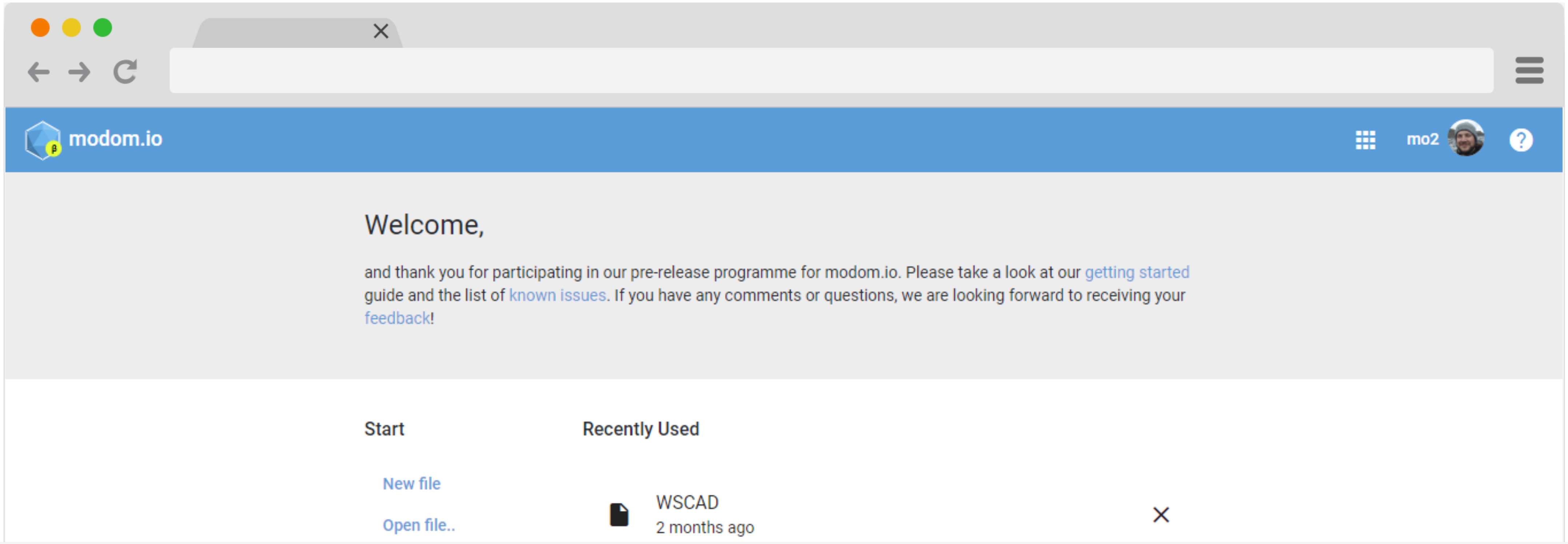
Problems:

- Limited modeling experience
- Adaptation into Code still requires manual effort

Our Solution

Modom.io

Web-Based Ontology Modeling Platform


modom.io

Welcome,

and thank you for participating in our pre-release programme for modom.io. Please take a look at our getting started guide and the list of known issues. If you have any comments or questions, we are looking forward to receiving your feedback!

