

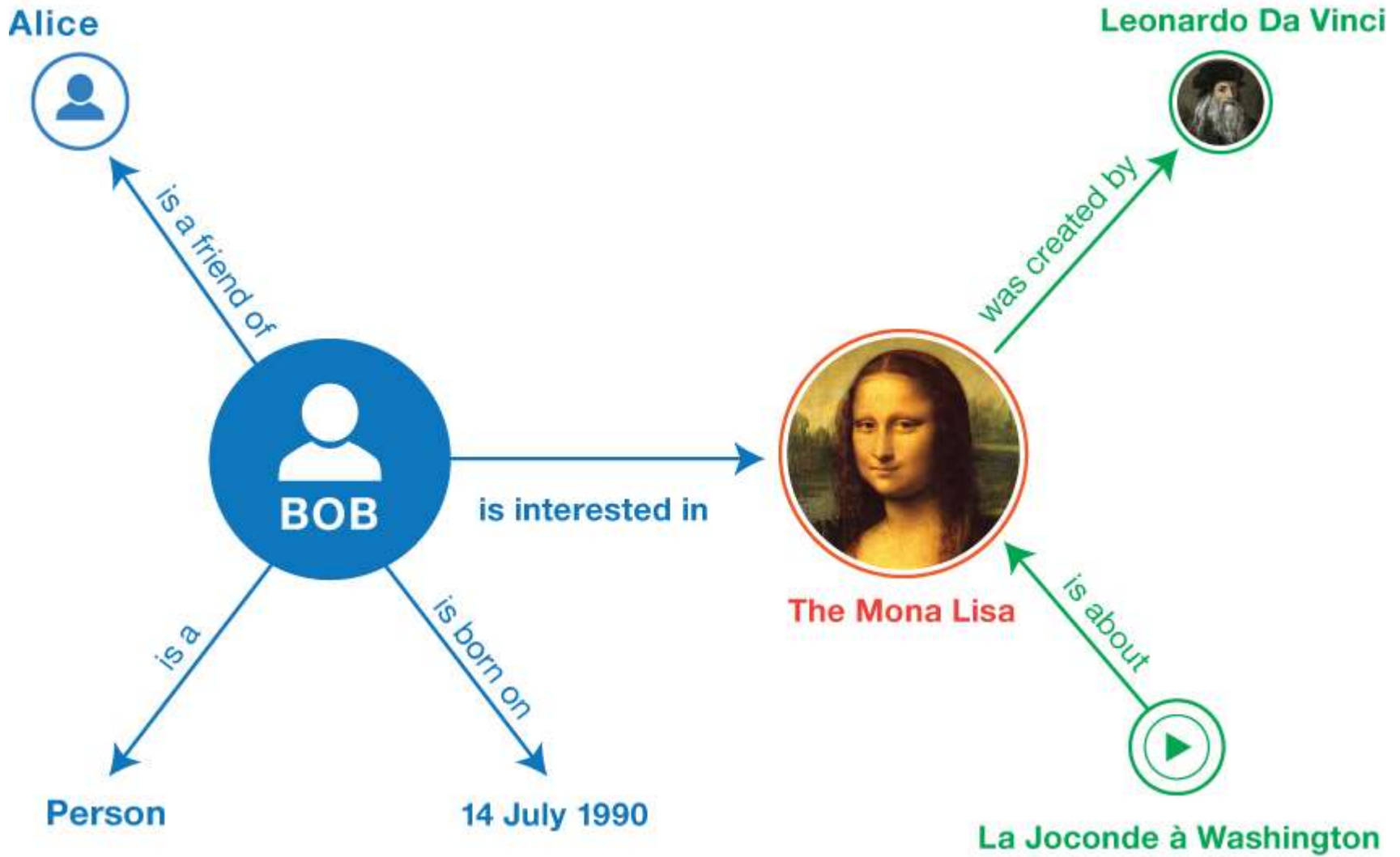
Automatic generation of i2b2 ontologies from 'real' RDF/SKOS ontologies

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The 2015 i2b2 European Academic User Group meeting
6th October 2015

