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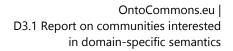
# Report D3.1 "Report on communities interested in domain-specific semantics"

Grant Agreement: 958371



OntoCommons - Ontology-driven data documentation for Industry Commons, has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 958371.





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Project Acronym	OntoCommons
Project Number	958371
Type of project	CSA - Coordination and support action
Topics	DT-NMBP-39-2020 - Towards Standardised Documentation of
	Data through taxonomies and ontologies (CSA)
Starting date of Project	01 November 2020
Duration of the project	36 months
Website	www.ontocommons.eu

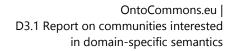
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# Report D3.1

# "Report on communities interested in domain-specific semantics"

Work Package	WP3   Industrial Domain Ontologies
Task	T3.1   Networking and consultation
Lead author	FRAUNHOFER IWM
Contributors ENIT, TRUST-IT, GCL, UKRI, IRES, UIO, UPM, CNR	
Peer reviewers Nadja Adamovic (TU Wien-ISAS), Hedi Karray (ENIT)	
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# Keywords

Communities, Stakeholders, Semantic Assents, Domain ontologies, Domain specific sematics

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# Disclaimer

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# **Executive Summary**

The core objective of Work Package 3 is to collect community input to formulate guidance and agreements concerning the harmonisation of domain ontologies. In this document we provide a first definition of the relevant domains for the project based on the Description of Actions and the demonstrators. Further relevant domains have been investigated with the help of **ENIT**. Still, the provided list of domains might not be complete and will be further elaborated in the course of the project. The present list of domains is mainly based on the focus of the OntoCommons project as described in the Grand Agreement. Further relevant domains have been selected, if work on semantic assets were visible and if the domains were similar to the ones mentioned in the Description of Actions. For this, the following platforms have been harvested

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- Ontologies registered in <u>Taxonda<sup>1</sup></u>.
- Semantic assets <u>collected by the RDA group</u><sup>2</sup>.
- Domains listed on the EMMO GitHub page<sup>3</sup>.

Furthermore, all members of the consortium have been asked to modify the list of domains and add further semantic assets to the list. The domains will be further refined in the upcoming activities in WP3, most importantly in the semantic landscape analysis (T3.2), the upcoming survey (See Chapter 4) and the focussed workshop FW3.1.

For every domain, we present the communities interested in it. These communities consist of organizations and projects, but most importantly of people. For each domain, we collected the relevant people active in the field and interested in domain ontologies, as well as interesting projects and organizations.

We asked all partners in the consortium to provide us with potential stakeholders and relevant people who might be interested in semantics for each domain. These people can be contacted during the project by the OntoCommons partner who added them in this document. In this manner we can ask the stakeholders to register on the OntoCommons Website. Afterwards, the project can invite them to activities, like workshops, which are most relevant to each of them.

For each identified stakeholder in a domain, we provide the name, affiliation, affiliation country, contact info, if available, as well as groups to which the stakeholder is associated. Due to privacy reasons, we will not publish names and contact information despite the public nature of the deliverable. Instead, we will only publish a censored version, while submitting the original to the European Commission. For each semantic asset, we provide the name, the author/owner or contact together with the intended scope and a download link or a link to material describing the asset in more detail. If there is a demonstrator planned in a domain, we mention it to indicate the importance of the domain for the project.

For the organizations and projects, we reduced the list of D1.1 developed by **GCL** to those entries which deal with specific domains. We asked the partners to provide relevant contacts for each

<sup>3</sup> https://github.com/emmo-repo https://www.ontocommons.eu/

<sup>&</sup>lt;sup>1</sup> https://emmc.info/taxonda-dashboard/

<sup>&</sup>lt;sup>2</sup> https://materials.registry.nist.gov/explore/keyword/



organization and project. We refer to D1.1 and the provided links to the website for more information and details.

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With the important members of the communities and relevant domains identified, the next step is to gather input from the stakeholders. For that matter, a survey is currently being prepared by **E-SDF** in collaboration with all Work Package partners. The results of the survey will be input for Deliverable 3.2, for which a semantic landscape analysis is performed. In the semantic landscape analysis, the field is scanned for existing and ontologies and semantic assets in much greater detail than in this first document. In the analysis, special attention lies in identifying the gaps in the current domain ontology landscape. **UKRI** currently prepares a focused workshop for direct interaction with stakeholders. This workshop will be an extended event, divided into two parts. The first part will be held in March and will be a kick-off workshop, aimed at discussing the survey results. It will contain a brainstorming activity as preparation for the second follow-up event. The second part is the DORIC-MM workshop co-located at the ESWC 2021 conference<sup>4</sup>, to reach a broad stakeholder audience. For DORIC-MM, experts in the field are invited as keynote speakers and participants can discuss their current challenges in digitisation and data interoperability using domain ontologies.

The document is organised in five chapters. The first chapter reports on the communities in the direct focus of OntoCommons, as they are explicitly mentioned in the Description of Action or as there exists an OntoCommons demonstrator for the domain. These mainly include the domains of materials and manufacturing as well as their subdomains. The second chapter contains domains which we consider also relevant, despite not being explicitly mentioned in the Description of Actions. We discovered these domains as described above, by harvesting several registries for semantic assets. In the third chapter we focus on communities, which are not in the direct focus of the project. Nevertheless, these communities have shown large interest in domain-specific semantics, so that we consider it very plausible to approach them for cooperation the future. In the fourth chapter we present the next steps in more detail and provide a first look at our current survey draft. This survey will be sent to potential stakeholders very soon and its results will be valuable input for the first focussed workshop in March. Finally, the conclusions of this work are shown in chapter five.

This deliverable has a public status and contains confidential information (names and emails of stakeholders) in its original form. In this public version we removed everything confidential. The unfiltered version is only shared with the consortium and submitted to the EC.

<sup>&</sup>lt;sup>4</sup> https://2021.eswc-conferences.org/ https://www.ontocommons.eu/



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# 1.Communities in the focus of OntoCommons

In the first chapter, we focus on the domains which are mentioned in the Grant Agreement as well as domains which are dealt within one of the demonstrator cases. We consider these domains the most important ones for the project. Since these domains are still relatively broad, we think it might be necessary to refine them by means of collaborative actions with the identified stakeholders. As in all chapters, we present relevant people for each domain at the top, followed by related organizations, projects as well as semantic assets. The input for these lists were mostly the projects partners' networks, including the lists collected in Deliverable 1.1. Furthermore, several web collections for semantic assets have been harvested, including Taxonda<sup>5</sup>, the assets the RDA group collected<sup>6</sup> as well as the assets which are on the <u>GitHub page of EMMO</u><sup>7</sup>.

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### 1.1 Materials

With at least 4 demonstrators mostly about materials, the materials community is at the heart of OntoCommons. In the last couple of years, this community has put great efforts into developing ontologies to advance digitisation and to overcome innovation bottlenecks.

The demonstrators focussing on materials include "European Virtual Marketplace Framework", "Feedstock Quality Assurance", "Cu/Al Data", and "NanoMaterials Characterisation" as described in the Grant Agreement.

The persons presented here are generally interested in domain ontologies for the materials domain. Further people interested in the materials domain will be presented in the subsections below.

