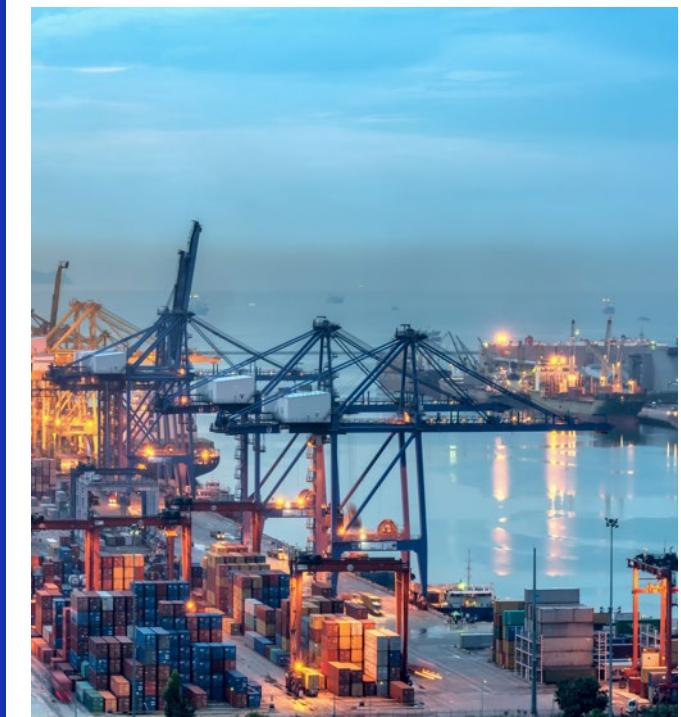


UN/CEFACT FORUM

Ontologies For RDM

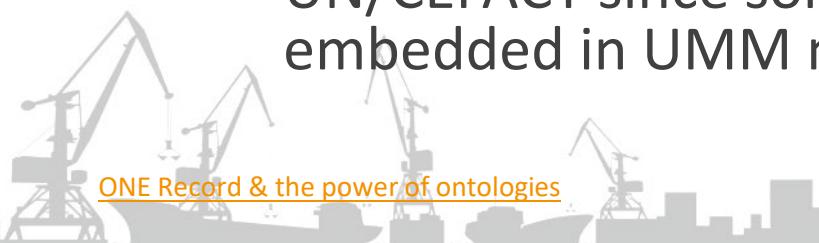
27 Apr. 2021

Zisis Palaskas, Inlecom



Ontologies for RDM

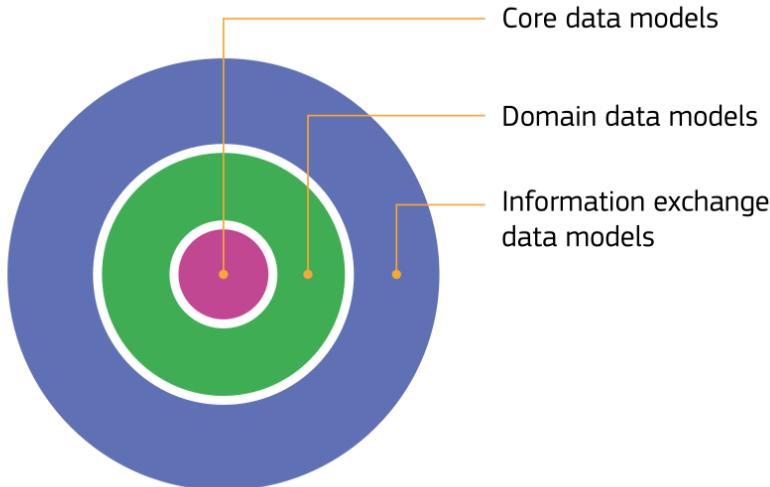
- Why do we need it?
 - An ontology defines a common vocabulary for sharing information about a domain.
 - Provides basic concepts and their relations within a domain.
 - Improves precision in concepts descriptions, and enables to extent/constraint their meaning by linking them to relevant concepts or use constraints.
 - Enables reuse of domain knowledge
- Who is using it in SC and Logistics?
 - Lately becomes popular, used by IATA One Record, FEDeRATED, DTLF SG2, and in many RTD projects (PROFILE data architecture for Customs Risks).
 - UN/CEFACT since sometime has considered ontologies (REA), implicitly embedded in UMM methodology which is prevalent to creating BRS, RSM etc.



The Creation of Core Vocabularies

Core Vocabularies context-neutral semantic building blocks that can be extended into context-specific data models:

- UN/CEFACT Core Component Technical Specification
- US National Information Exchange Model (NIEM).



Core data model: a context-neutral data model that captures the fundamental characteristics of an entity. The Core Vocabularies are at this level.

Domain data models: a data model modelling a particular domain (e.g. the justice domain, the healthcare domain) that identifies the entities involved and their relationships.

Information exchange data models: a data model that defines and describes the structure and content of information that is exchanged between organisations in a specific information exchange context.

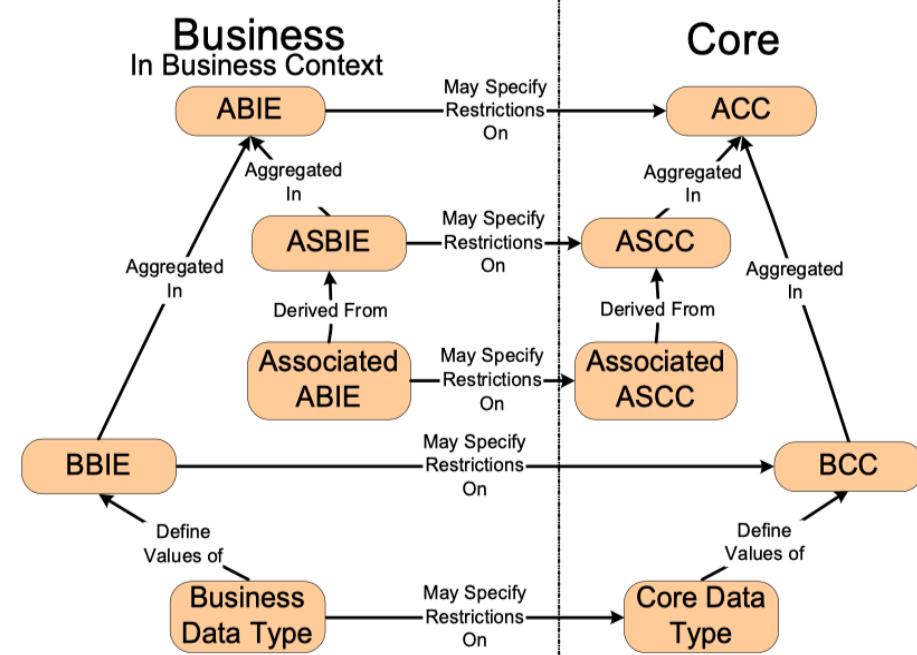
The Creation of Core Vocabularies

UN/CEFACT RDMs and domain Models are not 'plain' vocabularies.

Their creation and update process is based in a certain requirements-specifications and delivery lifecycle supported by UMM.

They are modelled around document structures which are always addressing/implement specific business processes.

They are consistently maintained by a tool (GEFEG.FX) which is storing rich metadata information around concepts.



UN/CEFACT Standards – Available Recourses

Trade Programme

Trade Facilitation and E-business - UN/CEFACT

COVID-19 Response

About us >

Domains

Projects

Public Reviews

Outputs >

Recommendations >

Standards >

Streamlined presentation of UN/CEFACT standards

UN/LOCODE

The "United Nations Code for Trade and Transport Locations" is commonly more known as "UN/LOCODE". Although managed and maintained by the UNECE, it is the product of a wide collaboration in the framework of the joint trade facilitation effort undertaken within the United Nations.

UN/EDIFACT

BSP-RDM

Supply Chain Management

Supply Chain Reference Data Model (SCRDM)

- Cross Industry Invoice
- Cross Industry Delivery
- Cross Industry Catalogue
- Cross Industry Quotation
- Cross Industry Remittance Advice
- Cross Industry Scheduling
- Cross Industry Ordering Process
- Cross Industry Export Packing List
- Material Safety Data Sheet Details (MSDS)
- Market Research Information

Transport and Logistics

Multi-Modal Transport Reference Data Model (MMT-RDM)

International Forwarding and Transfer

Booking

Shipping Instruction

Waybill

- BRS Overall
- BRS Waybill
- XSD Schema
- UML Diagram
- XLS
- Spreadsheet
- HTML

Status Report / Request

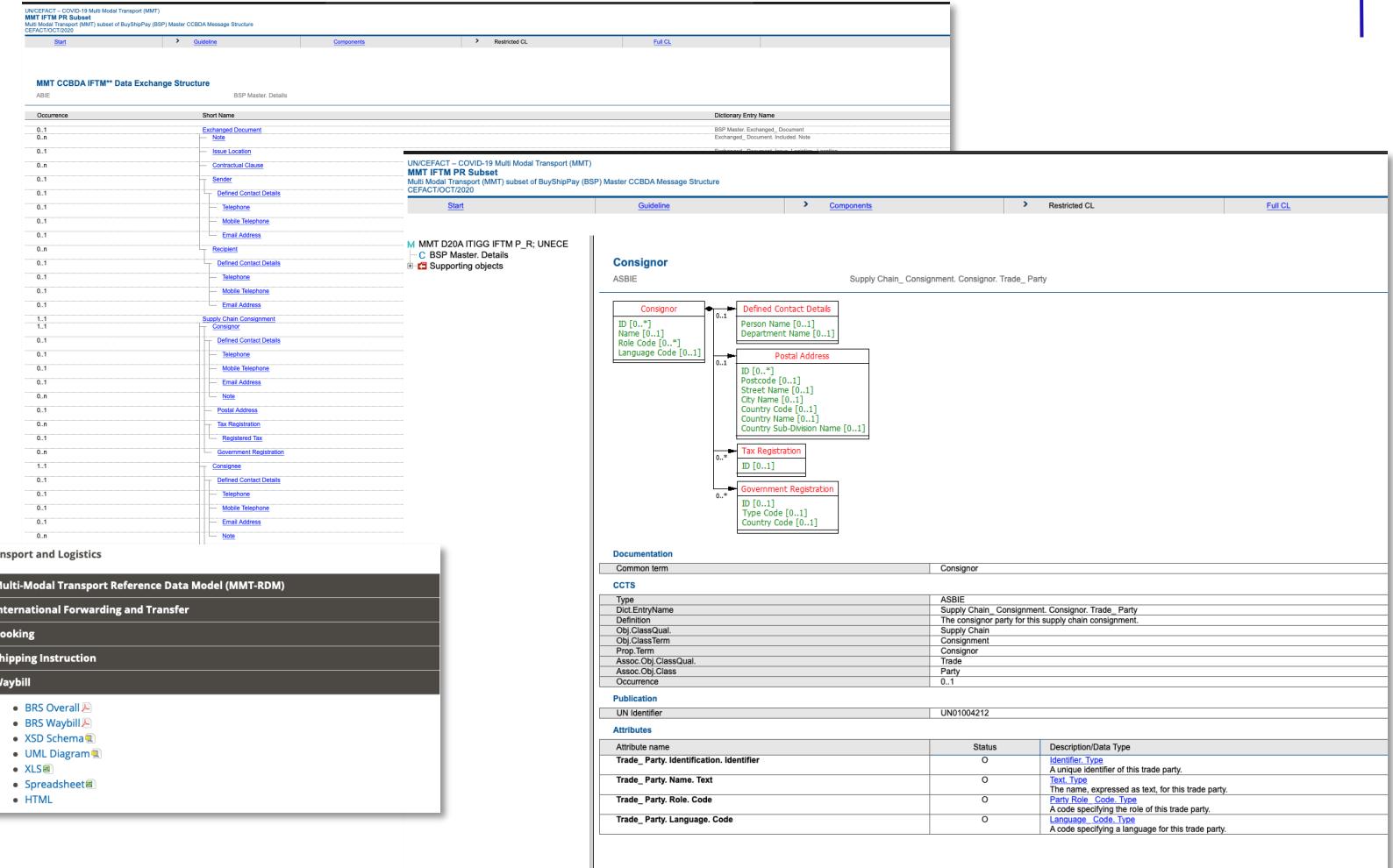
Road Consignment Note (eCMR)

