Natural Collection Description Ontology

Migrating NCD from XML schema to OWL

http://rs.tdwg.org/ontology/voc/Collection.rdf

NCD Classes
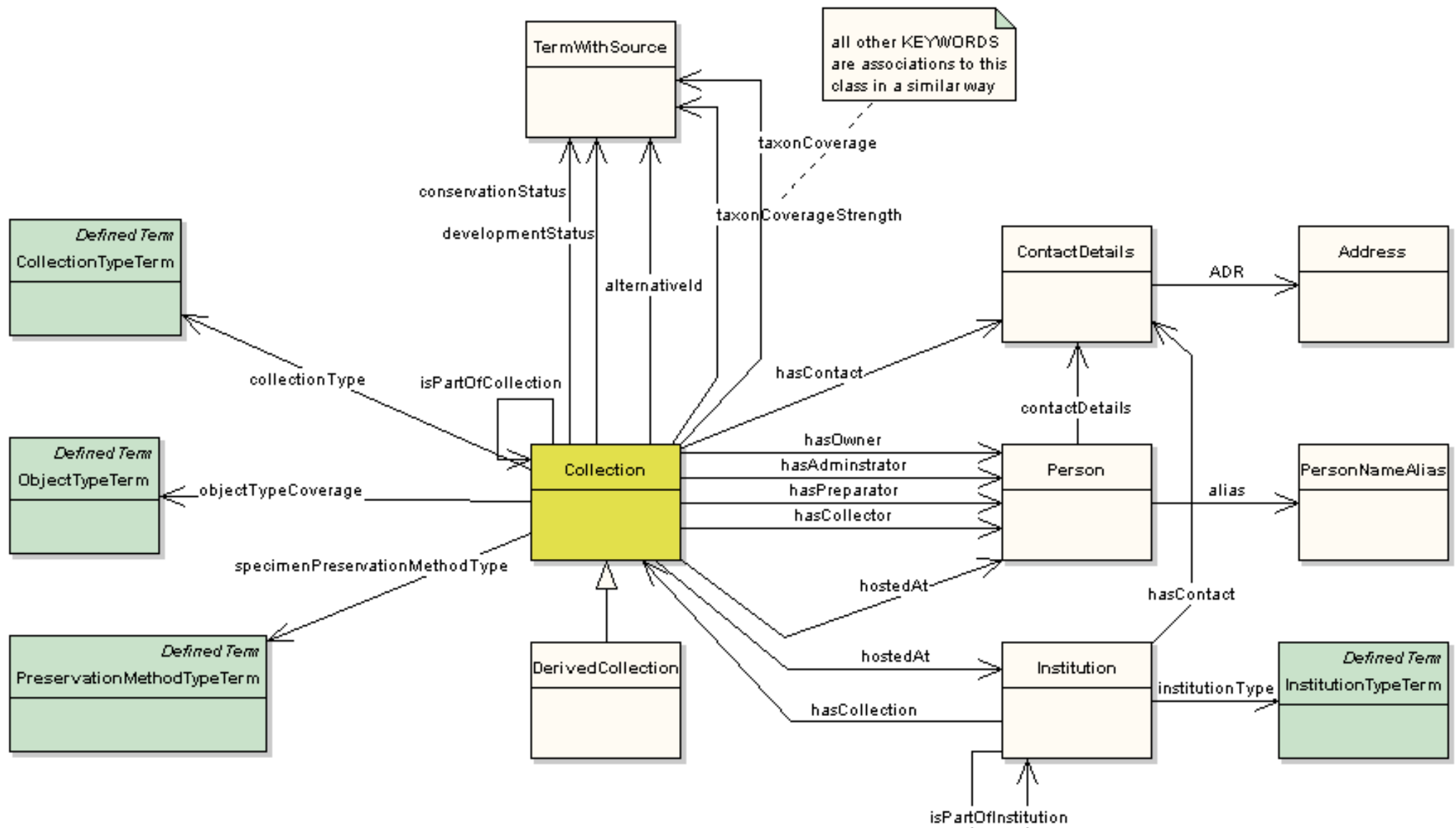
Attribute Naming

- In general all names have remained but:
  - adapted to lowerCamelCase
  - NCD elements starting with "Collection" usually lost this prefix
- In some cases attribute names were changed
- No cardinalities

➡ http://rs.tdwg.org/ontology/voc/Collection.rdf

Ontology Issues I

- controlled vocabularies missing

  InstitutionType, CollectionType, ObjectType,
  preservationMethods
  developmentStatus, conservationStatus

- TermWithSource vs DefinedTerms

  - can we replace TermWithSource?