Name	Affiliation	Country	Contact	Stakeholder groups
	Fraunhofer	Germany		
	Fraunhofer	Germany		
	Duke university	USA		
	US Airforce	USA		RDA, Materials and Ontology Engineer
	University of Sheffield	USA		

<sup>&</sup>lt;sup>5</sup> https://emmc.info/taxonda-dashboDard/

<sup>&</sup>lt;sup>6</sup> https://materials.registry.nist.gov/explore/keyword/

<sup>7</sup> https://github.com/emmo-repo https://www.ontocommons.eu/





Association for Computing Machinery	Japan	
The University of Queensland		
Karlsruhe Institute of Technology	Germany	
FRAUNHOFER	Germany	MarketPlace, StahlDigital, STREAM
ACCESS	Germany	MarketPlace, EMMC
EPFL	Swizerland	RDA, Marketplace, OptiMaDe, Materials Cloud, Intersect
	Switzerland	
NIST	USA	Metadata Librarian
Technion	USA, Israel	IEEE, INCOSE, IAPR, ISO

#### Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
MatOnto	Previous: Queensland university	Materials	<u>GitHub</u>
	now: NCOR		
MPDS and PAULING FILE hierarchy of the materials properties		organizing the physical properties data, excerpted from the peer-reviewed publication	<u>Website</u>
Adhesive Bonding Technology Taxonomy	Fraunhofer IFAM	materials and process (and material-process interdependencies) visualisation	<u>Website</u>
SKOS version of Materials Data Vocabulary	Andrea Medina-Smith	A version of the Materials Data Vocabulary structured as Simple Knowledge Organization System (SKOS)	<u>Downloa</u> <u>d</u>
Object-Process Methodology – OPM ISO 19450:2015		Universal Ontology - applicable to physics, chemistry, biology, technology, industry, complex	<u>ISO</u>



	socio-technical systems, and many other domains	
Open Terms and Definitions for Materials, Manufacturing, and Design	This vocabulary is comprised of terms and definitions related to materials, manufacturing and design and may be reused without any distribution limitation. However, the definitions of some terms require attribution.	<u>GitHub</u>

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#### Organizations and projects:

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https://www.ontocommons.eu/



#### 1.1.1 Materials characterisation

The materials characterisation community is very active in developing domain ontologies. OntoCommons includes the demonstrator Cu/Al Data to show the benefits of ontologies as well as standardised methodologies and tools for the ontology development in this domain.

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#### Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	The University of Nottingham	China		
	School of Materials Science and Engineering	China		
	Xi'an Jiaotong University	China		
	University of Ottawa	Canada		
	Fraunhofer IWM	Germany		
	UROMA3	Italy		
	SINTEF	Norway		EMMC, Marketplace
	Fraunhofer IWM	Germany		APACHE, ReaxPro, UrWerk
	Fraunhofer IWM	Germany		Domain expert, UrWerk

#### Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
Materials Characterization	NTUA	standard for characterization of materials	<u>Taxonda</u>
EMMO- crystallography	SINTEF	A crystallography domain ontology based on EMMO and the CIF core dictionary	<u>GitHub</u>
EMMO- mechanical- testing	Fraunhofer IWM	A domain ontology for mechanical testing based on EMMO	<u>GitHub</u>
Allotrope Ontology	Allotrope Foundation	Scientific lab data, analytical chemistry	<u>AFO</u>

#### Organizations and projects:





Name	Link	Contact
ElvalHalcor Hellenic Copper and Aluminim Industry	<u>Website</u>	
EMCC - The European Materials Characterization Council	<u>Website</u>	
CCDC – Cambridge Crystallographic Data Centre	<u>Website</u>	
i-TRIBOMAT	<u>Website</u>	
Allotrope Foundation	<u>Website</u>	
Oyster	<u>Website</u>	
Intellitest		

#### Guide for tensions tests from CEN:

ftp://ftp.cencenelec.eu/CEN/WhatWeDo/Fields/ICT/eBusiness/WS/WS-ELSSI-EMD/CWA16200\_2010\_ELSSI.pdf

#### 1.1.2 Nanotechnologies

Nanotechnologies are explicitly mentioned in the Grant Agreement and one of the demonstrators included in OntoCommons, NanoMaterials Characterisation, deals with this domain.

Name	Affiliation	Country	Contact	Stakeholder groups
	IRES	Belgium		



Mahatn Gandhi Univers		
Mahatn Gandhi Univers		
Mahatn Gandhi Univers		
UNIRON	MA3 Italy	Oyster
Maastri Univers		

Name	Link	Contact
EPPN - European Network for Pilot Production Facilities and Innovation Hubs	<u>Website</u>	
NSC - NanoSafety Cluster	<u>Website</u>	
NanoCommons	<u>Website</u>	
NanoMeCommons		
Oyster	<u>Website</u>	
SUSNANOFAB CSA	<u>Website</u>	

#### Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
eNanoMapper ontology	The eNanoMapper project	nanosafety	<u>GitHub</u>

#### 1.1.3 Computational modelling

The community of materials modelling is among the most active in terms of domain ontology development. There are several demonstrators of collaborating projects mentioned in the proposal which focus on this area:

https://www.ontocommons.eu/



- **SIMDOME**: Materials and Nano-Materials Synthesis; Molecular Spectroscopy
- **ONTOTRANS**: Post-launch analysis of pouch detergents

Name	Affiliation	Country	Contact	Stakeholder groups
	HLRS	Germany		
	TU Kaiserslautern	Germany		
	University of Glasgow	Canada		
	The Royal Society	United Kingdom		
	Manchester Metropolitan University	United Kingdom		
	UKRI, STFC, HLRS	United Kingdom		
	TU Berlin	Germany		
	TU Kaiserslautern	Germany		
	HZG	Germany		
	Fraunhofer ITWM	Germany		
	SINTEF	Norway		
	SINTEF	Norway		
	Uni Stuttgart	Germany		
	Fraunhofer IWM	Germany		
	Netherlands eScience Center	Netherlands		
	Netherlands eScience Center	Netherlands		
	UNIBO	Italy		
	Max Planck Institute for Polymer Research	Germany		
	NTUA	Greence		



Max Planck	Germany	
Institute for		
Polymer Research		

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#### Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
SimPhoNy-0.1	The SimPhoNy Project	materials modelling, computational materials state representation	<u>Website</u>
MolMod Database Nomenclature		nomenclature to be employed for intermolecular pair potentials	<u>Website</u>
Translation2Modeling		Nomenclature for Materials Modelling Translation processes	<u>Website</u>
VIMMP Ontologies		Virtual marketplace infrastructure and services, representation of simulations of materials (particle based, continuum, etc).	<u>Taxonda</u>
MarketPlace EMMO Extensions	The MarketPlace consortium	Translation, workflows, materials representation, standard for characterization of materials	<u>Website</u>
EMMO-atomistic	SINTEF	An EMMO-based domain ontology for atomistic and electronic modelling.	<u>GitHub</u>
Force BDSS ontology	The FORCE project	materials representation, workflows, optimisation	<u>Website</u>
VIMMP Ontology of Variables (VOV)	VIMMP consortium	variables that appear in modeling and simulation	<u>Zenodo</u>
Ontology for Simulation, Modelling, and Optimization (OSMO)	VIMMP consortium	Models and simulation workflows (ontology version of MODA)	<u>Zenodo</u>



VIMMP Software Ontology (VISO)	VIMMP consortium	Solvers in materials modelling (features, licensing, etc.)	<u>Zenodo</u>
EngMeta		metadata schema for computational engineering	<u>Paper</u>

Name	Link	Contact
EMMC - The European Materials Modelling Council	<u>Website</u>	
KMM-VIN - The European Virtual Institute on Knowledge-based Multifunctional Materials	<u>Website</u>	
BNN BioNanoNet	<u>Website</u>	
OntoTrans	<u>Website</u>	
OpenModel		
SimDOME	<u>Website</u>	
VIMMP	<u>Website</u>	
EXC 2075 SimTech	<u>Website</u>	
ReaxPro	<u>Website</u>	

#### 1.1.4 Materials development

With the OntoTrans project, we collaborate on the Composite Prepreg use case. Find below relevant members of the materials development community:

Name	Affiliation	Country	Contact	Stakeholder groups
	U. Linköping	Sweden		
	U. Linköping	Sweden		



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U. Linköping	Sweden	
East China University of Science and Technology	China	
East China University of Science and Technology	China	
Georgia Institute of Technology	United States	
isim	Poland	
University of Twente	Netherlands	
University of Twente	Netherlands	
University of Twente	Netherlands	
University of Massachusetts	USA	
Northwestern University	USA	
Northwestern University	USA	
Duke University	USA	
Duke University	USA	
Rensselaer Polytechnic Institute	USA	
Rensselaer Polytechnic Institute	USA	
 Northwestern University	USA	
Rensselaer Polytechnic Institute	USA	
University of Vermont	USA	
Duke University	USA	

#### Semantic assets in the domain:

Name /	Author / Owner / Contact	Scope	Link
Metal-alloy		materials representation	<u>Download</u>
<b>71</b>	Australian Research Data Commons (ARDC)	The Material Class vocabulary describes broad categories of earth materials (eg, rock, sediment, water, vegetation) that may be observed or sampled.	<u>NMMR</u>





The Plinius ontology of ceramic materials	ceramics	<u>Paper</u>
A semantic knowledge management system for laminated composites	composites	<u>Paper</u>
NanoMine	Polymer Nanocomposites	<u>Paper</u>
Materials Design Ontology (MDO)	materials design	<u>Paper</u>

# 1.2 Manufacturing

The manufacturing domain the second big focus area of OntoCommons. We are confident to show the benefits of domain semantic in at least 4 manufacturing demonstrators. These include the demonstrators "SeDIM", "Tribomat", "EngDemonstrator", "Product Service Systems and Complex Equipment". Find below the relevant stakeholders, including organizations and projects working the domain. We also collected a first number of manufacturing ontologies that we list below.