Smart Containers

Pipeline Data Exchange Standard (PDES)

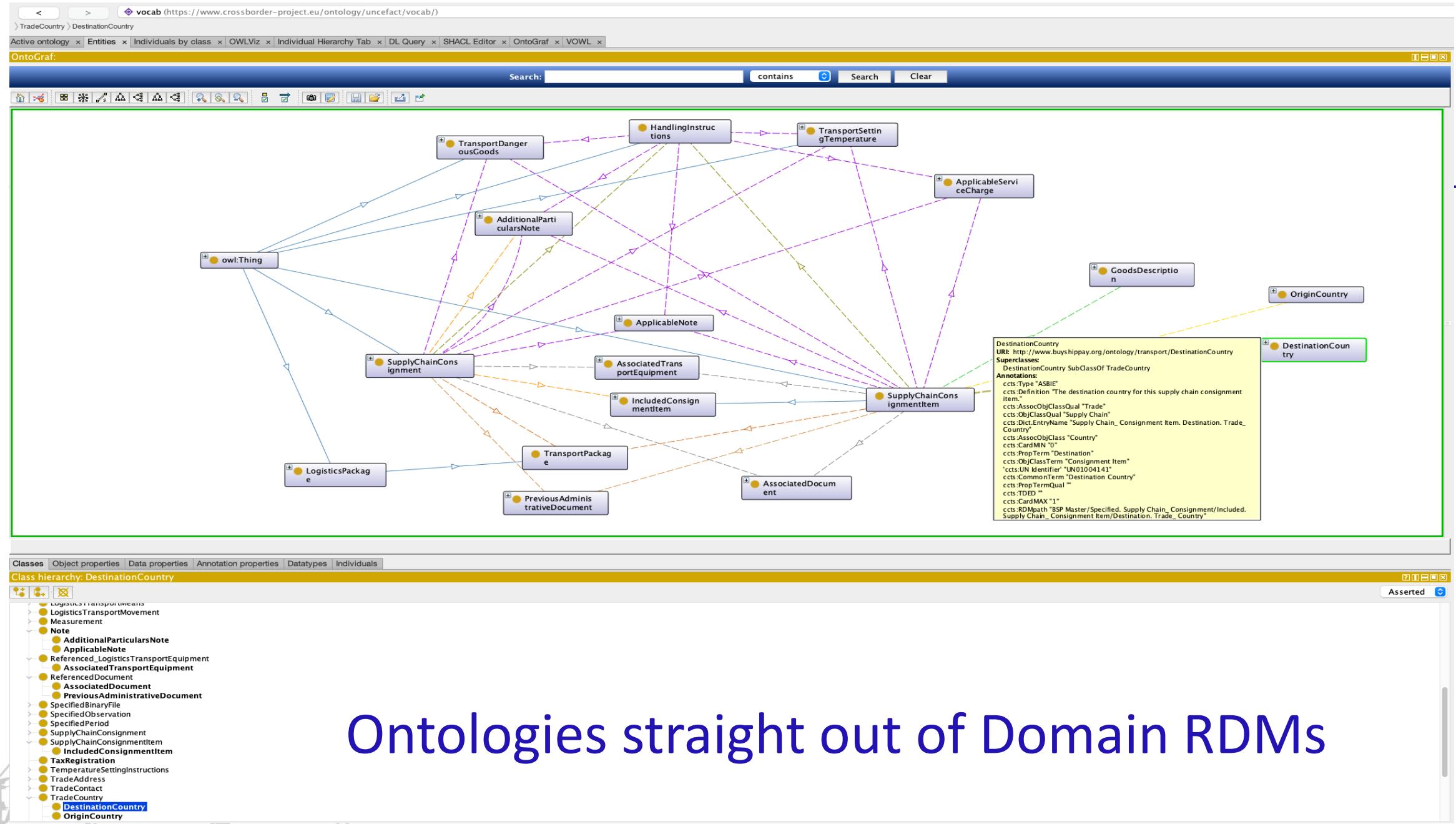
IMO FAL Compendium

Verified Gross Mass (VERMAS)



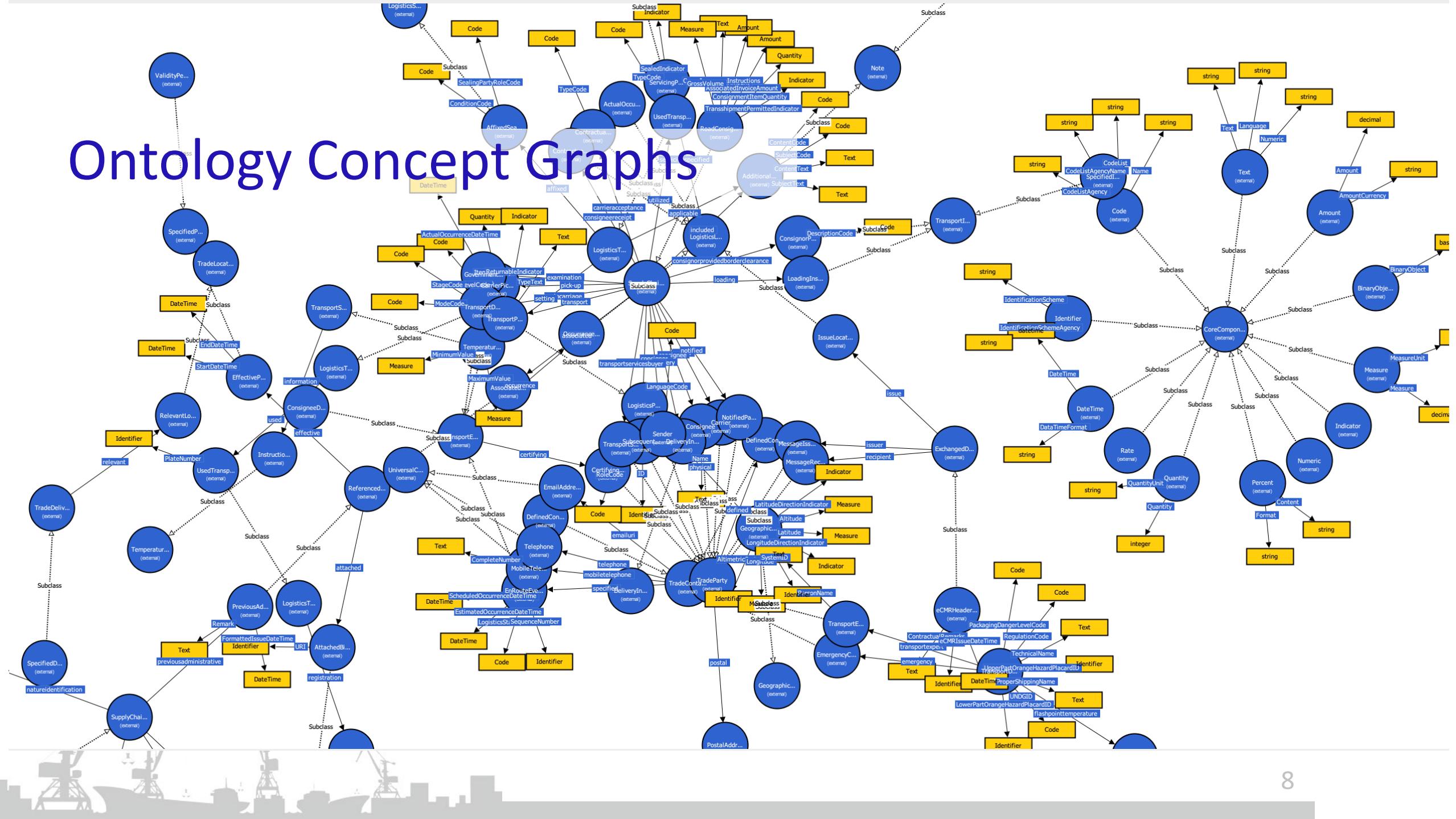
UN/CEFACT Standards – Available Resources

