



CIM – THE COMMON INFORMATION MODEL IN CLIMATE RESEARCH

Michael Lautenschlager, Hans Ramthun
(World Data Center Climate / Max-Planck-Institute for Meteorology)

and



METAFOR Project Team

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Standards Workshop
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11 partners

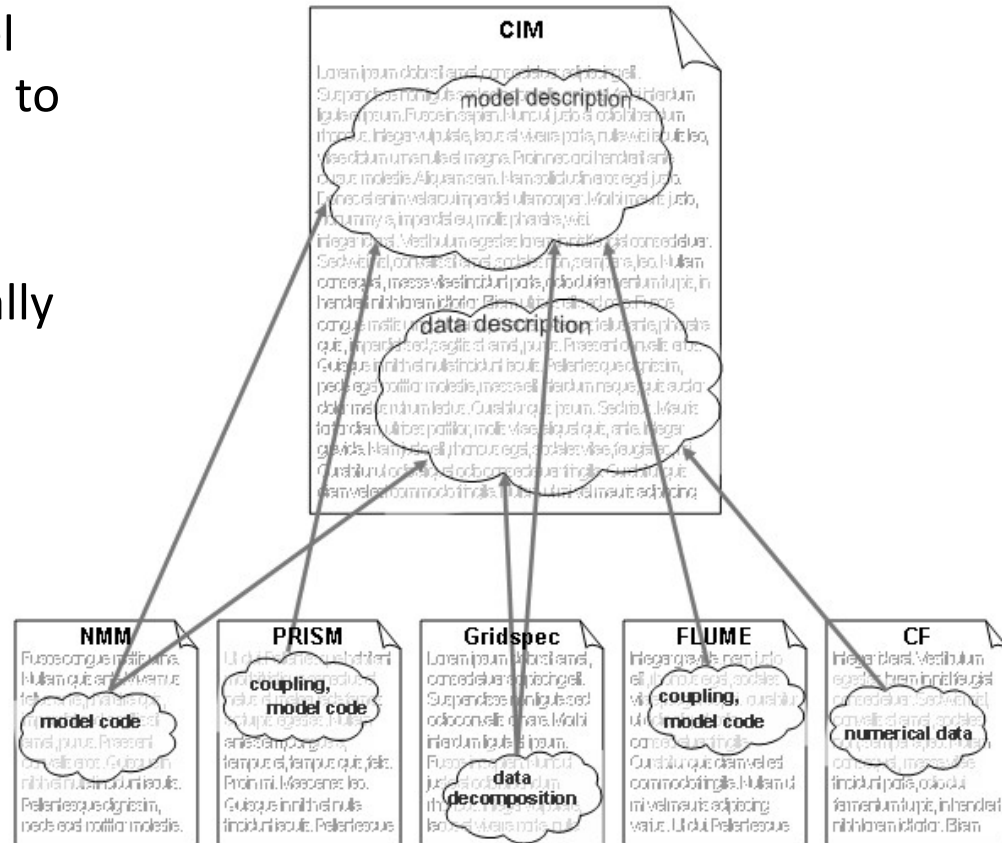
Started March 2008, duration 3 years

- NCAS, University of Reading, UK (Coordinator)
- BADC, Science and Technology Facilities Council, UK
- CERFACS, France
- Model and Data, Max Planck Institute for Meteorology, Germany
- Institute Pierre-Simon Laplace, CNRS, France
- University of Manchester, UK
- Met Office, UK
- Administratia Nationala de Meteorologie, Romania
- Météo France, CNRM, France
- CLIMPACT, France
- CICS, Princeton University, USA