Name	Affiliation	Country	Contact	Stakeholder groups
	Ecole Centrale de Nantes	France		Domain Expert
	CRAN CNRS	France		Domain expert, ontology developer
	École Centrale of Nantes	Italy		Ontologist
	University of Pannonia	Hungary		
	Shanghai Jiao Tong University	China		
	ATB Bremen	Germany		IOF





ATB Bremen	Germany	
ATB Bremen	Germany	IOF
EPFL	Switzerland	
EPFL	Switzerland	IOF
Fraunhofer IWM	DE	Domain expert
Tekniker	Spain	Semantic web, computer science
Control 2K Limited	United Kingdom	domain expert
Loughborough University	United Kingdom	Scientist, Domain Expert, Ontologist,
Loughborough University	United Kingdom	Scientist, Domain Expert, Ontologist, IOF
Rolls-Royce Plc	United Kingdom	Domain Expert, Ontologist
Fraunhofer Institute Production Systems and Design Technology	Germany	Scientist, Domain Expert,
IASI-CNR	Italy	Scientist, Domain Expert, Ontologist
Texas State University	USA	IOF





University of Ploiesti,	RO	Domain Expert, ontologist
National Institute of Standards and Technology	USA	IOF
National Institute of Standards and Technology	USA	IOF
The University of Western Australia	Australia	IOF
The University of Western Australia	Australia	IOF
The University of Western Australia	Australia	IOF
National Institute of Standards and Technology	USA	IOF
 University of Toronto	Canada	IOF
Ohio University	USA	IOF
Ohio University	USA	IOF
National Research Council, STIIMA-CNR	Italy	IOF
Johns Hopkins University Applied Physics Laboratory	USA	IOF
Clemson University International Center for Automotive Research	USA	Domain expert
Dassault system	USA	IOF
Pontifical Catholic University of Parana, Industrial and Systems Engineering Graduate Program	Brazil	Domain expert,
NCOR	USA	IOF



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Pontifical Catholic University of Parana, Industrial and Syster Engineering Graduat Program	ns	Domain expert
Université de Bordea	aux France	Domain Expert
Salzburg Research Forschungsgesellsch	Austria aft	Interoperability
University of Twente	Netherlands	Interoperability
Univeristé de Lyon	France	Domain epxert, ontologist
Fraunhofer IPK	Germany	Domain epxert, interoperability
ESTIA	France	Domain expert
University of Minho	Portugal	Domain Expert, interoperability, Ontologist
University of Minho	Portugal	Domain Expert, interoperability, Ontologist
University of Minho	Portugal	Domain Expert, interoperability
UNINOVA	Portugal	Domain Expert, interoperability
Uninova	Portugal	Domain Expert, interoperability
Pontifical Catholic University of Parana, Industrial and Syster Engineering Graduat Program	ns	Domain expert
Universitat Politècnie de València	ca Spain	domain expert
Universitat Politècnie de València	ca Spain	domain expert



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	ormation Catalyst for erprise Limited	United Kingdom	
	tituto Tecnológico Informática	Spain	
	lan Technology search Centre	Spain	
	GIP, Universitat itecnica de Valencia	Spain	
Alg	oWatt	Italy	
Asc	cora GmbH	Germany	
FID	IA S.p.A	Italy	
SIM	1AVI	Romania	
CTS	S	Portugal	
CTS	5	Portugal	
СТ	5	Portugal	
	ormation Catalyst for erprise (ICE)	United Kingdom	
Asc	cora Gmbh	Germany	
CIG	GIP	Spain	
Pro	ofactor GmbH	Austria	
enç	gineeringsemantics	USA	IOF
Cet	teck	Spain	
	rlan Technology search Center	Spain	
Vid	leo Systems Srl	Italy	
	tituto Tecnológico Informática	Spain	
ITI	nnovation Centre	United Kingdom	
IT I	nnovation Centre	United Kingdom	
ITI	nnovation Centre	United Kingdom	
Cha	almers University	Sweden	
Cha	almers University	Sweden	

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LGIPM	France	
LGIPM	France	
RPK -Universität Karlsruhe (TH)	Germany	
CERTH/ITI	Greece	
CERTH/ITI	Greece	
 CERTH/ITI	Greece	
CERTH/ITI	Greece	
POLIMI	Italy	
POLIMI	Italy	
POLIMI	Italy	
Université de Lorraine	France	
Université de Lorraine	France	
POLIMI	Italy	
 TNO	Netherlands	
TNO	Netherlands	
UPM	Spain	
UPM	Spain	
UPM	Spain	
KIT IMI	Germany	
LITIS laboratory	France	ontologists, ontology users





Name	Link	Contact
IOF – Industrial Ontology	<u>Website</u>	
Foundry	Case Studies	
OPC Foundation - The Industrial Interoperability Standard TM	<u>Website</u>	
Confirm Centre for Smart Manufacturing	<u>Website</u>	
Industrial Value Chain Initiative	<u>Website</u>	
BLM Group/Adige	<u>Website</u>	
Interop-VLab	<u>Website</u>	
OAS AG	<u>Website</u>	
Trygonal	<u>Website</u>	
M3DLoC	Website	
SMART 4.0	Website	

#### Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
MASON		Manufacturing	<u>Download</u>
Manufacturing Marketplaces Ontology	Centre for Research and Technology Hellas - Information Technology Institute (CERTH/ITI)	<ol> <li>Representation of manufacturing resources (machines, tools, materials etc) and services.</li> <li>Representation of supply chain entities that participate</li> </ol>	<u>Paper</u>
		in a manufacturing related Marketplace.	
VARM	Tekniker	Research development	<u>Website</u>
MSO: Manufacturing System Ontology		the physical aspect, the technological aspect, the control aspect, the visualization aspect	<u>Paper</u>
P-PSO		Manufacturing	<u>Paper</u>
Ontology- based system		Manufacturing sustainability	<u>Paper</u>

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for supporting manufacturing sustainability			
Factory		Manufacturing systems design, management and control	<u>Paper</u> <u>Link</u>
SAREF4INMA	ETSI (owner) non-ETSI authors	Industry and manufacturing	<u>Downlodad</u> <u>Paper</u>
SERENE – Smart and IntEgRated ENergy efficiency Evaluation		Materials related to product, process, and resources	<u>Paper</u>

#### 1.2.1 Process industries

The process industries domain is explicitly mentioned in the Grant Agreement and with the "EngDemonstrator" use case, we also include a demonstrator for this domain in the project. There is also the Section Mill demonstrator about Process Control in the OntoTrans project, on which the two projects will collaborate.

#### Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	FLUOR	USA		Ontology, Process Engineering
	TU Braunschweig	Germany		
	CO-LaN	France		
	Universidad Austral de Chile	Chile		
	Hamadan University of Medical Sciences	Iran		
	Bu-Ali-Sina University	Iran		
	RWTH Aachen	Germany		
	RWTH Aachen	Germany		
	RWTH Aachen	Germany		

Organizations and projects:

https://www.ontocommons.eu/





Name	Link	Contact
SPIRE – Sustainable Process Industry through Resource and energy Efficiency.	<u>Website</u>	
CO-LaN	<u>Website</u>	
NFDI4Cat	Information	
NFDI4Chem	<u>Website</u>	
Inprodat e.V Innovation Centre for Process Data Technology	<u>Website</u>	
FACTLOG	<u>Website</u>	

#### Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
iso-15926	ISO	ISO 15926-4 constitutes a Reference Data Library for the Process Industries.	<u>Wikipedia</u>
OntoCAPE	Marquardt et al.	computer-aided process engineering	<u>Paper</u>

#### 1.2.2 Factories of the future

With the Complex Equipment demonstrator and the two demonstrators of the of the collaborating H2020 Big-Data innovation action IoTwins, the domain "factories of the future" is an essential part of the OntoCommons project. Please find below some of the key players in the field:

Name	Affiliation	Country	Contact	Stakeholder groups
	Case Western Reserve University	United States		
	INSA Strasbourg - ICube Laboratory	France		





INSA Strasbourg - ICube Laboratory	France	
Fraunhofer Institute for Production Systems and Design Technology	Germany	
Fraunhofer Institute for Production Systems and Design Technology	Germany	
Fraunhofer Institute for Production Systems and Design Technology	Germany	
Centre for Research and Technology Hellas	Greece	
Centre for Research and Technology Hellas	Greece	
Centre for Research and Technology Hellas	Greece	
Centre for Research and Technology Hellas	Greece	

Name	Link	Contact
EFFRA – European Factories of the Future Research Association	<u>Website</u>	
WEF Global Future Council on Advanced Manufacturing and Production	<u>Website</u>	
BOOST 4.0	<u>Website</u>	
loTwins	<u>Website</u>	





QU4LITY	<u>Website</u>	
Eur3ka	<u>Website</u>	

#### 1.2.3 Equipment industry

Our "Product Service Systems" demonstrator will show the usefulness of OntoCommon's results in the Equipment industry. Below you can find relevant stakeholders, we can try to get in touch with to achieve this goal.

#### Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	Trade and Industry and Center for International Development			
	West Viriginia University	USA		
	University of São Paulo	Brazil		

#### Organizations and projects:

Name	Link	Contact
Weld Galaxy	Website	
GF Machining Solutions	https://www.gfms.com/country_CH/en.html	

#### 1.2.4 Product development

For the product development domain, there exists one interesting demonstrator in collaboration with the OntoTrans project, called "Detergent Pouch Systems".





#### Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	School of Mechanical Engineering	China		
	LiuGong Machinery Co.	China		
	Purdue University			

# 1.3 Engineering

The Engineering domain is one of the most important one for OntoCommons. At the same time the project should use its collaborative means like the focussed workshop FW3.1 to find out more fine-grained sub-domains the stakeholders are interested in ontologising.

Name	Affiliation	Country	Contact	Stakeholder groups
	Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University	United Kingdom		Domain expert, ontologist
	University of South Australia	Australia		Domain expert, ontologist
	Japan Advanced Institute of Science and Technology	Japan		Domain expert, ontologist
	The John Paul II Catholic University of Lublin	Poland		Ontologist
	Dassault Systems; No- Magic	USA		Ontologist, domain expert, software engineer
	Università Politecnica delle Marche	Italy		Domain expert
	Univ. Bourgogne Franche-Comté, UTBM, Belfort, France	France		Ontologist, domain expert





Loughborough University - Lough, Wolfson School of Mechanical, Electrical and Manufacturing Engineering	United Kingdom	Ontologist, domain expert
University of Derby College of Engineering and Technology	United Kingdom	Ontologist, domain expert
University of Twente	Netherlan ds	Ontologist, domain expert
Netherlands Energy Research Foundation ECN	Netherlan ds	Ontologist, domain expert
Agro-Technological Research Organization ATO- DLO	Netherlan ds	
RWTH Aachen University	Germany	
AIRBUS	France	 Aerospace system engineering
Northrop Grumman Corp.	USA	Domain exeprt

Name	Link	Contact
RDA Research Data Management in Engineering IG	Website	
South China University of Technology	Website	

### 1.4 Maintenance

There is the "Ontology-based Maintenance" demonstrator in the OntoCommons project that deals with maintenance. Furthermore, there is one more demonstrator in the IoTwins project. <a href="https://www.ontocommons.eu/">https://www.ontoCommons.eu/</a> @ontocommons.eu/





IoTwins is one of the projects that already committed to OntoCommons and it contains a demonstrator called "AI-based predictive maintenance of wind farm".

Name	Affiliation	Country	Contact	Stakeholder groups
	Politecnico di Milano	Italy		IFAC, A-MEST
	University of Sevilla	Spain		ISEAM (https://iseam.org/)
	University of Western Australia	Australia		IOF
	University of Western Australia	Australia		IOF
	University of Western Australia	Australia		IOF
				IOF
	Texas State University	USA		IOF
	University of South Australia	Australia		IOF
	University of Toronto	Canada		IOF
	University of California	USA		IOF
	York St John University	USA		IOF
	Isadeus	France		
	EDF	France		
	University of Patras	Greece		
	Uni Bremen	Germany		
	Uni Bremen	Germany		





University of Versailles St Quentin	Germany	
University of Versailles St Quentin	France	
University of Versailles St Quentin	France	
EFNMS		

#### Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
IMAMO	INPT-ENIT	Maintenance	
ROMAIN		industrial maintenance	<u>GitHub</u>
Z-BRE4K semantic model	EPFL	Predictive maintenance	<u>Website</u>
Z-BRE4K ontology	EPFL	Predictive maintenance	<u>Website</u>

## 1.5 Biotechnology

As mentioned in the Grant Agreement, OntoCommons will also deal with the digitisation needs of the Biotechnology domain. Find below interested stakeholders.

#### Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	Sun Yat-sen University	China		
	Stanford University	France		
	Stanford University			
	University of Surrey	United Kingdom		

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University of Surrey	United Kingdom	
University of Surrey	United Kingdom	
University of Surrey	United Kingdom	
University of Surrey	United Kingdom	
University of Stuttgart	Germany	

#### Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
BiOnto		Biomass materials described along with processing technologies	<u>Website</u>
EnzymeML		Biocatalysis & biochemical reaction kinetics	<u>Website</u>

#### Organizations and projects:

Name	Link	Contact
UFRGS – Universidade Federal Do Rio Grande Do Sul	<u>Website</u>	
UNIST – Ulsan National Institute of Science and Technology, Korea	<u>Website</u>	
EVOLOPRO	<u>Website</u>	

### 1.6 Regulatory and risk assessment

The following table shows relevant stakeholders in the regulatory and risk assessment domain, which will be relevant for OntoCommons as mentioned in the Grant Agreement.

Nam	ne	Affiliation	Country	Contact	Stakeholder groups
		Institute of Geography	Germany		





Cardiff University	United Kingdom	
Cardiff University	United Kingdom	
Steinbeis	Germany	Materials and Nanomaterials risk

### 1.7 Aerospace

With the "IRIS" demonstrator of UIO and AIRBUS, we include a demonstrator that deals with the Aerospace domain.

#### Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	AIRBUS SAS	France		Industrial System Digital Continuity
	M&M Aeronauticos	Spain		Aerospace Assembly
	AIRBUS	France		Aerospace system engineering
	Boeing	USA		
	Schaeffler	Germany		MAVO UrWerk

#### Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
Crystal Artemis project	Website	automotive, aerospace, rail and health sector	Deliverable





Name	Link	Contact
STIMULANT	<u>Website</u>	
Airbus	<u>Website</u>	
QU4LITY	<u>Website</u>	
MAVO UrWerk	<u>Website</u>	

### 1.8 Quality management

The OntoCommons demonstrator "Feedstock Quality Assurance" deals with quality management.

#### Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	University of Toronto	Canada		

#### Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
The Quality ontology VB	Gruninger, University of Toronto	Quality	<u>Paper</u>

#### Organizations and projects:

Name	Contact
QU4LITY	

# 1.9 People, Organization and projects generally interested in domain ontologies

The following people and organizations could not be assigned to one of the above domains by the partners. These are interested in domain ontologies in general, including the domains OntoCommons deals with.

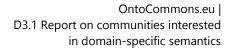




Name	Affiliation	Country	Contact	Stakeholder groups
	TU Darmstadt	Germany		
	TIB	Germany		

Name	Link	Contact
IAOA	<u>Website</u>	
forschungsdaten.info	<u>Website</u>	
NFDI e.V.	<u>Website</u>	
metadata4ing working group	<u>Website</u>	
RDA VSIG	Website	
ORKG	<u>Website</u>	
NFDI4Ing	Website	
Research Data Management in Engineering IG	<u>Website</u>	
EMMC Focus Area Interoperability	Website	
EMMC Focus Area Digitalization	Website	
RDA Domain Repositories IG	<u>Website</u>	





# 2.Communities relevant for OntoCommons

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In the second chapter we concentrate on domains that, although not being explicitly mentioned in the Grant Agreement or addressed by demonstrators, we think they might still be very relevant due to the similarity to the domains of the first chapter. We divide the following domains in two broad categories. In section 2.1 we list more general domains, that might potentially also fit in a middle-level ontology. Section 2.2 is about more specific industrial domains.