  - new terms would require an OWL
    vocabulary first

Ontology Issues II

- header metadata missing.
  belongs to RDF file as dublin core?

- vCard already covers most of person, institution and contactDetail class.
  Use owl:sameAs for those properties?

TDWG-TAG Issues

- multiple languages for TDWG ontology

- use dublin core for title, description, other resources, keyword, rights, modified, created, citation?

- Resource identifiers

  - URL + LSID via owl:sameAs, alternativeID

NCD Toolkit & RDF

- export / import static files?

- dynamic "files", one resource per URL?

- D2R wrapper?

RDF - Resource Description Framework

Subject → Property → Value

- RDF is a standard for describing resources.

- A resource might be a web page, a data set, part of an XML document

- A property is something like 'has author' or 'has title'

- A value is another resource or a literal such as a string or some other XML schema data type

Simple Example

```
<rdf:Description about='http://www.ibiblio.org/systema_naturae.html'>
   <Author>Carl Linnaeus</Author>
</rdf:Description>
```

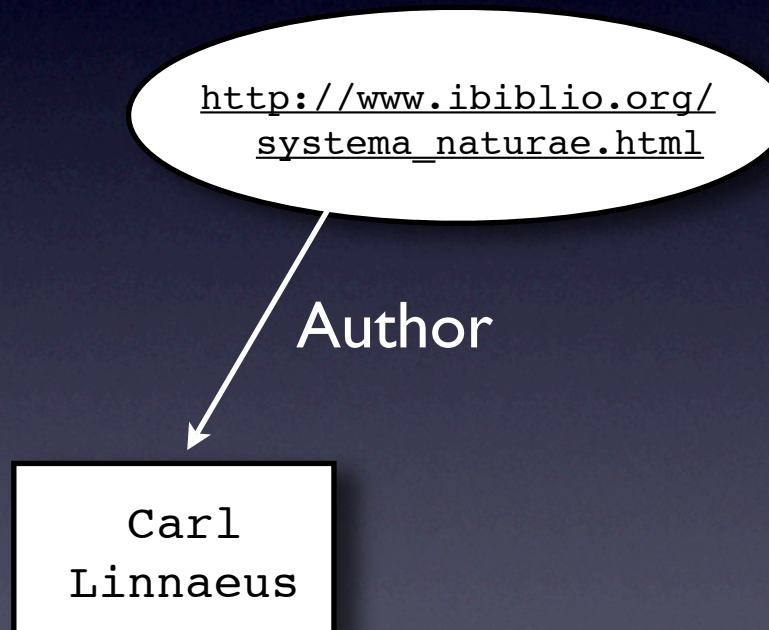- The subject is the systema_naturae.html file
- The property is Author
- The value is Carl Linnaeus

- It gets a bit more complicated when the property and value are also resources

RDF/XML Documents

- RDF has multiple "serialisation" formats. Common format is XML but there are more

- RDF/XML has different ways to express the same RDF graph. Therefore you cannot use XML tools like XSLT or SAX

- RDF therefore often represented as graph of "triples"

Graphically

```
<rdf:Description about='http://www.ibiblio.org/systema_naturae.html'>
   <Author>Carl Linnaeus</Author>
</rdf:Description>
```

http://www.ibiblio.org/
systema_naturae.html

Author

Carl
Linnaeus

vCard Example

```
BEGIN:vCard
FN:Andy Powell
ORG:University of Bath;UK Office for Library and
Information Networking
ADR;TYPE=work:;;;Bath;;BA2 7AY;United Kingdom
TEL;TYPE=work,voice:+44-1225-323933
EMAIL;TYPE=internet:a.powell@ukoln.ac.uk
URL:http://www.ukoln.ac.uk/ukoln/staff/a.powell.html
END:vCard
```

