Linked Data Developments in SeaDataCloud

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Why Linked Data for SeaDataNet?

INSPIRE · Infrastructure for Spatial Information in Europe

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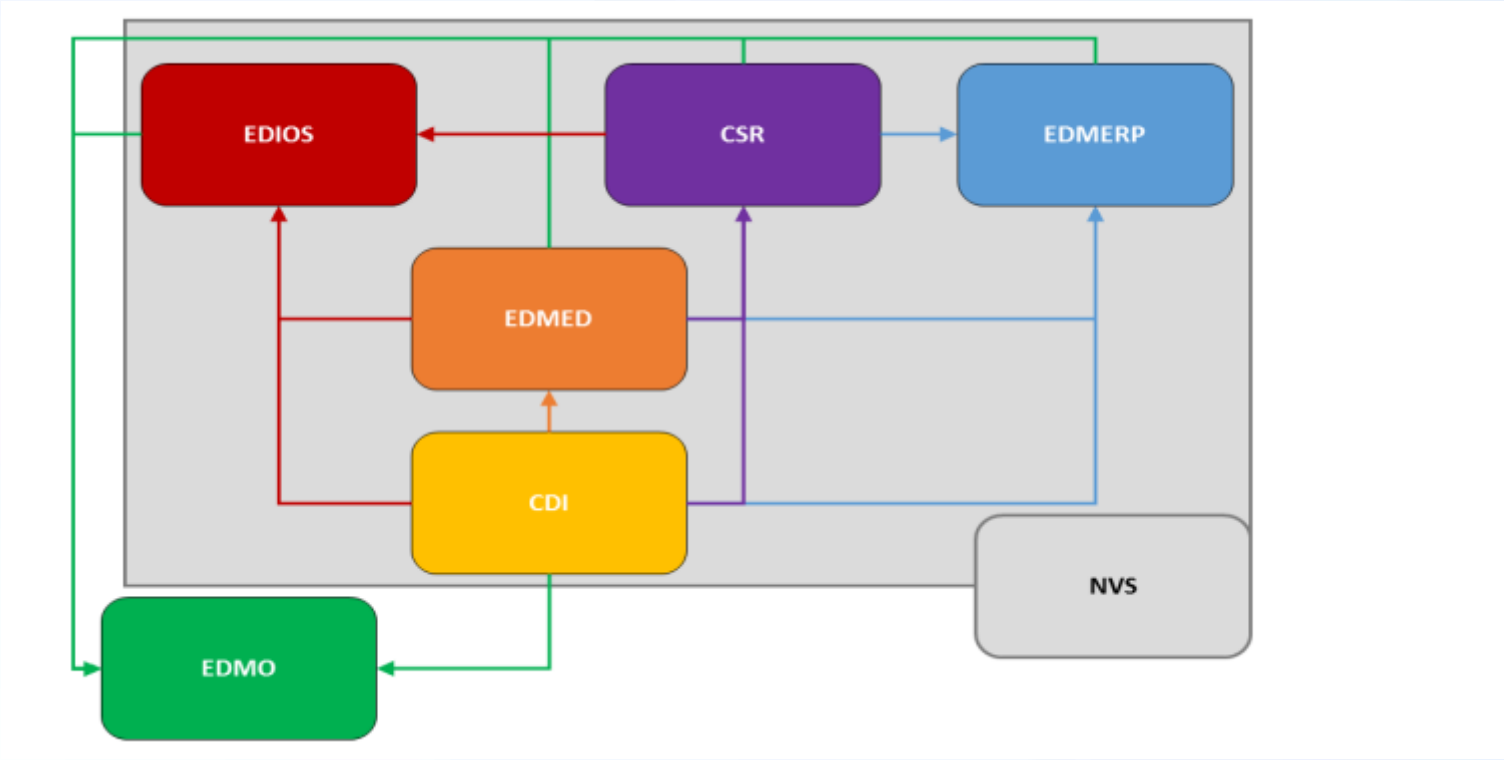
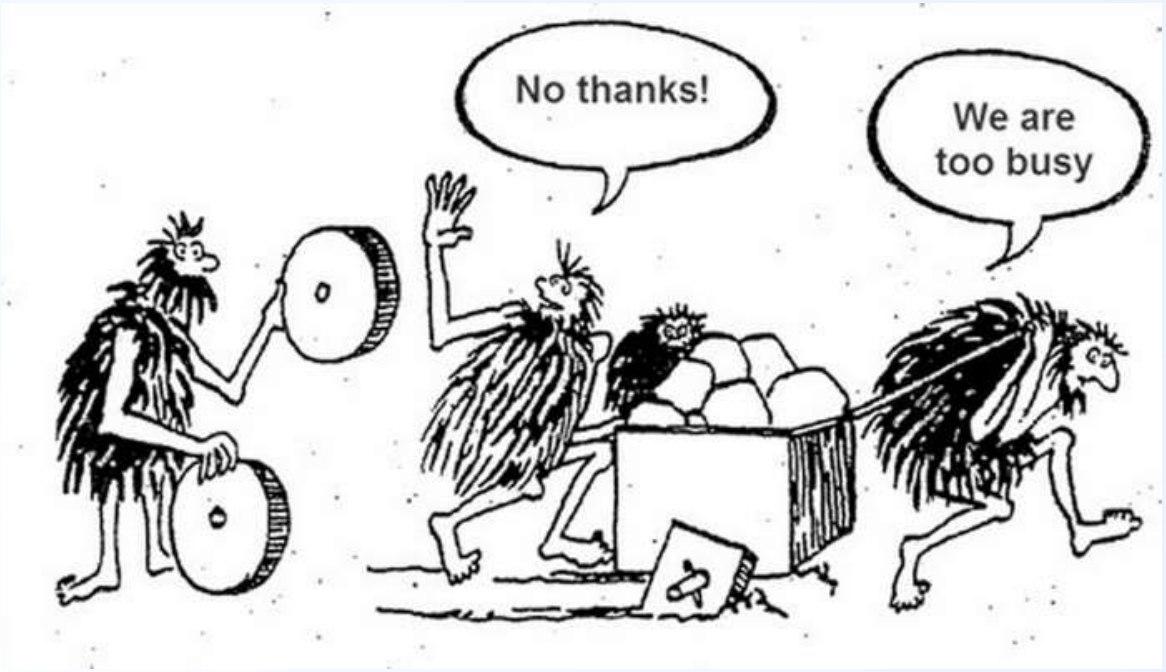
Why Linked Data for SeaDataNet?