# 2.1 General domains

# 2.1.1 Supply Chain

Name	Affiliation	C Contact o u n t y	Stakeholder groups
	Texas State University	USA	Ontologist, Domain Expert
	Manufacturing Department, School of Applied Sciences, Cranfield University	United Kingdom	Domain Expert
	Manufacturing Department, School of Applied Sciences, Cranfield University	United Kingdom	Domain Expert
	Technische Universität München	Germany	Domain Expert
	IBM Haifa Research Lab	Israel	
	IBM Haifa Research Lab	Israel	
	SRDC Software Research & Development and Consultancy Corp	Turkey	
	SRDC Software Research & Development and Consultancy Corp	Turkey	



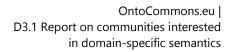


#### OntoCommons.eu | D3.1 Report on communities interested in domain-specific semantics

IBM Haifa Research Lab	Israel	
IBM Haifa Research Lab	Israel	
AIDIMME	Spain	
AIDIMME	Spain	
AIDIMME	Spain	
Salzburg Research	Austria	
Salzburg Research	Austria	
Salzburg Research	Austria	
Boeing		
CTS	Portugal	
CONICET Santa Fe	Mexico	
CONICET Santa Fe	Mexico	
cognizant	United Kingdom	
Instituto Tecnológico de Orizaba	México	
Instituto Tecnológico de Orizaba	México	
Instituto Tecnológico de Orizaba	México	
 Instituto Tecnológico de Orizaba	México	

Name	Author / Owner / Contact	Scope	Link
RosettaNet PIP		Supply Chain Management	<u>Website</u>
SCONTO	CONICET Santa Fe	Supply Chain Management	<u>Website</u>
Cognizant		Using Ontology to Capture Supply Chain Code Halos	<u>Booklet</u>
Simple Knowledge Organization System (SKOS)		knowledge; linked data; management; semantic; SKOS; supply chain	<u>Paper</u>





# 2.1.2 Transportation

Relevant people are:

Name	Affiliation	Country	Contact	Stakeholder groups
	Dipartimento di Ingegneria e Scienza dell'Informazione (DISI), University of Trento, Ital	Italy		Domain Expert
	Dipartimento di Ingegneria e Scienza dell'Informazione (DISI),University of Trento, Ital	Italy		Domain Expert
	SRDC	TR		Domain Expert
	University of Valenciennes and Hainaut-Cambrésis	France		
	University of Valenciennes and Hainaut-Cambrésis	France		
	Mir@cl Lab	Tunisia		
	University of Valenciennes and Hainaut-Cambrésis	France		
	University of Munich	Germany		
	University of Munich	Germany		
	University of Munich	Germany		

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## Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
Transportation ontology	De Oliviera et al. Univeristy Of Valenciennes	Transportation	<u>Paper</u>
Ontology of Transportation Networks		Transportation Networks	<u>Deliverable</u>

# 2.1.3 Scheduling

Relevant people:

https://www.ontocommons.eu/





Name	Affiliation	Country	Contact	Stakeholder groups
	University of Firenze	Italy		Domain Expert
	Ohio University	USA		domain epxert, ontologist
	NIST	USA		
	CNR	Italy		domain expert, ontologist
	Carnegie Mellon University	USA		
	Carnegie Mellon University	USA		

Name	Author / Owner / Contact	Scope	Link
OZONE		Scheduling	Download

# 2.1.4 Product types

Name	Affiliation	Country	Contact	Stakeholder groups
	National Scientific and Technical Research Council	Argentina		Domain Expert
	National Scientific and Technical Research Council   conicet · INTEC Instituto de Desarrollo Tecnológico para la Industria Química	Argentina		Domain Expert
	Universidad Tecnologica Nacional - CONICET · Ingeniería en Sistemas de Información - Instituto de Desarrollo y Diseño (INGAR)	Argentina		Domain Expert





University of Auckland	NZ	
University of Auckland	NZ	
Universität der Bundeswehr München	Germany	

Name	Link	Contact
ECLASS / eCl@ss	<u>Website</u>	

# Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
UNSPSC	United Nations	Product types	<u>Website</u>
productontology- eCl@ss	E-Business and Web Science Research Group. Universität der Bundeswehr München	Product types	<u>Website</u>
Ontology-Aided Product Classification: A Nearest Neighbour Approach		Reasoning system for classifying products	<u>Paper</u>
The Product Types Ontology			<u>Website</u>

# 2.1.5 Product information

Name	Affiliation	Country	Contact	Stakeholder groups
	KR&KM Research Group University of Mannheim	Germany		Domain Expert
	KR&KM Research Group	Germany		Domain Expert





University of Mannheim		
EPFL	Switzerland	
CONICET/UTN	Argentinia	
CONICET/UTN	Argentinia	
CONICET/UTN	Argentinia	
NIST	USA	
NIST	USA	
Engisis	Italy	
EERE	USA	
NIST	USA	
University of Lorraine	France	
Politecnico di Bari	Italy	
University of Lorraine	France	

Name	Author / Owner / Contact	Scope	Link
PRONTO	ONICET/UNL, Argentina	Product information	<u>Website</u>
ontoSTEP	NIST	Product information	<u>Website</u>
ontoPDM	CRAN, FR	Product information	
SOM	EPFL	Product information	<u>Website</u>

# 2.1.6 Product life cycle

# Relevant people:

Name Affiliation	Country	Contact	Stakeholder groups
Leibniz Institute of Information Infrastructure & Karlsruhe	Germany		Ontologist

https://www.ontocommons.eu/





Institute o Technolog (KIT)		
Otto-von- Guericke- Universitä Magdebu	t	Domain Expert
SIEMENS	AT	Domain Expert
SIEMENS		Domain Expert
EPFL	Switzerland	Domain expert, Ontologist
UTC	France	Domain expert
Université Paris 8	France	Domain expert
AIRBUS	France	Domain expert, ontologist
Univeristé Lyon	de France	Domain expert
ESTIA	France	Domain expert
M&M	Spain	Domain expert, ontologist
Univeristé Lyon 2	France	Domain expert
Fraunhofe IWM	er DE	Domain expert
Fraunhofe IWM	er DE	Domain expert, ontologist
Fraunhofe IWM	er DE	Domain expert, ontologist
Fraunhofe IWM	er DE	Domain expert, ontologist
Fraunhofe IWM	er DE	Domain expert, ontologist

Name	Author / Owner / Contact	Scope	Link
https://www.c	ontocommons.eu/	🤎 @ontocommons   in com	pany/ontocommons





reference PLM ontology	Politecnico Torino	Product lifecycle management	
An Ontological Approach to Representing the Product Life Cycle	University of Buffalo, EPFL	PLC ontology	<u>Website</u>
An ontology for Assembly representation	NIST	Assembly representation	<u>Paper</u>

Name	Link	Contact
ORIENTING	<u>Website</u>	
Fraunhofer IWM Digital Hub	<u>Website</u>	
DMD4Future	<u>Website</u>	

# 2.1.7 Design

Name	Affiliation	Country	Contact	Stakeholder groups
	University of Miami	USA		Ontologist
	Senior UX Designer na Alchemy Machines	United Kingdom		Ontologist
	Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb	Croatia		Ontologist
	Wayne State University	USA		





University of Pittsburgh	USA	
Chonnam National University	South Korea	
LIRIS	France	

Name	Author / Owner / Contact	Scope	Link
AsD Ontology	Kim et al, Wayne State University	Design	<u>Paper</u>
CDFO Common Design Features Ontology	S. Abdul-Ghafour, P. Ghodous, B. Shariat and E. Perna,	Design	<u>Paper</u>

# 2.1.8 Industrial processes

Name	Affiliation	Country	Contact	Stakeholder groups
	University of Toronto	Canada		Ontologist
	TU Darmstadt	Germany		
	NIST	USA		Ontologist, Domain Expert
	NTNU	Norway		
	EPFL	Swiss		





