Appendix 1: Ontology Engineering Tools

This appendix contains links for each category presented in Figure 2. These classifications and definitions have been taken from Poveda-Villalón et al. (2022).

* Concept extractor
	+ Word cloud systems: https://www.wordclouds.com/
	+ Entity recognition: https://huggingface.co/dslim/bert-large-NER
* Test specification / Test executor
	+ THEMIS: http://themis.linkeddata.es/
	+ TDD Onto2: https://github.com/kierendavies/tddonto2
* General docs
	+ Tables
		- OpenOffice http://www.openoffice.org/
		- Google Drive https://www.google.com/drive
		- MS Office https://www.office.com/
	+ Documents
		- OpenOffice http://www.openoffice.org/
		- Google Drive https://www.google.com/drive
		- MS Office https://www.office.com/
	+ Mindmaps
		- Miro https://miro.com/mind-map/
		- Mural https://www.mural.co
		- Coggle <https://coggle.it/>
* Ontology editor
	+ Protégé: https://protegewiki.stanford.edu/wiki/ProtegeDesktopUserDocs
	+ WebProtégé: https://protegewiki.stanford.edu/wiki/WebProtege
	+ Fluent Editor: https://www.cognitum.eu/semantics/FluentEditor/
	+ TopBraid Composer: https://archive.topquadrant.com/topbraid-composer-install/
	+ PoolParty: https://www.poolparty.biz/
	+ CAMEO: https://www.3ds.com/products-services/catia/products/no-magic/cameo-systems-modeler/
	+ SousLeSens: https://souslesens.enit.fr
* (Visual) Drafting
	+ Chowlk: https://chowlk.linkeddata.es/
	+ crowd-tool: https://crowd-app.fi.uncoma.edu.ar/
	+ Menthor Editor: https://ontouml.org/ontouml/tooling/
	+ OntoPanel: https://github.com/yuechenbam/yuechenbam.github.io
	+ OWBO: https://github.com/mdaquin/OWBO
	+ DiTTO: https://essepuntato.it/ditto/
	+ Gra.fo: https://gra.fo/
* Ontology Design Pattern Reuse
	+ Reasonable Ontology Templates (OTTR): https://ottr.xyz/
	+ ODP Portal: http://ontologydesignpatterns.org/wiki/Main\_Page
* Modularizer
	+ Ontofox: https://ontofox.hegroup.org/
* Matcher
	+ Alignment Cubes: https://www.ida.liu.se/%7Epatla00/research/AlignmentCubes/
* Visualizer
	+ WebVOWL: http://vowl.visualdataweb.org/webvowl.html
* Repository
	+ IndustryPortal: http://industryportal.enit.fr/
	+ LOV: https://lov.linkeddata.es
	+ BARTOC: https://bartoc.org/
	+ Ontohub: https://ontohub.org/
	+ LOV4IoT: https://lov4iot.appspot.com/
	+ BioPortal: https://bioportal.bioontology.org/
	+ OntoBee: https://ontobee.org/
	+ AgroPortal: http://agroportal.lirmm.fr/
	+ ODP Portal: http://ontologydesignpatterns.org/wiki/Main\_Page
	+ DBpedia Archivo: https://archivo.dbpedia.org/list
	+ Ontology Lookup Service (OLS) : https://www.ebi.ac.uk/ols/index
* Validator
	+ OOPS!: https://oops.linkeddata.es/
	+ ASTREA: https://astrea.linkeddata.es/
	+ Shaclgen: https://pypi.org/project/shaclgen/
	+ Shape designer: https://gitlab.inria.fr/jdusart/shexjapp
* Reasoner
	+ Pellet: https://github.com/stardog-union/pellet
	+ Fact++: http://owl.cs.manchester.ac.uk/tools/fact/
	+ Hermit: http://www.hermit-reasoner.com/
	+ Konclude: https://www.derivo.de/en/produkte/konclude.html
	+ ORMiE: https://gitlab.inf.unibz.it/franconi/ormie-release/
	+ Hets: https://github.com/spechub/Hets
* Documenter
	+ WIDOCO: https://dgarijo.github.io/Widoco/doc/tutorial/
	+ LODE: https://essepuntato.it/lode/
	+ pyLODE: https://github.com/RDFLib/pyLODE
* Publication Server
	+ Web servers: General web server to manage web domains.