- Types of questions we can ask…
  - "Which cruises have physical oceanographic data?"
  - "Give me all temperature data for the Celtic Seas for 2015"

Why Linked Data for SeaDataNet?



What we didn't want to do



What we did about it

- Reusing existing patterns
  - Better understanding outside of SDN
  - Better interoperability with other organisations
  - Better INSPIRE compliance

What we did about it

- Reusing existing patterns
  - EDMO
  - EDMED
  - EDMERP
  - CDI
  - CSR
  - EDIOS

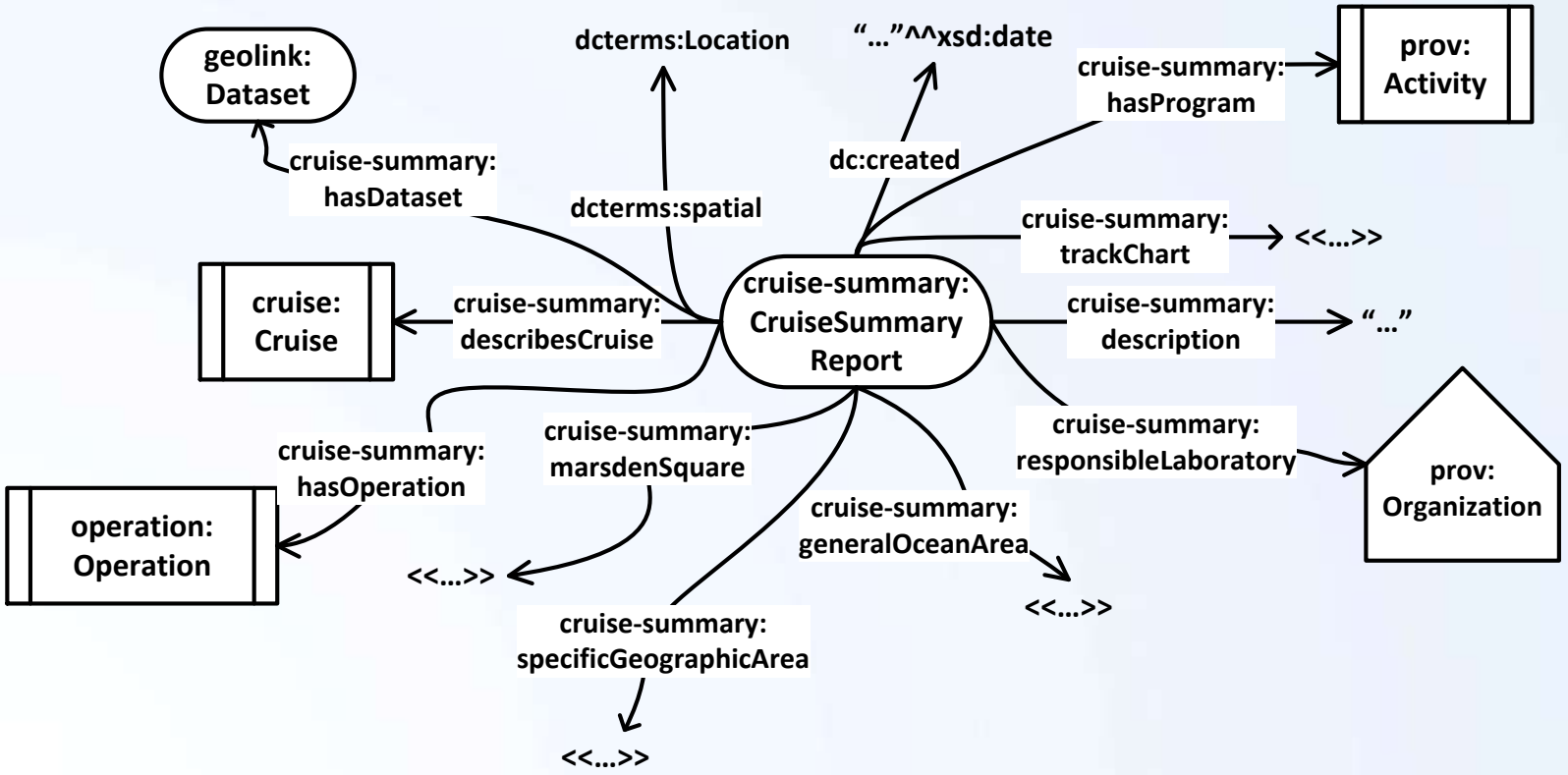
What we did about it

- Reusing existing patterns
  - EDMO – W3C Organisation
  - EDMED – W3C DCAT
  - EDMERP – W3C Prov / DBPedia Research Project
  - CDI – W3C DCAT
    - ODV metadata to INSPIRE / ISO O&M
  - CSR - …
  - EDIOS – INSPIRE Environmental Monitoring Facilities