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	
1	RDM Path	Unique UN Assigned ID	ABIE/ BBIE/ ASBIE	Business Name	CCL DEN (Dictionary Entry Name)	Definition	Object Class Term Qualifier(s)	Object Class Term	Property Term Qualifier(s)	Property Term	Datatype Qualifier(s)	Representatio n Term	Associated Object Class	Associated Object Class	Occurren ce Min	Occurren ce Max	TDED	
2	BSP Master	ABIE	BBIE	BSP Master, Details			BSP Master											
3	BSP Master/Exchanged_Document	UN01002487	ASBIE	BSP Master, Exchanged_Document	The header document information for a use of this master message assembly.		BSP Master											
4	BSP Master/Exchanged_Document/Identification_Identifier	UN01002488	BBIE	Exchanged_Document, Identification, Identifier	The unique identifier of this exchanged document.	Exchanged	Document	Identification					Exchanged	Document	0	1		
5	BSP Master/Exchanged_Document/Name_Text	UN01002489	BBIE	Exchanged_Document, Name, Text	A name, expressed as text, of this exchanged document.	Exchanged	Document	Name							0	1	(1000)	
6	BSP Master/Exchanged_Document/Type_Code	UN01002491	BBIE	Exchanged_Document, Type, Code	The code specifying the type of exchanged document.	Exchanged	Document	Type	Document					0	1	(1001)		
7	BSP Master/Exchanged_Document/Issue_Date Time	UN01002493	BBIE	Exchanged_Document, Issue, Date Time	The date, date time or other date time value for the issuance of this exchanged document.	Exchanged	Document	Issue			Date Time			0	1	(2007)		
8	BSP Master/Exchanged_Document/Remarks_Text	UN01003553	BBIE	Exchanged_Document, Remarks, Text	A remark, expressed as text, regarding this exchanged document.	Exchanged	Document	Remarks							0	unbounde d		
9	BSP Master/Exchanged_Document/Purpose_Code	UN01003561	BBIE	Exchanged_Document, Purpose, Code	A code specifying the purpose of this exchanged document, such as request or reminder.	Exchanged	Document	Purpose	Message Function	Code					0	1	(1225)	
10	BSP Master/Exchanged_Document/Information_Text	UN01003563	BBIE	Exchanged_Document, Information, Text	Information, expressed as text, for this exchanged document.	Exchanged	Document	Information							0	unbounde d	(4142)	
11	BSP Master/Exchanged_Document/Cancellation_Date Time	UN01005275	BBIE	Exchanged_Document, Cancellation, Date Time	The date, time, date time, or other date time value of a cancellation of the exchanged document.	Exchanged	Document	Cancellation			Date Time			0	1	(2095)		
12	BSP Master/Exchanged_Document/Requested_Response_Type_Code	UN01006746	BBIE	Exchanged_Document, Requested, Response_Type, Code	A code specifying a type of response requested for this exchanged document.	Exchanged	Document	Requested	Response Type	Code					0	1	(4343)	
13	BSP Master/Exchanged_Document/Included_Note	UN01002497	ASBIE	Exchanged_Document, Included_Note	A note included in this exchanged document.	Exchanged	Document	Included					Note	0	unbounde d			
14	BSP Master/Exchanged_Document/Included_Note_Subject_Text	UN01002520	BBIE	Note_Subject, Text	The subject, expressed as text, of this note.		Note	Subject						0	1			
15	BSP Master/Exchanged_Document/Included_Note_Content_Code	UN01002521	BBIE	Note_Content, Code	A code specifying the content of this note.		Note	Content						0	1	(4441)		
16	BSP Master/Exchanged_Document/Included_Note_Content_Text	UN01002522	BBIE	Note_Content, Text	A content, expressed as text, of this note.		Note	Content						0	1	(4440)		
17	BSP Master/Exchanged_Document/Included_Note_Subject_Code	UN01002523	BBIE	Note_Subject, Code	A code specifying the subject of this note.		Note	Subject						0	unbounde d	(4451)		
18	BSP Master/Exchanged_Document/Issue_Logistics_Location	UN01003580	ASBIE	Exchanged_Document, Issue, Logistics_Location	The location where this exchanged document has been issued.	Exchanged	Document	Issue					Logistics	Location	0	1		
19	BSP Master/Exchanged_Document/Issue_Logistics_Location_Identifier	UN01003680	BBIE	Logistics_Location, Identification, Identifier	A unique identifier for this logistics related location, such as a United Nations Location Code (UNLOCODE) or GS1 Global Location Number (GLN).	Logistics	Location	Identification							0	1	(3225)	
20	BSP Master/Exchanged_Document/Issue_Logistics_Location_Name_Text	UN01003681	BBIE	Logistics_Location, Name, Text	A name, expressed as text, of this logistics related location.	Logistics	Location	Name	Text					0	1	(3224)		
21	BSP Master/Exchanged_Document/Issue_Logistics_Location_Country_Identifier	UN01004897	BBIE	Logistics_Location, Country, Identifier	The unique identifier of a country for this logistics location.	Logistics	Location	Country	Country	Identifier				0	1			
22	BSP Master/Exchanged_Document/Contractual_Document_Clause	UN01003582	ASBIE	Exchanged_Document, Contractual_Document, Clause	A contractual clause of this exchanged document.	Exchanged	Document	Contractual					Document	Clause	0	unbounde d		
23	BSP Master/Exchanged_Document/Contractual_Document_Clause_Identifier	UN01002647	BBIE	Document_Clause, Identification, Identifier	The unique identifier of this document clause.	Document	Clause	Identification							0	1	(4069)	
24	BSP Master/Exchanged_Document/Contractual_Document_Content_Text	UN01002648	BBIE	Document_Clause, Content, Text	Content, expressed as text, of this document clause.	Document	Clause	Content							0	1	(4068)	
25	BSP Master/Exchanged_Document/Sender_Trade_Party	UN01003587	ASBIE	Exchanged_Document, Sender_Trade_Party	The party that sends this exchanged document.	Exchanged	Document	Sender					Trade	Party	0	1		
26	BSP Master/Exchanged_Document/Sender_Trade_Party_Identifier	UN01004595	BBIE	Trade_Party, Identification, Identifier	A unique identifier of this trade party.	Trade	Party	Identification							0	unbounde d	(3039)	
27	BSP Master/Exchanged_Document/Sender_Trade_Party_Name_Text	UN01004598	BBIE	Trade_Party, Name, Text	The name, expressed as text, for this trade party.	Trade	Party	Name	Text					0	1	(3036)		
28	BSP Master/Exchanged_Document/Sender_Trade_PartyDefined_Trade_Contact	UN01004602	ASBIE	Trade_Party, Defined_Trade_Contact	A trade contact defined for this trade party.	Trade	Party	Defined					Trade	Contact	0	1		
29	BSP Master/Exchanged_Document/Sender_Trade_PartyDefined_Trade_Contact_Person_Name_Text	UN01001642	BBIE	Trade_Contact_Person, Name, Text	The name, expressed as text, of this trade contact person.	Trade	Contact	Person Name							0	1	(3412)	
30	BSP Master/Exchanged_Document/Sender_Trade_PartyDefined_Trade_Contact_Telephone_Universal_Communication	UN01004564	ASBIE	Trade_Contact_Telephone, Universal_Communication	Telephone communication information for this trade contact.	Trade	Contact	Telephone					Universal	Communication	0	1		
31	BSP Master/Exchanged_Document/Sender_Trade_PartyDefined_Trade_Contact_Telephone_Universal_Communication_Contact_Telephone_Universal_Communication	UN01001256	BBIE	Universal_Communication, Complete_Number_Text	The text string of characters that make up the complete number for this universal communication.	Universal	Communication	Complete Number							0	1	(3148)	
32	BSP Master/Exchanged_Document/Sender_Trade_PartyDefined_Trade_Contact_Mobile_Telephone_Universal_Communication	UN01004566	ASBIE	Trade_Contact_Mobile_Telephone, Universal_Communication	The mobile telephone communication information for this trade contact.	Trade	Contact	Mobile	Telephone					Universal	Communication	0	1	
33	BSP Master/Exchanged_Document/Sender_Trade_PartyDefined_Trade_Contact_Mobile_Telephone_Universal_Communication_Complete_Number_Text	UN01001256	BBIE	Universal_Communication, Complete_Number_Text	The text string of characters that make up the complete number for this universal communication.	Universal	Communication	Complete Number							0	1	(3148)	
34	BSP Master/Exchanged_Document/Sender_Trade_PartyDefined_Trade_Contact_Email_URI_Universal_Communication	UN01004569	ASBIE	Trade_Contact_Email_URI, Universal_Communication	The email URI communication information for this trade contact.	Trade	Contact	Email	URI					Universal	Communication	0	1	
35	BSP Master/Exchanged_Document/Sender_Trade_PartyDefined_Trade_Contact_Email_URI_Universal_Communication_Contact_Email_URI_Universal_Communication	UN01001253	BBIE	Universal_Communication, URI	The Uniform Resource Identifier (URI), such as a web or an email address, for this universal communication.	Universal	Communication	URI							0	1	(3148)	
36	BSP Master/Exchanged_Document/Sender_Trade_PartyDefined_Trade_Contact_Email_URI_Universal_Communication_Contact_Email_URI	UN01004602	ASBIE	Trade_Party, Defined_Trade_Contact	A trade contact defined for this trade party.	Trade	Party	Defined					Trade	Contact	0	1		
37	BSP Master/Exchanged_Document/Recipient_Trade_Party_Identifier	UN01004889	ASBIE	Exchanged_Document, Recipient_Trade_Party	A trade party that receives this exchanged document.	Exchanged	Document	Recipient					Trade	Party	0	unbounde d		
38	BSP Master/Exchanged_Document/Recipient_Trade_Party_Identifier_Identifier	UN01004595	BBIE	Trade_Party, Identification, Identifier	A unique identifier of this trade party.	Trade	Party	Identification							0	unbounde d	(3039)	
39	BSP Master/Exchanged_Document/Recipient_Trade_PartyName_Text	UN01004598	BBIE	Trade_Party, Name, Text	The name, expressed as text, for this trade party.	Trade	Party	Name	Text					0	1	(3036)		
40	BSP Master/Exchanged_Document/Recipient_Trade_PartyDefined_Trade_Contact	UN01001642	BBIE	Trade_Contact_Person, Name, Text	The name, expressed as text, of this trade contact person.	Trade	Contact	Person Name							0	1		
41	BSP Master/Exchanged_Document/Recipient_Trade_PartyDefined_Trade_Contact_Person_Name_Text	UN01001642	BBIE	Trade_Contact_Person, Name, Text	The name, expressed as text, of this trade contact person.	Trade	Contact	Person Name							0	1	(3412)	
42	BSP Master/Exchanged_Document/Recipient_Trade_PartyDefined_Trade_Contact_Telephone_Universal_Communication	UN01004564	ASBIE	Trade_Contact_Telephone, Universal_Communication	Telephone communication information for this trade contact.	Trade	Contact	Telephone					Universal	Communication	0	1		
43	BSP Master/Exchanged_Document/Recipient_Trade_PartyDefined_Trade_Contact_Telephone_Universal_Communication_Contact_Telephone_Universal_Communication	UN01001256	BBIE	Universal_Communication, Complete_Number_Text	The text string of characters that make up the complete number for this universal communication.	Universal	Communication	Complete Number							0	1	(3148)	



Ontologies straight out of Domain RDMS

Ontology Concept Graphs



Deriving the Ontologies

- How to derive the ontology in an ‘easy way’
- Use the Manchester syntax of Turtle
 - designed primarily to describe class expressions in tools as well as to represent complete ontologies, is ‘frame-based’ and supports non-logicians with a syntax that makes it easier to write ontologies.
 - Class is a Class
 - Association is an Object Property
 - Attribute is a Data Property



