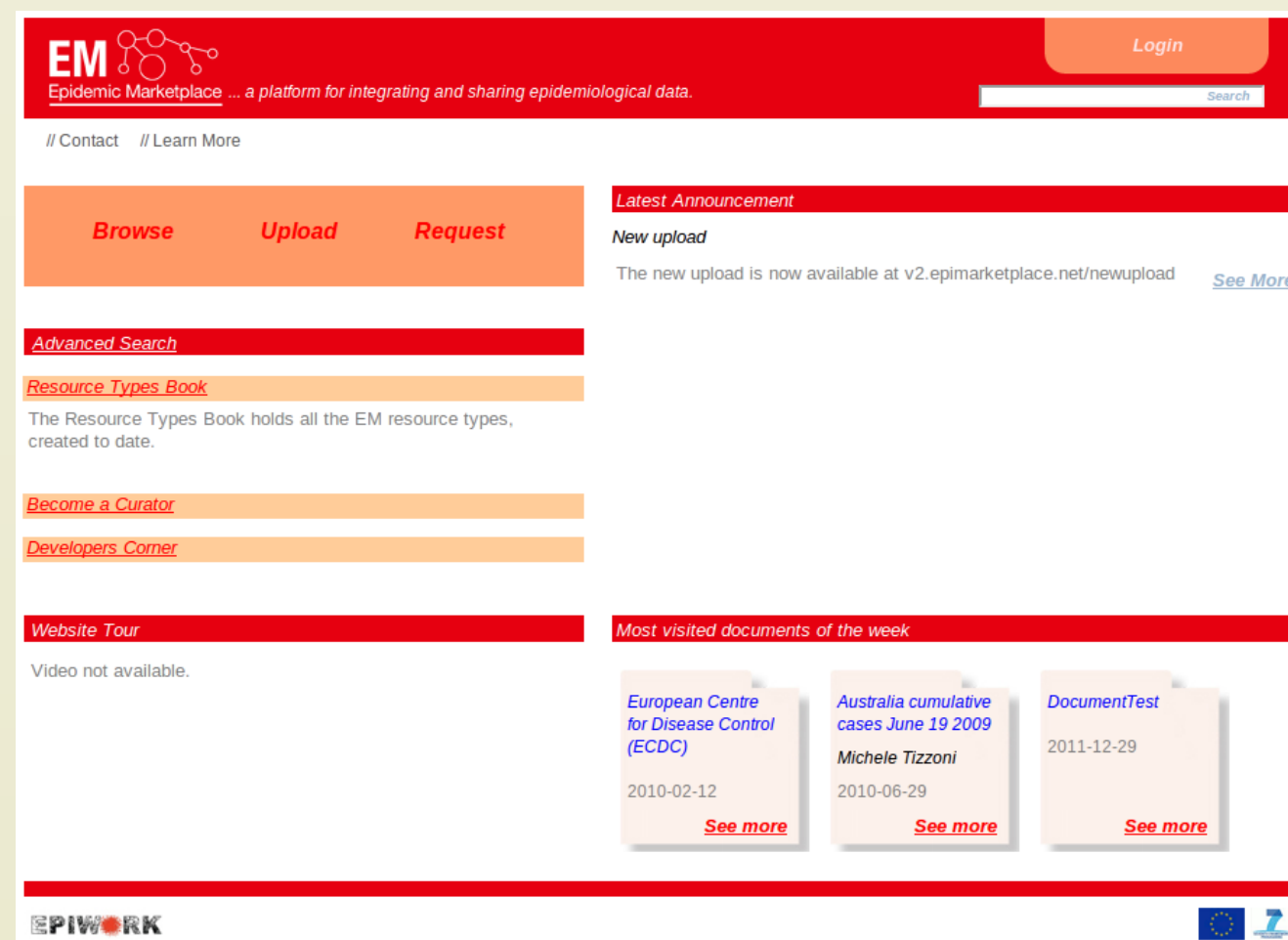


The Epidemic Marketplace



Users can ...