Start

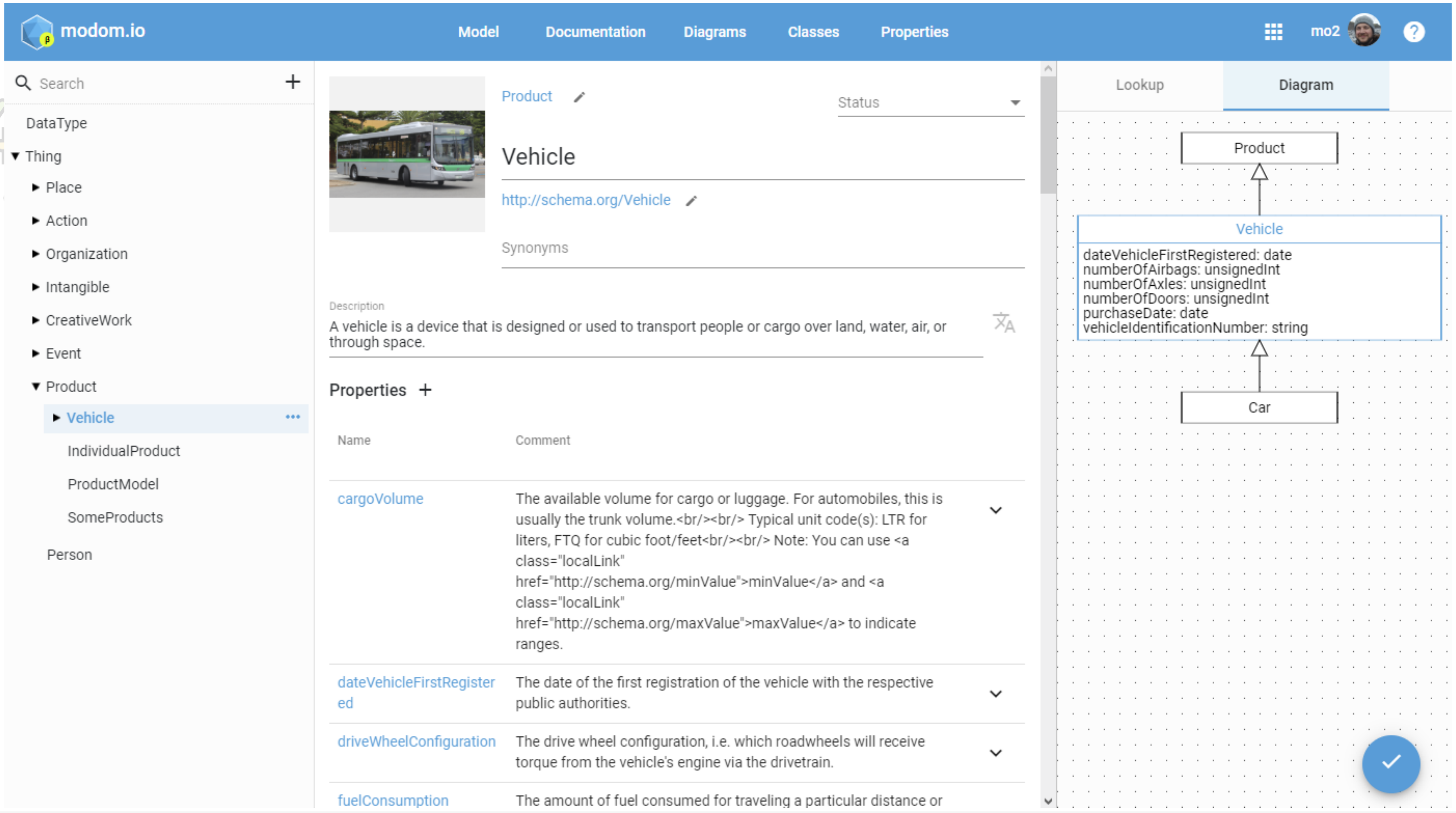
New file

Open file..