Ontology Mapping

	A	B	C	D	E	F	G
1	RDM Path	Unique UN Assigned ID	ABIE/BBIE/ ASBIE	Business Name	CCL DEN (Dictionary Entry Name)	Definition	Object Class Term Qualifier(s)
2	BSP Master	ABIE	BBIE	BSP Master, Details		BSP Master	
3	BSP MasterExchanged_Document	UN01002487	ASBIE	BSP Master, Exchanged_Document	The header document information for a use of this master message assembly.	BSP Master	
4	BSP MasterExchanged_Document/Identification, Identifier	UN01002488	BBIE	Exchanged_Document, Identification, Identifier	The unique identifier of this exchanged document.	Exchanged	Document
5	BSP MasterExchanged_Document/Name, Text	UN01002489	BBIE	Exchanged_Document, Name, Text	A name, expressed as text, of this exchanged document.	Exchanged	Document
6	BSP MasterExchanged_Document/Type, Code	UN01002491	BBIE	Exchanged_Document, Type, Code	The code specifying the type of exchanged document.	Exchanged	Document
7	BSP MasterExchanged_Document/Issue, Date Time	UN01002493	BBIE	Exchanged_Document, Issue, Date Time	The date, time, date time or other date time value for the issuance of this exchanged document.	Exchanged	Document
8	BSP MasterExchanged_Document/Remarks, Text	UN01003553	BBIE	Exchanged_Document, Remarks, Text	A remark, expressed as text, regarding this exchanged document.	Exchanged	Document
9	BSP MasterExchanged_Document/Purpose, Code	UN01003581	BBIE	Exchanged_Document, Purpose, Code	A code specifying the purpose of this exchanged document, such as request or reminder.	Exchanged	Document
10	BSP MasterExchanged_Document/Information, Text	UN01003563	BBIE	Exchanged_Document, Information, Text	Information, expressed as text, for this exchanged document.	Exchanged	Document
11	BSP MasterExchanged_Document/Cancellation, Date Time	UN01005275	BBIE	Exchanged_Document, Cancellation, Date Time	The date, time, date time, or other date time value of a cancellation of this exchanged document.	Exchanged	Document
12	BSP MasterExchanged_Document/Requested_Response Type, Code	UN01006746	BBIE	Exchanged_Document, Requested_Response Type, Code	A code specifying a type of response requested for this exchanged document.	Exchanged	Document
13	BSP MasterExchanged_Document/Included, Note	UN0102497	ASBIE	Exchanged_Document, Included, Note	A note included in this exchanged document.	Exchanged	Document
14	BSP MasterExchanged_Document/Included, Note/Subjct, Text	UN01002520	BBIE	Note, Subject, Text	The subject, expressed as text, of this note.	Note	
15	BSP MasterExchanged_Document/Included, Note/Content, Code	UN01002521	BBIE	Note, Content, Code	A code specifying the content of this note.	Note	
16	BSP MasterExchanged_Document/Included, Note/Content, Text	UN01002522	BBIE	Note, Content, Text	A content, expressed as text, of this note.	Note	
17	BSP MasterExchanged_Document/Included, Note/Subjct, Code	UN01002523	BBIE	Note, Subject, Code	A code specifying subject of this note.	Note	
18	BSP MasterExchanged_Document/Issue, Logistics_Location	UN01003580	ASBIE	Exchanged_Document, Issue, Logistics_Location	The location where this exchanged document has been issued.	Exchanged	Document
19	BSP MasterExchanged_Document/Issue, Logistics_Location/Identification, Identifier	UN01003680	BBIE	Logistics_Location, Identification, Identifier	A unique identifier for this logistics related location, such as a United Nations Location Code (UNLOCODE) or GS1 Global Location Number (GLN).	Logistics	Location
20	BSP MasterExchanged_Document/Issue, Logistics_Location/Name, Text	UN01003681	BBIE	Logistics_Location, Name, Text	A name, expressed as text, of this logistics related location.	Logistics	Location
21	BSP MasterExchanged_Document/Issue, Logistics_Location/Country, Identifier	UN01004897	BBIE	Logistics_Location, Country, Identifier	The unique identifier of a country for this logistics location.	Logistics	Location
22	BSP MasterExchanged_Document/Contractual, Document, Clause	UN01003582	ASBIE	Exchanged_Document, Contractual, Document_Clause	A contractual clause of this exchanged document.	Exchanged	Document
23	BSP MasterExchanged_Document/Contractual, Document, Clause/Identifier	UN01002647	BBIE	Document_Clause, Identification, Identifier	The unique identifier of this document clause.	Document	Clause
24	BSP MasterExchanged_Document/Contractual, Document, Content/Text	UN01002648	BBIE	Document_Clause, Content, Text	Content, expressed as text, of this document clause.	Document	Clause
25	BSP MasterExchanged_Document/Sender, Trade_Party	UN01003587	ASBIE	Exchanged_Document, Sender, Trade_Party	The party that sends this exchanged document.	Exchanged	Document
26	BSP MasterExchanged_Document/Sender, Trade_Party/Identification, Identifier	UN01004595	BBIE	Trade_Party, Identification, Identifier	A unique identifier of this trade party.	Trade	Party
27	BSP MasterExchanged_Document/Sender, Trade_Party/Name, Text	UN01004598	BBIE	Trade_Party, Name, Text	The name, expressed as text, for this trade party.	Trade	Party
28	BSP MasterExchanged_Document/Sender, Trade_Party/Defined, Trade_Contact/Email, URI, Universal_Communication	UN01004602	ASBIE	Trade_Party, Defined, Trade_Contact	A trade contact defined for this trade party.	Trade	Party
29	BSP MasterExchanged_Document/Sender, Trade_Party/Defined, Trade_Contact/Person, Name, Text	UN01001642	BBIE	Trade_Contact, Person, Name, Text	The name, expressed as text, of this trade contact person.	Trade	Contact
30	BSP MasterExchanged_Document/Sender, Trade_Party/Defined, Trade_Contact/Telephone, Universal_Communication	UN01004564	ASBIE	Trade_Contact, Telephone, Universal_Communication	Telephone communication information for this trade contact.	Trade	Contact
31	BSP MasterExchanged_Document/Sender, Trade_Party/Defined, Trade_Contact/Universal_Communication	UN01001256	BBIE	Universal_Communication, Complete Number, Text	The text string of characters that make up the complete number for this universal communication.	Universal	Communication
32	BSP MasterExchanged_Document/Sender, Trade_Party/Defined, Trade_Contact/Mobile, Telephone, Universal_Communication	UN01004566	ASBIE	Trade_Contact, Mobile_Telephone, Universal_Communication	The mobile telephone communication information for this trade contact.	Trade	Contact
33	BSP MasterExchanged_Document/Sender, Trade_Party/Defined, Trade_Contact/Mobile, Telephone, Universal_Communication/Complete Number	UN01001256	BBIE	Universal_Communication, Complete Number, Text	The text string of characters that make up the complete number for this universal communication.	Universal	Communication
34	BSP MasterExchanged_Document/Sender, Trade_Party/Defined, Trade_Contact/Email, URI, Universal_Communication	UN01004569	ASBIE	Trade_Contact, Email, URI, Universal_Communication	The email URI communication information for this trade contact.	Trade	Contact
35	BSP MasterExchanged_Document/Sender, Trade_Party/Defined, Trade_Contact/Email, URI, Universal_Communication/URI, Identifier	UN01001253	BBIE	Universal_Communication, URI, Identifier	The Uniform Resource Identifier (URI), such as a web or an email address, for this universal communication.	Universal	Communication
36	BSP MasterExchanged_Document/Recipient, Trade_Party	UN01004889	ASBIE	Exchanged_Document, Recipient, Trade_Party	A trade party that receives this exchanged document.	Exchanged	Document
37	BSP MasterExchanged_Document/Recipient, Trade_Party/Identification, Identifier	UN01004595	BBIE	Trade_Party, Identification, Identifier	A unique identifier of this trade party.	Trade	Party
38	BSP MasterExchanged_Document/Recipient, Trade_Party/Name, Text	UN01004598	BBIE	Trade_Party, Name, Text	The name, expressed as text, for this trade party.	Trade	Party
39	BSP MasterExchanged_Document/Recipient, Trade_Party/Defined, Trade_Contact	UN01004602	ASBIE	Trade_Party, Defined, Trade_Contact	A trade contact defined for this trade party.	Trade	Party
40	BSP MasterExchanged_Document/Recipient, Trade_Party/Defined, Trade_Contact/Person, Name, Text	UN01001642	BBIE	Trade_Contact, Person, Name, Text	The name, expressed as text, of this trade contact person.	Trade	Contact
41	BSP MasterExchanged_Document/Recipient, Trade_Party/Defined, Trade_Contact/Telephone, Universal_Communication	UN01004564	ASBIE	Trade_Contact, Telephone, Universal_Communication	Telephone communication information for this trade contact.	Trade	Contact
42	BSP MasterExchanged_Document/Recipient, Trade_Party/Defined, Trade_Contact/Universal_Communication	UN01001256	BBIE	Universal_Communication, Complete Number, Text	The text string of characters that make up the complete number for this universal communication.	Universal	Communication

UN/CEFACT Ontology Mapping:

Core Components Types and Annotations for Meta-Level Definitions



```
ship.ttl 9+ eCMR.ttl 9+ • BSP Model Turtle Notation Shapes.ttl
MMT Ontologies > eCMR.ttl
105 #####
106 ##### Core Components Type Definitions
107 #####
108 #####
109 #####
110 Datatype: cct:Measure
111 Annotations:
112 dcam:memberOf "Core Component Types" @en,
113 dc:description "A numeric value determined by measuring an object
114 along with the specified unit of measure." @en
115 #####
116 Datatype: cct:Amount
117 Annotations:
118 dcam:memberOf "Core Component Types" @en,
119 dc:description "A number of monetary units
120 specified in a currency where the unit of the currency is explicit or implied." @en
121 #####
122 Datatype: cct:Quantity
123 Annotations:
124 dcam:memberOf "Core Component Types" @en,
125 dc:description "A counted number of non-monetary units possibly including fractions." @en
126 #####
127 Datatype: cct:Numeric
128 Annotations:
129 dcam:memberOf "Core Component Types" @en,
130 dc:description "Numeric information that is assigned or is determined by calculation, counting, or sequencing. It does not require a unit of quantity or unit of measure." @en
131 #####
132 Datatype: cct:Code
133 Annotations:
134 dcam:memberOf "Core Component Types" @en,
135 dc:description "A character string (letters, figures or symbols) that for brevity
136 and/or language independence may be used to represent or
137 replace a definitive value or text of an Attribute together with relevant supplementary information." @en
138 #####
139 Datatype: cct:Identifier
140 Annotations:
141 dcam:memberOf "Core Component Types" @en,
142 dc:description "A character string to identify and distinguish uniquely,
143 one instance of an object in an identification scheme from all other objects
144 in the same scheme together with relevant supplementary information." @en
145 #####
146 Datatype: cct:Indicator
147 Annotations:
148 dcam:memberOf "Core Component Types" @en,
149 dc:description "A list of two mutually exclusive Boolean values
150 that express the only possible states of a Property." @en
151 #####
152 Datatype: cct:Percent
153 Annotations:
154 dcam:memberOf "Core Component Types" @en,
155 dc:description "Numeric information that is assigned or is determined by calculation, counting, or sequencing.
156 It does not require a unit of quantity or unit of measure." @en
157 #####
158 Datatype: cct:Text
159 Annotations:
160 dcam:memberOf "Core Component Types" @en,
161 dc:description "A character string (i.e. a finite set of
162 characters) generally in the form of words of a language." @en
163 #####
164 Datatype: cct:DateTime
165 Annotations:
166 dcam:memberOf "Core Component Types" @en,
167 dc:description "A particular point in the progression
168 of time together with the relevant supplementary information." @en
169 #####
eCMR.ttl 9+ • BSP Model Turtle Notation Shapes.ttl
601 cct:BinaryObject
602 Range:
603 xsd:base64Binary #an..5
604 #####
605 # Annotations
606 #####
607 Class: ccts:CCTS_Annotations
608 AnnotationProperty: ccts:Definition
609 SubpropertyOf: dc:description
610 Annotations:
611 rdfs:label "ccts:Definition"
612 AnnotationProperty: ccts:Type
613 SubpropertyOf: dc:type
614 Annotations:
615 rdfs:label "ccts:Type"
616 AnnotationProperty: ccts:CommonTerm
617 SubpropertyOf: dc:title
618 Annotations:
619 rdfs:label "ccts:CommonTerm"
620 AnnotationProperty: ccts:DictEntryName
621 SubpropertyOf: terms:alternative
622 Annotations:
623 rdfs:label "ccts:Dict.EntryName"
624 AnnotationProperty: ccts:ReprTerm
625 SubpropertyOf: dc:type
626 Annotations:
627 rdfs:label "ccts:Repr.Term"
628 AnnotationProperty: ccts:UNIdentifier
629 SubpropertyOf: dc:identifier
630 Annotations:
631 rdfs:label "ccts:UN Identifier"
632 AnnotationProperty: ccts:TDED
633 SubpropertyOf: dc:identifier
634 Annotations:
635 rdfs:label "ccts:TDED"
636 AnnotationProperty: ccts:ObjClassQual
637 SubpropertyOf: dc:subject
638 Annotations:
639 rdfs:label "ccts:ObjClassQual"
640 AnnotationProperty: ccts:ObjClassTerm
641 SubpropertyOf: terms:isPartOf
642 Annotations:
643 rdfs:label "ccts:ObjClassTerm"
644 AnnotationProperty: ccts:PropTermQual
645 SubpropertyOf: dc:subject
646 Annotations:
647 rdfs:label "ccts:PropTermQual"
648 AnnotationProperty: ccts:PropTerm
649 SubpropertyOf: dc:relation
650 Annotations:
651 rdfs:label "ccts:PropTerm"
652 AnnotationProperty: ccts:AssocObjClassQual
653 SubpropertyOf: dc:object
654 Annotations:
655 rdfs:label "ccts:AssocObjClassQual"
656 AnnotationProperty: ccts:AssocObjClassTerm
657 SubpropertyOf: dc:object
658 Annotations:
659 rdfs:label "ccts:AssocObjClassTerm"
660 AnnotationProperty: ccts:AssocObjClassTerm
661 SubpropertyOf: dc:object
662 Annotations:
663 rdfs:label "ccts:AssocObjClassTerm"
664 AnnotationProperty: ccts:AssocObjClassQual
665 SubpropertyOf: dc:object
666 Annotations:
667 rdfs:label "ccts:AssocObjClassQual"
```

UN/CEFACT Ontology Mapping:

Core Components Types and Annotations for Meta-Level Definitions

Datatypes:

