

Marine Feature Types and Feature Type Catalogues

Outputs from the MOTIIVE SSA on
GMES-INSPIRE Marine Data Harmonisation

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What is MOTIIVE About?

- Premise (of call)
 - GMES Service will be more cost-effective to deploy through the use and adoption of OGC/ISO Interoperability standards
 - This interoperability will entail true ‘mix and match’ between (and amongst) ‘core’ and ‘downstream’ data processors.
- Scope (of Motiive)
 - How do you apply ISO/OGC Standards to the coastal/marine community
 - Land:sea interaction (Marine Overlays on Topology)
 - What do the standards look like and how does a ‘cost benefit’ manifest itself

Project Update

- What has Motiive achieved?
 - Community needs for harmonisation (need for FT and FTC)
 - Community Feature Types (published as UML and XSD)
 - These findings will be useful to any community where datasets exchanged between members are '*representation on environmental phenomena*' such as water quality, air temperature, water flows...

This presentation

- Community needs for harmonisation
- The cost-benefit to the community of this harmonisation
- GML Application Schema of the Feature Types needed by the community
- A reference implementation of a Feature Type Catalogue
 - To publish and re-use your Feature Types

Community Harmonisation Needs

- Coastal Managers (MOTIIVE D7b)

- Main
- Sea
- Sea

Requirements consistent with the statement in the INSPIRE Directive on the data sharing problem to be solved.

- Meteorological

- WM
- (flexible) chaining of services
- Maintaining access to legacy data

- Integrating

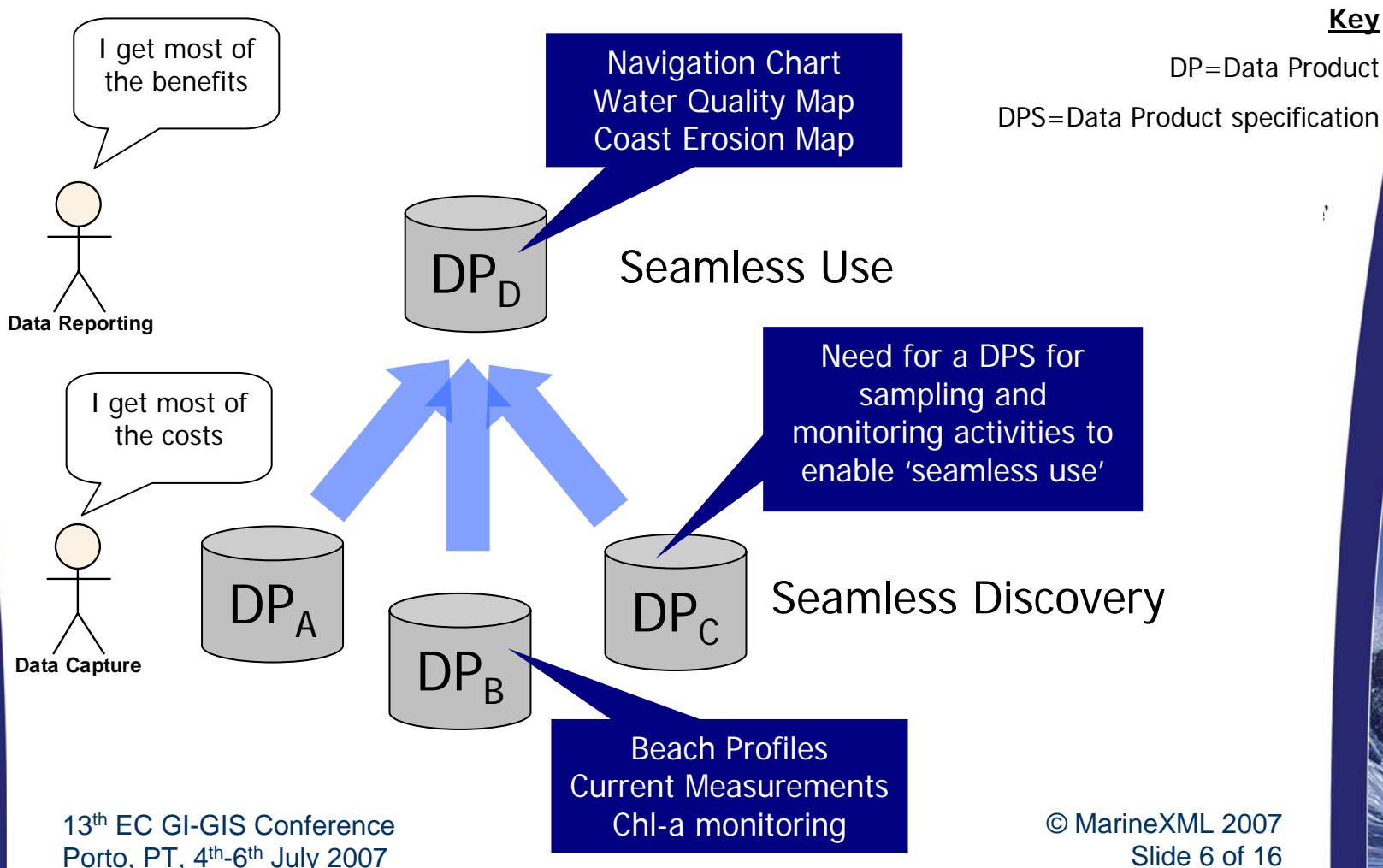
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These requirements were used to formulate a 'use case' to drive (and test) the INSPIRE guidelines for developing a Data Product Specification

