Science & Technology Facilities Council

Towards a meteorological domain model: next steps

Andrew Woolf, Dominic Lowe

STFC Rutherford Appleton Laboratory

British Atmospheric Data Centre
NATIONAL CENTRE FOR ATMOSPHERIC SCIENCE
NATURAL ENVIRONMENT RESEARCH COUNCIL

Science & Technology Facilities Council
e-Science

Outline

- Background
- Related activities
- Case study: GeoSciML
- Case study: INSPIRE
- Next steps

Science & Technology Facilities Council

Background

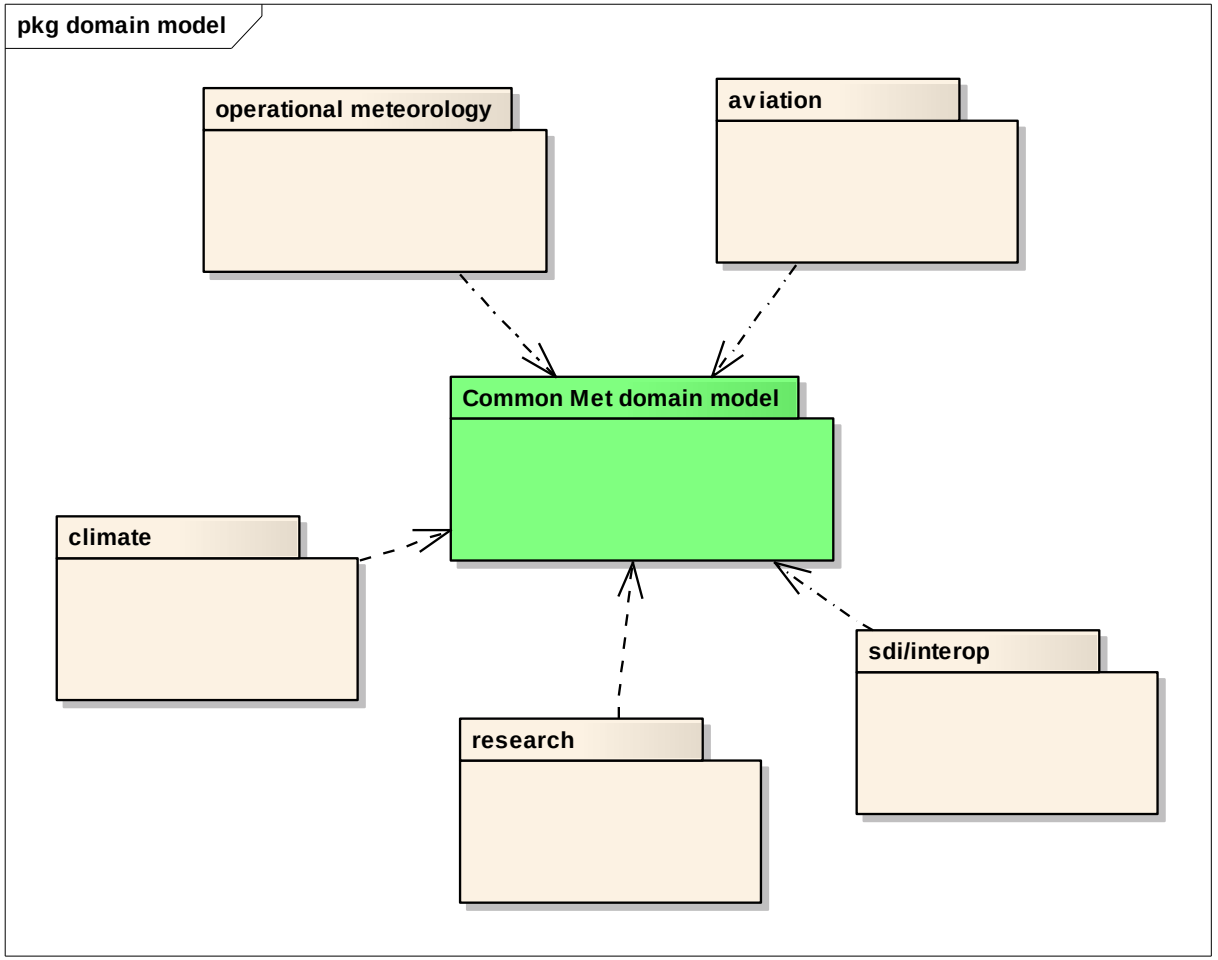
- Nov ’08: 1st ISO/OGC workshop (ECMWF)
  - met. model (elements: features/coverages/observations)
- Mar ’09: OGC TC Athens
  - Met Domain Working Group established
- Jun ’09: OGC TC Boston
  - actors (e.g. INSPIRE, IPET-MDI, CSML, NNEW, CDM, WXXM, ...)
- Sep ’09: OGC TC Darmstadt
  - ‘what’ (info. classes, patterns, registers, ...)
- ***Nov ’09: 2nd ISO/OGC workshop (Météo-France)***
  - ***‘how’...***