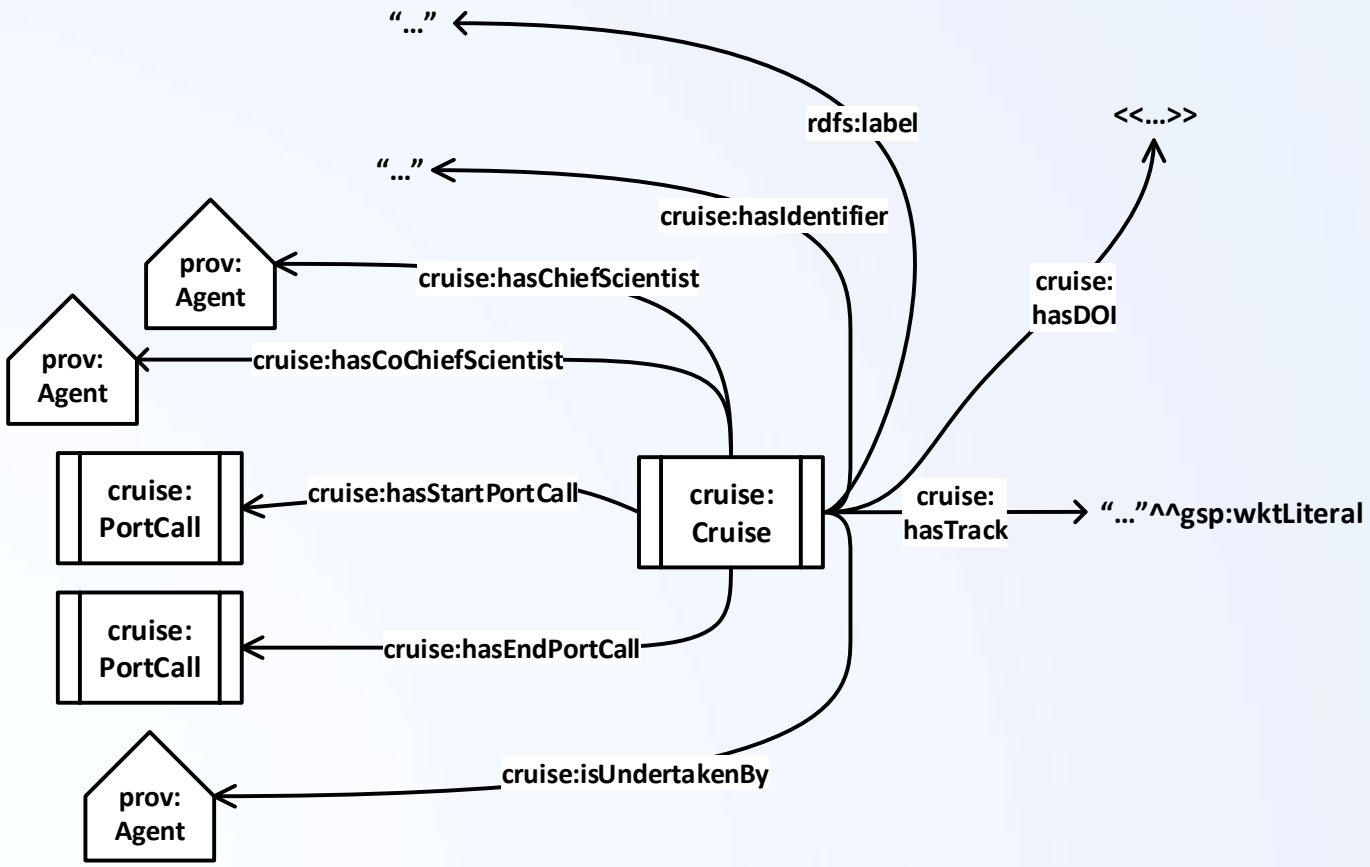
What we did about it

- Reusing existing patterns
  - Also
    - Sextant catalogue to W3C DCAT

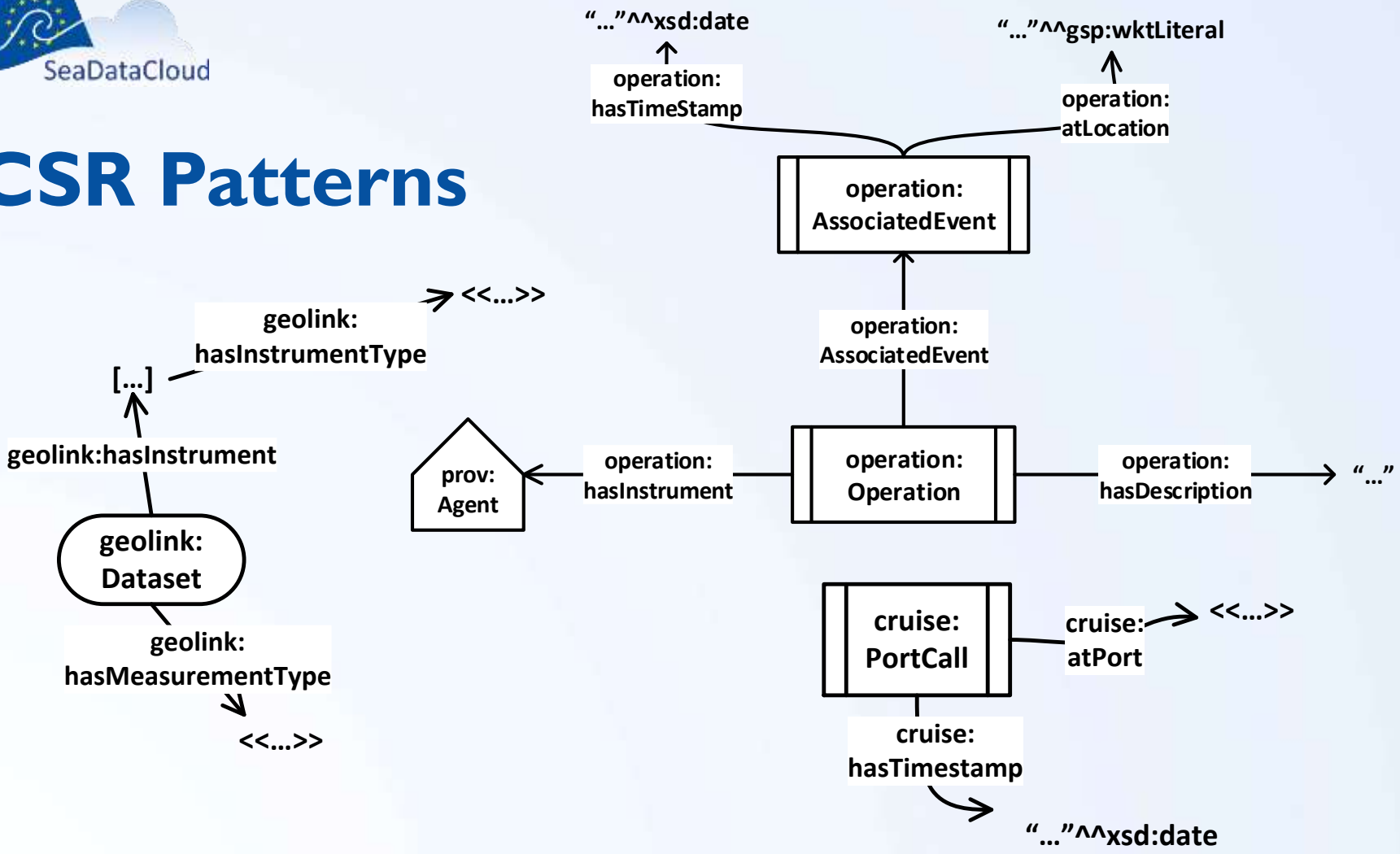
CSR Patterns

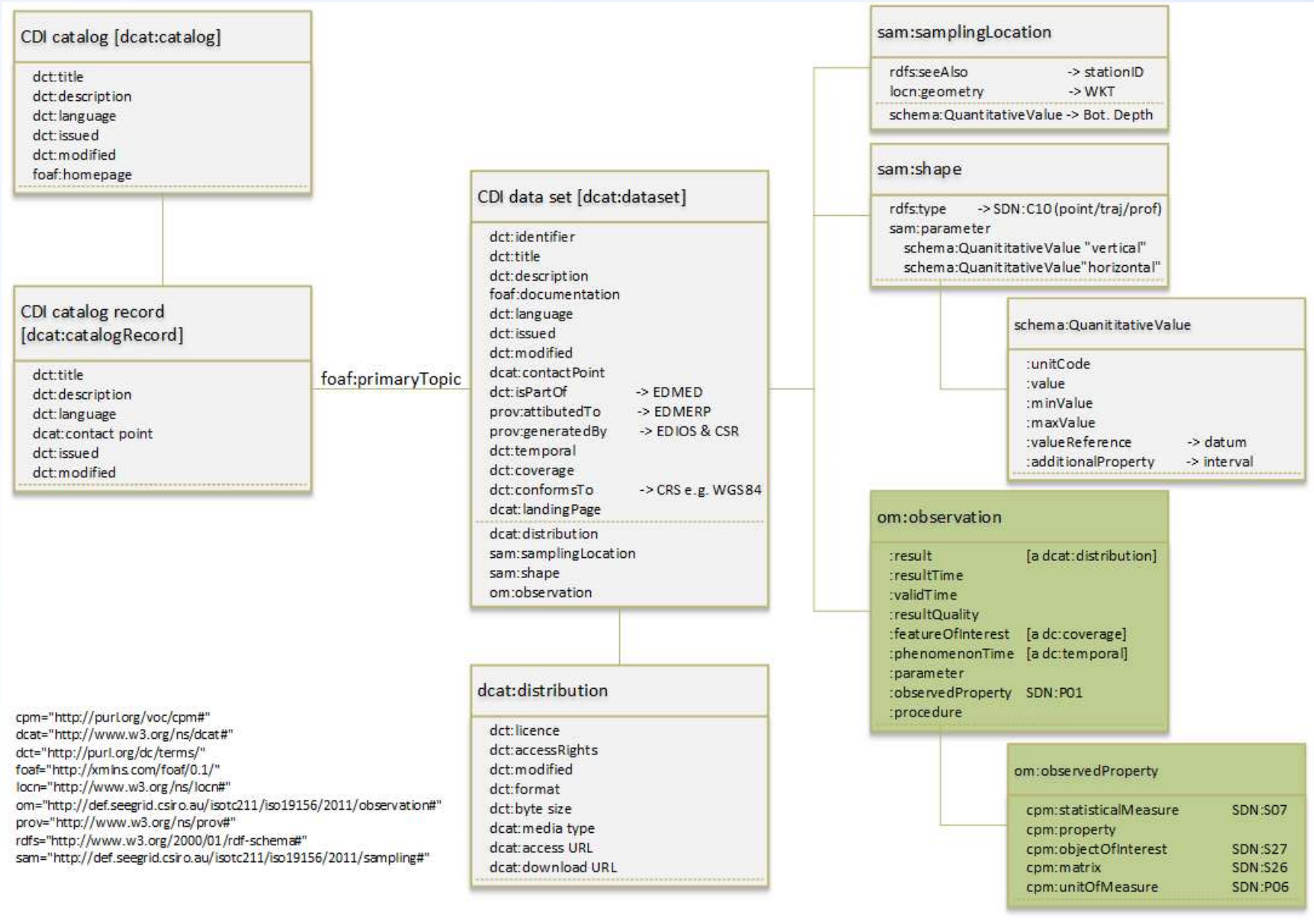


CSR Patterns



CSR Patterns




CDI catalog [dcat:catalog]
dct:title
dct:description
dct:language
dct:issued
dct:modified
foaf:homepage
CDI catalog record [dcat:catalogRecord]
dct:title
dct:description
dct:language
dcat:contact point
dct:issued
dct:modified
foaf:primaryTopic
CDI data set [dcat:dataset]
dct:identifier
dct:title
dct:description
foaf:documentation
dct:language
dct:issued
dct:modified
dcat:contactPoint
dct:isPartOf -> EDMED
prov:attibutedTo -> EDMERP
