# baseURI: https://cmisa.example.org

@prefix cmisa: <http://data.europa.eu/cmisa/>.

@prefix dct: <http://purl.org/dc/terms/> .

@prefix ex: <https://cmisa.example.org/> .

@prefix foaf: <http://xmlns.com/foaf/0.1/> .

@prefix locn: <http://www.w3.org/ns/locn#> .

@prefix org: <https://www.w3.org/TR/vocab-org/>.

@prefix owl: <http://www.w3.org/2002/07/owl#> .

@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .

@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .

@prefix schema: <http://schema.org/> .

@prefix skos: <http://www.w3.org/2004/02/skos/core#> .

@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

@prefix vcard:<http://www.w3.org/2006/vcard/ns#>.

ex:basic-example

 a owl:Ontology ;

 rdfs:label "A basic example of the CMISA data model using DIH data"@en;

 dct:description "This is a basic example of usage for the CMISA data model. For the compilation of this example data are taken from https://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/3480/view. All data used in this example are real, except where stated differently"@en ;

 dct:created "2020-08-31"^^xsd:date ;

 dct:creator

 [

 foaf:name "Szabolcs Szekacs";

 schema:affiliation [

 foaf:homepage <https://ec.europa.eu/knowledge4policy/organisation/dg-grow-dg-internal-market-industry-entrepreneurship-smes\_en> ;

 foaf:name "DG GROW.F1 European Commission"

 ] ;

 foaf:homepage <https://joinup.ec.europa.eu/collection/cmisa> ;

 ] ;

 dct:creator

 [

 foaf:name "Anastasia Sofou";

 schema:affiliation [ foaf:homepage <http://www.trasysinternational.com/> ;

 foaf:name "Trasys International"

 ] ;

 foaf:homepage <https://www.linkedin.com/in/anastasia-sofou/> ;

 ] ;

.

# ------- EXAMPLE OF AGGREGATOR PLATFORM CLASS -------

# -- Instance of the Aggragotor Platform Class and its properties

ex:DIH-platform

 a cmisa:AggregatorPlatform;

 foaf:name "Smart Specialization Platform - Digital Innovation Hubs"@en;

 dct:description" "@en;

 dct:identifier<>; #no identifier for the platform yet

 foaf:homepage <https://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool>;

 cmisa:platformActorType "Digital Innovation Hubs"@en;

 cmisa:aggregates ex:aggregation-3480;

.

# ------- EXAMPLE OF THE AGGREGATION CLASS -------

# -- The relationship class Aggragation that associates the aggregator platform with an Actor

ex:aggregation-3480

 a cmisa:Aggregation;

 cmisa:platformActorAccessURL <https://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool/-/dih/3480/view>;

 #dct:identifier<>; --> maybe an internal identifier is better since dct:identifier is for legacy or dereferencable identifiers

 dct:hasPart ex:actor-3480;

.

# ------- EXAMPLE OF THE ACTOR CLASS -------

# -- Instance of the Actor class and its properties

ex:actor-3480

 a cmisa:Actor;

 skos:prefLabel "Aachen DIH Center for Robotics in Healthcare"@en;

 skos:altLabel " "@en;

 foaf:homepage <http://www.robotics.ukaachen.de/>;

 dct:decscription "The Center for Robotics in Healthcare is the central one-stop-shop for enterprises, researchers or clinicians, who would like to engage in the field of healthcare robotics and are looking for support and partners to develop innovative ideas into products. Serving as the main entry gate to the regional Digital Innovation Hub, the CRH connects interested parties with the right institutions within the extensive and deeply rooted technological network in Aachen and the EUREGIO region."@en;

 org:classification <http://data.europa.eu/cmisa/actor-types/multilevel/L1-1>; # L1-1: Research and Technology organisations -> actor-type :concept from actor-type vocabulary

 org:classification <ttp://data.europa.eu/cmisa/actor-types/direct/DA>; # direct actor

 org:identifier "PIC-987865432"^^xsd:Literal; #imaginary PIC number (not real data)

 cmisa:TRL <http://data.europa.eu/cmisa/TRL/TRL1>, <http://data.europa.eu/cmisa/TRL/TRL2>, <http://data.europa.eu/cmisa/TRL/TRL3>, <http://data.europa.eu/cmisa/TRL/TRL4>, <http://data.europa.eu/cmisa/TRL/TRL5>, <http://data.europa.eu/cmisa/TRL/TRL6>, <http://data.europa.eu/cmisa/TRL/TRL7>, <http://data.europa.eu/cmisa/TRL/TRL8>;

 cmisa:hasContactPoint ex:contact-3480;

 locn:location ex:location-3480;

 org:linkedTo ex:actor-002, ex:actor-003;

 cmisa:hasSector ex:sector-3480;

 cmisa:hasTechnology ex:technology-3480-1, ex:technology-3480-2, ex:technology-3480-3, ex:technology-3480-4;

 cmisa:hasGenericCatalog ex:genericCatalog-3480-01, ex:genericCatalog-3480-02;

.