Upload // Request // Search and Browse

... insert resources in the repository

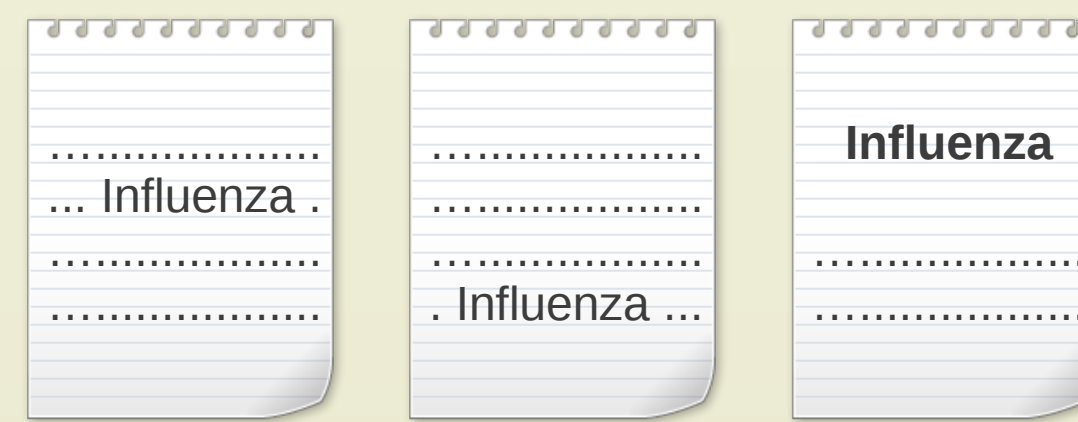
... request specific information

... search by *keyword* and *content*, or browse through the marketplace

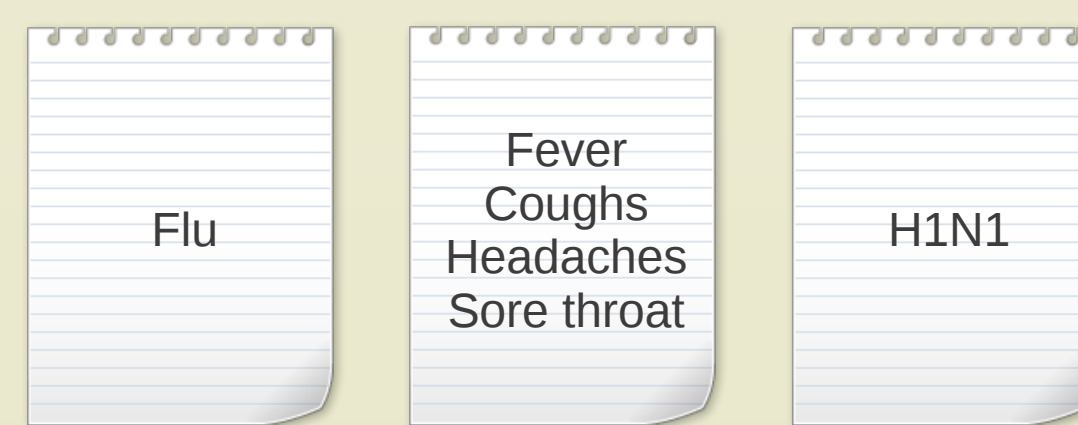
Metadata enhances the retrieval capabilities

Why use metadata?

Search without metadata: "influenza"



But there are other resources about "influenza"



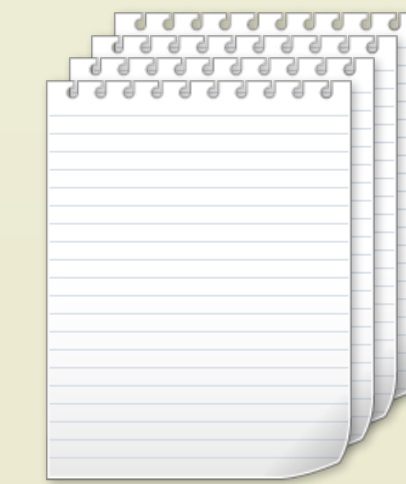
Synonyms Related concepts Subtypes

Metadata allows easy categorisation

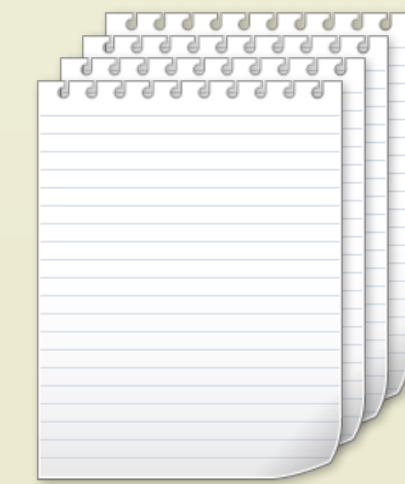
Resources by João D Ferreira



Resources on Influenza



Resources about France



Some elements of metadata:

