Software for Managing and Sharing Metadata Translation Information

Mark Hedley Met Office United Kingdom

Introduction

Publishing Standards

Relating Terms

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In Summary

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Three Steps to Interoperability

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- Publishing standards:

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Three Steps to Interoperability

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- Publishing standards:
  - accessibility - to specific concepts:
    - for humans;
    - for machines.

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- Publishing standards:
  - accessibility - to specific concepts:
    - for humans;
    - for machines.
- Relating standardised terms:
  - http://metarelate.net

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- Publishing standards:
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    - for machines.
- Relating standardised terms:
  - http://metarelate.net
- Translating data sets.
  - http://scitools.org.uk/iris

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What is Linked Data?

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In Summary

- Linked Data describes a method of publishing structured data so that it can be interlinked and become more useful.
- Three key steps to linked data:
  - use open standards to publish information,
  - use URIs to identify resources,
  - link to other people's resources.

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- There are semantic web technologies and standards to help us; e.g.:
  - RDF, OWL, SKOS, SPARQL;
  - http://www.w3.org/standards/semanticweb/data

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  - RDF, OWL, SKOS, SPARQL;
  - http://www.w3.org/standards/semanticweb/data
- Technologies can facilitate,
  - if we know what we want to do.

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Serving CF Semantics

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In Summary

- Numerous communities, including CF, have been publishing semantics as linked data for a number of years.
- http://vocab.nerc.ac.uk/collection/P07/current/CFSN0015/
- or a locally downloaded RDF/XML file
- Courtesy of the British Oceanographic Data Centre and the British Atmospheric Data Centre.

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Serving WMO Semantics

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In Summary

- IPET-MDRD are working to publish the manuals on codes as linked data:
  - http://codes.wmo.int
- http://codes.wmo.int/grib2/codeflag/4.2/0-3-0
- or a locally downloaded one
- Courtesy of the WMO and the Met Office.

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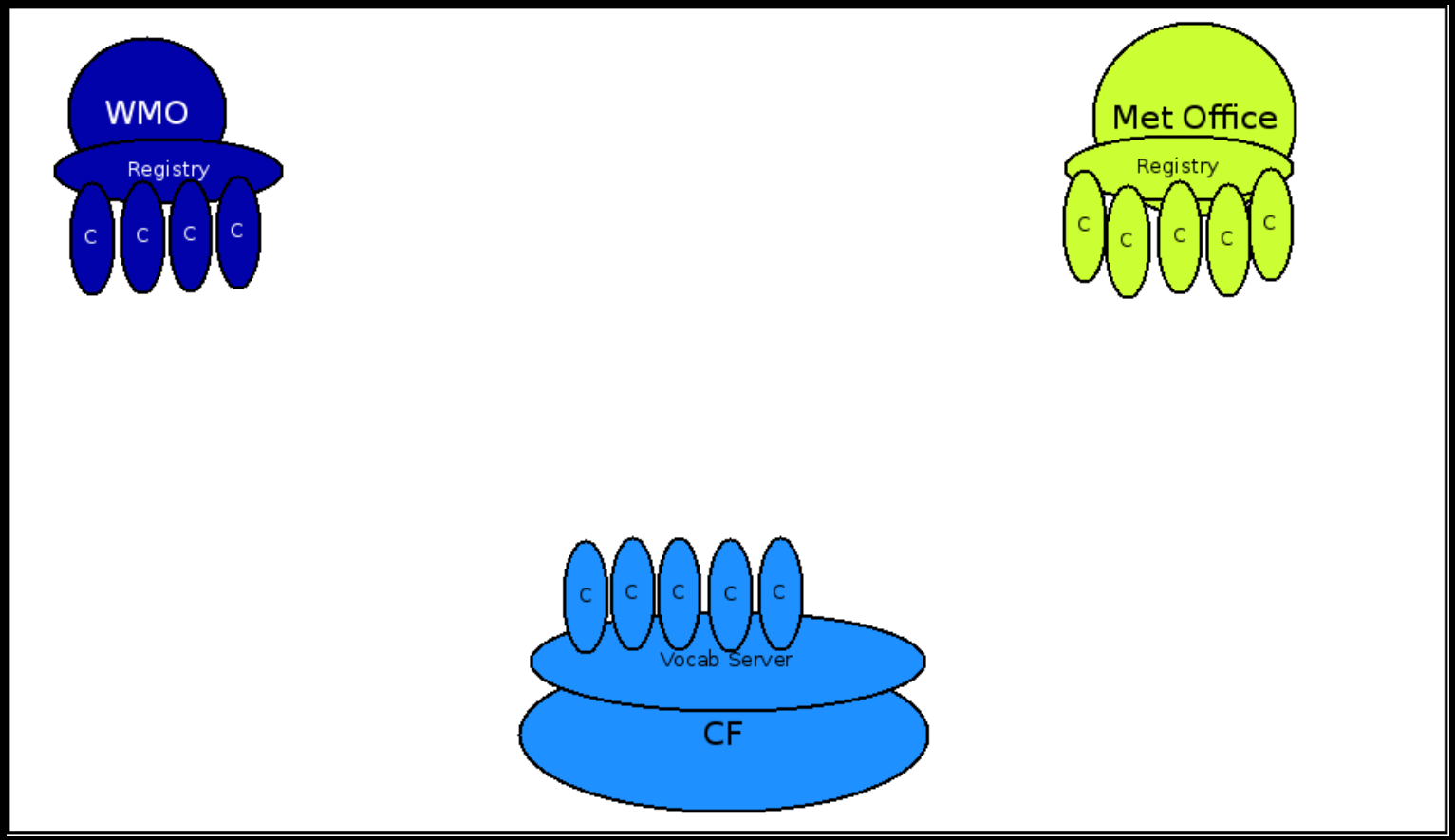