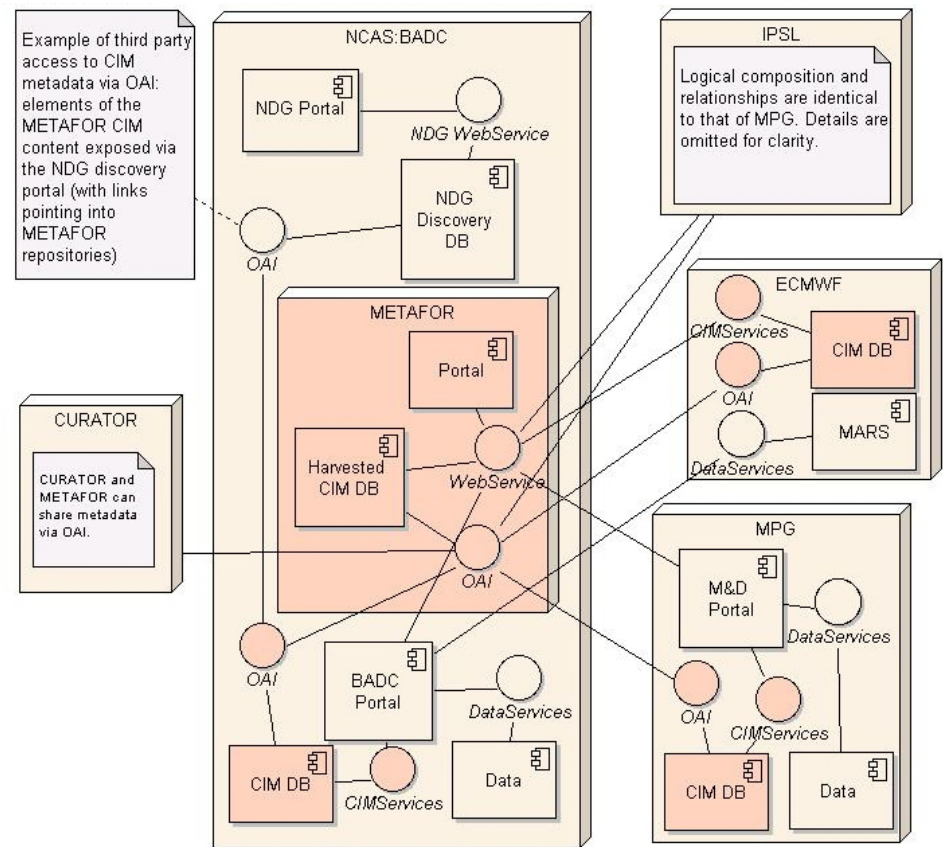
Create a **standard metadata Common Information Model (CIM)** to describe **climate data** and the **models** and **experiments** that produced those data

- Allows essential data, model and experiment distinctions to be understood
- Builds on existing metadata standards used internationally in climate (CF, CDML, CSML, Curator, NMM, FLUME, ISO etc.)
- Uses existing format and framework (XML, RDF, etc.)



Develop, deploy, and evaluate a **prototype infrastructure** that will allow key **data** and **models** to be **discovered** and **compared** between **distributed digital repositories**

- single sign-on services to populate and manipulate, the CIM metadata
- services exploit NDG CSML to provide a common Geographic Markup Language interface to climate data
- centralized CIM content harvested from individual repositories using OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting).



Key METAFOR service components



Discovery metadata

ISO 19139
ISO 19115

Climate Modelling

gridspec - *model discretisation*
Sensor ML - *observations*
NMM - *model description*
CERA2 - *data management*