Name	Author / Owner / Contact	Scope	Link
PSL	NIST	Processes	<u>Colore</u> ontology repository
MultiDisciplineModelOntology		anything that is based on balances thus extensive quantities	<u>Paper</u>
Semantic framework for Industry 4.0	EPFL	Industry 4.0	<u>Website</u>

# 2.1.9 Green & Sustainable production

## Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	School of Computing and DigitalTechnology	United Kingdom		Ontologist
	ENIT	France		ontologist
	Fraunhofer IWM	DE		domain expert

## Organizations and projects:

Name	Link	Contact
ORIENTING	<u>Website</u>	





# 2.1.10 Project management

# Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
PROMONT	Abels et al, Univeristy of Oldenburg Germany	Project Management	<u>Paper</u>

# 2.1.11 Organization

Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	Harbin Institute of Technology	China		
	IMS	France		
	University of Toronto	Canada		
	University of Toronto	Canada		
	University of Toronto	Canada		
	University of Toronto	Canada		
	HP Labs	United Kingdom		

Name	Author / Owner / Contact	Scope	Link
Organization ontology for enterprise modelling	Univ ot Toronto	Organization	<u>Paper</u>
ORG	Epimorphics Ltd. UK Government Linked Data Working group	Organization	<u>Download</u>





# 2.1.12 Virtual marketplaces

## Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	EnginSoft	Italy		
	Fraunhofer IWM	Germany		MarketPlace
	Fraunhofer IFAM	Germany		VIMMP

Name	Author / Owner / Contact	Scope	Link
European Virtual Marketplace Ontology (EVMPO)	Joint development by the VIMMP Consortium and the MARKETPLACE Consortium	Virtual marketplaces related to modelling and simulation of materials and their properties and behaviour	<u>Taxonda</u>
VIMMP VIMMP consortium Communication Ontology (VICO)		Communication between users of digital marketplaces in materials modelling	<u>Zenodo</u>
Marketplace-VIMMP consortiumAccessibleVIMMP consortiumComputationalResourceOntologyImage: Construct of the second		Computational resources, file Zena formats, etc., relevant to digital marketplaces in materials modelling	
Materials Modelling Translation Ontology (MMTO)	VIMMP consortium	"Translation" process in materials modelling as formalized by EMMC ASBL (business cases, "industrial cases," "translation cases," etc.)	<u>Zenodo</u>
Ontology for Training Services (OTRAS)	VIMMP consortium	Training services, events, documents, etc., including a formalism for describing competencies and a taxonomy of topics relevant to materials modelling	Zenodo
VISO – VIMMP Software Ontology	VIMMP consortium	describe software, addressing mostly its capabilities, but also licensing, requirements (as libraries and operating systems) and compatibility with other tools.	<u>Slides</u>





Name	Link	Contact
DOME4.0		
Market4.0	<u>Website</u>	
MarketPlace	<u>Website</u>	
ViMMP	<u>Website</u>	

# 2.1.13 Digital Twin

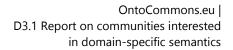
# Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	Ecole centrale Nante	France		Domain Expert
	EPFL	Switzerland		INCOSE ( <u>https://www.incose.org</u> /)
	University of Bordeaux	France		Domain Expert
	IMT Mines-ales	France		Domain Expert
	Salzburg Research Forschungsgesellschaft	Austria		Domain Expert
	Tekniker	Spain		Domain Expert

# Organizations and projects:

Name	Link	Contact
SEIIA - Swedish Industrial Interoperability Association	Website	
UK National Digital Twin Programme - ACTIVE	<u>Website</u>	
FACTLOG	https://www.factlog.eu/	





# 2.2 Specific industrial domains

This chapter is about specific industrial domains, which we consider relevant for the OntoCommons project.

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# 2.2.1 Gas and Oil

#### Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	Total	France		Domain Expert, Ontology User

## Organizations and projects:

Name	Link	Contact
Aibel AS	<u>Website</u>	
Total		

## Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
ISO 15926		Gas and Oil	<u>Website</u>
Aibel MMD			https://github.com/Sirius- sfi/aibel-mmd-ontology

# 2.2.2 Electronics

**Relevant people:** 

Name	Affiliation	Country	Contact	Stakeholder groups
	Siemens	Germany		System Integrity and Usability
	TU Dresden			

## Organizations and projects:

Name	Link	Contact
	<u>Website</u>	





Name	Author / Owner / Contact	Scope	Link
CEO: Consumer electronics Ontology		Electronics	<u>Website</u>
	monenergy project.eu	Appliance	<u>Website</u>
INDISET	Bob Young et al, FLEXINET project	Appliance	<u>Pdf</u>
GRACE ontology	SIEMENS, WHIRLPOOL	Appliance	<u>Paper</u>
Ericsson	Siemens, Blumbach	Product Documentation	N/A

# 2.2.3 Automotive

# Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	Universität der Bundeswehr Munich	Germany		
	ALA	Italy		
	EADS-IW			
	PoliTO	Italy		

## Organizations and projects:

Name	Link	Contact
	<u>Website</u>	
	<u>Website</u>	

Name	Author / Owner / Contact	Scope	Link
Volkswagen Vehicles Ontology	Volkswagen	Automotive	<u>Website</u>
Automotive ontology working group	W3C working group	Automotive	<u>Website</u>





Crystal Artemis Project	Automotive, aerospace, rail and	<u>Deliverable</u>
	health sector	

# 2.2.4 Architecture and Construction

Name	Affiliation	Country	Contact	Stakeholder groups
	TU Eindhoven	Netherlands		Domain expert, ontologist
		United Kingdom		
	French National Centre for Scientific Research	France		
	Semantic Arts	International		People with data
	Semantic Arts	International		People with data
	TU Braunschweig			
	КІТ	Germany		
	KIT	Germany		
	Niras Technical University of Denmark	Denmark		
	École Nationale Supérieure des Mines de Saint-Étienne	France		
	Schaeffler	Germany		





CNR	ltaly	domain expert, ontologist
TU Dresden	Germany	
TU Dresden	Germany	
SUITE5	Cyprus	
 SUITE5	Cyprus	
UPM	Spain	
UPM	Spain	
UPM	Spain	
UFRGS	Brazil	
UFRGS	Brazil	
	France	
UFRGS	Brazil	
Tekniker	Spain	Domain Expert
Ramon Llull University	Spain	Domain Expert, ontologist

Name	Author / Owner / Contact	Scope	Link
KnoHolEM Ontology	Institute for Information Management in Engineering, Karlsruhe Institute of Technology	Materials on building parts	<u>Paper</u>
Building Toplogy Ontology	Mads Holten Rasmussen, Pieter Pauwels, Maxime Lefrançois, Georg Ferdinand Schneider	minimal ontology for describing the core topological concepts of a building.	Specification





ifcOWL	Pieter Pauwels and Walter Terkaj	standard for representing building and construction data	<u>Website</u>
DICO- BuildingMaterials	Janakiram Karlapudi, Prathap Valluru	building materials	Specification
DICO- EnergySystems	Kostas Tsatsakis, Spiros Kousouris	energy systems	<u>Specification</u>
Brick	?	semantic descriptions of the physical, logical and virtual assets in buildings and the relationships between them	<u>Specification</u>
SAREF4BLDG	ETSI (owner) non-ETSI authors: María Poveda- Villalón, Raúl García-Castro	Building devices from IFC	Specification
BIMERR ontology network	María Poveda- Villalón, Serge Chavez-Feria	Building renovation and construction	website
Gist Ontology	Semantic Arts		https://www.semanticarts.com/gist/
GeoCore ontology	Luan Fonseca Garciaa, Informatics Institute, UFRGS, Bento Gonçalves 9500, Porto Alegre, Brazil and Geosiris Company (France)	General core ontology	<u>Paper</u> <u>Github</u>





Name	Link	Contact
BIMERR	<u>Website</u>	
National Digital Twin Programme	<u>Website</u>	
COGITO	<u>Website</u>	
W3C Linked Building Data CG	<u>Website</u>	

# 2.2.5 Chemistry

# Cooperation Demonstrator: [SIMDOME] Chemical Kinetics

Name	Affiliation	Country	Contact	Stakeholder groups
	Univ Florida	USA		Ontology development, Chemical science
	Wellcome Trust Genome Campus	United Kingdom		EBI
	Wellcome Trust Genome Campus	United Kingdom		EBI
	Wellcome Trust Genome Campus	United Kingdom		EBI
	Wellcome Trust Genome Campus	United Kingdom		EBI
	Wellcome Trust Genome Campus	United Kingdom		EBI
	Wellcome Trust Genome Campus	United Kingdom		EBI