Science & Technology Facilities Council

Related activities

- WMO IPET-MDI
- ISO 19156 (Observations and Measurements)
- Weather for Aviation {Conceptual, Exchange} Model (WXCM, WXXM)
- NextGen Network Enabled Weather (NNEW)
- Climate Science Modelling Language (CSML)
- Unidata netCDF Common Data Model
- Weather Objects Model Language (WOML)

Common domain model?



Science & Technology Facilities Council

Case study: GeoSciML

- Data model for the geoscience community
- Scope
  - restricted to “those geoscience objects which form the main components of a geological map”
  - Faults, Boreholes, Geological Ages, ...
- Not in scope
  - aspects with no governance remit
  - concepts defined elsewhere
  - e.g. GroundWaterML: derived from GeoSciML, separately governed

Case study: GeoSciML

- Governance
  - IUGS Commission for the Management and Application of Geoscience Information (IUGS CGI)
  - CGI Interoperability Working Group
  - Active participants: BGS (UK), BRGM (FR), CSIRO (AU), GA (AU), GSC (CA), APAT (IT), JGS (JA), SGU (SE), USGS (US), ...
- Remit
  - develop a conceptual data model
  - map to a common interchange format
  - testbed demonstration

Science & Technology Facilities Council

Case study: GeoSciML

- CGI IWG method
  - Steering Committee + Task Groups
    - Use-cases and requirements task group
    - GeoSciML Design task group
    - Outreach and Technical assistance task group
    - Geoscience Concept Definitions
  - roughly bi-annual physical meetings

Case study: GeoSciML

- Infrastructure
  - OneGeology portal
  - testbeds
  - registry
  - wiki
  - mailing lists
  - subversion repository
  - documentation
  - UML tools

Science & Technology Facilities Council

Case study: INSPIRE

- EC Directive (2007/2/EC) for European SDI
- Scope:
  - data in electronic format
  - related to any of 34 themes
  - held “by or on behalf of a public authority ... and falling within the scope of its public tasks”
- UK Statutory Instrument, scope ≈ Env. Info. Reg.

Science & Technology Facilities Council

Case study: INSPIRE

Annex I		
Coordinate reference systems	Geographical grid systems	Geographical names
Administrative units	Addresses	Cadastral parcels
Transport networks	Hydrography	Protected sites
Annex II		
Elevation	Land cover	Orthoimagery
Geology		
Annex III		
Statistical units	Buildings	Land use
Human health and safety	Utility and governmental services	Environmental monitoring facilities
Production and industrial facilities	Agricultural and aquaculture facilities	Population distribution – demography
Area management/restriction/regulation zones and reporting units	Natural risk zones	Atmospheric conditions
Meteorological geographical features	Oceanographic geographical features	Sea regions
Bio-geographical regions	Habitats and biotopes	Species distributions
Energy resources	Mineral resources	