Recently Used

WSCAD
2 months ago

Features



Vehicle

http://schema.org/Vehicle

Synonyms

Description

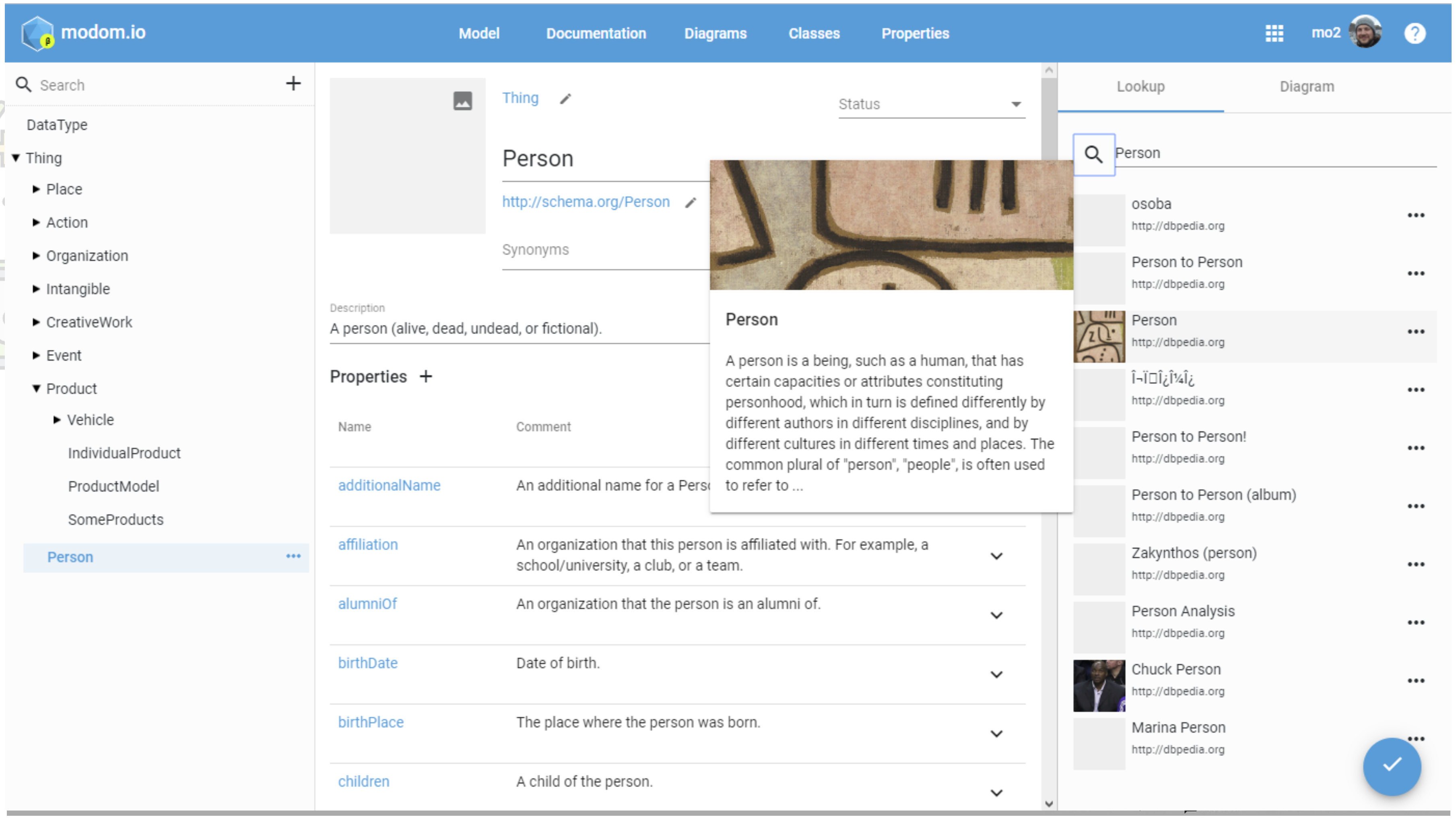
A vehicle is a device that is designed or used to transport people or cargo over land, water, air, or through space.

Properties

Name	Comment
cargoVolume	The available volume for cargo or luggage. For automobiles, this is usually the trunk volume.<br/><br/> Typical unit code(s): LTR for liters, FTQ for cubic foot/feet<br/><br/> Note: You can use <a class="localLink" href="http://schema.org/minValue">minValue</a> and <a class="localLink" href="http://schema.org/maxValue">maxValue</a> to indicate ranges.
dateVehicleFirstRegistered	The date of the first registration of the vehicle with the respective public authorities.
driveWheelConfiguration	The drive wheel configuration, i.e. which roadwheels will receive torque from the vehicle's engine via the drivetrain.
fuelConsumption	The amount of fuel consumed for traveling a particular distance or

Vehicle
dateVehicleFirstRegistered: date
numberOfAirbags: unsignedInt
numberOfAxles: unsignedInt
numberOfDoors: unsignedInt
purchaseDate: date
vehicleIdentificationNumber: string

Features



DataType
- Thing
  - Place
  - Action
  - Organization
  - Intangible
  - CreativeWork
  - Event
  - Product
    - Vehicle
    - IndividualProduct
    - ProductModel
    - SomeProducts
  - Person

Thing

Person

http://schema.org/Person

Synonyms

Description
A person (alive, dead, undead, or fictional).