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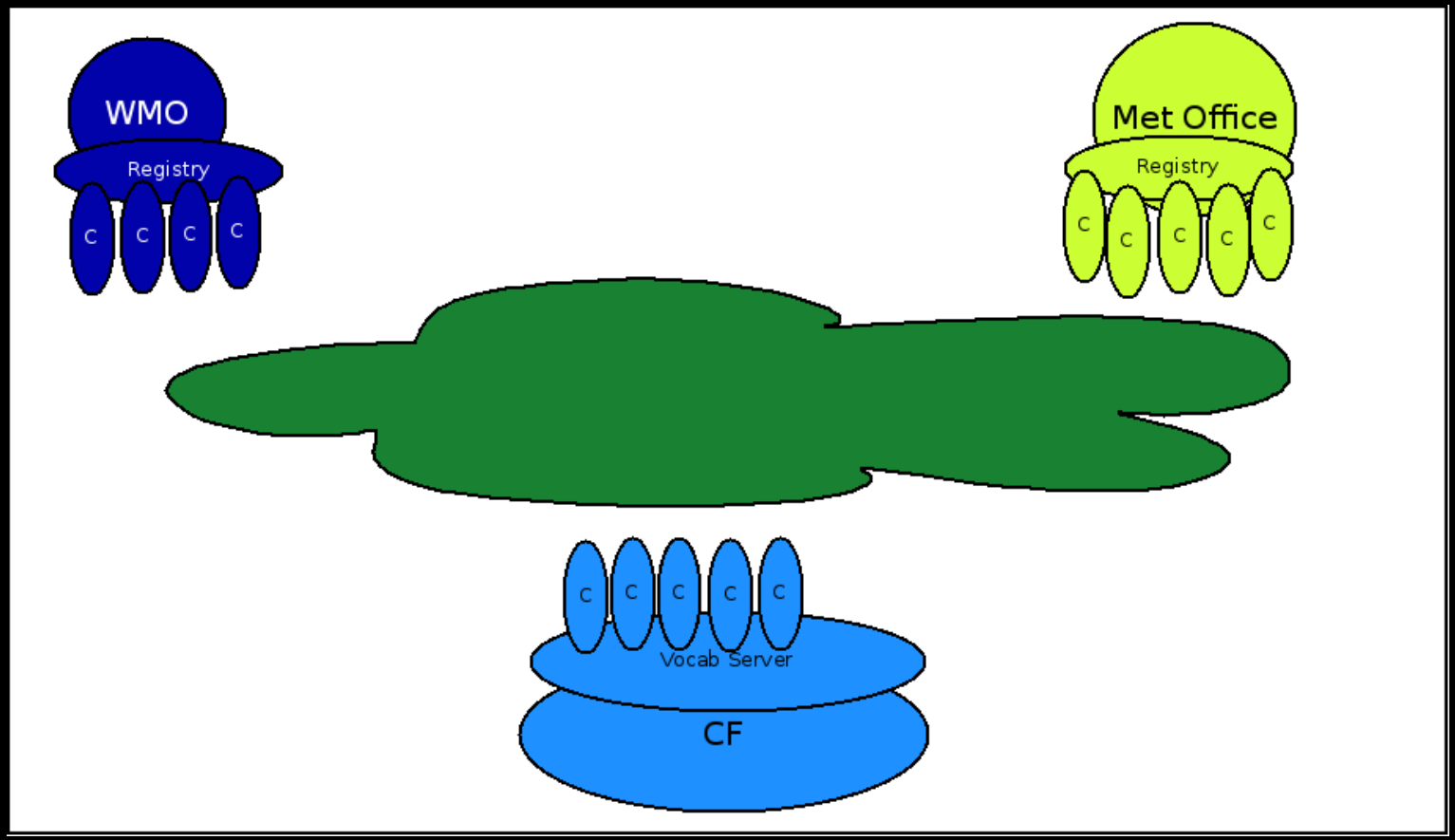