Wellcome TrustUnitedGenomeKingdomCampus		EBI
Wellcome Trust Genome Campus	United Kingdom	EBI
Wellcome Trust Genome Campus	United Kingdom	EBI
University of Cambridge	United Kingdom	EBI
University of Ottawa	Canada	EBI
Maastricht University	Netherlands	EBI
Uni Jena	Germany	EBI
Maastricht University	Netherlands	EBI
Department of Standardization in Laboratory Medicine	Denmark	

Name	Link	Contact
RDA Chemistry Research IG	<u>Website</u>	
CCDC	<u>Website</u>	
IUCr	<u>Website</u>	

Name	Author / Owner / Contact	Scope	Link
СНМО		Chemical methods	<u>GitHub</u>
RXNO		Chemical reactions	<u>GitHub</u>
ChEBI		Small chemical compounds	<u>Website</u>



CHEMINF	representing chemical information	<u>GitHub</u>
OntoKin/Ontochem	The modelling, representation, management and querying of Chemical Kinetic Reaction Mechansims, on the basis of OntoCAPE	<u>Taxonda</u>
IUPAC ontology	An Ontology on Property for Physical, Chemical and Biological Systems	<u>Paper</u> <u>Code</u>

# Communities:

Name	Link	Contact
NFDI4Chem	<u>Website</u>	
NFDI4Cat	Information	

# 2.2.6 Human Resources

# Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	Actonomy	Belgium		Ontology, Expert in HR Automation domain
	Université de Savoie, France	France		Ontologist
	Birzeit University	Palestine		Ontologist, Semantic Web expert

Name	Author / Owner / Contact	Scope	Link
HRM Ontology	Ontology Engineering Group, Polytech Madrid	Human resource ontology	<u>Website</u>
Job Ontology		Improved search and matching results for the	<u>Website</u>



OntoCommons.eu |

	labour market using sema web	ntic
OOA - The Ontology Outreach Advisory	Semantic challenges and opportunities in the Huma Resources Domain	In Website

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# 2.2.7 Clean energy

# Relevant people:

Name	Affiliation	Country	Contact	Stakeholder groups
	Wrocław University of Science and Technology	Poland		Engineer
	Mondragon University	Spain		Engineer
	Mondragon University	Spain		Engineer
	National University of Ireland Galway	Ireland		Engineer
	Sohar University	Austria		Computer Science
	ENEA	Italy		Computational Physics, materials
	Tekniker	Spain		Informatics, Artificial intelligence, ontologist
	SIEMENS	Austria		Electrical Engineer
	Institut Mihajlo Pupin	Serbia		Electrical Engineer

# Organizations and projects:

Name	Link	Contact
REACT	https://react2020.eu/	

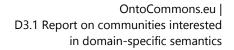
Name	Author / Owner / Contact	Scope	Link
SAREF	ETSI (owner)	Smart applications	<u>Downlodad</u>
https://www.ontocommons.eu/		🥑 @ontoco	mmons   in company/ontocommons





	non-ETSI authors:		
CIM	DMTF	Smart Grid modelling	https://www.dmtf.org/standards/cim
EEPSA	Tekniker	Energy Efficiency and Thermal Comfort	http://w3id.org/eepsa
RESPOND ontology	RESPOND H2020 consortium	Demand Response	http://w3id.org/respond





# 3.Other Communities interested in domain specific semantics

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The following domains are characterised by their large efforts in digitisation and development of ontologies. Despite being only mildly relevant, we also report on these domains because of that. We consider it to be very plausible and fruitful to have collaborations in the future.

# 3.1 Internet of Things

Name	Affiliation	Country	Contact	Stakeholder groups
	Netherlands Organisation for Applied Scientific Research (TNO)	Netherlands		Ontologist
	Warsaw University of Technology	Poland		Interoperability IoT
	University of Surrey	United Kingdom		Engineer
	University of Surrey	United Kingdom		Engineer
	University of Surrey	United Kingdom		Software Developer
	University of Granada	Spain		Engineer
	Universitat Ramon Llull	Spain		Engineer
	Universitat Ramon Llull	Spain		Engineer
	Universitat Ramon Llull	Spain		Engineer
	SIEMENS	Austria		Engineer
	SIEMENS	Austria		Engineer





Fraunhofer	Germany	
Institute		
Production		
Systems and		
Design		
Technology		

Name	Link	Contact
AIOTI Alliance for Internet of things	<u>Website</u>	
ETSI	<u>Website</u>	
oneM2M - Standards for M2M and the Internet of Things	<u>Website</u>	
Enable	<u>Website</u>	
Project Haystack	<u>Website</u>	

# Semantic assets in the domain:

Name	Author / Owner / Contact	Scope	Link
SAREF	See <u>project team</u>	Smart Appliances REFerence (SAREF) ontology	<u>Website</u>

# 3.2 Robotics

Name	Affiliation	Country	Contact	Stakeholder groups
	Instituto de Informática, UFRGS	Brazil		Computer Scientist
	Instituto de Informática, UFRGS	Brazil		Computer Scientist
	Instituto de Informática, UFRGS	Brazil		Computer Scientist





Instituto de Informática, UFRGS	Brazil	Engineer
Instituto de Informática, UFRGS	Brazil	Computer Scientist
University of Maryland	USA	System Researcher
University of Genova	Italy	Computer Scientist
Technical University of Lisbon	Portugal	Engineer
Distributed Systems Lab, UFBA	Brazil	Computer Scientist
The American University in Cairo	Egypt	Full Professor
LISSI Lab., Université Paris- Est Créteil	France	Computer Scientist
CEA LIST Institute	France	Engineer
LISSI Lab., Université Paris- Est Créteil	France	Computer Scientist
Intelligent Systems Division, NIST	USA	Engineer
Tekniker	Spain	Computer Scientist

Name	Link	Contact
euRobotics AISBL	<u>Website</u>	
1872-2015 - IEEE Standard Ontologies for Robotics and Automation	<u>Specification</u>	





Name	Author / Owner / Contact	Scope	Link
A review and comparison of ontology- based approaches to robot autonomy	Olivares-Alarcos et al.	Review about ontologies for robotics	<u>Paper</u>

# Organizations and projects:

Name	Link	Contact
KnowRob and KnowRob 2.0	<u>Website</u> <u>GitHub</u> <u>Paper</u>	

# 3.3 Cultural heritage

N	ame	Affiliation	Country	Contact	Stakeholder groups
		Foundation for Research and Technology - Hellas (FORTH)	Greece		
		Foundation for Research and Technology - Hellas (FORTH); Takin.solutions Ltd.	Greece		
		Institute of Heritage Sciences, Spanish National Research Council (CSIC)	Spain		
		National Research Council of Italy (CNR)	Italy		





University of Bologna	Italy	
The University of Sydney	Australia	Information Technology scientist
The University of Sydney	Australia	Information Technology scientist
The University of Sydney	Australia	Information Technology scientist
Istituto Centrale per il Catalogo e la Documentazione (ICCD-MiBACT)	ltaly	Ontologist
Sapienza University of Rome	Italy	Architect
Sapienza University of Rome	Italy	Engineer
Sapienza University of Rome	Italy	Engineer
Sapienza University of Rome	Italy	Architect
Fraunhofer IWM	Germany	APACHE
UNIVE	Italy	APACHE
Mirabile	France	APACHE

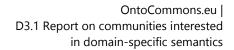
Name	Author / Owner / Contact	Scope	Link
CIDOC Conceptual Reference Model (CRM)	CIDOC CRM Special Interest Group - a volunteer community dedicated to the development and maintenance of a common standard for integrating cultural heritage data.	A theoretical and practical tool for information integration in the field of cultural heritage.	<u>Website</u> <u>Specification</u>
EMMO- Cultural Heritage Preservation	The APACHE Project (Fraunhofer IWM)	The main objective of this ontology is to model the underlying information of the APACHE Decision Support System (DSS), related to the conservation of cultural heritage. This	<u>GitHub</u>



	extension involves mainly the representation of museums and cultural heritage objects, preventive measures and agents of deterioration.	
ARCO ontology suit	Italian Cultural heritage	<u>Website</u>

Name	Link	Contact
APACHE	<u>Website</u>	
ARCO	<u>Website</u>	
DARIAH	<u>Website</u>	
Europeana	<u>Website</u>	



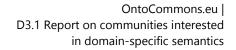


# 4.Next step: Survey

To gather input from the identified stakeholders, a survey will be sent to them. See the current draft of the survey, which is aimed at getting information from the person and the ontologies they have worked with.

