

HMA-Testbed Activities

OGC TC Valencia – Europe Forum
4 December 2008, Valencia

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➤ HMA-T Overview

- Context
- Objectives
- Schedule

➤ Project information

- Evolution of specifications
- Conformance Testing
- Uptake and (Open-source) implementations

➤ Conclusion

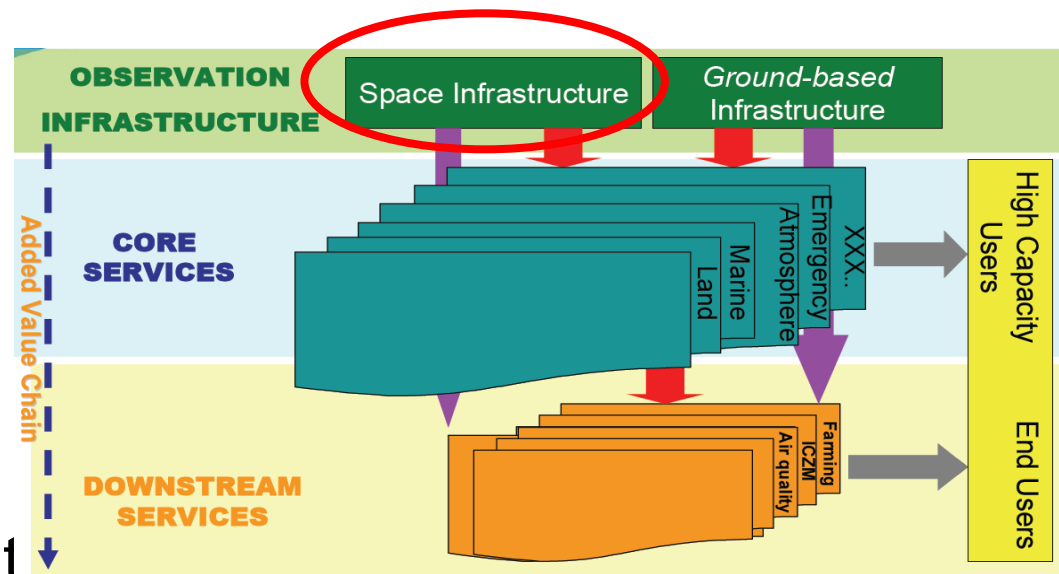
➤ GMES Components

- Space component
- In-situ component
- Service component

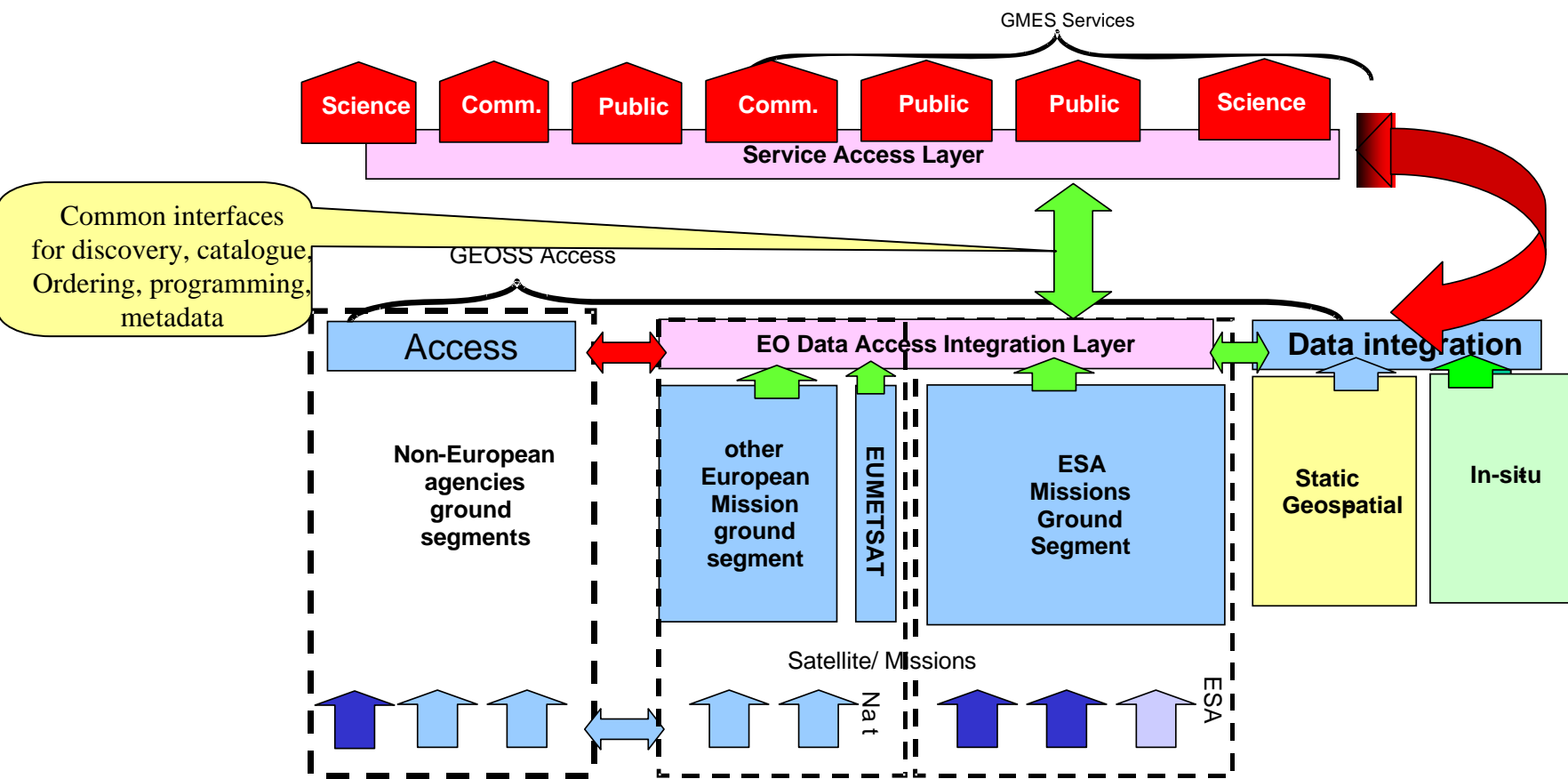
➤ GMES Service Component

- Core services
- Downstream services

➤ GMES Services require access to Observation infrastructure: EO and In-situ data