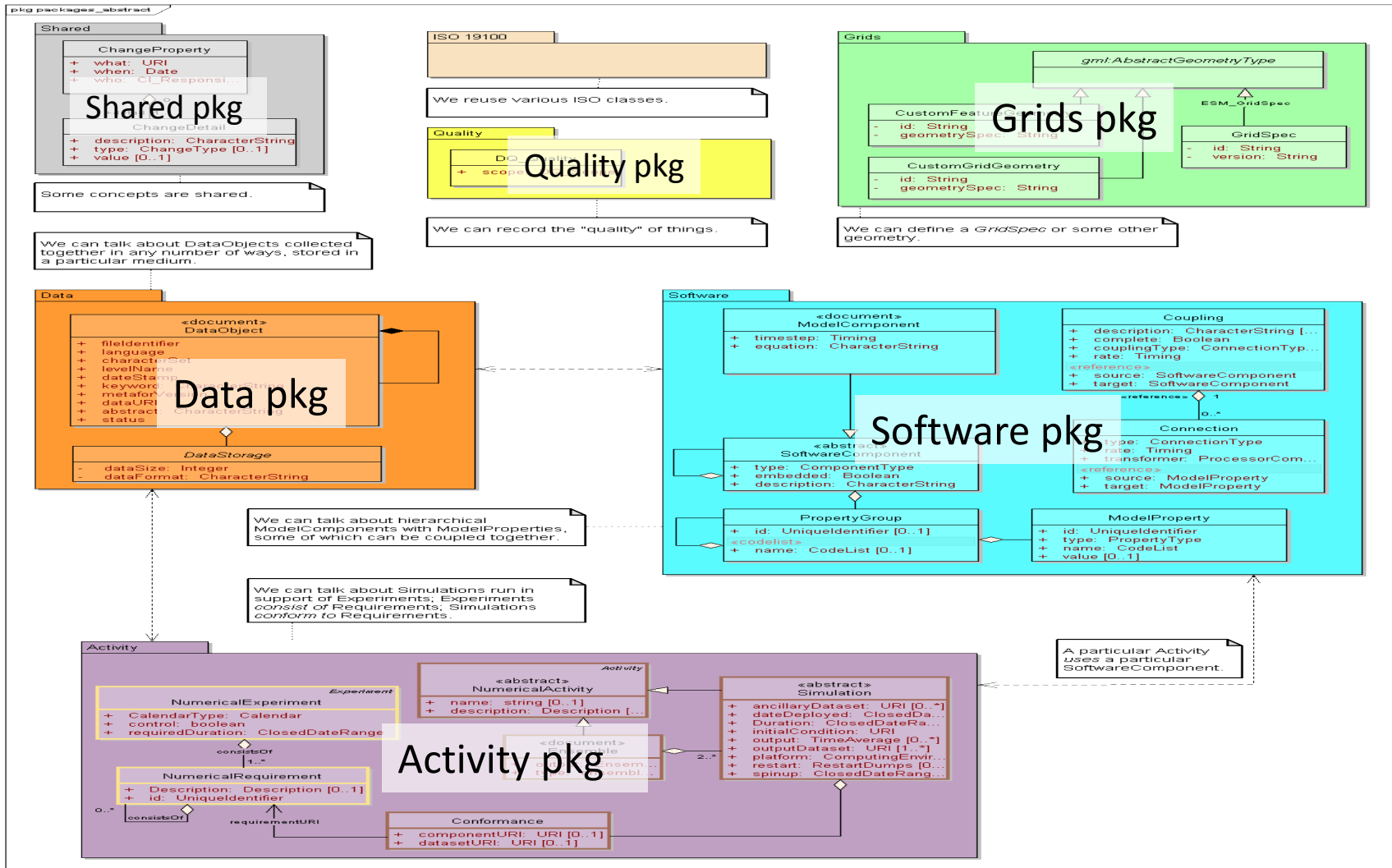
Data

CF for netcdf

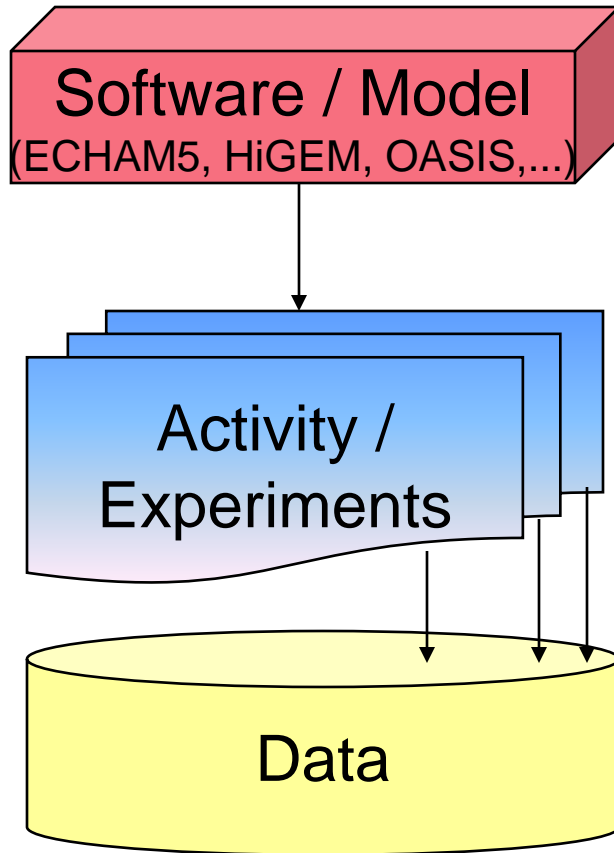
Metafor will coordinate

- filling of metadata gaps
- mapping to different standards
- aggregating the metadata
- creating new standards (if necessary)

- Existing metadata models in Earth system modeling provide description of **model output**. This description is complete with respect to **browse, search, identify and use Earth system model results**.
- **Identified gaps** in existing metadata models for Earth system modelling are:
 - **Provenance information** and
 - **Structured, searchable description of numerical models**



CIM schema is found here: <http://metaforclimate.eu/trac/browser/CIM>



<i>is described by</i>	CIM stereotype
Software / Model	<code>modelComponent</code> <code>processorComponent</code> <code>deployment</code>
Activity / Experiment	<code>dataProcessing</code> <code>ensemble</code> <code>numericalExperiment</code> <code>simulationComposite</code> <code>simulationRun</code>
Data	<code>dataObject</code> <code>gridSpec</code>

modelComponent:

- Atmosphere
- AtmosphericChemistry
- LandIce
- SeaIce
- Ocean
- OceanBiogeochemistry
- LandSurface