- author
- date
- type
- subject
- disease
- host
- transmission
- environment
- ...

Uploading with metadata

Upload resource	
Title:	Influenza in France
Description:	Contains data collected by an organisation
Disease:	Influenza
Host:	Human
Transmission:	Airborne
Environment:	Temperature, Humidity
Location:	France
Demography:	Age, Scholarship
...	

Origin of metadata values:

- Users' minds (free text)
- Controlled vocabularies

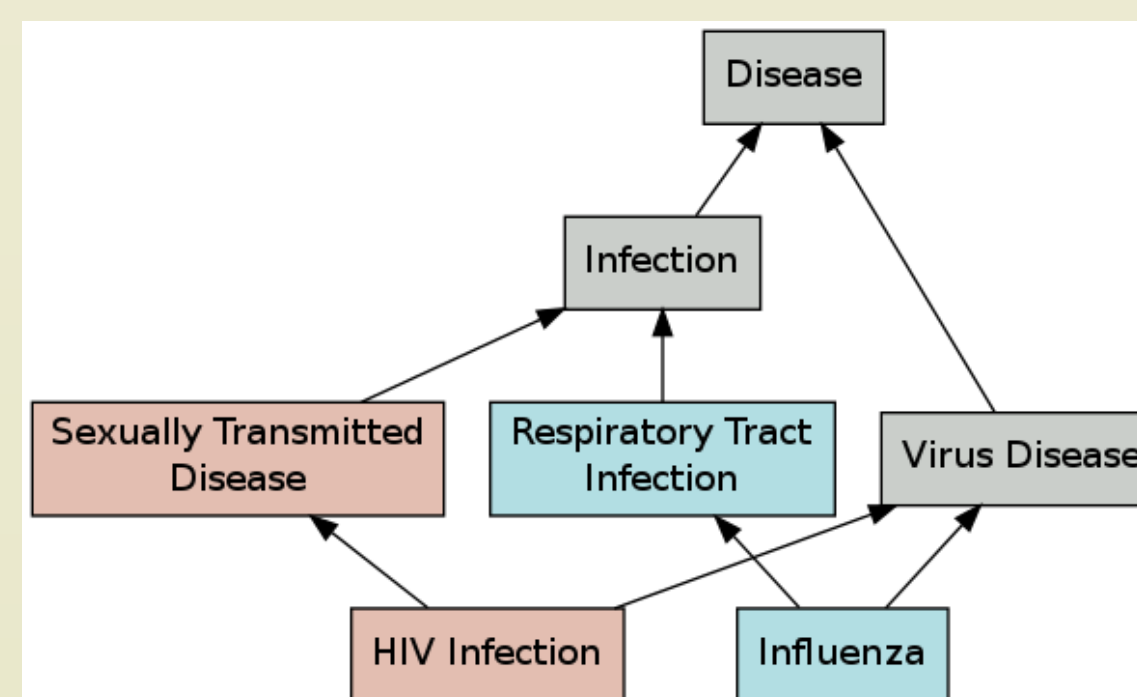
→ Ontologies!

Ontologies

- Organisation of knowledge:
- categorisation of concepts
- list of term synonyms
- automatic reasoning
- machine-readable meaning!

Facts become tangible!

