Introduction to the eNanoMapper Ontology

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Overview

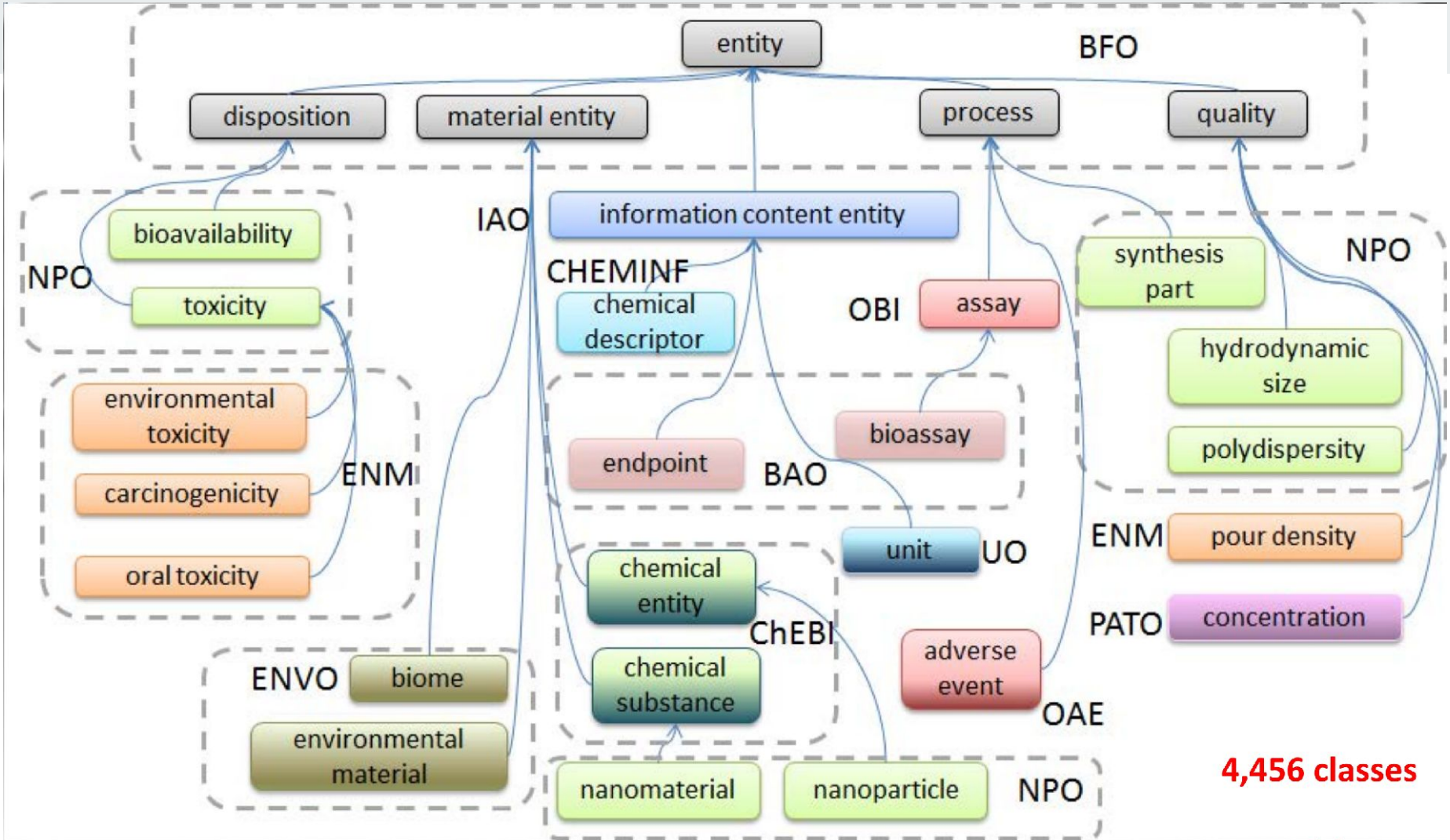
- Introduction
- What the eNanoMapper ontology is designed to achieve
- How the ontology is designed
- What it's used for
- How to access and browse it

eNanoMapper Objectives

- A complete ontology for the nanosafety domain
- Provide a terminology for the domain that exists sensibly in relation to other scientific domains
- Use this domain description to annotate data
- As we will see, this enables Good Things
- Ontologies of this kind are called Application Ontologies (another example is EFO)

eNanoMapper Design

- There are already many ontologies, which we may have just heard about: CHEBI, IAO, NanoMaterials
- The important thing is that we can clearly see that this exists in the kind of intersection of domains, along with its own information
- So, a wonderful tool called Slimmer has been developed to chop up pieces of ontologies and include them into our own.


entity
BFO
disposition
material entity
process
quality
bioavailability
NPO
toxicity
IAO
information content entity
CHEMINF
chemical descriptor
OBI
assay
synthesis part
NPO
hydrodynamic size
polydispersity
environmental toxicity
carcinogenicity
oral toxicity
ENM
endpoint
BAO
bioassay
unit
UO
ENM
pour density
chemical entity
ChEBI
chemical substance
PATO
concentration
adverse event
OAE
ENVO
biome
environmental material
nanomaterial
nanoparticle
NPO
4,456 classes

eNanoMapper Uses

- Browsing and searching terms in the ontology
- Annotation of data with ontology terms
- Semantic data lookup and search USING the ontology and annotated data
    - E.g. semantic pubmed searching for conceptual information
- Data science: logical inference, semantic similarity
    - Examples for where this approach has been applied is most obviously, functional similarity for prediction of protein-protein interactions, genetic orthology, etc

How to Browse The Ontology

- There are many tools providing an ontology interaction interface. On the web, these include BioPortal and AberOWL. On the desktop, mainly Protege.