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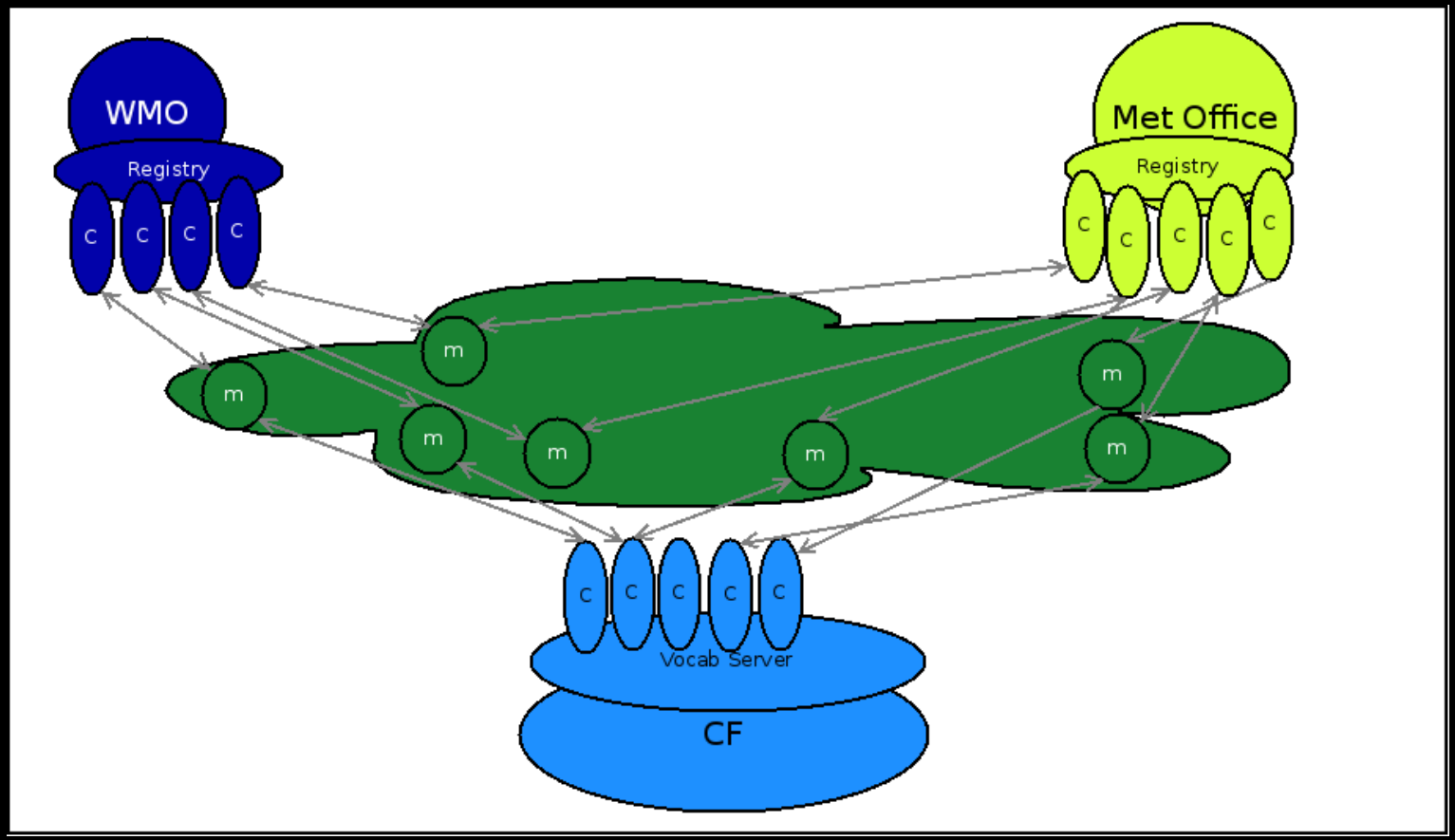