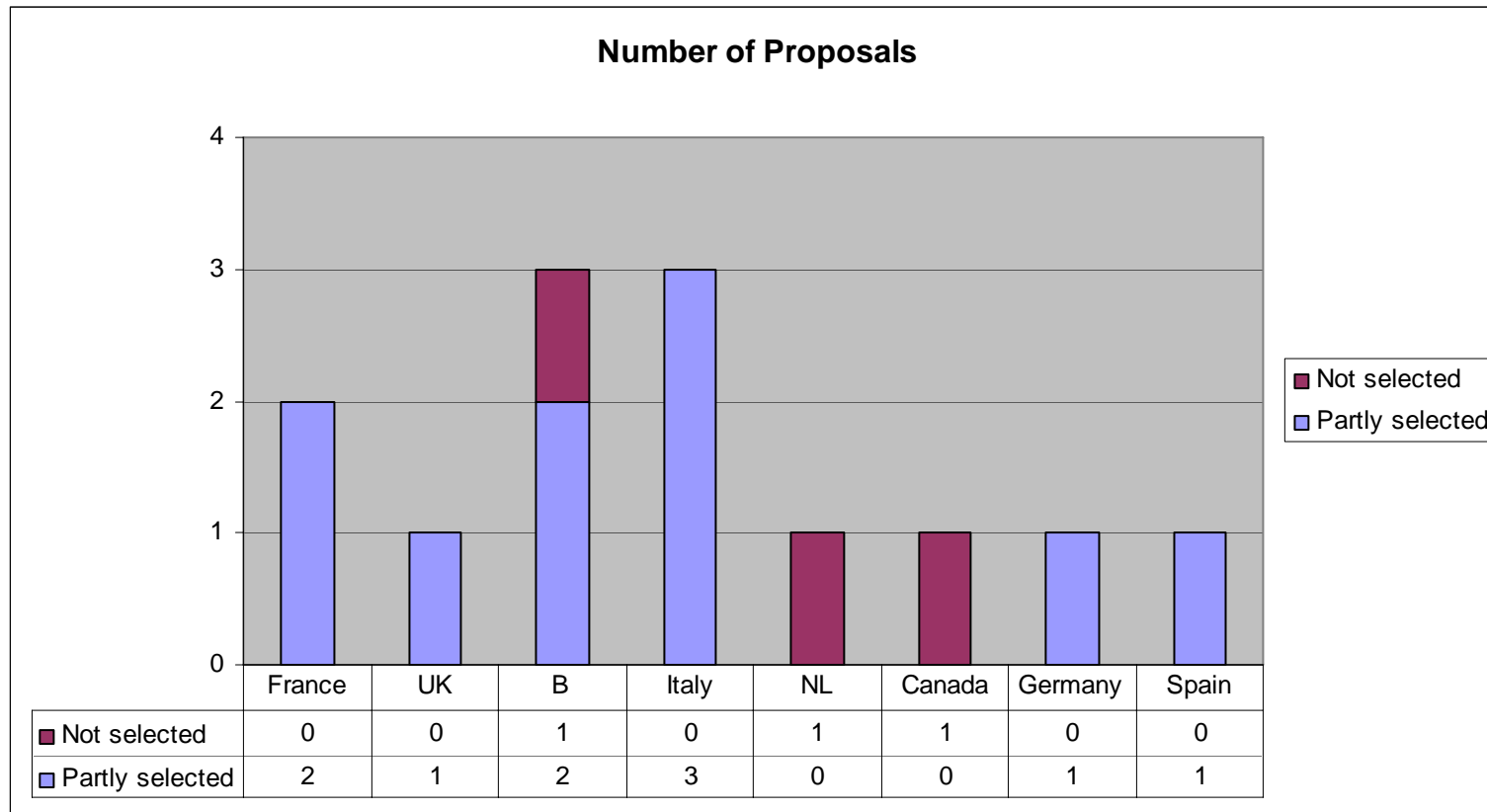


- "HMA": harmonised interfaces to heterogeneous EO missions
- Being operationally implemented.

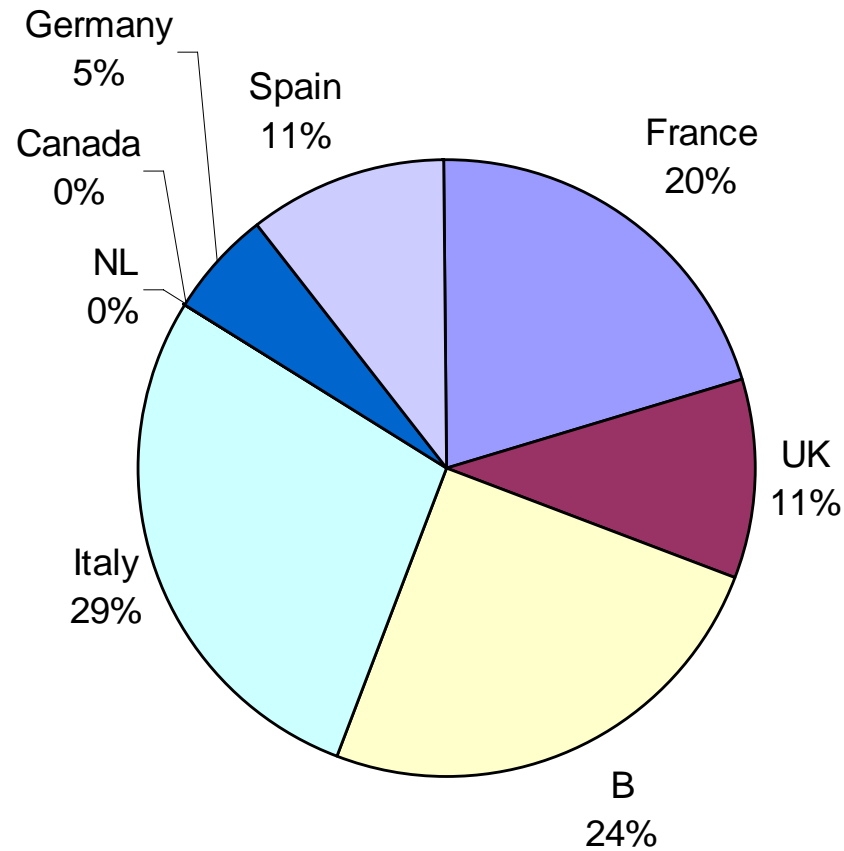


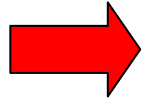
1. Permit evolution and test of HMA interoperability standards in parallel with EODAIL-Implementation and implementation of I/F with Partner G/S.
2. Permit conformance testing of HMA adopted standards.
3. Support take-up of HMA defined standards by European Institutional Users and geospatial software product developers

- 10 Proposals – subprojects - selected.