prov:generatedBy -> EDIOS & CSR
dct:temporal
dct:coverage
dct:conformsTo -> CRS e.g. WGS84
dcat:landingPage
dcat:distribution
sam:samplingLocation
sam:shape
om:observation
dcat:distribution
dct:licence
dct:accessRights
dct:modified
dct:format
dct:byte size
dcat:media type
dcat:access URL
dcat:download URL
sam:samplingLocation
rdfs:seeAlso -> stationID
locn:geometry -> WKT
schema:QuantitativeValue -> Bot. Depth
sam:shape
rdfs:type -> SDN:C10 (point/traj/prof)
sam:parameter
schema:QuanititativeValue "vertical"
schema:QuanititativeValue"horizontal"
schema:QuanititativeValue
:unitCode
:value
:minValue
:maxValue
:valueReference -> datum
:additionalProperty -> interval
om:observation
:result [a dcat:distribution]
:resultTime
:validTime
:resultQuality
:featureOfInterest [a dc:coverage]
:phenomenonTime [a dc:temporal]
:parameter
:observedProperty SDN:P01
:procedure
om:observedProperty
cpm:statisticalMeasure SDN:S07
cpm:property
cpm:objectOfInterest SDN:S27
cpm:matrix SDN:S26
cpm:unitOfMeasure SDN:P06
cpm="http://purl.org/voc/cpm#"
dcat="http://www.w3.org/ns/dcat#"
dct="http://purl.org/dc/terms/"
foaf="http://xmlns.com/foaf/0.1/"
locn="http://www.w3.org/ns/locn#"
om="http://def.seegrid.csiro.au/isotc211/iso19156/2011/observation#"
prov="http://www.w3.org/ns/prov#"
rdfs="http://www.w3.org/2000/01/rdf-schema#"
sam="http://def.seegrid.csiro.au/isotc211/iso19156/2011/sampling#"