# ------- EXAMPLE OF THE LOCATION CLASS -------

# -- The location of the ACTOR

ex:location-3480

 a dct:Location;

 locn:address ex:address-3480;

 locn:seeAlso <http://dbpedia.org/resource/ISO\_3166-2:DE>;

.

# ------- EXAMPLE OF THE ADDRESS CLASS -------

# -- Address associated with the Location of the Actor

ex:address-3480

 a locn:Address;

 locn:fullAddress "Pauwelsstraße 30, 52074, Aachen (Germany)";

 locn:aminUnit1 "Germany";

 locn:adminUnit2 "Aachen";

.

# ------- EXAMPLE OF ACTORS REKATED TO MAIN ACTOR -------

# --- Actors 002 and 003 are actors that are linked (as partners) to the main actor-3480

# --- Partner actor-002

ex:actor-002

 a cmisa:Actor;

 skos:prefLabel "RWTH Aachen University"@en;

 org:classification<http://data.europa.eu/cmisa/actor-types/multilevel/L1>; # university

 org:classification<http://data.europa.eu/cmisa/actor-types/direct/PA>;# parent organisation

 foaf:homepage <http://www.rwth-aachen.de>;

 locn:location ex:location-002;

.

# --- Location of actor-002

ex:location-002

 a dct:Location;

 locn:seeAlso <http://dbpedia.org/resource/ISO\_3166-2:DE>;

.

# --- Partner actor-003

ex:actor-003

 a cmisa:Actor;

 skos:prefLabel "RWTH Aachen University"@en;

 org:classification <http://data.europa.eu/cmisa/actor-types/multilevel/L6>;

 foaf:homepage <http://www.ukaachen.de>;

.

# ------- EXAMPLE OF THE SECTOR CLASS -------

# --- Sector class of main actor -3480

ex:sector-3480

 a cmisa:Sector;

 dct:title "Health and social work"@en;

 dct:description" Services provided are: Awareness creation, Ecosystem building, scouting, brokerage, networking, Visioning and Strategy Development for Businesses, ollaborative Researchs, Concept validation and prototyping, Testing and validation, Pre-competitive series production, Commercial infrastructure, Digital Maturity Assessment, Incubator/accelerator support, Voice of the customer, product consortia, Access to Funding and Investor Readiness Services, Mentoring, Education and skills development"@en;

 dct:type ex:nace-q;

.

# --- The type of the Sector (list item of NACE code list) of the main actor-3480 is defined as a concept

ex:nace-q

 a skos:Concept;

 skos:inScheme ex:nace ;

 skos:prefLabel "Q - Human health and social work activities"@en ;

 skos:notation "Q";

 rdfs:seeAlso <https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST\_CLS\_DLD&StrNom=NACE\_REV2#l>;

.

# --- The concept scheme wherethe concept of the sector type belongs to

ex:nace

 a skos:ConceptScheme;

 skos:prefLabel "A List of NACE codes"@en ;

 skos:hasTopConcept ex:nace-q;

.

# --- EXAMPLES OF TECHNOLOGY CLASS

# --- Multiple technology catalogs describing different technological competences

ex:technology-3480-1

 a cmisa:Technology;

 dct:title "Micro and nano electronics, smart system integration"@en;

.

ex:technology-3480-2

 a cmisa:Technology;

 dct:title "Sensors, actuators, MEMS, NEMS, RF"@en;

.

ex:technology-3480-3

 a cmisa:Technology;

 dct:title "Robotics and autonomous systems"@en;

.

# --- Alternative way of providing multiple technological comletences in a single technology catalog

ex:technology-3480-4

 a cmisa:Technology;

 dct:title "Internet of Things (e.g. connected devices, sensors and actuators networks)"@en;

 dct:title "Artificial Intelligence and cognitive systems"@en;

 dct:title "Interaction technologies (e.g. human-machine Interaction, motion recognition and language technologies)"@en;

 dct:title "Augmented and virtual reality, visualization"@en;

 dct:title "Simulation and modelling"@en;

 # dct:type; -> since there are multiple technological competencess it is not straightforward how to choose type

.