Person

A person is a being, such as a human, that has certain capacities or attributes constituting personhood, which in turn is defined differently by different authors in different disciplines, and by different cultures in different times and places. The common plural of "person", "people", is often used to refer to ...

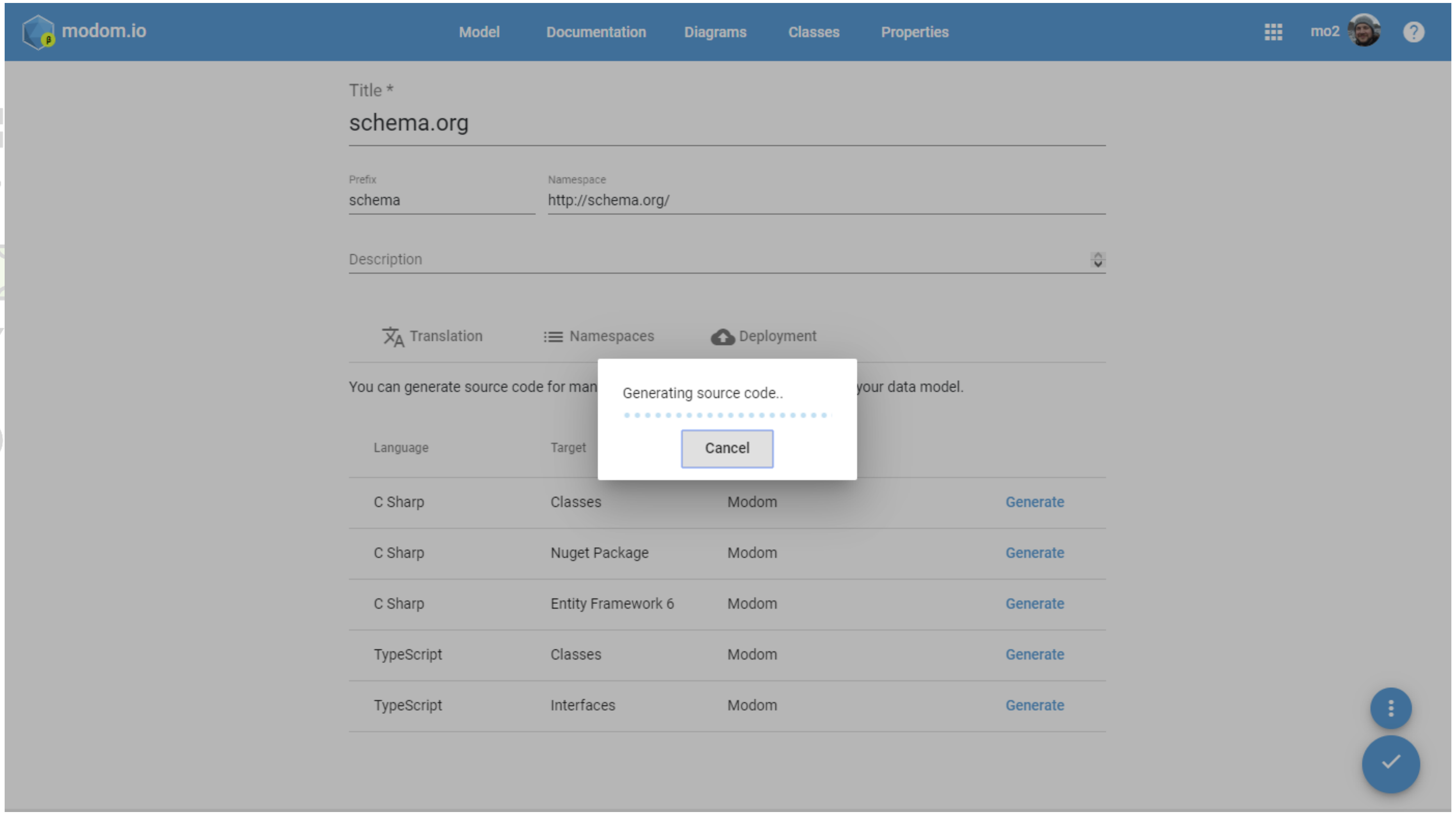
Properties +

Name	Comment
additionalName	An additional name for a Pers
affiliation	An organization that this person is affiliated with. For example, a school/university, a club, or a team.
alumniOf	An organization that the person is an alumni of.
birthDate	Date of birth.
birthPlace	The place where the person was born.
children	A child of the person.