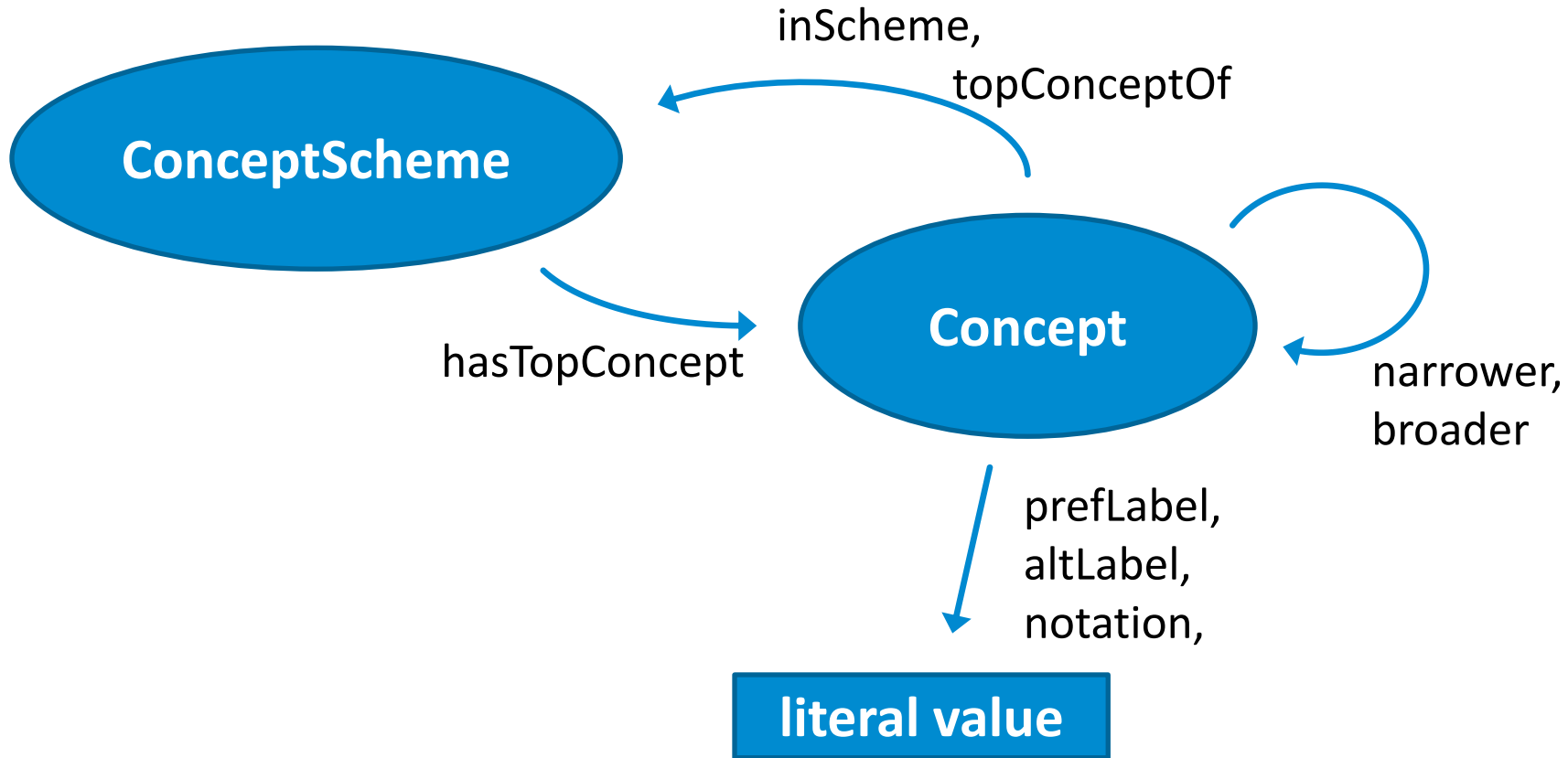
Resource Description Framework (RDF)

0001110010101001010010011101010101010101000100110100101011100100100100111000100101010010101010010110011101101010100010011



Simple Knowledge Organisation System (SKOS)

1000111100101010001010010011101010101010101000100110100101010111001001001001110001001010100101010100101100111011011010100010011



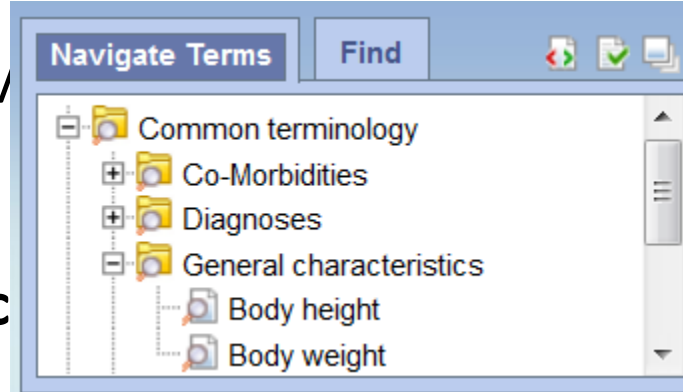
@prefix skos: <http://www.w3.org/2004/02/
@prefix dzl: <http://data.dzl.de/ns/dwh#>