# --- EXAMPLES OF GENERIC CATALOG CLASS

# --- This is a Generic catalog that describes the services provided by the main actor-3480. The catalog has mutliple catalogValues but no Catalog Attributes

ex:genericCatalog-3480-01

 a cmisa:GenericCatalog;

 dct:title "Services provided"@en;

 dct:description "This catalog provides information about the services provided by the Actor"@en;

 cmisa:catalogValue "Awareness creation"@en;

 cmisa:catalogValue "Ecosystem building, scouting, brokerage, networking"@en;

 cmisa:catalogValue "Visioning and Strategy Development for Businesses"@en;

 cmisa:catalogValue "Collaborative Researchs"@en;

 cmisa:catalogValue "Concept validation and prototyping"@en;

 cmisa:catalogValue "Testing and validation"@en;

 cmisa:catalogValue "Pre-competitive series production"@en;

 cmisa:catalogValue "Commercial infrastructure"@en;

 cmisa:catalogValue "Digital Maturity Assessment"@en;

 cmisa:catalogValue "Incubator/accelerator support"@en;

 cmisa:catalogValue "Voice of the customer, product consortia"@en;

 cmisa:catalogValue "Access to Funding and Investor Readiness Services"@en;

 cmisa:catalogValue "Mentoring"@en;

 cmisa:catalogValue "Education and skills development"@en;

.

# --- Another Generic catalog that provides some service examples provided by the actor-3480. The catalog is associated with mutliple Catalog Attributes, but has no catalogValues

ex:genericCatalog-3480-02

 a cmisa:GenericCatalog;

 dct:title "Service Example"@en;

 dct:description "This catalog provides some examples of the services provided by the Actor"@en;

 cmisa:hasCatalogAttribute ex:catalogAttribute-3480-02-01;

 cmisa:hasCatalogAttrubute ex:catalogAttribute-3480-02-02;

 cmisa:hasCatalogAttribute ex:atalogAttribute-3480-02-03;

.

 # --- EXAMPLES OF THE CATALOG ATTRIBUTE CLASS

ex:catalogAttribute-3480-02-01

 a cmisa:CatalogAttribute;

 dct:title "Leveraging the holding system &quot; EndoTAIX &quot; from scientific development to ready-to -market"@en;

 cmisa:attributeValue "For one of SurgiTAIX AG's products, the holding system &quot; EndoTAIX &quot; for surgical instrument fixation, the SurgiTAIX AG cooperated very closely with the RWTH University's Helmholtz institute. The services provided comprised the complete first phase of scientific development. Besides, after the first concepts of the holding system took shape, a prototype was successfully build in the scope of a feasibility study. In the role regarding the self-conception as a transfer service provider offering services itself, the SurgiTAIX AG refined the technology to market level and successfully performed all the steps necessary within the process to the approval and certification of the product. Afterwards, the product was delivered to another vendor with SurgiTAIX AG carrying out the production process as an OEM."@en;

 cmisa:attributeValue "http://surgitaix.com/wp/en/home-one-pager-2/#services"^^xsd:anyURI;

.

ex:catalogAttribute-3480-02-02

 a cmisa:CatalogAttribute;

 dct:title "Development of a self-adapting robotic rehabilitation system"@en;

 cmisa:attributeValue "Based on the expertise of different partners of the hub, DIERS International GmbH (SME) was enabled to develop a self-adapting robotic rehabilitation system that allows patients after stroke to relearn motion patterns autonomously. The particular challenge of this cooperation was to adjust the robot to the individual and actual needs of the patient at any particular time of the exercise. Therefore, different sensors have been utilized to detect the actual movement performance of the patient. Feature extraction algorithms have been developed to identify the actual needs of the individual patient and intelligent predicting control algorithms enable the robot to independently adapt the movement task to the needs of the patient. These challenges could be solved only by the services provided by different partners of the hub which include the transfer of the newly developed technologies, access to patient data, acquisition of knowledge and demands from healthcare personal and coordinating the application for public funding."@en;

 cmisa:attributeValue "http://www.diers.eu"^^xsd:anyURI;

.

ex:catalogAttribute-3480-02-03

 a cmisa:CatalogAttribute;

 dct:title "Establishment of a robotic couch lab and test facility for radiotherapy"@en;

 cmisa:attributeValue "With the help of services provided by different partners of the hub, the robotic integrator SME BEC GmbH was given the opportunity to enhance their robotic patient positioning device ExaMove to allow for compensation of lung tumor movements during free breathing. The provided services solved the need to establish a test facility within the intended environment (the radiotherapy department) and provided the transfer of necessary innovative technologies such as new sensors and intelligent automatic control algorithms. Furthermore, the provided services included the coordination of the consortium, identifying, preparing and coordinating the application for public funding, provision of access to the hospital’s infrastructure and the acquisition of knowledge and demands from healthcare personal."@en;

 cmisa:attributeValue "http://www.b-e-c.de/bec-news-en/2017/9/6/forschungs-konsortium-erhlt-zuschlag-fr-das-ropara-projekt-y5y8p"^^xsd:anyURI;

.

# -- EXAMPLE OF VCARD CLASS -----

# --- Contact information of Actor Provided as a vcard

ex:contact-3480

 a vcard:Individual;

 vcard:fn "Rolf Possaint";

 vcard:hasEmail <mailto:robotics@ukaachen.de>;

.