➤ Georeturn per Country (simplified):





Event	At	Planned Date	Option 1 (short)	Option 2 (long)
KO (T0)	ESRIN	2-3/07/2008	Phase 2 Kick-off	Phase 2 Kick-off
T0+5M	SPACEBEL	26/11/2008	PM1	PDR
T0 + 5M	OGC TC (Valencia)	02/12/2008	PM2 (optional)	PM2 (optional)
AR-1 (T0+7M)	SPACEBEL	30/01/2009	Acceptance Test Review (AR) Phase 2 Part 1	CDR
AR-2 (T0+9M)	SPACEBEL	30/03/2009	PM3	Acceptance Test Review (AR) Phase 2 Part 2
FP (T0+11M)	ESRIN	01/06/2009	Final Presentation (FP) Phase 2	Final Presentation (FP) Phase 2
EOC (T0+18M)	N/A	31/12/2009	End of contract	End of contract

➤ HMA-T Overview

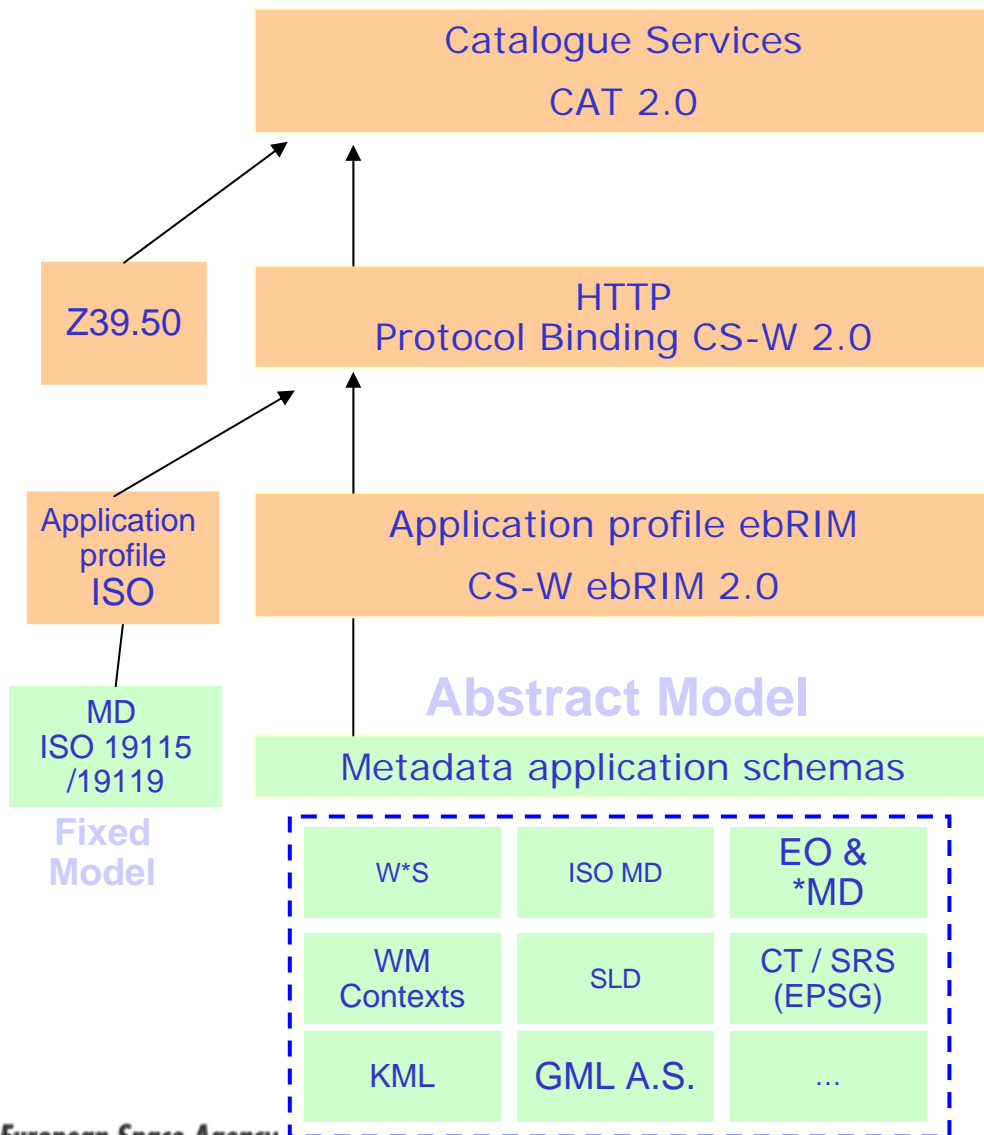
- Context
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➤ Project information

