



**Table 1 (Partial): Graphical vocabulary of G-OWL entities**

	Graphical Alphabet	Meaning	Typed disambiguation	Polysemy in OWL
Abstract level		The rectangle depicts the « what » of things		owl:Class
		The containing rectangle depicts a universal or existential <i>Restriction</i> or its value or cardinality.	$\exists$ $\forall$ $\exists, \leq, \geq, =$	owl:someValuesFrom owl:allValuesFrom <i>plus others ...</i>
		The containing rectangle is also used to represent a collection of declarative knowledge	$\cap$ $\cup, [, ], \neg, \neq$	owl:intersectionOf owl:unionOf <i>plus others...</i>
		The hexagon is used for representing a role that defines the property between abstract or factual entities.	<i>if codomain is a data</i> <i>if codomain is a fact</i> $T, S(\text{symmetric}),$ $F(\text{func.}),$ <i>plus others ...</i>	owl:DatatypeProperty owl:ObjectProperty owl:TransitivProperty <i>plus others ...</i>
Factual level		The dotted-line rectangle depicts a fact.		OWL individual
		The dotted-line depicts data of the type <i>integer, real, s, etc.</i>	Bool, String, Int, Float	xsd:Boolean <i>plus others ...</i>

**Table 2 (Partial): Graphical vocabulary of G-OWL relations**

Type	Meaning	disambiguation rule	Polysemy in OWL
--- S --> SLink	The <i>specialization link</i> associates two knowledge items of the same type of which the first is a specialization of the second.	<i>if SLink between two concepts</i> <i>if SLink between two roles</i>	rdfs:subClassOf rdfs:subPropertyOf
<-- S --> LinkDS (LinkS with double orientation)	The <i>synonymy link</i> associates two knowledge items of the same type at the abstract level or two facts. It indicates that the first knowledge item is the equivalent (or synonym) of the second.	<i>if DLink between two concepts</i> <i>if DLink between two roles</i> <i>if DLink between two facts</i>	owl:equivalentClass owl:equivalentProperty owl:sameAs
-- A --> ALink	The <i>attribution link</i> associates an attribute to a concept, a restriction or a collection to specify the image or domain of a property.	<i>if source is concept and destination is role</i> <i>if source is role and destination is concept</i>	rdfs:domain rdfs:range
--name--> Non Typed Link	The <i>Non Typed link</i> associates a <i>predicate</i> between a fact and a knowledge item. The name of the predicate is associated to an existing attribute via the <i>RoleName</i> .	<i>if source is a fact and destination is a fact</i>	<i>Predicate</i>
-- I --> ILink	The <i>Instantiation link</i> associates a concept with a fact which designates an instance of this knowledge item.	<i>if source is a fact and destination is a concept</i>	rdf:type

using it as a supporting tool for knowledge elicitation and brainstorming, as well as for building more domain ontologies.

## 6. REFERENCE

[1] G. Paquette, M. Léonard, J. Basque, and B. Pudelko, "Modeling for Knowledge Management in Organizations," in *Visual Knowledge Modeling for Semantic Web Technologies: Models and Ontologies*, ed: IGI Global, 2010, pp. 393-413.

[2] D. D. Suthers, "Representational guidance for collaborative inquiry," in *Arguing to Learn* J. Andriessen, M. Baker, and D. Suthers, Eds., ed Dordrecht/Boston/London: Kluwer, 2003, pp. 27-46.

[3] D. Gašević, D. Djurić, and V. Devedžić, *Model Driven Architecture and Ontology Development*. New York, Inc.: Springer-Verlag, 2006.

[4] R. Falco, A. Gangemi, S. Peroni, D. Shotton, and F. Vitali, "Modelling OWL Ontologies with Graffoo," in *The Semantic Web: ESWC 2014 Satellite Events*. vol. 8798, V. Presutti, E. Blomqvist, R. Troncy, H. Sack, I. Papadakis, and A. Tordai, Eds., ed: Springer International Publishing, 2014, pp. 320-325.

[5] S. Krivov, R. Williams, and F. Villa, "GrOWL: A tool for visualization and editing of OWL ontologies," *Web Semantics: Science, Services and Agents on the World Wide Web*, vol. 5, pp. 54-57, 2007.

[6] M. Héon, *Web sémantique et modélisation ontologique (avec G-OWL): Guide du développeur Java sous Eclipse*, Editions ENI, 2014.

[7] P. Hitzler, et al. (2012, 23-10-2013). *OWL 2 Web Ontology Language Primer (Second Edition)*. Available: <http://www.w3.org/TR/owl2-primer/>

**Fig. 1. Partial ontology of the Château d'Yquem Sauterne in graphical representation and G-OWL (extracted from wine.owl).**

Graph representation	G-OWL Representation	Protégé OntoGraph	Criteria Ent/link	Graph	G-OWL	OntoGraph
			Number of types	6/8	5/3	6/3
			Total number	13/13	9/5	6/7