Person

osoba	http://dbpedia.org
Person to Person	http://dbpedia.org
Person	http://dbpedia.org
Î¬ÏÎ¿Î¼Î¿	http://dbpedia.org
Person to Person!	http://dbpedia.org
Person to Person (album)	http://dbpedia.org
Zakynthos (person)	http://dbpedia.org
Person Analysis	http://dbpedia.org
Chuck Person	http://dbpedia.org
Marina Person	http://dbpedia.org

Features



Title *
schema.org

Prefix
schema

Namespace
http://schema.org/

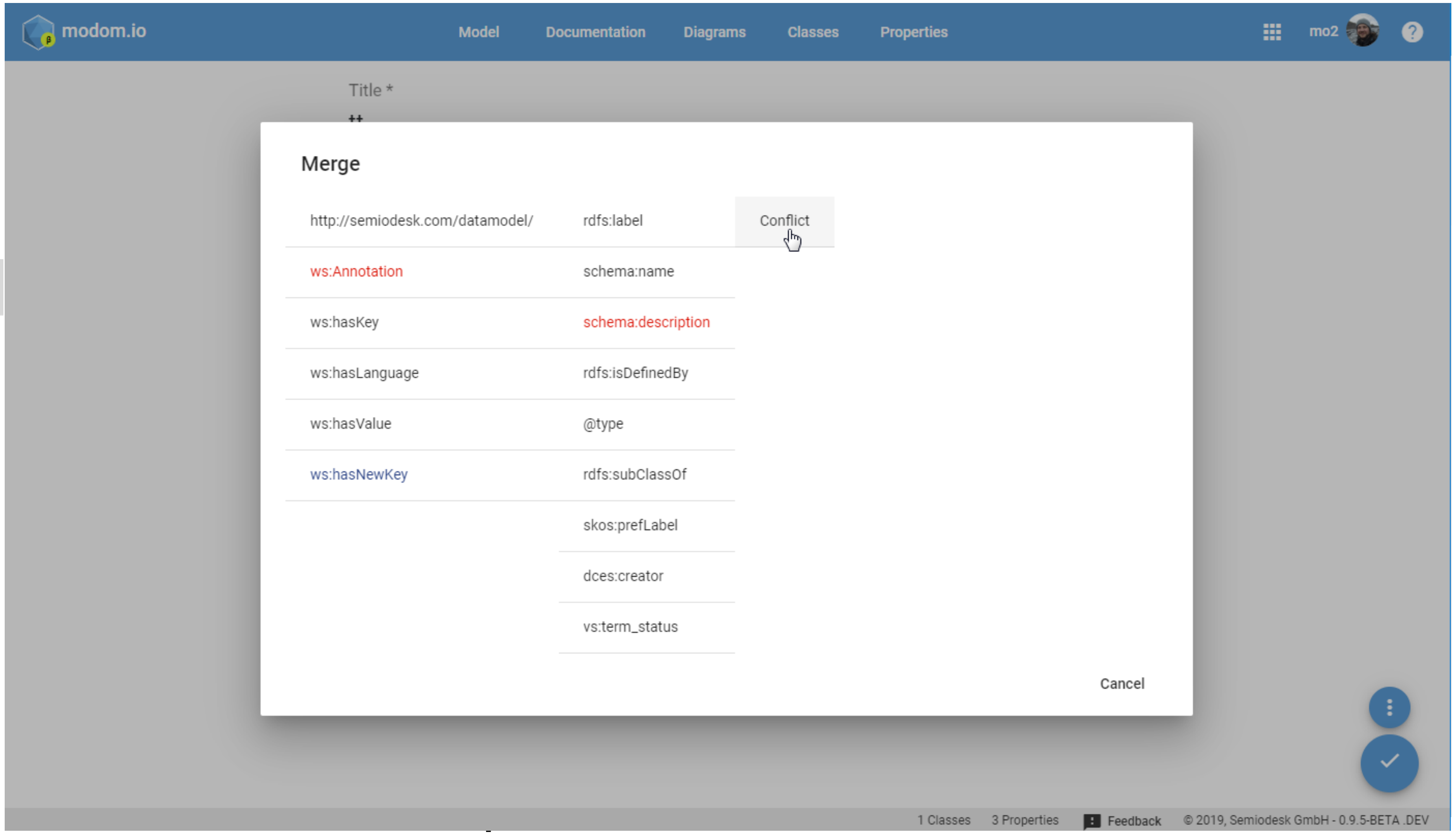
Description

You can generate source code for man… your data model.