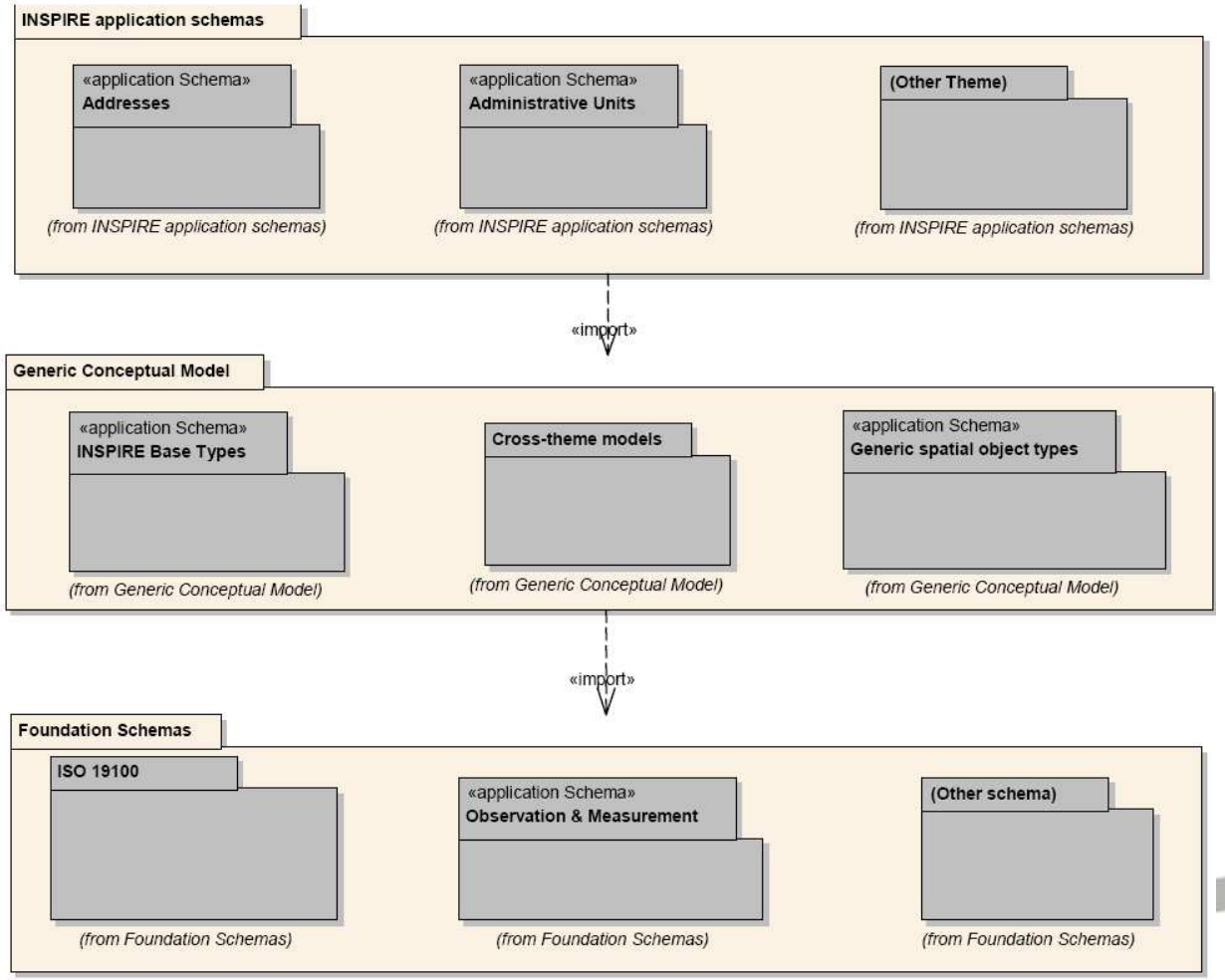
Science & Technology Facilities Council

Case study: INSPIRE

- ‘Framework’ directive, separate regulations (Implementing Rules) for:
  - Metadata [≈ 19115 core]
  - Network services (discovery, view, download, transformation, invoke) [≈ OGC]
  - ***Data interoperability***
  - Data/service sharing
  - Monitoring/reporting