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Responsibility, Trust

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In Summary

- Individual standards communities have responsibility for their domains and the semantics published within those domains.
  - Who owns these mappings?
  - Are they authoritative?
  - Can we trust them?

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Responsibility, Trust

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Publishing Standards

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In Summary

- Individual standards communities have responsibility for their domains and the semantics published within those domains.
  - Who owns these mappings?
  - Are they authoritative?
  - Can we trust them?
- To build trust, we need to develop:
  - a community to maintain the information;
  - delegated authority for this community to act with multiple standards bodies;
  - an information curation strategy and work flow;
  - a validation process for trusted information.

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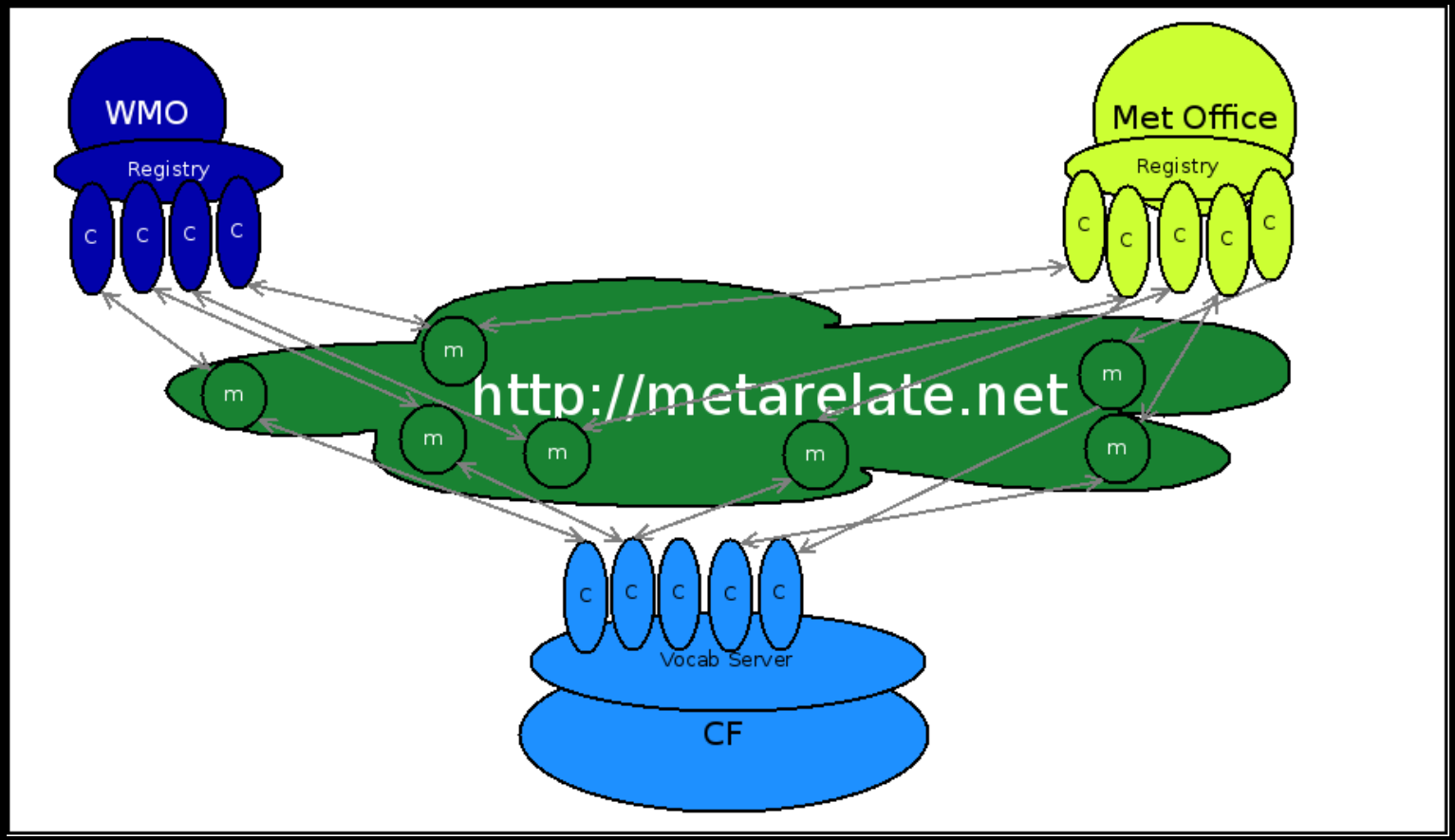

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Metarelate

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In Summary

- Metarelate is a free and open source collaboration project targeting metadata interoperability.
  - GRIB and CF are two of the formats targeted for initial development.
- It provides a potential place for standards communities and their users to collaborate on sharing and managing translation information.

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In Summary

- Metarelate is a free and open source collaboration project targeting metadata interoperability.
  - GRIB and CF are two of the formats targeted for initial development.
- It provides a potential place for standards communities and their users to collaborate on sharing and managing translation information.
- This may be able to be a focal point for a set of collaborative activities.

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Software and Information

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In Summary

- Under the Metarelate domain there are two projects:
  - metarelate: a python API for managing metadata translation information;
    - built on semantic web technologies: Jena, Fuseki, SPARQL.
  - MetOcean: a database of mapping entries in the meteorology and oceanography domain.

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In Summary

- Under the Metarelate domain there are two projects:
  - metarelate: a python API for managing metadata translation information;
    - built on semantic web technologies: Jena, Fuseki, SPARQL.
  - MetOcean: a database of mapping entries in the meteorology and oceanography domain.
- Metarelate's MetOcean translation database is currently a software development project only, with no live hosting of information.