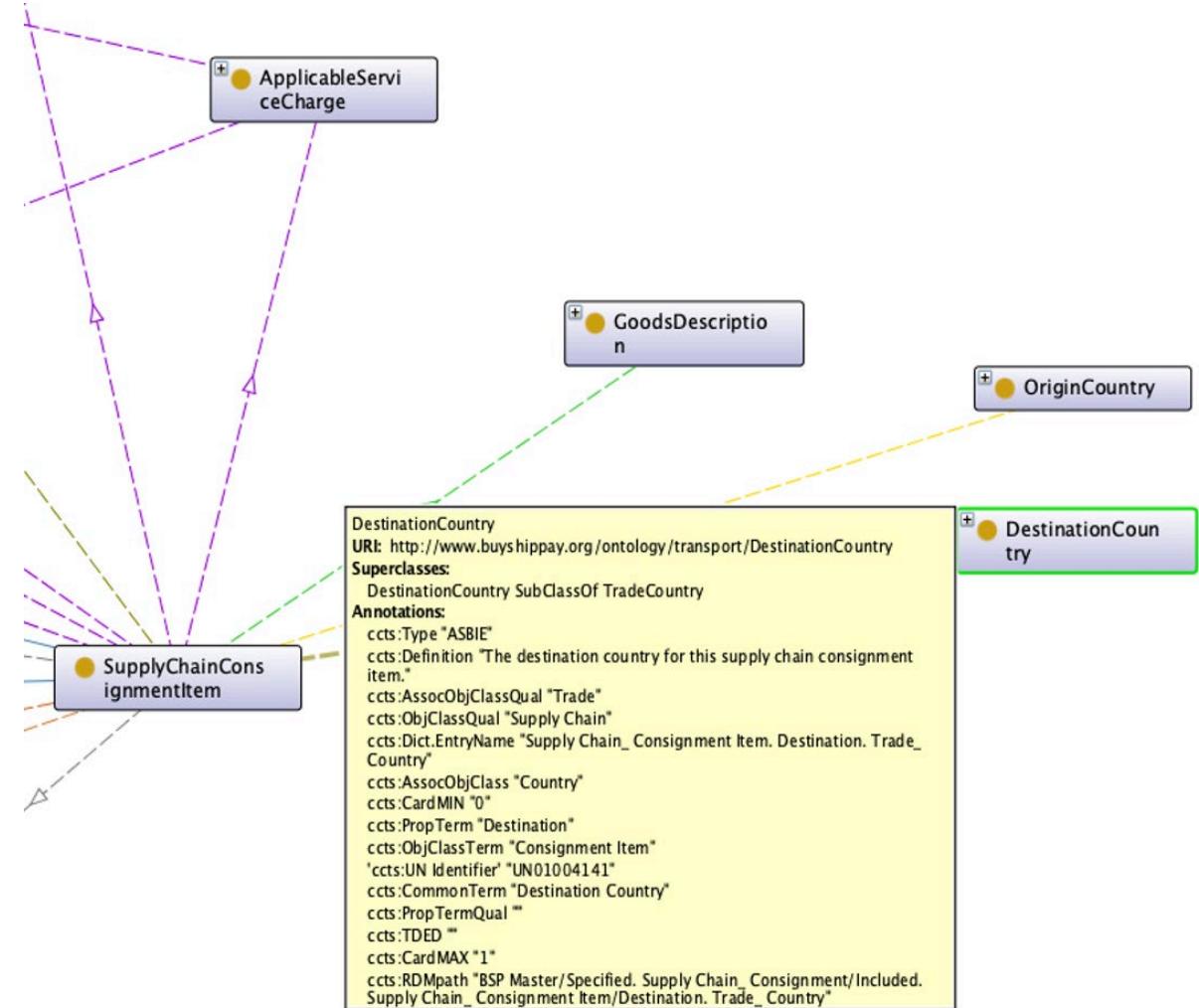
- cct:BinaryObject
- cct:Code
- cct:DateTime
- cct:Identifier
- cct:Indicator
- cct:Measure
- cct:Numeric
- cct:Percent
- cct:Quantity
- cct:Rate
- cct:Text

Annotations Usage

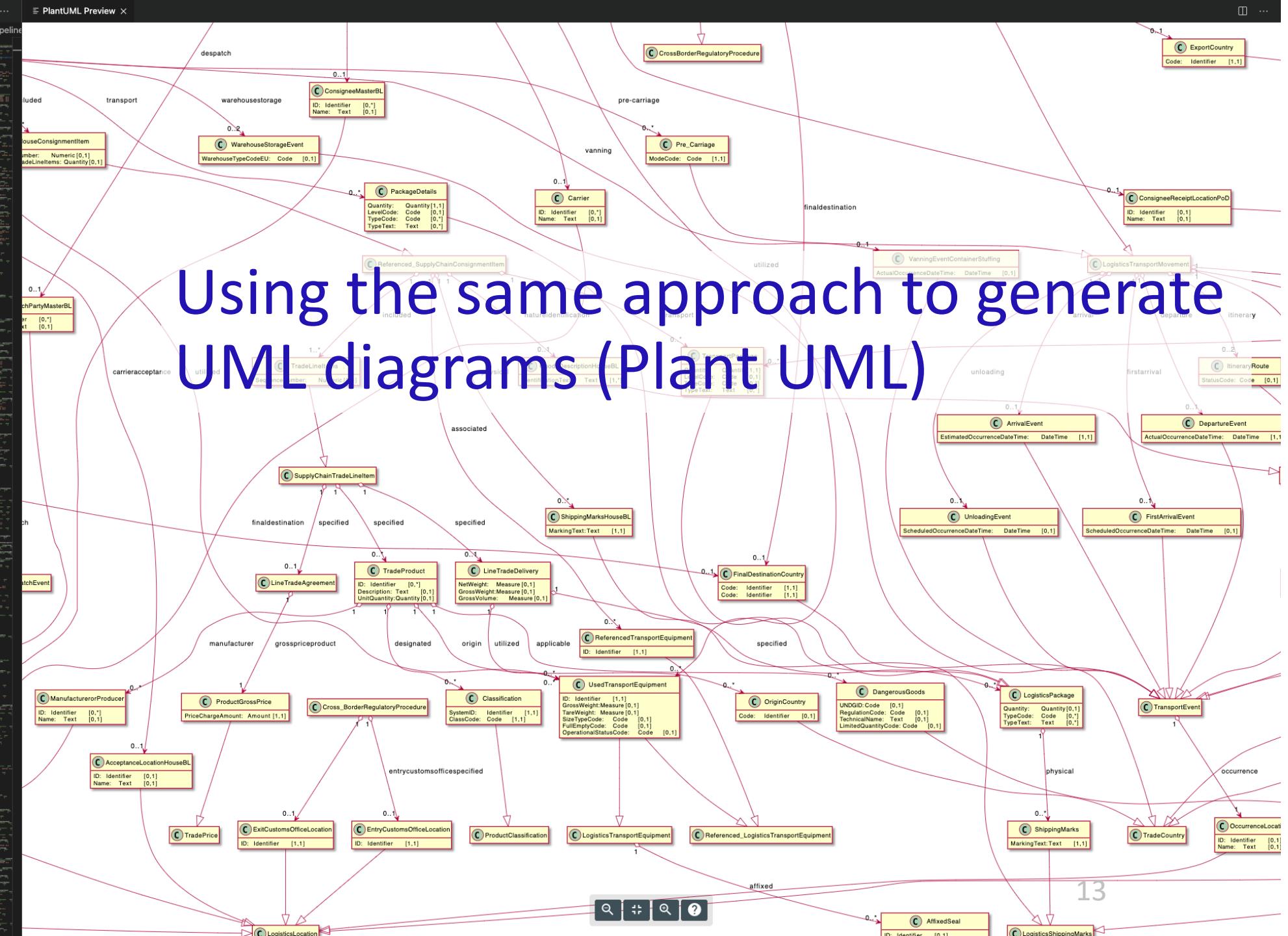
Annotations: DeliveryInstructionsandRelatedServices

Annotations +

- ccts:AssocObjClass
- Instructions
- ccts:AssocObjClassQual
- Delivery
- ccts:CardMAX
- unbounded
- ccts:CardMIN
- 0
- ccts:CommonTerm
- Delivery Instructions and Related Services
- ccts:Definition
- Delivery instructions for this supply chain consignment.
- ccts:Dict.EntryName



```
1 @startuml
2 hide empty members
3 set namespaceSeparator none
4
5
6
7 ##### MMTLogisticsPipelineDataExchange
8 Class MMTLogisticsPipelineDataExchangeStructure
9 }
10
11 ##### ExchangedDocument #####
12 Class ExchangedDocument {
13     IssueDateTime: DateTime [1,1]
14 }
15 Issuer --> TradeParty
16 ##### Issuer #####
17 Class Issuer {
18     ID: Identifier [1,1]
19     RoleCode: Code [1,1]
20 }
21 WaypointData --> ExchangedDeclaration
22 ##### WaypointData #####
23 Class WaypointData {
24     ID: Identifier [0,1]
25     TypeCode: Code [1,1]
26     ProcedureCode: Code [0,*]
27     DeclaredAmountforCustoms: Amount [0,1]
28     DeclaredAmountforStatistics: Amount [0,1]
29     CustomsExchangeRate: Rate [0,1]
30     SpecificCircumstancesIndicator: Code [0,1]
31 }
32 DataDeclarant --> TradeParty
33 ##### DataDeclarant #####
34 Class DataDeclarant {
35     ID: Identifier [0,1]
36 }
37 SubmissionLocation --> LogisticsLocation
38 ##### SubmissionLocation #####
39 Class SubmissionLocation {
40     ID: Identifier [0,1]
41     Name: Text [0,1]
42 }
43
44 ##### Cross_BorderCustomsValuation #####
45 Class Cross_BorderCustomsValuation
46     AddedAdjustmentAmount: Amount [0,1]
47     DeductedAdjustmentAmount: Amount [0,1]
48     AddedAdjustmentPercent: Percent [0,1]
49     DeductedAdjustmentPercent: Percent [0,1]
50     MethodCode: Code [0,1]
51 }
52 PreviousDocument --> ReferencedDocument
53 ##### PreviousDocument #####
54 Class PreviousDocument {
55     TypeCode: Code [1,1]
56     ID: Identifier [1,1]
57 }
58 AssociatedParty --> TradeParty
59 ##### AssociatedParty #####
60 Class AssociatedParty {
61     ID: Identifier [0,1]
62 }
63 AdditionalInformation --> Note
64 ##### AdditionalInformation #####
65 Class AdditionalInformation {
66 }
```



Using the same approach to generate UML diagrams (PlantUML)

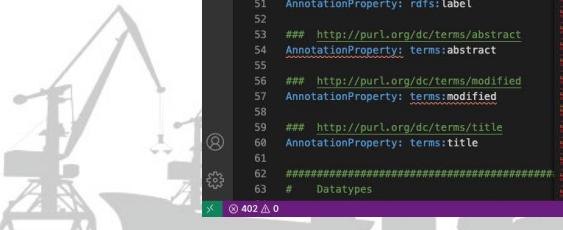
RDM Ontologies and APPLICATIONS

PROFILE e-Commerce

- Supported by Dutch Customs
- About product pricing variations of e-commerce products and examine available information to derive seller profiles
- Example implementation of the PROFILE analytics architecture
- Data integration via APIs, cleansing and quality checking, data ontology alignment, graph queries (SPARQL and Cypher/Neo4j) and Graph Analytics