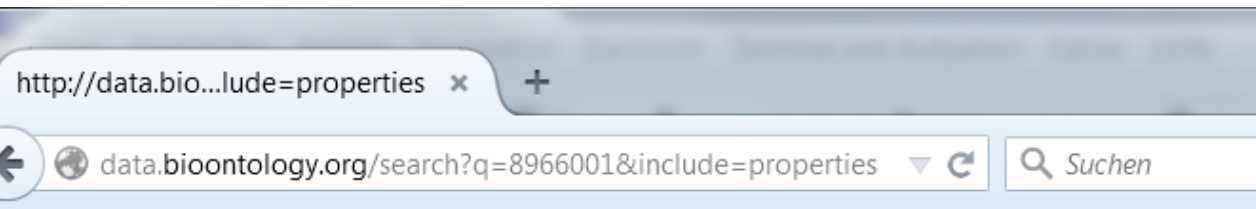
dzl:Scheme a skos:ConceptSc

dzl:Common a skos:Concept ;
skos:inScheme dzl:Scheme ;
skos:topConceptOf dzl:Scheme ;
skos:prefLabel "Common terminology"@en ;
skos:prefLabel "DZL-weite Terminologie"@de ;
skos:narrower dzl:GeneralCharacteristics ;
skos:narrower dzl:LabResults .

...

dzl:GeneralCharacteristics a skos:Concept ;
skos:prefLabel „General Characteristics"@en .
skos:narrower snomed:50373000 ; # height
skos:narrower snomed:27113001 . # weight





Open Biomedical Ontologies / BioPortal





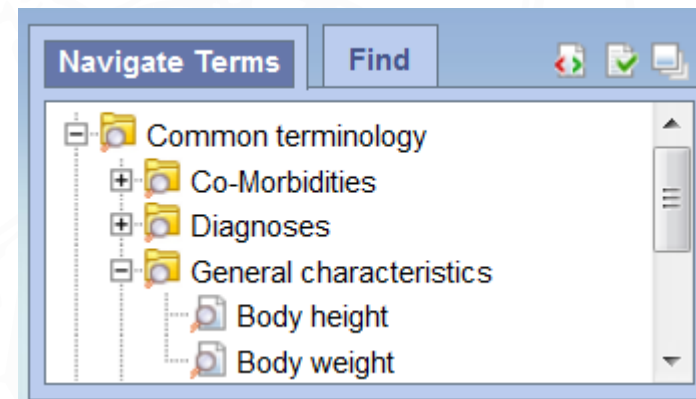
- funded by the US NIH
- www.bioontology.org



```
page: 1,
pageCount: 1,
prevPage: null,
nextPage: null,
+ links: { ... },
- collection: [
  - {
    - properties: {
      + http://purl.bioontology.org/ontology/SNOMEDCT/SUE
      + http://purl.bioontology.org/ontology/SNOMEDCT/EFE
      + http://purl.bioontology.org/ontology/SNOMEDCT/ACT
      + http://bioportal.bioontology.org/ontologies/umls/
      + http://purl.bioontology.org/ontology/SNOMEDCT/TYE
      + http://purl.bioontology.org/ontology/SNOMEDCT/CAS
      - http://www.w3.org/2004/02/skos/core#prefLabel: [
        "Left eye structure"
      ],
      - http://www.w3.org/2004/02/skos/core#altLabel: [
        "Left eye",
        "Left eye structure (body structure)",
        "OS - Left eye"
      ],
      - http://www.w3.org/2004/02/skos/core#notation: [
        "8966001"
      ],
      - http://purl.bioontology.org/ontology/SNOMEDCT/CTV
        "XU9Bm"
      ],
```

RDF ontology processing

- Triple store and reasoner
 - e.g.  Apache Jena,  Sesame/OpenRDF
- Generate projection of graph into i2b2 tree structure
 - Choose single ConceptSchema, language
 - Only plain SKOS needed
 - `skos:notation` ↔ `concept_cd`



```
dwh:floatRestriction a owl:Restriction ;
  owl:onProperty      rdf:value ;
  owl:allValuesFrom  xsd:decimal .
```

```
:FF.2142.qsphf_3 a      skos:Concept ;
  skos:prefLabel      'Procalcitonin'@en ;
  skos:notation        'FF.2142.qsphf_3' ;
  dwh:restriction    :floatRestriction .
```

```
:FF.1234.abc_1 a skos:Concept ;
  skos:notation    "FF .1234.abc_1" ;
  dwh:mapWith [
    a      dwh:MapRule ;
    dwh:condition "fact.value==1"^^dwh:Javascript ;
    dwh:mapTo    snomed:274664007;
  ] .
```

Extensions

- Generate i2b2 c_metadataxml column
- Concept mapping / harmonisation



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