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Mappings

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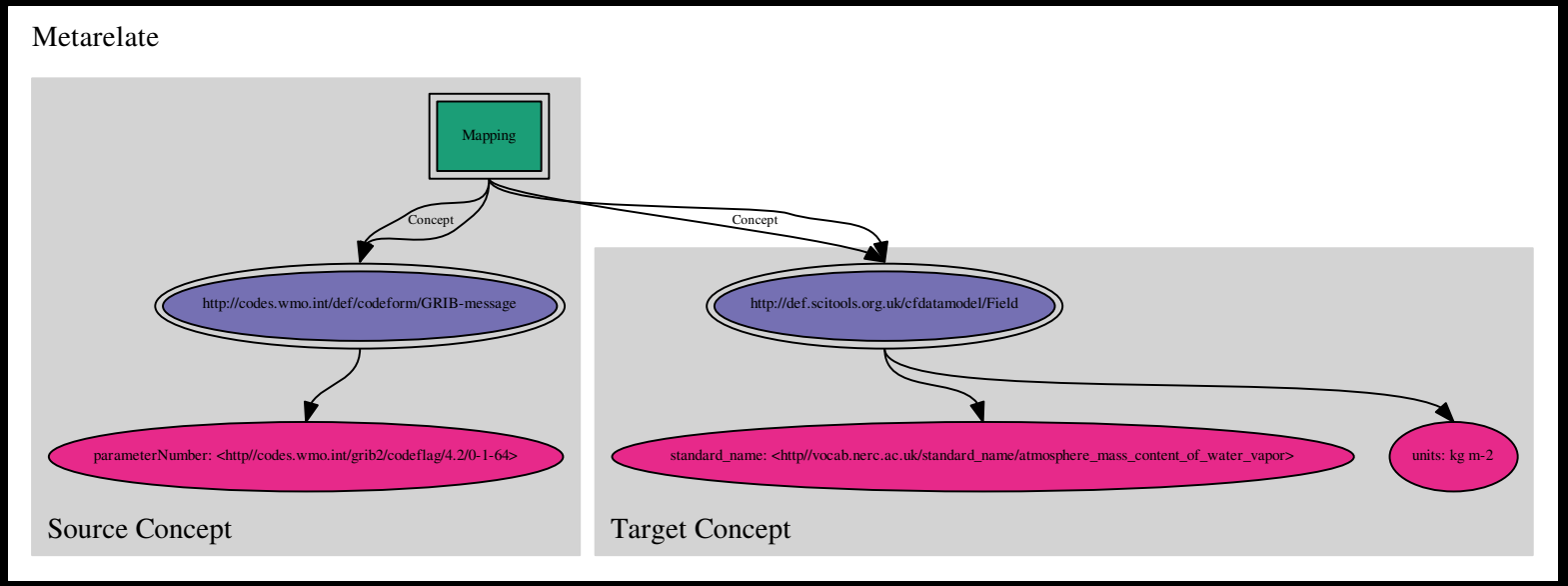