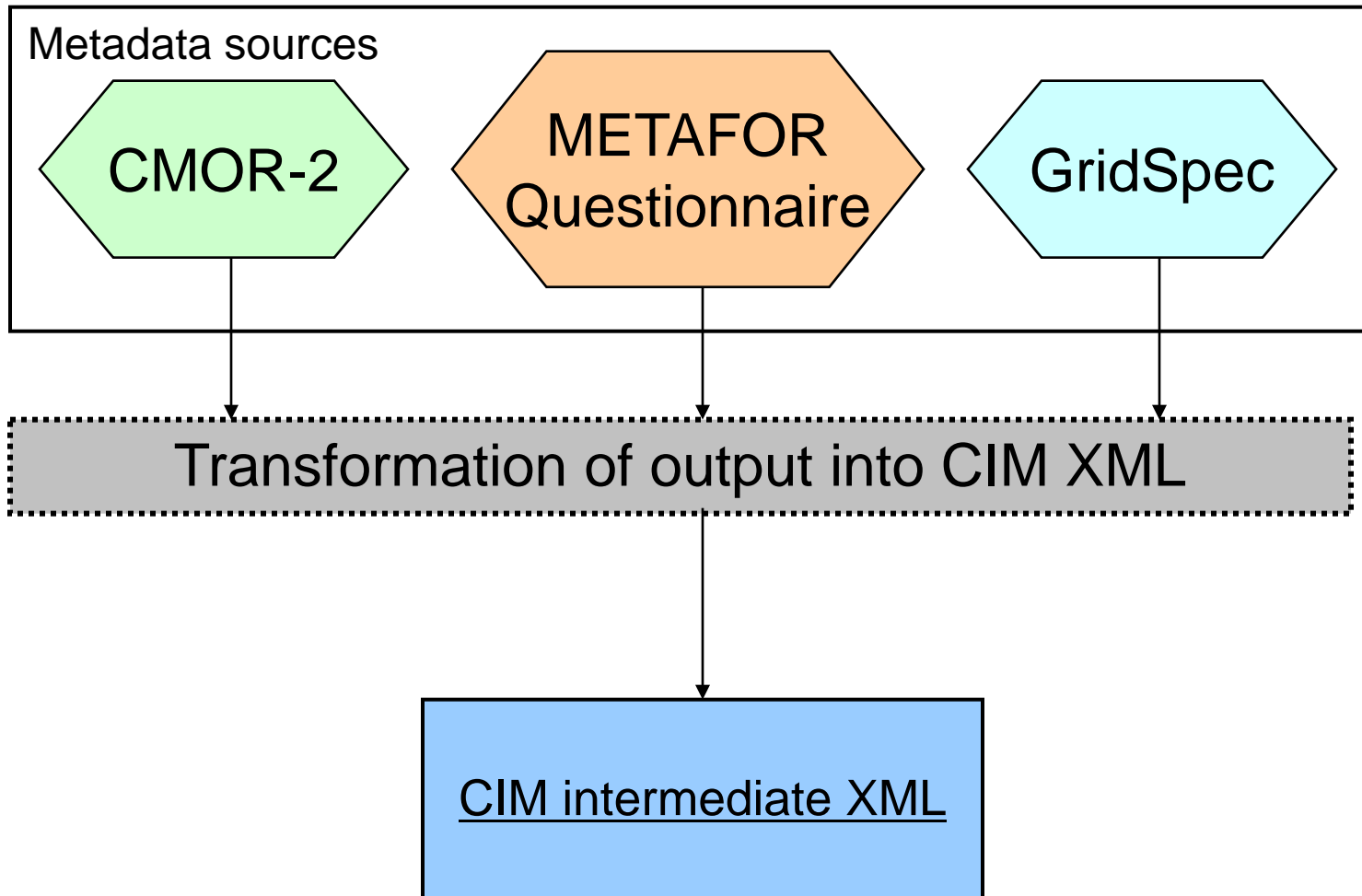
- Coupling (Reggridding)