The Ontology ‘by-hand’: Manchester Syntax



```
ecomPROFILE Manchester copy.ttl
Volumes > Flash > External Data > ebay_datasets > ecomPROFILE Manchester copy.ttl
> ecom:Country
Prefix: : <http://profile-project.eu/data/eCommerce/#
Prefix: ecom: <http://profile-project.eu/data/eCommerce/#
Prefix: dc: <http://purl.org/dc/elements/1.1/
Prefix: foaf: <http://xmlns.com/foaf/0.1/
Prefix: gn: <https://www.geonames.org/ontology#>
Prefix: gr: <http://purl.org/goodrelations/
Prefix: owl: <http://www.w3.org/2002/07/owl#
Prefix: rdf: <http://www.w3.org/1999/02/22-rdf-syntax#>
Prefix: rdfs: <http://www.w3.org/2000/01/rdf-schema#>
Prefix: schema: <http://schema.org/>
Prefix: terms: <http://purl.org/dc/terms/>
Prefix: vc: <http://www.w3.org/2008/05/vcard#>
Prefix: xml: <http://www.w3.org/XML/1998/namespace>
Prefix: xsd: <http://www.w3.org/2001/XMLSchema#>

Ontology: <http://profile-project.eu/data/eCommerce/Sellers_Ontology>
Annotations:
  dc:description "The eCommerce Sellers ontology"
  dc:title "Sellers Ontology"
  terms:abstract "Sellers Ontology"
  terms:modified "20-12-2028"
  terms:title "Sellers Ontology"
  rdfs:isDefinedBy "http://profile-project.eu/data/eCommerce/Sellers_Ontology"
  rdfs:label "Sellers Ontology"
  owl:versionInfo "0.1 Created by hand in 2028"

#####
# Annotation properties
#####

### http://purl.org/dc/elements/1.1/description
AnnotationProperty: dc:description
  rdfs:comment "the description of the item"
  rdfs:label "Description"
  SubClassOf: schema:Text

### http://purl.org/dc/elements/1.1/title
AnnotationProperty: dc:title
  rdfs:comment "the title of the item"
  rdfs:label "Title"
  SubClassOf: schema:Text

### http://www.w3.org/2002/07/owl/versionInfo
AnnotationProperty: owl:versionInfo
  rdfs:comment "the version information of the ontology"
  rdfs:label "Version Info"
  SubClassOf: schema:Text

### http://www.w3.org/2000/01/rdf-schema#comment
AnnotationProperty: rdfs:comment
  rdfs:comment "the comment of the item"
  rdfs:label "Comment"
  SubClassOf: schema:Text

### http://www.w3.org/2000/01/rdf-schema#label
AnnotationProperty: rdfs:label
  rdfs:comment "the label of the item"
  rdfs:label "Label"
  SubClassOf: schema:Text

### http://purl.org/dc/terms/abstract
AnnotationProperty: terms:abstract
  rdfs:comment "the abstract of the item"
  rdfs:label "Abstract"
  SubClassOf: schema:Text

### http://purl.org/dc/terms/modification
AnnotationProperty: terms:modified
  rdfs:comment "the modification date of the item"
  rdfs:label "Modification Date"
  SubClassOf: schema:Text

### http://purl.org/dc/terms/title
AnnotationProperty: terms:title
  rdfs:comment "the title of the item"
  rdfs:label "Title"
  SubClassOf: schema:Text

#####
# Datatypes
#####

# Object Properties
#####

### ecom:hasPhysicalAddress
ObjectProperty: ecom:hasPhysicalAddress
  Annotations:
    rdfs:comment "The Business Address"
    rdfs:label "Has Physical Address"
    Domain: ecom:Seller
    Range: ecom:Location
    Characteristics: Functional

### ecom:addressOf
ObjectProperty: ecom:addressOf
  Annotations:
    rdfs:comment "an address can be of a seller"
    rdfs:label "Address of Seller"
    Domain: ecom:Location
    Range: ecom:AddressOf some ecom:Seller
    InverseOf: ecom:hasPhysicalAddress

### ecom:sells
ObjectProperty: ecom:sells
  Annotations:
    rdfs:comment "Supplier sells Merchandise"
    rdfs:label "Sells"
    SubClassOf: schema:Place

### ecom:Location
Class: ecom:Location
  Annotations:
    rdfs:comment "Location Definition"
    rdfs:label "Location"
    SubClassOf: schema:Place

### schema:Product
Class: schema:Product
  Annotations:
    rdfs:comment "Product Definition"
    rdfs:label "Product"
    SubClassOf: schema:Merchandise

### ecom:Merchandise
Class: ecom:Merchandise
  Annotations:
    rdfs:comment "Product Definition"
    rdfs:label "Product"
    SubClassOf: schema:Product

### ecom:SellerType
DataProperty: ecom:sellerType
  Annotations:
    rdfs:comment "ecom seller type Type"
    rdfs:label "SellerType"
    Domain: ecom:Seller
    Range: xsd:string
    Characteristics: Functional

#####
# Data Properties
#####

### ecom:BusinessLocality
DataProperty: ecom:BusinessLocality
  Annotations:
    rdfs:comment "Business Locality"
    rdfs:label "Business Locality"
    Domain: ecom:Location
    Range: xsd:string
    EquivalentTo: ecom:city

### schema:addressRegion
DataProperty: schema:addressRegion
  Annotations:
    rdfs:comment "Address Region"
    rdfs:label "Address Region"
    Domain: ecom:Location
    Range: xsd:string
    EquivalentTo: ecom:region

### schema:streetAddress
DataProperty: schema:streetAddress
  Annotations:
    rdfs:comment "Street and Number"
    rdfs:label "Address"
    Domain: ecom:Location
    Range: xsd:string
    EquivalentTo: ecom:address

### gn:postalCode
DataProperty: gn:postalCode
  Annotations:
    rdfs:comment "Postal code"
    rdfs:label "Postcode"
    Domain: ecom:Location
    Range: xsd:string
    EquivalentTo: ecom:postCode

### schema:description
DataProperty: schema:description
  Annotations:
    rdfs:comment "Product Item Description"
    rdfs:label "Item Description"
    Domain: ecom:Merchandise
    Range: xsd:string
    EquivalentTo: ecom:description

### gr:PriceSpecification
DataProperty: gr:PriceSpecification
  Annotations:
    rdfs:comment "Product Price"
    rdfs:label "Price Specification"
    Domain: ecom:Merchandise
    Range: xsd:decimal
    EquivalentTo: ecom:price

# Specific Circumstance Indicator
#####

Class: euadm:GoodsItemNumber
  Annotations:
    dc:description "Data requirements table column C2 and I2"
    Data Requirements table column C2 and I2
    Data requirements table columns F10 to F15
    Data requirements table column F43:Item number
    rdfs:label "Goods Item Number"
    dc:label "Group 11"
    terms:references "11 03 000 000"
    #EquivalentTo: wodcm:ConsignmentItem

  DataProperty: euadm:GoodsItemNumber
    Annotations:
      rdfs:label "Goods Item Number"
      dc:label "Group 11"
      dc:description "Data requirements table column C2 and I2"
      Data Requirements table column C2 and I2
      Data requirements table columns F10 to F15
      Data requirements table column F43:Item number
      Item number assigned to the goods upon
      Data requirements table columns F10 to F15
      Number of the item contained in each consignment
      Data requirements table column F43:Item number assigned to the goods with
      terms:references "11 03 000 000"
      Domain: euadm:GoodsItemNumber
      Range: xsd:integer #..5

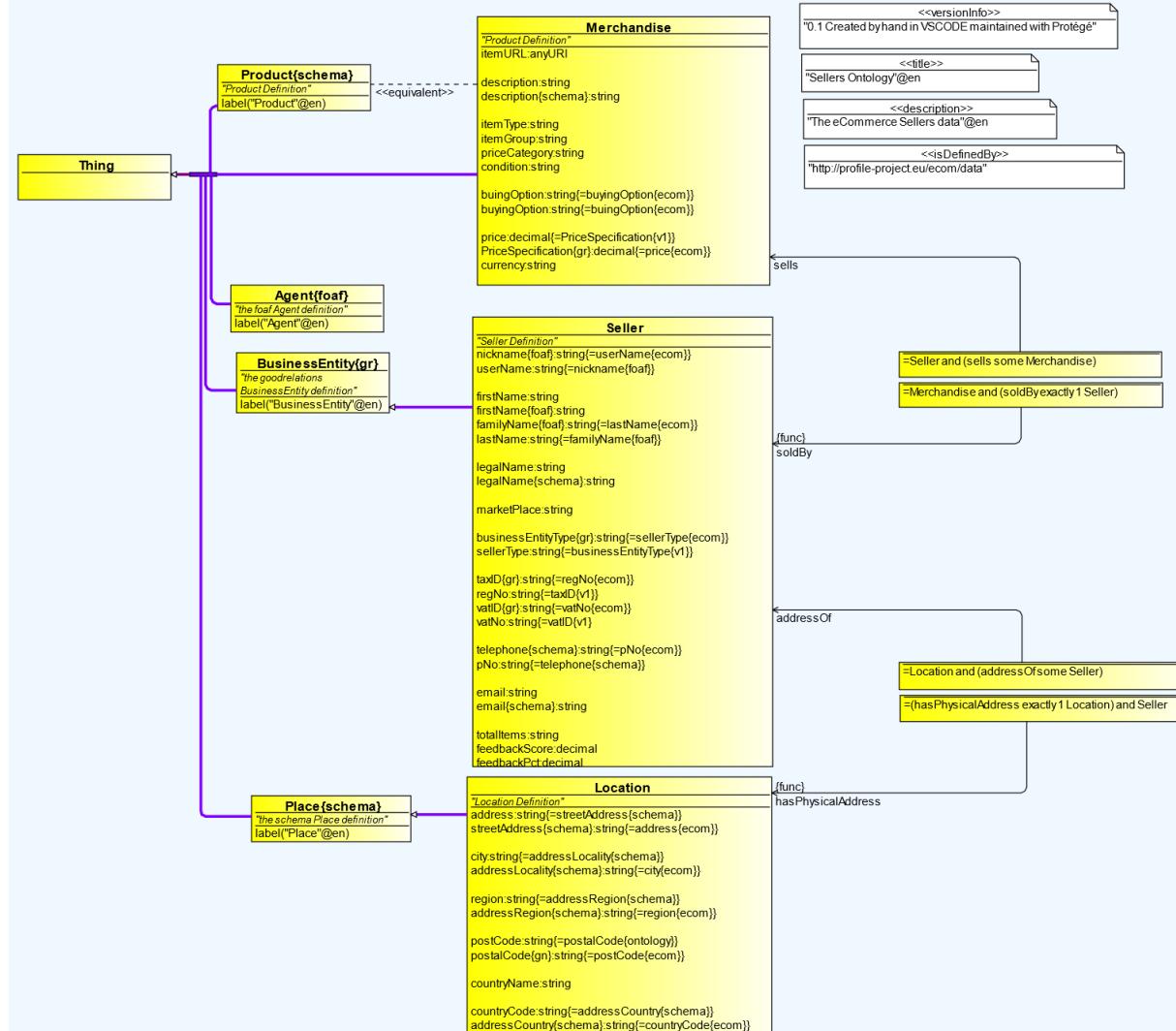
  Class: euadm:SpecificCircumstanceIndicator
    Annotations:
      rdfs:label "Specific Circumstance Indicator"
      dc:label "Group 11"
      dc:description "Data requirements table column A2"
      Data Requirements table column A2
      Using the relevant code, indicate whether the item is a specific circumstance indicator
      Data requirements table columns F10 to F51
      Using the relevant codes, indicate the relevant specific circumstance indicator
      terms:references "11 04 001 000"
      Domain: euadm:SpecificCircumstanceIndicator
      Range: xsd:string #an3

  # Split Consignment
  #####
  
```

The Ontology, as Conceptual Model

- The eCOM ontology shown in a UML like form
- Imported / curated using OWLGrEd

<http://owlgred.lumii.lv/>



Creating the RDF database: use OntoRefine



1. Create and Apply recipes

The screenshot shows the OntoRefine interface with a table titled "Seller Phones". The table has columns: id, title, price, priceCategory, currency, itemGroupType, itemType, itemWebUrl, username, sellDate, feedbackScore, accountType, itemCondition, itemBiddingOns1, itemBiddingOns2, and itemLocation. A sidebar on the left lists various "RDF Tabular (OntoRefine)" operations, including "Import", "Explore", "SPARQL", "Monitor", "Setup", and "Help". A modal window titled "Extract Operation History" is open, showing a list of previous transformations.