Generating source code..

Language	Target		
C Sharp	Classes	Modom	Generate
C Sharp	Nuget Package	Modom	Generate
C Sharp	Entity Framework 6	Modom	Generate
TypeScript	Classes	Modom	Generate
TypeScript	Interfaces	Modom	Generate

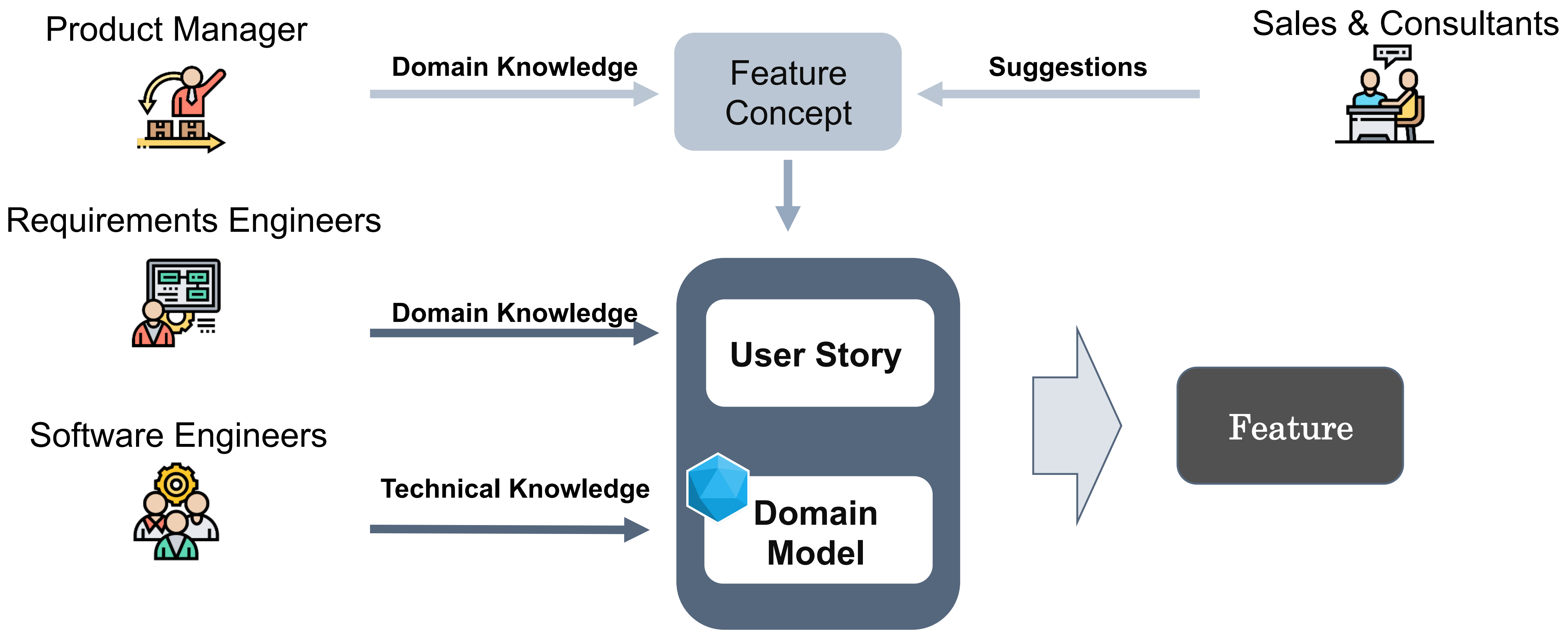
Features



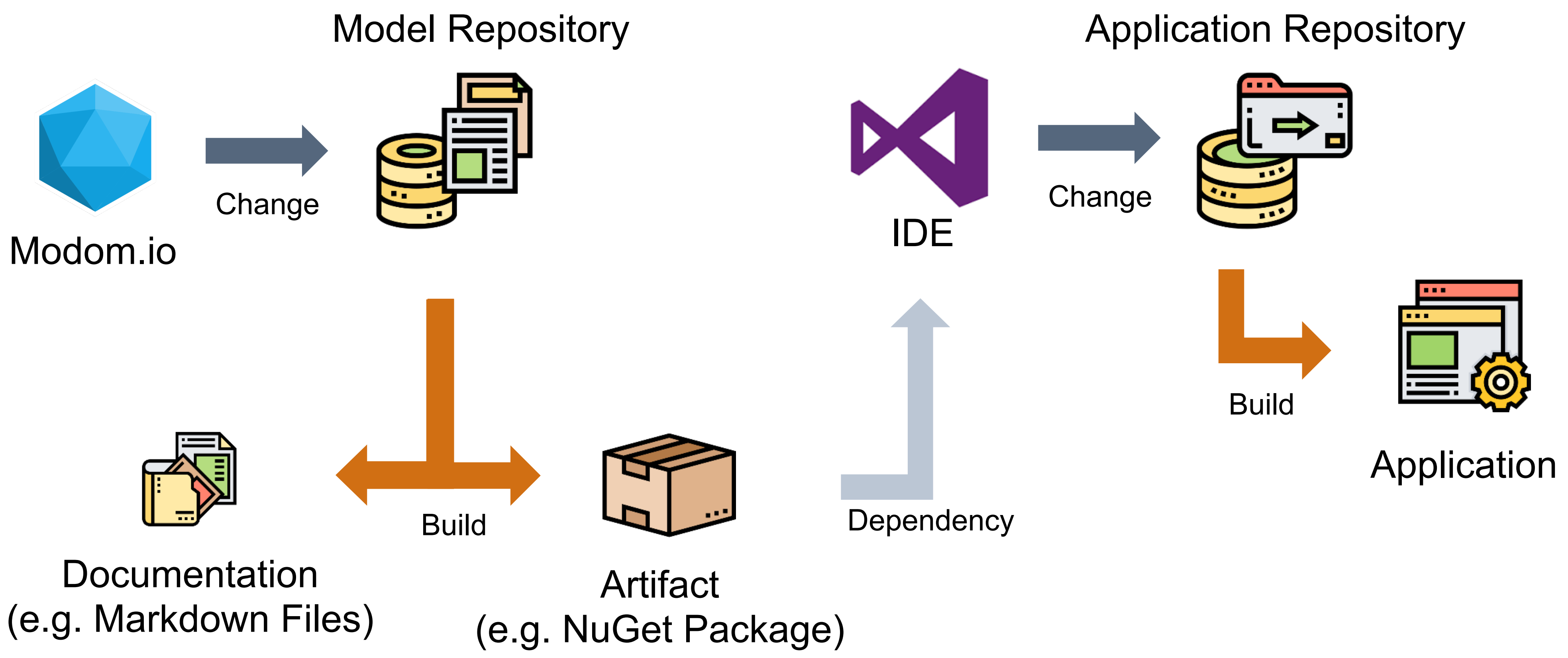
Merge

http://semiodesk.com/datamodel/	rdfs:label	Conflict
ws:Annotation	schema:name	
ws:hasKey	schema:description	
ws:hasLanguage	rdfs:isDefinedBy	
ws:hasValue	@type	
ws:hasNewKey	rdfs:subClassOf	
	skos:prefLabel	
	dces:creator	
	vs:term_status	

Resulting Process



Resulting Process



Conclusion

- Generated Artifacts were key for fast implementation
  - Code delivered a foundation
  - Documenation the right understanding

- Solid Data Migration Strategy still necessary
  - At least now changes are transparent

- Fewer Regressions
  - Testing can be directed
  - Conflicts are identified earlier

Outlook

- Loading & Linking of existing Concepts
  - AutomationML
  - ifcOWL
  - …
- Generate all the boring code
  - Validations
- Improve usability
  - Visual Editor

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Thank you!
Visit us at our booth!