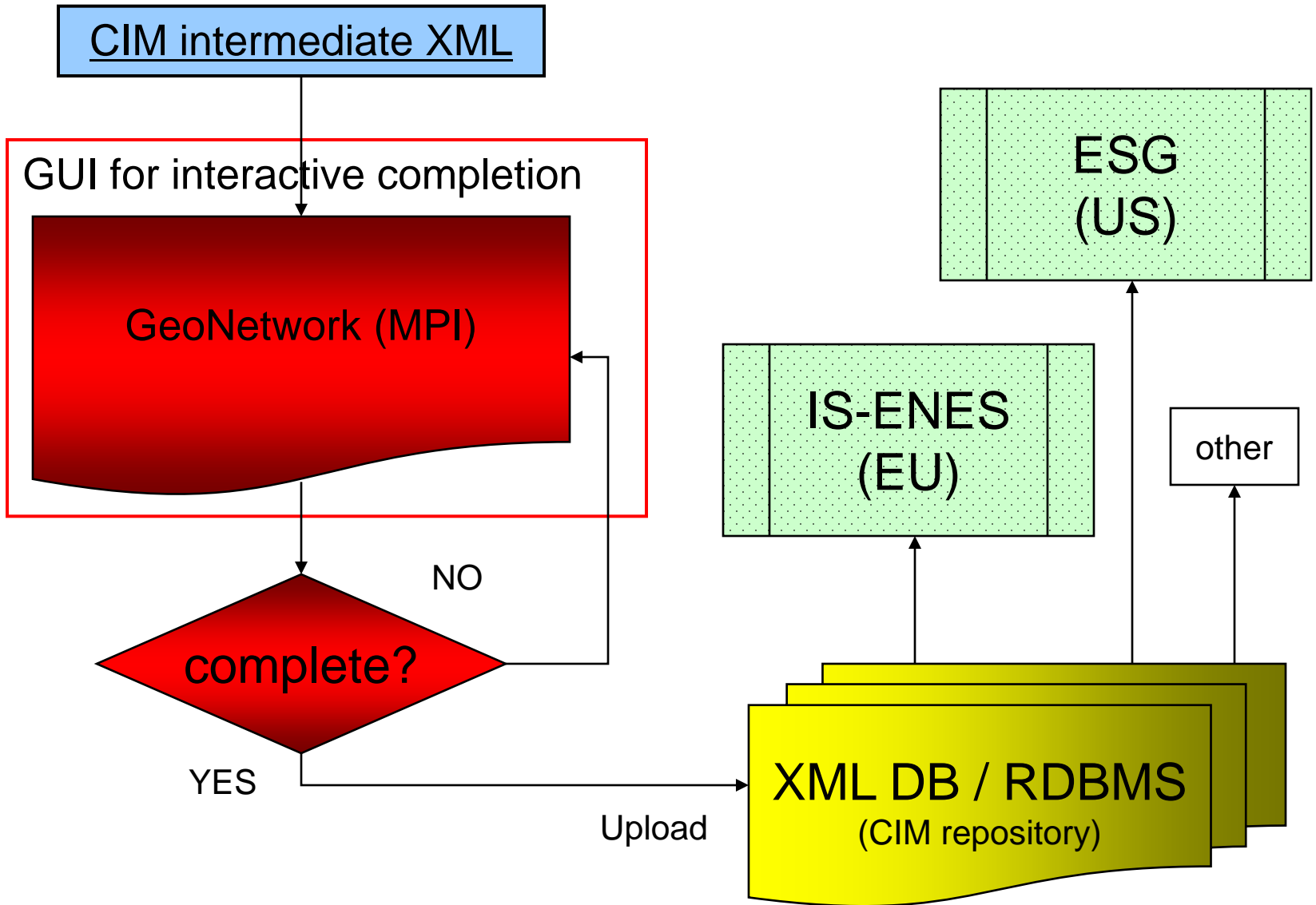
CIM Controlled Vocabulary

Atmosphere	Component	DynamicalCore
	Component	OrographyAndWaves
	Component	Radiation
	Component	TurbulenceConvectionClouds
AtmosphericChemistry	Component	AdvectionScheme
	Component	BelowCloudScavenging
	Component	GasPhaseChemistry
	Component	SubgridScaleTransport and InCloudScavenging
	Component	SurfaceExchanges

More complex vocabularies in subsequent hierarchy layers

- **Application use case:**
 - CMIP5 / IPCC AR5 climate projections from Earth system models
- Methods of CV development for the **CIM software classes**
 - **Prototyping** with selected Earth system model developing scientists (interviews)
 - **Structuring** with METAFOR project
 - Presentation and discussion within wider **Earth system modelling community**
 - **Revised version** is taken for the application use case
 - Experience from application use will improve the CIM CV implementation (**next iteration loop**)
- **Requirement:** community agreement is needed for acceptance
- **Missing:** formalised process to expand CIM CV lists is yet not in place.





Homepage:

<http://metaforclimate.eu/>

Prototype of CIM Human GUI:

<http://anticyclone.dkrz.de:8088/geonetwork/>

Prototype of CMIP5 questionnaire:

<http://cmip5.metafor.ceda.ac.uk/cmip5/>

METAFOR CV server: 'Not Yet Available!'

Work in progress: List of so far captured CV entries

<http://metaforclimate.eu/trac/wiki/WP2/ControlledVocabulariesList>