- Tutorial: https://bit.ly/2JqhMIf

eNanoMapper

Last uploaded: September 27, 2018

Summary | Classes | Properties | Notes | Mappings | Widgets

Details

Acronym	ENM
Visibility	Public
Description	The eNanoMapper ontology covers the full scope of terminology needed to support research into nanomaterial safety. It builds on multiple pre-existing external ontologies such as the NanoParticle Ontology.
Status	Beta
Format	OWL
Contact	Haralambos Sarimveis, hsarimv@central.ntua.gr Egon Willighagen, egon.willighagen@maastrichtuniversity.nl Philip Doganis, filippos@mail.ntua.gr Friederike Ehrhart, friederike.ehrhart@maastrichtuniversity.nl Gareth Owen, gowen@ebi.ac.uk Linda Rieswijk, linda.rieswijk@maastrichtuniversity.nl Jiakang Chang, jkchang@ebi.ac.uk Janna Hastings, hastings@ebi.ac.uk
Categories	Chemical, Health

Submissions

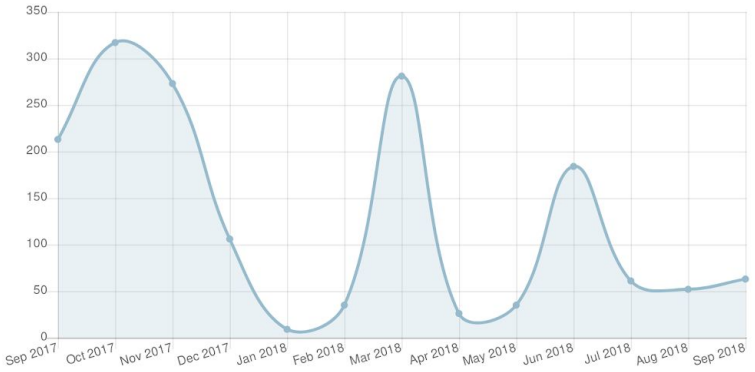
Version	Released	Uploaded	Downloads
5.0.1 (Parsed, Indexed, Metrics, Annotator)	09/27/2018	09/27/2018	OWL | CSV | RDF/XML | Diff
5.0 (Archived)	09/14/2018	09/14/2018	OWL | Diff
5.0 (Archived)	09/13/2018	09/13/2018	OWL | Diff
4.1 (Archived)	10/11/2017	10/11/2017	OWL | Diff
4.0 (Archived)	09/24/2017	09/24/2017	OWL | Diff

more...

Metrics

Classes	12,531
Individuals	414
Properties	4
Maximum depth	12
Maximum number of children	1,811
Average number of children	6
Classes with a single child	830
Classes with more than 25 children	75
Classes with no definition	4,929

Visits



Jump to:

- entity
  - disposition
  - information content entity
    - AdverseOutcomePathway
    - algorithm
    - AopEntity
    - assay description
    - Authority
    - chemical entity information format specification
    - citation
    - data item
    - datum value
    - descriptor
    - endpoint
      - binary endpoint
      - Biological property endpoint
      - concentration endpoint
      - graphical calculation endpoint
      - percentage yield
      - physchem property endpoint
      - profile endpoint
      - protein substrate and ligand constant
      - response endpoint
      - solubility endpoint
      - temperature endpoint
      - time endpoint
      - toxicological endpoint
        - cytotoxicity endpoint
        - ecotox
        - eye irritation
        - Immunotoxicity
        - RD50
        - tox long term
        - toxicity
          - **carcinogenicity**

Tutorial: https://bit.ly/2JqhMIf

- The tree view on the left expresses the ontology classes, and allows you to browse through them.
- The Jump To text box allows you to search for classes.
- Remember each sub-item **is a** more specific kind of the thing above it (subsumption relationship)

Page: https://bit.ly/2y5wXTy

Tutorial: https://bit.ly/2JqhMIf

Details | Visualization | Notes (0) | Class Mappings (58) |

Preferred Name	citation
Definitions	a textual entity intended to identify a particular publication
ID	http://purl.obolibrary.org/obo/IAO_0000301
definition editor	PERSON: Lawrence Hunter
editor preferred label	citation
example of usage	Verspoor, K., Cohen, KB., Hunter, L. Textual characteristics of traditional and Open Access scientific journals are similar, BMC Bioinformatics 2009, 10:183.
has curation status	http://purl.obolibrary.org/obo/IAO_0000125
label	citation
prefixIRI	IAO:0000301
prefLabel	citation
textual definition	a textual entity intended to identify a particular publication
subClassOf	information content entity

- On the right, information about the class
- The ID is important for annotation
- Different ontologies have different tendencies towards what they include here

Thank you!

Credits to Janna Hastings for the eNanoMapper design graphics!
Slides at http://lokero.xyz/nano.pdf