Issues

- Creation of a SeaDataNet Linked Data ontology.
- Clean URIs for each catalogue
- Content negotiation
- NERC Vocabulary Server v.1 is deprecated.
- EDMO links to external vocabularies
- All terms in C19 are equated to prov:Location.
- A register of individuals and publications.
- Project record to an associated research programme links to another EDMERP record not an XML snippet.
- Dbpedia to PROV-O alignment.
- CDIs with EDMED codes included should be used to populate the DCAT Distribution information.
- Consider alignments in the DCAT keywords specification to the research classification vocabularies.
- A non-SDN/SDC namespace is used for the publication of the Linked Data terms.
- Port entries in C38 should be given an RDF linkage to their countries.
- Port entries in C38 should be made instances of geolink:Place and prov:Location.
- Research vessels entries in C17 should be made instances of prov:Entity.
- A CDI SKOS scheme should be set up on the NVS incorporating the P02, L05 and C19 vocabularies.
- Include links to ICES station dictionary URIs.
- Include links to terms from the BODC Series Feature Type vocabulary (C10).

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Issues – URLs

http://seadata.bsh.de/Cgi-csr/retrieve_sdn2/viewReport.pl?csrref=[csr_code]
http://www.bodc.ac.uk/data/information_and_inventories/edmed/report/[edmed_code]/
http://seadatanet.maris2.nl/v_edmo/print.asp?n_code=[n_code]
http://seadatanet.maris2.nl/v_edmerp/print.asp?n_code=[n_code]
http://seadatanet.maris2.nl/v_cdi_v3/print_ajax.asp?n_code=[n_code]
http://seadatanet.maris2.nl/v_edios_v2/print_ajax.asp?screen=0&n_code=[n_code] prog
http://seadatanet.maris2.nl/v_edios_v2/print_ajax.asp?screen=1&n_code=[n_code] serie

Issues – URLs

http://cruise-summary.seadatanet.org/ [csr_code]
http://edmed.seadatanet.org/[edmed_code]
http://edmo.seadatanet.org/[n_code]
http://edmerp.seadatanet.org/[n_code]
http://cdi.seadatanet.org/[n_code]
http://edios.seadatanet.org/programme/[n_code]
http://edios.seadatanet.org/series/[n_code]

Issues – URLs

http://cruise-summary.seadatanet.org/[csr_code]

http://seadata.bsh.de/Cgi-csr/retrieve_sdn2/viewReport.pl?csrref=[csr_code]

Issues – EDMO interoperability

http://vocab.aodn.org.au/def/organisation/entity/1 **a skos:Concept; skos:inScheme** http://vocab.aodn.org.au/def/organisation/1**.**

???

http://edmo.seadatanet.org/1 **a org:Organization.**

Issues – EDMO interoperability

sdn
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sdn
ww

Issues – EDMO interoperability

sdn
ww

Issues – EDMO interoperability

rdfs:seeAlso

sdn
ww

Issues – EDMO interoperability

so:claimsIdentical

rdfs:seeAlso

sdn

ww

Issues – EDMO interoperability

so:claimsIdentical

rdfs:seeAlso

owl:sameAs

skos:exactMatch

Recommended reading:
When owl:sameAs isn't the Same* by Halpin *et al
http://iswc2010.semanticweb.org/pdf/261.pdf

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ww

Next Steps

- Address pre-requisites in the issues
- Develop RDF implementation of catalogues
  - Alexandra will present EDMED developments
- Develop Schema.org mappings
  - Done for EDMED
- Develop Linked Data representation of IODE Ocean Expert entries