- GSE (M

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Community Harmonisation Needs



Cost:Benefit of Harmonisation

- Few cost:benefit studies have been undertaken specifically for harmonisation
- MOTIIVE developed a hybrid method
 - Based on best existing methods
 - 20 methods analysed
 - Implemented as a spreadsheet
- Standards can help reduce costs
 - Feature definitions is a prime example
- But data integration still labour intensive
 - Human needed to identify inconsistent / poor quality of data

Community Feature Types

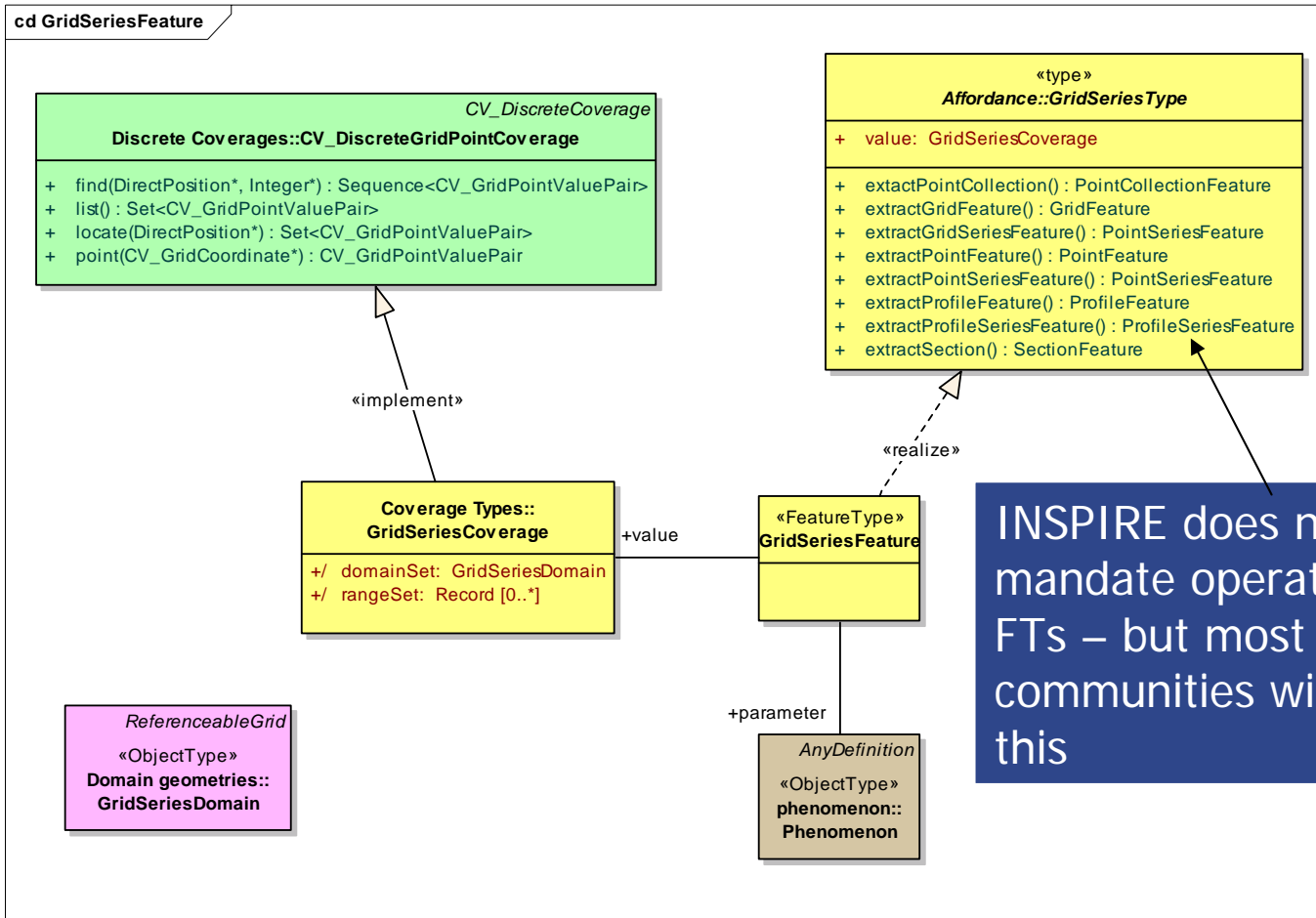
- Developing a DPS related to measuring and observations requires Feature Types that are based on:
 - Scientific utility of the sampling regime
 - Limitations of the observation process
- CSML (Climate Science Modelling Language)
 - Feature types and storage descriptors
 - Binding to NetCDF, GRIB etc.
 - Consistent with community practice
 - ESRI, UniData, NOAA
 - Implemented in UML and GML