- Fever *symptom-of* Influenza
- Italy *neighbour-of* France
- Life expectancy *is-a* Population characteristic



NERO – Network of Epidemiology-Related Ontologies

5 example requirements:

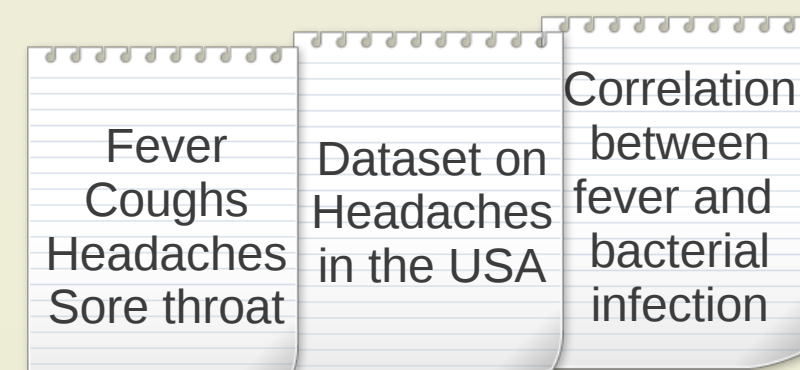
- Expressive but tractable
- Cross-references between ontologies
- Textual definition of the concepts
- Lists of synonyms
- Publicly available