Science & Technology Facilities Council

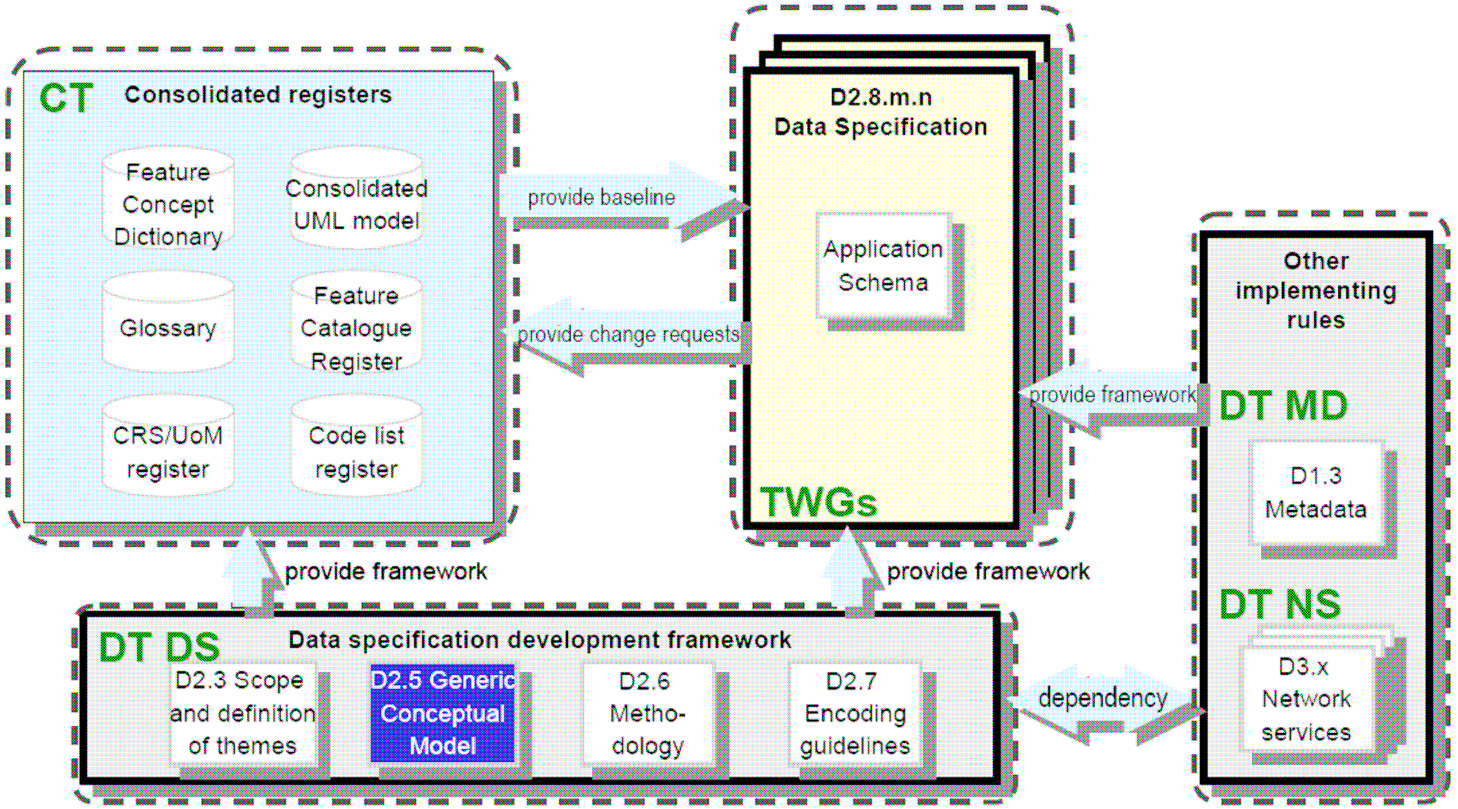
Case study: INSPIRE



Science & Technology Facilities Council

Case study: INSPIRE

Data specifications framework



Science & Technology Facilities Council

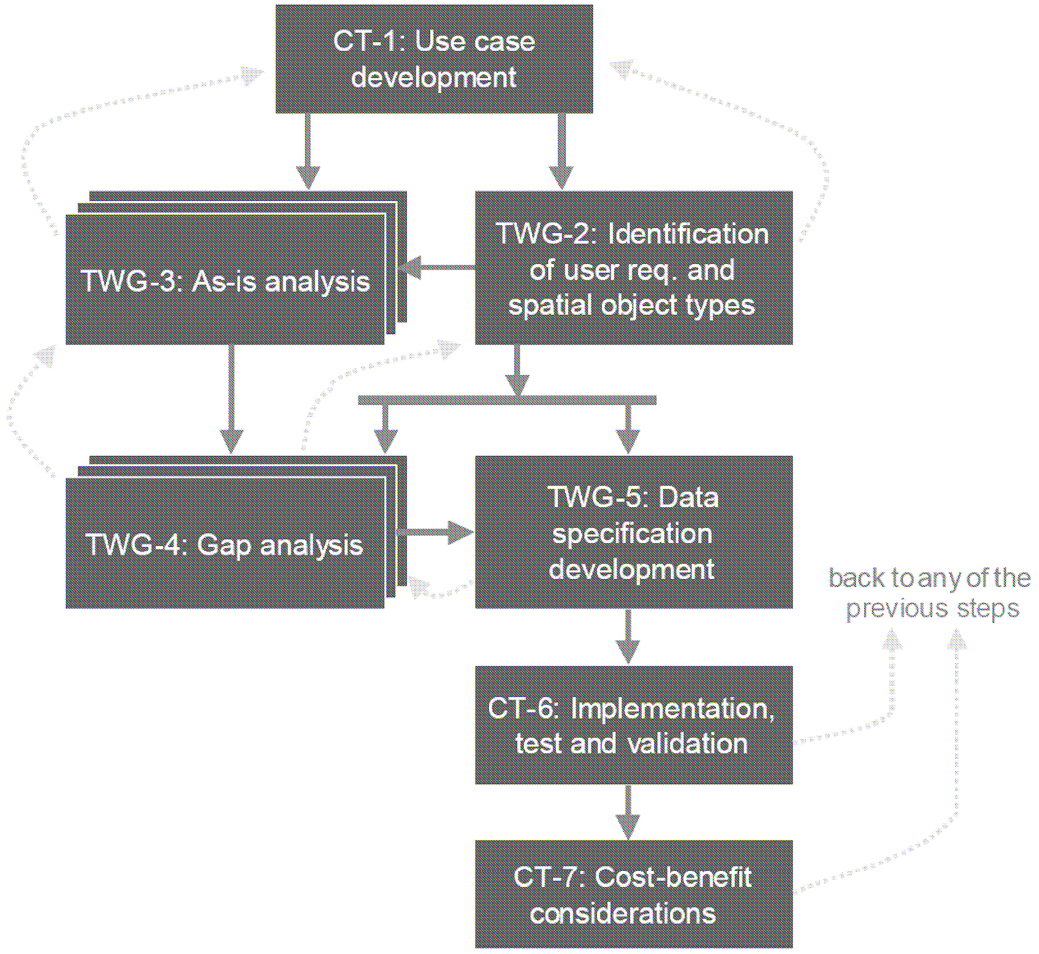
Case study: INSPIRE

- Thematic Working Groups (TWGs)
  - small (< 10 members)
  - *Facilitator*: manages the specification process
  - *Editor*: documents the data specification, inc. application schema
  - *Domain experts*: expertise about thematic domain and application data

Science & Technology Facilities Council

Case study: INSPIRE

Data specifications development process



Science & Technology Facilities Council

Next steps

- Recommendations
  1. Adopt the ISO TC211 modelling framework
  2. Focus on a core *common domain model* supporting application extensibility
  3. Set roadmap under the OGC MetOc DWG

Next steps

- Questions
  1. Scope of a common domain model?
  2. What working structure to adopt?
  3. Resourcing/infrastructure?
  4. Roadmap and methodology?

(Immediate) next steps

- ‘Case studies’ document for more info
- Working Group ‘Conceptual modelling’
  - bring ideas
  - modellers bring a ‘model overview’ slide