2. Perform RDF data mapping

The screenshot shows the OntoRefine interface with a configuration page for "Seller". It maps columns to RDF triples using the ecom namespace. For example, "username" is mapped to <IRI> ecom: Seller. The "schema: Product" section shows mappings for "itemid", "title", "description", "priceSpecification", "priceCategory", "currency", "itemGroup", "itemType", "itemURL", "condition", "buyingOption", "addressCountry", and "sells".

Import

The screenshot shows the GraphDB Import interface. It has tabs for "User data" and "Server files". Under "User data", there are buttons for "Upload RDF files" (All RDF formats, up to 200 MB), "Get RDF data from a URL", and "Import RDF text snippet" (Type or paste RDF data). Below these are imported files: "ecomPROFILE.rdf", "sellersNew.ttl", "phonesNew.ttl", and "watchesNew.ttl".

3. Import the data to the Ontology Graph



- With OntoRefine create the mapping of tabular form data to RDF sentences.
- Important to have the ontology setup properly.

The Ontology Graph

1. Structural data

2. Graph Overview

GraphDB FREE

- Import
- Explore
- Graphs overview
- Class hierarchy
- Class relationships
- Visual graph
- Similarity
- SPARQL
- Monitor
- Setup
- Help

89 ecom:bluekash44
90 ecom:bluekash44_addr
91 ecom:brandnew_phones
92 ecom:brandnew_phones_addr
93 ecom:brankbles0
94 ecom:brankbles0_addr
95 ecom:buingOption
96 ecom:buybay_returndeals
97 ecom:buybay_returndeals_addr
98 ecom:buyingOption
99 ecom:buyingOption
100 ecom:buytIRECTdiscounts
101 ecom:buytIRECTdiscounts_addr
102 ecom:buylsttraders
103 ecom:buylsttraders_addr
104 ecom:by_papet
105 ecom:by_papet_addr
106 ecom:c.c.diamonds
107 ecom:c.c.diamonds_addr

Visual graph

Search for an IRI to view it and configure the visualisation through the UI without using SPARQL.

kic

http://profile-project.eu/data/ecom/kickmobiles-ltd

http://profile-project.eu/data/ecom/kickmobiles-ltd_addr

https://www.ebay.es/itm/Orologio-Nautica-NAPPLH006-Uomo-Al-quarzo/22421232518?hash=item343417294&g_kicAAOSw189fmT7n

https://www.ebay.de/itm/Apple-iPhone-6-16GB-Silber-Ohne-Simlock-A1586-CDMA-GSM-254768847089?hash=item3b516818f1:g:KicAAOSwFfkSR-

https://www.ebay.de/itm/Samsung-N975F-Galaxy-Note-10-DualSim-Aura-Glow-256GB-LTE-Android-6-8-12-MPX/202917919154?hash=item2f3cebdb52:g:kicAAOSwNHZewj-d

https://www.ebay.de/itm/Antik-Sterlingsilber-Keywind-Taschenuhr-CA1870S-Inklusive-Schlusse/33383415421?hash=item4dba10f59d:g:kicAAOSwR5dXsw72

rdf:type	ecom:Seller
rdf:type	ecom:Location

3. Searching

4. Visualisation

5. Details

v1%7C121812105740%7C0

Type: <http://profile-project.eu/data/ecom/Merchandise> <http://schema.org/Product>

RDF rank: 0

Search instance properties

http://profile-project.eu/data/ecom/buyingOption FIXED_PRICE

http://profile-project.eu/data/ecom/condition New

http://profile-project.eu/data/ecom/countryCode GB

http://profile-project.eu/data/ecom/currency EUR

http://profile-project.eu/data/ecom/description BNIB HTC One A9 16GB Silver 5" Inch Factory Unlocked 4G/LTE 3G 2G GSM Simfree

http://profile-project.eu/data/ecom/itemType phone

http://profile-project.eu/data/ecom/price 665.75 Show 2 more

http://profile-project.eu/data/ecom/priceCategory high

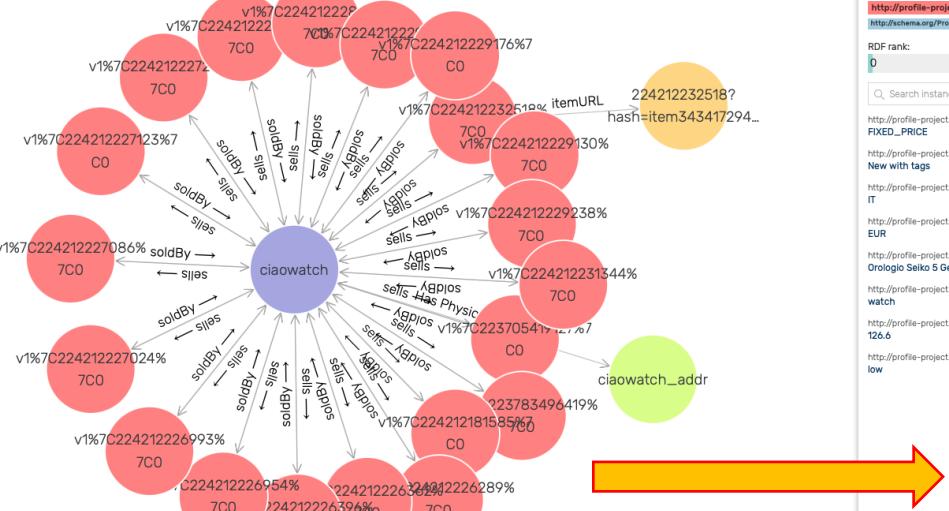
Ontology Explorations ...

18

The Ontology Graph

Visual graph

1. seek Items..



2. ... and find following the Links

v1%7C224212229238%7C0 ↳

↳ v1%7C224212229238%7C0

Types:
<http://profile-project.eu/data/ecom/Merchandise>
<http://schema.org/Product>

RDF rank:
0

Q Search instance properties

http://profile-project.eu/data/ecom/buyingOption
FIXED_PRICE

http://profile-project.eu/data/ecom/condition
New with tags

http://profile-project.eu/data/ecom/countryCode
IT

http://profile-project.eu/data/ecom/currency
EUR

http://profile-project.eu/data/ecom/description
Orologio Seiko 5 Gent SNKL51K1 Uomo Automatico

http://profile-project.eu/data/ecom/itemType
watch

http://profile-project.eu/data/ecom/price
126.6

http://profile-project.eu/data/ecom/priceCategory
low





Makes Sense

About Data Quality - SHACL

1. Define SHACL constraints



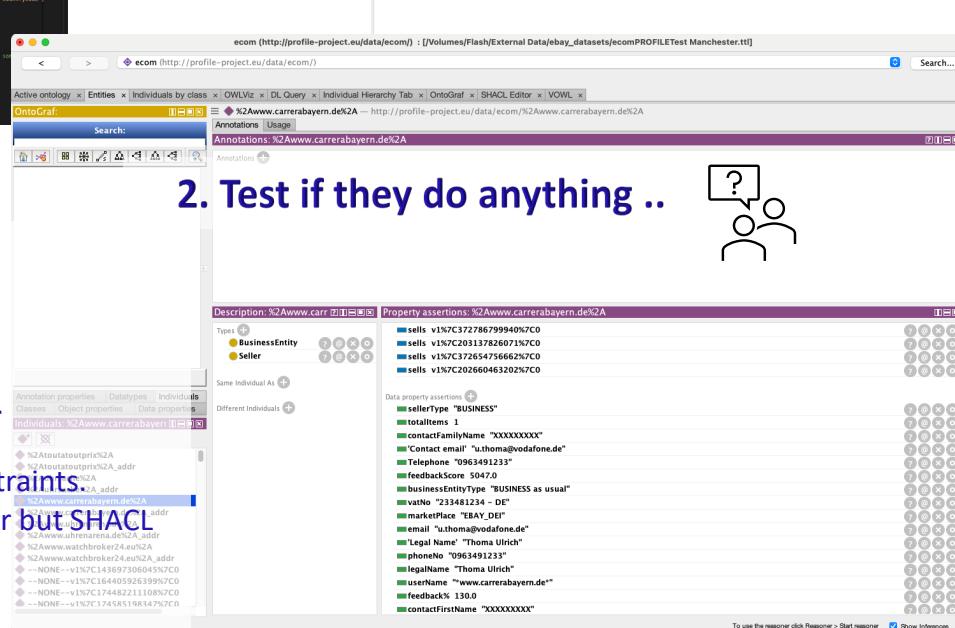
- SHACL – SHAPES Constraint Language

HIGHLIGHTS

 - SHACL is a W3C Technical recommendation
 - OWL assumes ‘open world’
 - In data quality, we need to constraint types, cardinalities etc
 - Done in the past with ad-hoc SPARQL, also with SPIN etc.
 - SHACL avoids programmatic (e.g. SPARQL) definition of constraints
 - ShEx – Shapes Expressions, is equivalent and possibly simpler, has stronger support.
 - SHACL is being simplified too..

HIGHLIGHTS

- SHACL is a W3C Technical recommendation
 - OWL assumes ‘open world’
 - In data quality, we need to constraint types, cardinalities etc
 - Done in the past with ad-hoc SPARQL, also with SPIN etc.
 - SHACL avoids programmatic (e.g. SPARQL) definition of constraints
 - ShEx – Shapes Expressions, is equivalent and possibly simpler
has stronger support.
 - SHACL is being simplified too..



2. Test if they do anything ..



3. ... they do



SHACL editor:

```
[Open | Save | Validate]
  sh:minCount 1;
  sh:maxCount 1;
  sh:datatype xsd:decimal ;
  sh:deactivated true;
];
sh:property [
  # ecomprice      "499.0"^^xsd:decimal
  sh:name "price";
  sh:path ecomprice;
  sh:minCount 1;
  sh:maxCount 1;
  sh:datatype xsd:decimal ;
];
sh:property [
  sh:name "description";
# sh:property [ sh:label "Description" sh:datatype xsd:string ]
  sh:label "Description";
  sh:datatype xsd:string;
  sh:minCount 1;
  sh:maxCount 1;
  sh:datatype xsd:string ;
];

```

SHACL constraint violations: 5/33996

Severity	SourcePath	Message	FocusNode	Path	Value
http://www.w3.org/ns/ruleViolation	1706f1cf1d045x28a3496f6bfadfdca	Value is not less than or equal to 100	http://profile-project.eu/data/econ/%...feedbackPct	http://profile-project.eu/data/econ/%...feedbackPct	130.0^http://www.w3.org/2001/XM...
http://www.w3.org/ns/ruleViolation	3e852c573ebabe791912d44fa16cd7	None value from the shin enumeration	http://profile-project.eu/data/econ/%...marketPlace	http://profile-project.eu/data/econ/%...marketPlace	EBAy_DEI
http://www.w3.org/ns/ruleViolation	3e852c573ebabe791912d44fa16cd7	Value has more than 7 characters	http://profile-project.eu/data/econ/%...marketPlace	http://profile-project.eu/data/econ/%...marketPlace	EBAy_DEI
http://www.w3.org/ns/ruleViolation	3706e3d378e07d07eeccaa833c94e4...	PROPERTY needs to have at least 1 value.	http://profile-project.eu/data/econ/%...SellerShip...	http://profile-project.eu/data/econ/%...SellerShip...	Product< http://schemas.org.telep...>
http://www.w3.org/ns/ruleViolation		SellerShip...	http://profile-project.eu/data/econ/%...SellerShip...	http://profile-project.eu/data/econ/%...SellerShip...	0063a01233

http://www.w3.org/2001/XMLSchema#string

Individual Hierarchy Tab x OntoGraf x SHACL Editor x VOWL x

— 8 —

Using the Graph Database - SPARQL

Extremely Expensive Products by Sellers with no VAT ID

```
PREFIX ecom: <http://profile-project.eu/data/ecom/>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
PREFIX schema: <http://schema.org/>
PREFIX gr: <http://purl.org/goodrelations/v1#>
PREFIX : <http://profile-project.eu/data/ecom/>

SELECT ?s ?mkt ?prod ?sctr ?pctr
WHERE {
  ?s a :Seller;
  :sellerType ?type;
  :hasPhysicalAddress ?addr;
  :marketPlace ?mkt;
  :sells ?prod.
  ?addr :countryCode ?sctr.

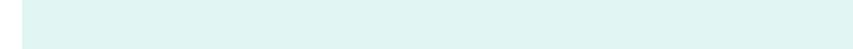
  ?prod :countryCode ?pctr;
  :priceCategory "extreme"
  { FILTER NOT EXISTS { ?s :vatNo ?v } }
  FILTER (?type = "BUSINESS").
  FILTER ( ?sctr != ?pctr )
}
GROUP BY ?s ?mkt ?prod ?sctr ?pctr

#The extremely expensive products are sold by sellers with no Vat Info !!
#Product in other country
```

extremely expensive prod... × product sold in different m... × products sold in marketpla... × extremely expens

```
v 1 PREFIX ecom: <http://profile-project.eu/data/ecom/>
2 PREFIX foaf: <http://xmlns.com/foaf/0.1/>
3 PREFIX schema: <http://schema.org/>
4 PREFIX gr: <http://purl.org/goodrelations/v1#>
5 PREFIX : <http://profile-project.eu/data/ecom/>
6
7 SELECT ?s ?mkt ?prod ?sctr ?pctr
8 WHERE {
9   ?s a :Seller;
10  :sellerType ?type;
11  :hasPhysicalAddress ?addr;
12  :marketPlace ?mkt;
13  :sells ?prod;
14  ?addr :countryCode ?sctr.
}
```