... as RDF graph
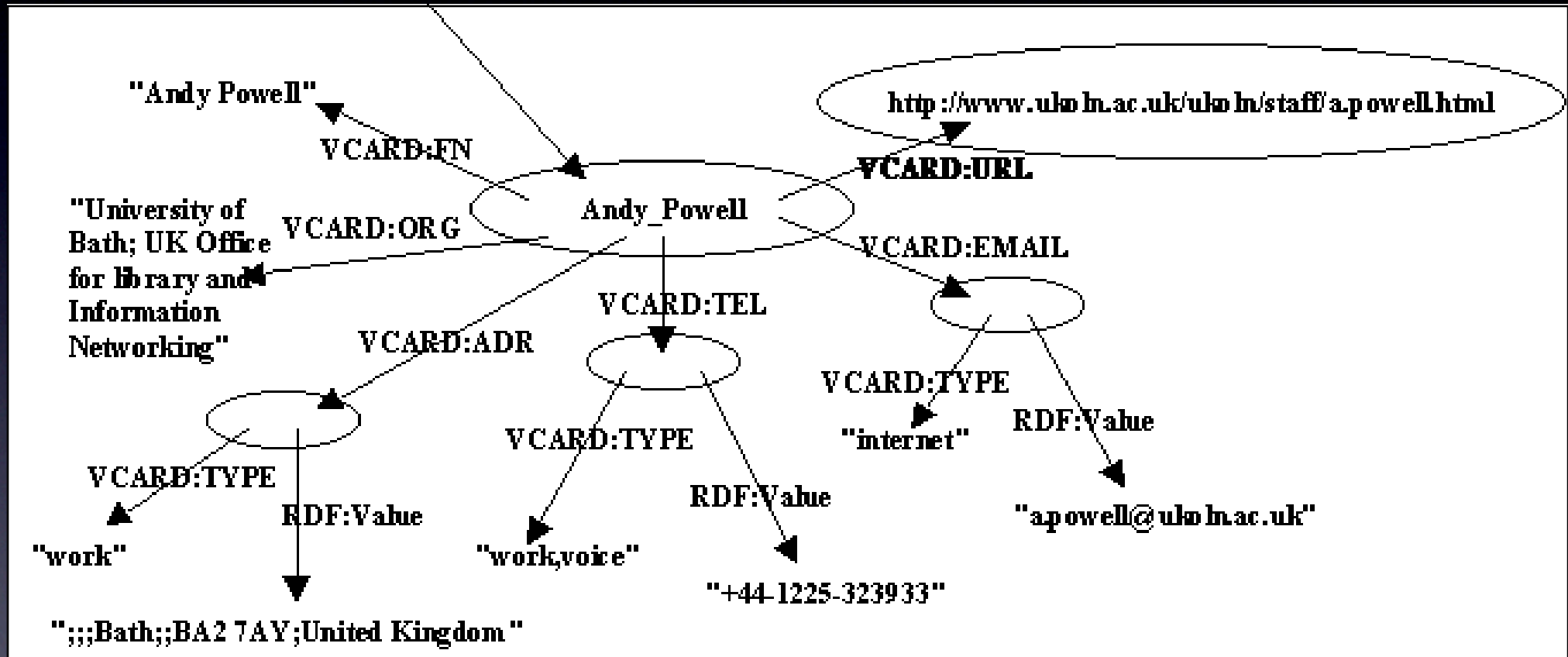
... as RDF/XML

```xml
<rdf:rdf
    xmlns:rdf='http://www.w3.org/1999/02/22-rdf-syntax-ns#'
    xmlns:vcard='http://www.w3.org/2001/vcard-rdf/3.0#'>

  <rdf:Description rdf:about="Andy_Powell">
    <vcard:FN>Andy Powell</vcard:FN>
    <vcard:ORG>
      University of Bath;UK Office for Library and Information Networking
    </vcard:ORG>
    <vcard:ADR>
      <rdf:Description>
        <vcard:TYPE>work</vcard:TYPE>
        <rdf:Value>;;;Bath;;BA2 7AY;United Kingdom</rdf:Value>
      </rdf:Description>
    </vcard:ADR>
    <vcard:TEL>
      <rdf:Description>
        <vcard:TYPE>work,voice</vcard:TYPE>
        <rdf:Value>+44-1225-323933</rdf:Value>
      </rdf:Description>
    </vcard:TEL>
    <vcard:EMAIL>
      <rdf:Description>
        <vcard:TYPE>internet</vcard:TYPE>
        <rdf:Value>
            a.powell@ukoln.ac.uk
        </rdf:Value>
      </rdf:Description>
    </vcard:EMAIL>
    <vcard:URL rdf:HREF="http://www.ukoln.ac.uk/ukoln/staff/a.powell.html"/>
  </rdf:Description>
</rdf:rdf>
```

Further Reading

- Specifications
  - http://www.w3.org/TR/owl-features/
  - http://www.w3.org/TR/rdf-primer/

- Tutorials
  - http://uts.cc.utexas.edu/~efp/owlpresentation/
  - http://www.co-ode.org/resources/tutorials/ProtegeOWLTutorial.pdf
  - http://www.w3.org/2001/sw/BestPractices/

- Link Collections
  - http://wp5.e-taxonomy.eu/wiki/OntologyModelling
  - http://planetrdf.com/guide/