CSML Features

Presently in Release 2

<i>CSML feature type</i>	<i>Description</i>	<i>Examples</i>
TrajectoryFeature	Discrete path in time and space of a platform or instrument.	ship's cruise track, aircraft's flight path
PointFeature	Single point measurement.	raingauge measurement
ProfileFeature	Single 'profile' of some parameter along a directed line in space.	wind sounding, XBT, CTD, radiosonde
GridFeature	Single time-snapshot of a gridded field.	gridded analysis field
PointSeriesFeature	Series of single datum measurements.	tidegauge, rainfall timeseries
ProfileSeriesFeature	Series of profile-type measurements.	vertical or scanning radar, shipborne ADCP, thermistor chain timeseries
GridSeriesFeature	Timeseries of gridded parameter fields.	numerical weather prediction model, ocean general circulation model

CSML *GridSeries*



INSPIRE does not mandate operations for FTs – but most communities will require this

www.marineXML.net

Feature Type Catalogues

- Feature type definitions may be stored for re-use in catalogues (ISO 19110).
- Since features encapsulate important data semantics within communities of practice.
 - *Feature Type Catalogues may be regarded as ‘semantics repositories’ within an overall information architecture.*
- Our use case suggest this needs to be a machine-readable and web-based

Feature Type Catalogue

Table 1 — Conformance classes

Attributes only	Attributes and associations	Attributes, associations and operations	Inheritance relationships included	Test Module
X	—	—	—	A.17
—	X	—	—	A.18
—	—	X	—	A.19
X	—	—	X	A.23
—	X	—	X	A.24
—	—	X	X	A.25

ISO 19110 (211n2053 revision)

A machine-readable ISO 19110 Feature Catalogue at high conformance level supports modelling both inheritance and operations.

Our analysis suggests that compliance to A.25 level is needed for the marine community

FTC Deployment Pieces

- FTC (completed)
 - WRS and Cat Services installed and tested
 - Prototype FTC browser
- FTC (to do)
 - ebRIM 19110 package implementation
 - Service binding to realise feature instances
 - Finalise FTC browser
- Completion in October 2007

Conclusions: Motiive and INSPIRE

- Experience from Motiive submitted to the INSPIRE Drafting Teams
 - Via calls for comment on Data Product Specification guidance and through DT membership
- Ensuring needs of 'Earth Science' communities are represented
 - “Feature types for observations”
- Reference of Feature Type Catalogues
 - Feature Types will be defined for each of the INSPIRE Themes.
 - Need a catalogue to put them in that is searchable amongst and between communities

Conclusions: Motiive and OGC

- Working closely with OGC to take things forward post-project
- Plan to submit FTC as a Recommendation to OGC
- Change requests to OGC for
 - Query model
 - Irregular grids in GML (ISO 19123)
- Non-quadrilateral grids?

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More resources (documents, CBA
spreadsheets, wiki, and mailing list) at
www.motive.net

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