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Complications

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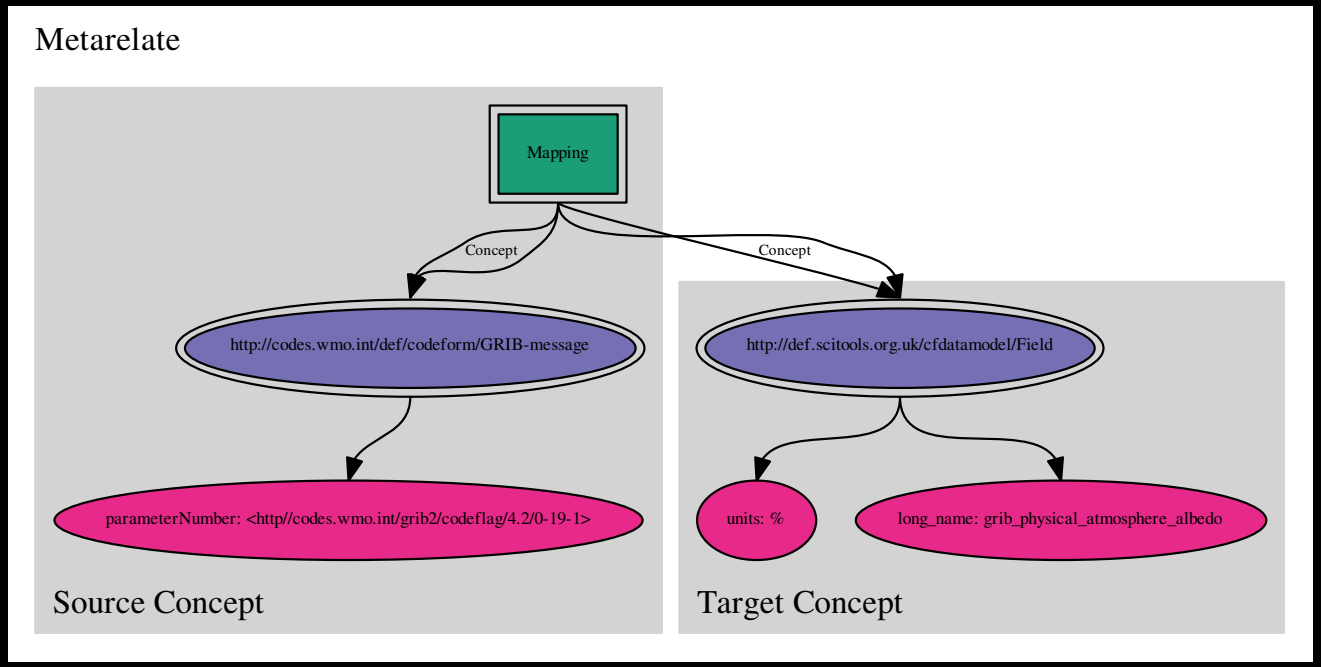