Requirements ensure

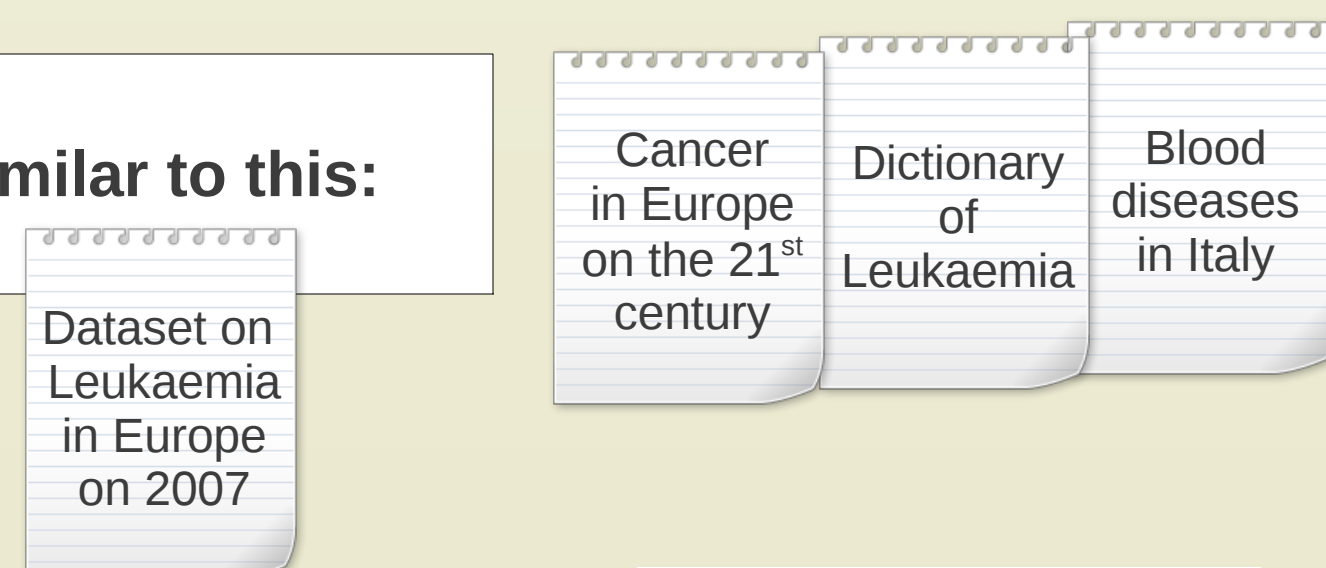
- Quality
- Stability
- Expressiveness

Semantic Web Technologies

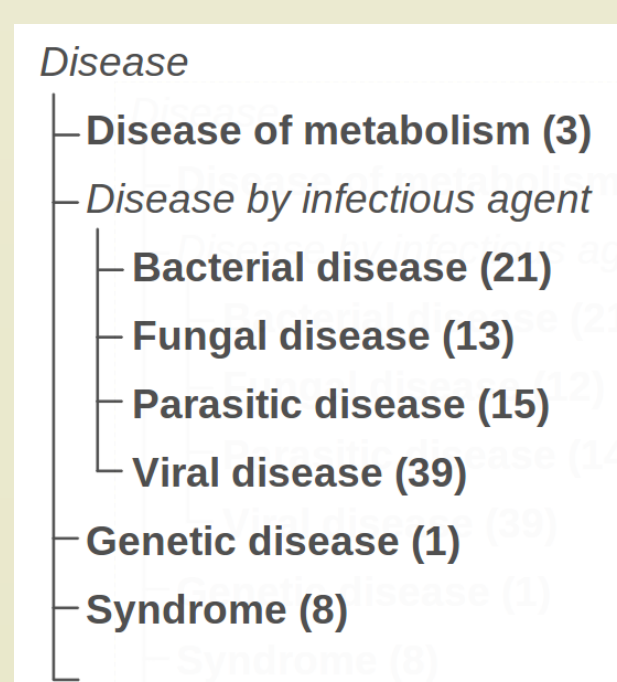
Find resources about "Influenza symptoms"



Find resources similar to this:



Analyse types of diseases



Example ontologies in NERO

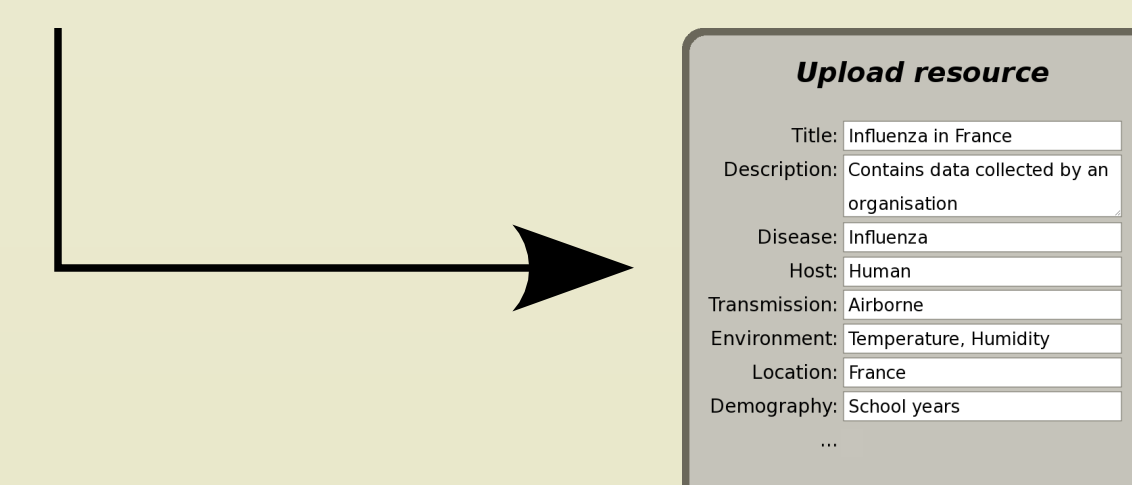
MeSH used to index articles in biomedical sciences (**general domain**)

GeoPlanet™ representation of the world **geography**

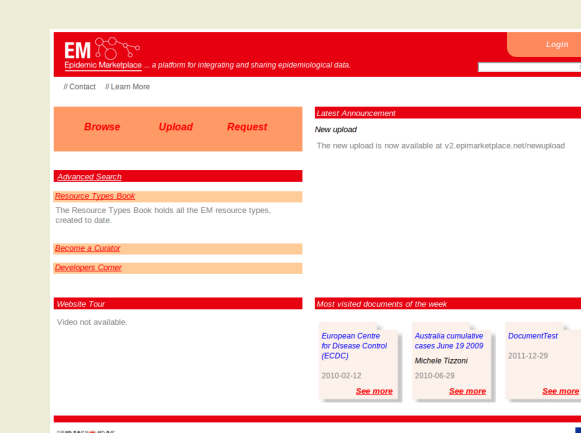
ENVO ontology for the **environment** domain

TRANS describes **transmission** of a pathogen from one host to another host

ChEBI ontology of **chemical compounds** focussed on biologically relevant entities



Conclusions



+ NERO

- Centralised repository for Epidemiology related resources
- Easy access to the resources
- Fully-fledged navigation based on metadata
- Expressive queries
- Semantic analysis over the resources
- Statistic analysis over the resources
- ...