Table Raw Response Pivot Table Google Chart



Available Variables
prod +

Cells
Count

Rows
S +

Columns
mkt + sctr + pctr +

mkt	EBAY_DE			EBAY_ES		Totals
sctr	US			GB		
pctr	AE	CH	HK	SG	SE	
:mayfair-watches					1	1
:watchbox_govbergjewelers	41	31	54	19		145
Totals	41	31	54	19	1	146



Using the Graph Database - SPARQL

Products Sold in Different Markets

Suppliers from country per Market Suppliers from country per Product Sellers with no VAT that sell via

```
7 SELECT ?supplier ?product ?market
8 WHERE
9 { ?supplier :sells ?product;
10   :marketPlace ?market
11 { select ?supplier
12   where {
13     ?supplier ecom:marketPlace ?mkt .
14     ?supplier ecom:marketPlace ?mkt1
15     FILTER(?mkt > ?mkt1 )
16   }
17 }
18 }
19 ORDER BY ?supplier ?product
20
21
```

[Table](#) [Raw Response](#) [Pivot Table](#) [Google Chart](#)

Showing results from 2,001 to 2,232 of 2,232. Query took 0.2s, moments ago.

Available Variables	product
Cells	Count
Rows	market
supplier	

market	EBAY_DE	EBAY_ES	EBAY_IT	Totals
supplier	38	38	76	
:shurenzh_markenuhren	38	38	76	
:navary_store	15	15	30	
:websrl	31	31	62	
:wehaveyoucovered	6	6	12	
:westernoutfits53	10	10	20	
:wir.kaufen.alles.43	12	12	24	
:worldquality	3		3	6
:zzzretromerzzz	1	1		2
Totals	116	113	3	232



Run

Save

< 1 2 3 >

Products in MarketPlaces Pivot Analysis

Showing results from 9,001 to 10,000 of 123,311. Qu

Showing results from 9,001 to



Available Variables
p pkat price curcy addr

Cells
Sum
Columns
Rows
S cond

Available Variables
p pkat price curcy addr

Cells
Sum
Columns
Rows
mkt sellAddr type prodAddr

s	cond	mkt				EBAY_DE				Totals	
		sellAddr	BG		DE		ES		GB		
			phone	phone	phone	watch	phone	phone	GB		
s	cond	prodAddr	BG	DE	ES	ES	GB	GB	GB		
:by_papet	New		2,498.00				2,498.00				
:by_papet	New		48,442.27				48,442.27				
:cw-mobile-shop	New - some issues		2,637.25				2,637.25				
:deltatecc-prime	New		20,621.51				20,621.51				
:joker-shop	New - some issues		7,612.00				7,612.00				
:gregory.belfast	New		76,599.76				76,599.76				
:hifi-extra	Opened - never used						4,410.63			4,410.63	
:hifi-extra	New - some issues		70,162.69				70,162.69			70,162.69	
:hifi-extra	Used		15,285.80				15,285.80			15,285.80	
:laptopoutletdirect	New		36,039.27				36,039.27			36,039.27	
:laptopoutletdirect	Seller refurbished						653.39			653.39	
:mediamarkt-neumuenster	New		612.02				612.02			612.02	
:mediamarkt-neumuenster	New - some issues		5,095.00				5,095.00			5,095.00	
:connect15	Used		1,499.00				1,499.00			1,499.00	
:rayners%2Aentertainment	For parts or not working						62.16			62.16	
:rayners%2Aentertainment	New						411.45			411.45	
:rayners%2Aentertainment	Opened - never used						4,567.82			4,567.82	
:techtomoney	New		16,066.00				16,066.00			16,066.00	
:techtomoney	New - some issues		799.00				799.00			799.00	
:techtomoney	Used		1,059.00				1,059.00			1,059.00	
:todoconsolassl	New		3,539.59				3,539.59			3,539.59	
:todoconsolassl	Used		89,415.30				99,403.30			99,403.30	
	Totals		1,499.00	267,489.30	92,545.89	9,988.00	46,144.72	418,075.91			

Available Variables
p pkat price curcy addr

Cells
Sum
Columns
Rows
mkt sellAddr type prodAddr

s	cond	mkt				EBAY_DE				Totals	
		sellAddr	BG		DE		ES		GB		
			phone	phone	phone	watch	phone	phone	GB		
s	cond	prodAddr	BG	DE	ES	ES	GB	GB	GB		
:by_papet	New		2				2			2	
:by_papet	New		99				99			99	
:cw-mobile-shop	New - some issues		6				6			6	
:deltatecc-prime	New		25				25			25	
:joker-shop	New - some issues		8				8			8	
:gregory.belfast	Opened - never used		152				152			152	
:hifi-extra	New - some issues		113				113			113	
:hifi-extra	Used		38				38			38	
:laptopoutletdirect	New		3				3			3	
:laptopoutletdirect	Seller refurbished		3				3			3	
:mediamarkt-neumuenster	New		3				3			3	
:mediamarkt-neumuenster	New - some issues		7				7			7	
:connect15	Used		1				1			1	
:rayners%2Aentertainment	For parts or not working		1				1			1	
:rayners%2Aentertainment	New		3				3			3	
:rayners%2Aentertainment	Opened - never used		20				20			20	
:techtomoney	New		14				14			14	
:techtomoney	New - some issues		1				1			1	
:techtomoney	Used		1				1			1	
:todoconsolassl	New		22				22			22	
:todoconsolassl	Used		124				124			124	
	Totals		1	469	338	124	68	1,000			

Graph Analytics

Find "extreme" priced products; the network was created dynamically navigating on the graph

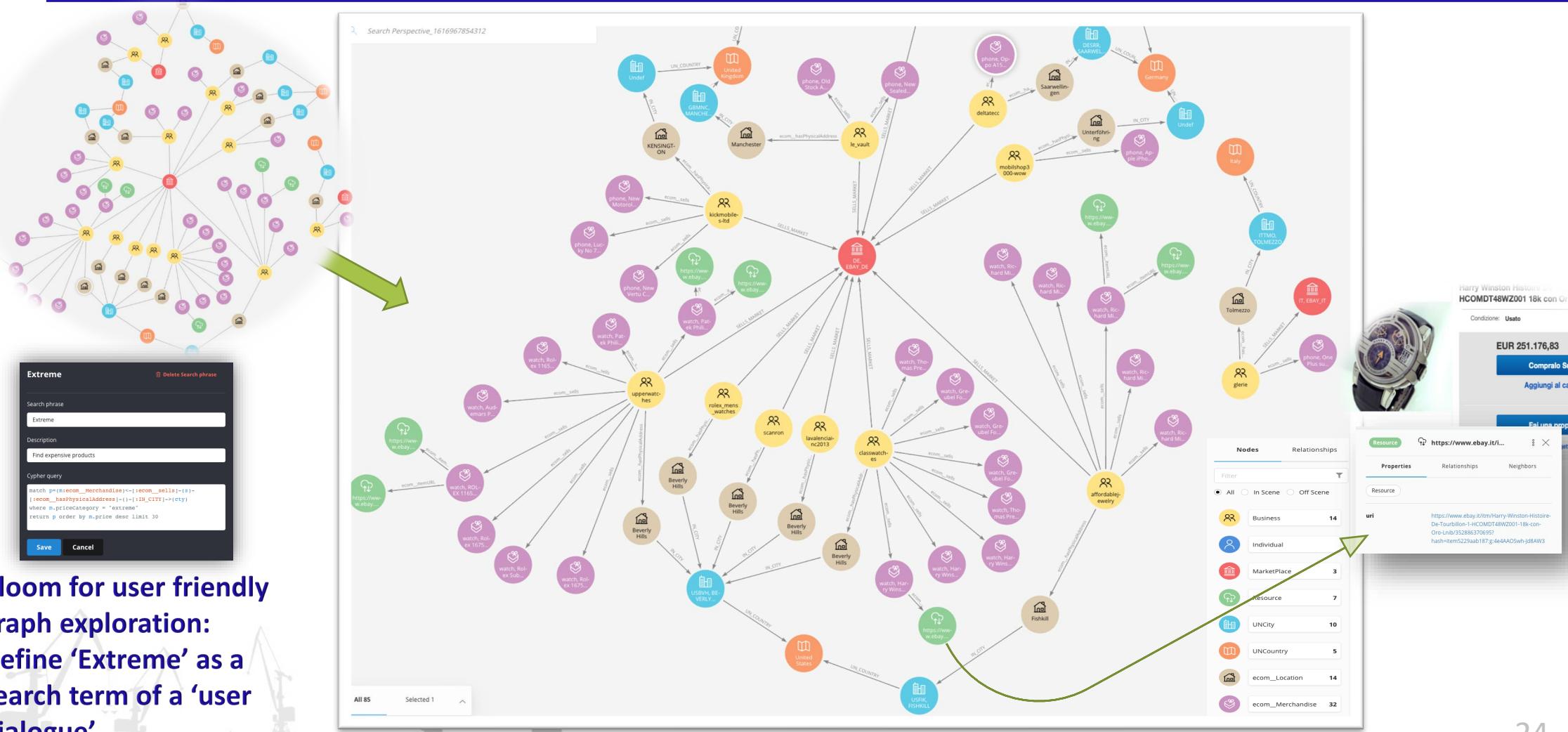
neo4j\$ match p=(m:ecom_Merchandise)-[:ecom_sells]-(s)-[:ecom_hasPhysicalAddress]-()-[IN_CITY]-(cty) where m.priceCategory = "extreme" return p order by m.price desc limit 30

Graph Table Text Code

Resource ecom_Merchandise <id>:165490 condition: Pre-owned ecom_buyingOption: BEST_OFFER, FIXED_PRICE ecom_condition: Pre-owned ecom_countryCode: US ecom_currency: EUR ecom_description: Harry Winston Histoire de Tourbillon #1 HCOMDT48WZ001 18k WGOLD \$802,600 LNIB price: 247043.26, 245510.21 ecom_priceCategory: extreme itemType: watch location: US name: Harry Winston Histoire de Tourbillon #1 HCOMDT48WZ001 18k WGOLD \$802,600 LNIB priceCategory: extreme uri: http://pro...

Started streaming 3 records after 1 ms and completed after 42 ms.

More graph analytics



RDM Ontologies and Applications

Discussion