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Complicated Mappings

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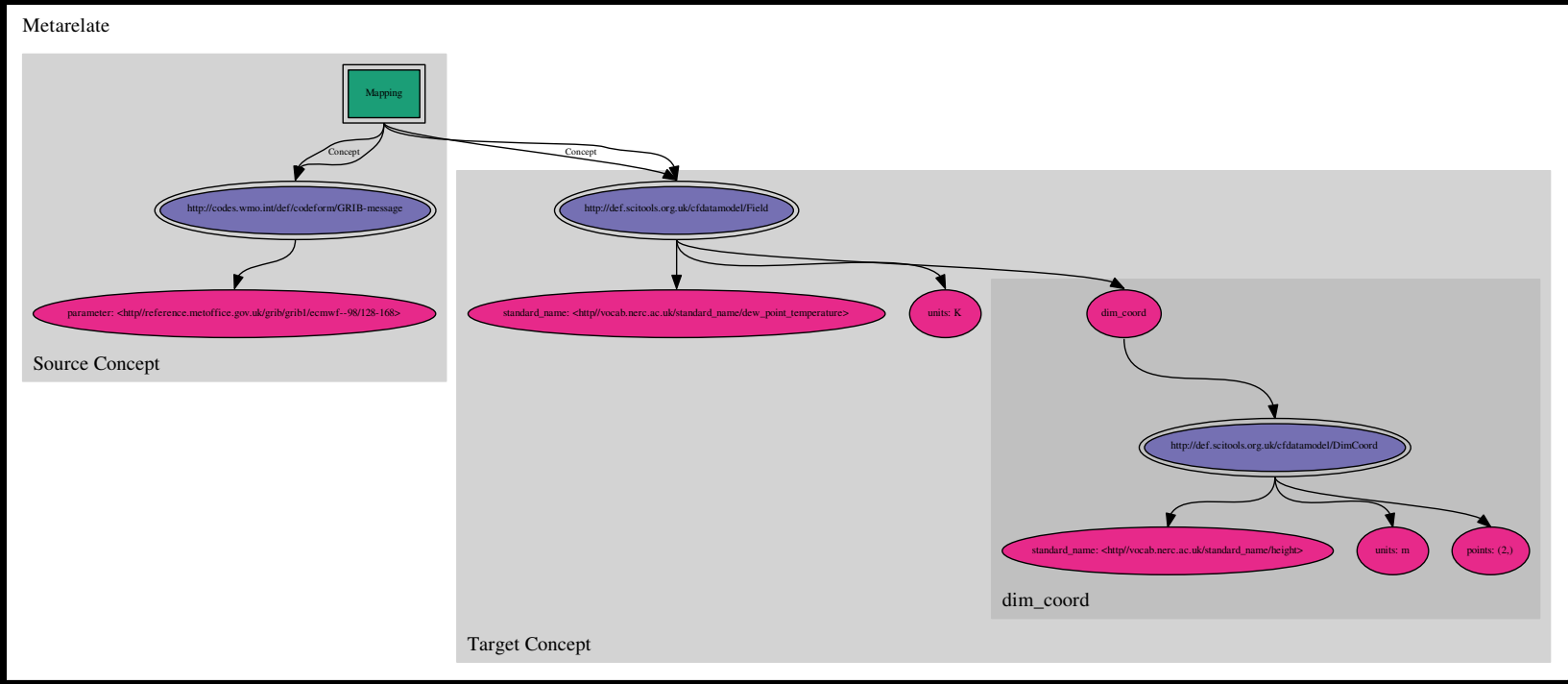