	+ w3id: https://w3id.org/
	+ purl: https://purl.archive.org/
* Ontology FAIR validator
	+ FOOPS!: https://w3id.org/foops/
	+ O’FAIRE: https://github.com/agroportal/fairness
* Issue tracking
	+ GitHub: https://github.com/
	+ GitLab: https://about.gitlab.com/
	+ Jira: https://www.atlassian.com/software/jira
	+ Mantis: https://www.mantisbt.org/
* Versioning
	+ ontology-toolkit: https://github.com/semanticarts/ontology-toolkit
* Populator
	+ LinkML : https://linkml.io/
	+ OpenRefine: https://github.com/OpenRefine/OpenRefine
	+ LODRefine: https://github.com/sparkica/LODRefine
	+ OntoRefine: https://www.ontotext.com/products/ontotext-refine/
	+ R2RML: https://www.w3.org/TR/r2rml/
	+ RML: https://rml.io/specs/rml/
	+ YARRML: https://rml.io/yarrrml/
	+ Matey: https://rml.io/yarrrml/matey/
	+ Helio: https://oeg-upm.github.io/helio/
	+ Karma: https://usc-isi-i2.github.io/karma/
	+ MORPH: https://morph.oeg.fi.upm.es/
	+ SPARQL-generate: https://ci.mines-stetienne.fr/sparql-generate/
	+ excel2RDF: https://pypi.org/project/excel2rdf/
	+ mimir: https://github.com/mimir-org
* Constraints validator
	+ ASTREA: https://astrea.linkeddata.es/
	+ Shaclgen: https://pypi.org/project/shaclgen/
	+ Shape designer: https://gitlab.inria.fr/jdusart/shexjapp
* Triple Store / Publisher
	+ AllegroGraph: https://allegrograph.com/products/allegrograph/
	+ GraphDB: https://graphdb.ontotext.com/
	+ Virtuoso: https://virtuoso.openlinksw.com/
	+ GRUFF: https://allegrograph.com/products/gruff/
	+ IntelligentGraph: https://github.com/peterjohnlawrence/com.inova8.intelligentgraph/tree/master/olgap
	+ Helio: https://oeg-upm.github.io/helio/
	+ LUPOSDATE: https://github.com/luposdate/luposdate
	+ Ontop: https://ontop-vkg.org/
	+ RDFox: https://www.oxfordsemantic.tech/
	+ Stardog: https://www.stardog.com/
	+ WIMU: http://wimu.aksw.org/
	+ YASGUI: https://github.com/TriplyDB/Yasgui
* Data FAIR validator
	+ F-UJI: https://www.f-uji.net/
* APIs
	+ Apache Jena: https://jena.apache.org/
	+ OData2SPARQL: https://inova8.com/bg\_inova8.com/offerings/odata2sparql/
	+ Ontospy: http://lambdamusic.github.io/Ontospy/
	+ OWL API: http://owlcs.github.io/owlapi/
	+ Owlready2: https://owlready2.readthedocs.io/en/v0.35/
	+ EMMOntoPy: https://emmo-repo.github.io/EMMO-python
	+ Pronto: https://github.com/althonos/pronto
	+ RDF4J: https://rdf4j.org/
	+ RDFLib: https://rdflib.readthedocs.io/en/stable/
	+ ROBOT: http://robot.obolibrary.org/
* Project management, version management and issue tracking
	+ Ontology development oriented
		- OnToology: http://ontoology.linkeddata.es/
		- VocBench: https://ec.europa.eu/isa2/solutions/vocbench3\_en
		- VoCol: https://vocol.iais.fraunhofer.de//
		- CENtree: https://www.scibite.com/platform/centree-ontology-management-platform/
	+ General or software-oriented
		- GitHub : https://github.com/
		- GitLab: https://about.gitlab.com/
		- Jira: https://www.atlassian.com/software/jira
		- Mantis: https://www.mantisbt.org/
	+ Communication tools
		- Zoom: https://zoom.us/
		- Google Meet: https://meet.google.com/
		- Jitsi Meet: https://meet.jit.si/
		- Teams: https://www.microsoft.com/en/microsoft-teams/group-chat-software
		- Skype: https://www.skype.com
		- Webex: <https://www.webex.com/>
		- GoToMeeting: https://www.goto.com/