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# Metadata for OntoCommons ontology catalogue

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This survey is oriented to people who are aware of any ontology that could be useful for materials, manufacturing or related domains.

Our final goal is to develop an ontology catalogue in order to provide the materials and manufacturing communities with the most suitable ontologies in this area. In addition the catalogue also contains general domain ontologies frequently used across domains.

The estimated time required to complete the questionnaire is of XXX minutes. Once the form about an ontology is submitted it will be manually assessed and automatically processed. After this, the ontology will be included in the OntoCommons Catalogue available at XXXXXX . Please note that there is a manual component in the process, therefore the on-line catalogue will not be updated immediately after the submission.

The questionnaire does not include any personal question and the confidentiality of the answers will be preserved. We only ask for an email address just in case you want to obtain information about the results we produce.

If you don't have time to fill all the data, you can also propose ontologies to be included in the catalogue through a very short form XXXXXXXX

This questionnaire is being performed in the context of the OntoCommons HORIZON2020 project (WEBSITE).

If you have any question or comment about the questionnaire contact XXXXXX \* Erforderlich

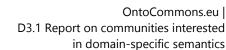
1. Name\*

The name given to the ontology.

2. URI \*

The URI of the ontology.





#### 3. Description \*

A free-text account of the ontology.

#### 4. Domains \*

The different domains covered by the ontology. If the ontology covers more than one domain, please separate them by commas. Example: manufacturing, material science, maintenance, AEC industry, marketing,...

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#### 5. Scope

The scope of the ontology in a particular domain e.g. predictive maintenance, stakeholder description, product nomenclature, sensor, building

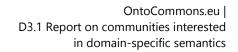
#### 6. Namespace

The preferred namespace URI to use when using terms from this vocabulary.

#### 7. Version

The version of the ontology.





#### 8. Creation date

The date of formal issuance of the ontology.

Beispiel: 7. Januar 2019

#### 9. Last update

Most recent date on which the ontology was changed, updated or modified.

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Beispiel: 7. Januar 2019

#### 10. Contact person

The person(s) primarily responsible for making the ontology. Please include name and email address of the contact persons whenever possible. If there is more than one contact person, please separate them by commas.

#### 11. Publisher

The organization that published the ontology.



#### 12. Ontology language

The language in which the ontology is implemented.

Wählen Sie alle zutreffenden Antworten aus.

OWL	
RDF-S	
SKOS	
SUO-KIF	
Isabelle (FOL)	
OBO format	
UML	
Sonstiges:	

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#### 13. Format

The format(s) of the ontology.

Wählen Sie alle zutreffenden Antworten aus.

RDF/XML			
Turtle			
N3			
N-Triples			
TriX			
TriG			
Sonstiges:			

#### 14. Use of top level ontologies ?

Wählen Sie alle zutreffenden Antworten aus.

Basic Formal Ontology
DOLCE
SUMO
EMMO
Jnified Foundational Ontology
/AMATO
CYC
General Formal Ontology
tiges:



#### 15. License

The license of the ontology. Example: CC BY-SA, MIT, etc.

Wählen Sie alle zutreffenden Antworten aus.

All rights reserved / no license (No Open)
CC0 1.0 Universal - "Creative Commons public domain waiver" (Open)
http://creativecommons.org/publicdomain/zero/1.0/
CC-BY Creative Commons Attribution International (Open)
http://creativecommons.org/licenses/by/4.0/
CC-BY Creative Commons Attribution Unported (Open)
http://creativecommons.org/licenses/by/3.0/
CC-BY-SA Creative Commons Attribution-ShareAlike International (Open)
http://creativecommons.org/licenses/by-sa/4.0/
CC-BY-SA Creative Commons Attribution-ShareAlike Unported (Open)
http://creativecommons.org/licenses/by-sa/3.0/
CC-BY-ND CreativeCommons Attribution-NoDerivs International (No Open)
http://creativecommons.org/licenses/by-nd/4.0/
CC-BY-NC CreativeCommons Attribution-NonCommercial International (No Open)
http://creativecommons.org/licenses/by-nc/4.0/
CC-BY-NC-SA Creative Commons Attribution-NonCommercial-ShareAlike International
(No Open) http://creativecommons.org/licenses/by-nc-sa/4.0/
CC-BY-NC-ND Creative Commons Attribution-NonCommercial-NoDerivs International
(No Open) http://creativecommons.org/licenses/by-nc-nd/4.0/
GNU Free Documentation License (GFDL) (Open) http://www.gnu.org/copyleft/fdl.html
MIT (Open) http://opensource.org/licenses/MIT
PDDL: Public Domain Dedication and License (PDDL) - "Public Domain for
data/databases" (Open) <u>http://www.opendatacommons.org/licenses/pddl/</u>
ODC-By: Open Data Commons Attribution (ODC-By) - "Attribution for data/databases"
(Open) http://www.opendatacommons.org/licenses/by/
ODBL: Open Database License (ODC-ODbL) - "Attribution Share-Alike for
data/databases" (Open) <u>http://www.opendatacommons.org/licenses/odbl/</u>
W3C software license (Open) <u>http://www.w3.org/Consortium/Legal/2002/copyright-</u>
software-20021231
Unknown

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Sonstiges:



#### 16. Language

The ISO 639-1 code(s) of the language(s) of the resource. If the ontology is implemented in more than one language, please separate them by commas. Example: es, en, (See <u>http://en.wikipedia.org/wiki/List\_of\_ISO\_639-1\_codes</u> for a full list of codes).

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Wählen Sie alle zutreffenden Antworten aus.

E	en - English
	es - Spanish
	fr - French
	de - German
	it - Italian
	bg - Bulgarian
	nl - Dutch
	no - Norwegian
	ru - Russian
So	onstiges:

- 17. Available documentation URLs for the documentation of the ontology
- Is the ontology stored and indexed in a dedicated repository/registry?
   Please
- 19. Does the ontology follow one of the following established best practices or principles?

Wählen Sie alle zutreffenden Antworten aus.

ОВО	Foundry
Indus	stry Ontology Foundry principles
Sonstiges	5:



#### 20. Development methodology and knowledge sources

Please provide a short description of the methodology and knowledge sources used to develop the ontology as a comma separated list

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21. Is the ontology an outcome of a European project? If so, please indicate the project name and the website if possible.

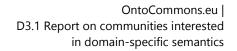
#### 22. Comments

Further information about the ontology that might be revelant.

#### 23. References

Resources that might provide additional information (documents, deliverables, papers, etc.).





#### 24. Your contact information

You can let us know who you are so that we know to whom to be thankful for the contribution. In addition we might occasionally contact you in case we need any further information about the ontology you submitted (In this case we will need your name and email adress).

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**Google** Formulare



OntoCommons.eu | D3.1 Report on communities interested in domain-specific semantics

# 5.Conclusion

The present document, while being only a first step towards examining the entire domain ontology landscape relevant for the OntoCommons project, already identifies key players and stakeholders. We were able to collect many stakeholders especially in the domains of materials and manufacturing as well as engineering. Thanks to all contributors, we were able to collect over 250 stakeholders for the domains in the focus of OntoCommons (chapter 1). In the second chapter we reported over 150 stakeholders and in the third one almost 50. In total we collected about 450 different stakeholders in this document. We organized them in 39 different domains and plan to refine these domains in the course of the project. The collected over 100 semantic assets and ontologies can be direct input for a follow up semantic landscape analysis. Together with the collected persons, the over 100 mentioned organizations and projects can be invited to focused workshops and other means of collaborations. We need their input to successfully examine the field and gain a complete picture of what is already out there in terms of semantic assets.

This document will be updated when we encounter new interested stakeholders through the OntoCommons Website. The stakeholders identified in this document will be invited to register on the project website and to be part of OntoCommons community. The list of ontologies will be updated in the next Deliverable (3.2).