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Translating Data Sets

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In Summary

- We would like to make it easy for domain experts to contribute to the contents of the translation database.
- People need to see that they can:
  - use the information for something useful;
  - trust the information available.

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In Summary

- We would like to make it easy for domain experts to contribute to the contents of the translation database.
- People need to see that they can:
  - use the information for something useful;
  - trust the information available.
- This is key to encouraging the engagement of specialist expertise required.

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Using Metarelate Mappings

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In Summary

- Metarelate provides no data set translation capabilities.

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Using Metarelate Mappings

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In Summary

- Metarelate provides no data set translation capabilities.
- Metarelate has attempted to be implementation neutral.

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In Summary

- Metarelate provides no data set translation capabilities.
- Metarelate has attempted to be implementation neutral.
- We can configure our software to use the Metarelate mappings.

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Using Metarelate Mappings

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In Summary

- Metarelate provides no data set translation capabilities.
- Metarelate has attempted to be implementation neutral.
- We can configure our software to use the Metarelate mappings.
- This provides a potential path towards consistency of interpretation between different applications.

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SciTools - Iris

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In Summary

Iris is a free and open source Python library which provides metadata translation capabilities between CF-netCDF and GRIB2 files (amongst others).

- Iris uses Metarelate as a trusted source of metadata translation information.
- Translations are sourced as a code change and provided in a packaged release.

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Conclusions

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In Summary

- We find that using the linked data approach works.

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Conclusions

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In Summary

- We find that using the linked data approach works.
- Managing the relationships between different standards requires inter-community effort and shared responsibility.

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Conclusions

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In Summary

- We find that using the linked data approach works.
- Managing the relationships between different standards requires inter-community effort and shared responsibility.
- We need domain experts to participate, contribute, use and benefit.

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Next Steps?

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In Summary

- Assemble, collate and validate mappings between CF and GRIB2 terminologies.

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In Summary

- Assemble, collate and validate mappings between CF and GRIB2 terminologies.
- Encourage the formation of a community of stakeholders to curate the information.

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In Summary

- Assemble, collate and validate mappings between CF and GRIB2 terminologies.
- Encourage the formation of a community of stakeholders to curate the information.
- Develop a community translation curation process to build trust in the provided translations.

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In Summary

- Assemble, collate and validate mappings between CF and GRIB2 terminologies.
- Encourage the formation of a community of stakeholders to curate the information.
- Develop a community translation curation process to build trust in the provided translations.
- Develop Metarelate's MetOcean as a web service.

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- Questions?
- Comments?
- Thoughts?

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