- Evolution of specifications:
 - OGC 06-131, 07-038: EO and CIM Extension Package
 - OGC 07-018, 07-063.
- Conformance Testing
- Uptake and (Open-source) implementations

➤ Conclusion

- New specifications based on OGC/ISO existing specifications :
 - OGC 03-105r1 - OGC Geography Markup Language (GML) Encoding Specification
 - ISO 19115:2003 & corrigendum / ISO 19119:2006 & amendment
 - OGC 07-110r3 - OGC Catalogue Services ebRIM Application Profile of CSW
- All HMA specifications submitted to OGC (DP, BP) :
 - OGC 06-080 - GML 3.1.1 Application schema for Earth Observation products
 - OGC 07-038 - ISO 19115/19119 Extension Package for ebRIM AP of CS-W
 - OGC 06-131 - EO Products Extension Package for ebRIM AP of CS-W



Abstract Model defining « **what is a Catalogue** », which **requests** are Supported and their syntax and what are the interfaces for the discovery, access and management of the information on the resources present in a Catalog

Interfaces defined in the above abstract model are bound to a **protocol**, In this case HTTP. This implies a « mapping » between abstract interfaces and the interfaces of the protocol. At this level, a Catalog must be able to expose its resources according **Core Query / Dublin Core** Metadata & core requests

« Application Profile » defines **implementation** choice and binds functional components with (abstract) information model which defines how Metadata Are organized in the Catalog. With ebRIM AP, the Catalog can then store, organize and expose any resources according a single abstract model

Different schemas of metadata can be represented in the « RIM » (Registry Information Model) for different Application domains (GI Data, communities like EO, GeoScML, Defense, ...)

Any « artifacts » (say « OGC Resources ») can be represented

- ISO19115 Metadata (+ any profile of it)
- ... but also FGDC, Anzlic, etc. Metadata
- Community Metadata profiles (EO, ...)
- OGC Web Services (OWS W*S)
- OGC WM Contexts
- SLD rules
- GML Application Schema
- Coordinate Transform & SRS's (EPSG)
- ...

➤ WP 2000 : CIM Extension / Promote to OGC

The objective of this work package is to define, set-up and manage a new OGC Specification Working Group dedicated to the specification regarding HMA Catalogue (RIM extension package for ISO – CIM EP).

- Started beginning of October
- Registered people : 39
- List of comments internal to the group
 - Mainly oriented for INSPIRE compliancy
- Public RFC should start in January after first update of the document.

➤ OUTPUT:

- Updated document of 07-038 CIM Extension Package
- The objective of proposing this document as an OGC standard

- WP : Promote EO Extension Package as OGC Standard

The objective of this work package is to define, set-up and manage a new OGC Specification Working Group dedicated to the specification regarding HMA Catalogue (RIM extension package for EO – EO EP) :

- Started beginning of October
 - Registered people : 43
 - Actually gathering comments internally to the group
 - 06-080 (EO GML), SWG will also gather comments on this specification
 - Public RFC voted by SWG and will be announced this month
- OUTPUT:
 - Updated document of 06-131 EO Extension Package
 - SWG for this document, with the objective of proposing this document as an OGC standard

➤ Support evolution of specifications

- OGC 07-018 EO Profile for SPS (Spotimage)
 - Alignment with upcoming SPS 2.0 will be tested via implementation for optical and radar SPS (Joint Deimos and Spotimage proposal).
 - Note: Spotimage is participating to the SPS 2.0 and EO Profile for SPS revisions at OGC.
- OGC 07-063 EO Profile of WMS (Infoterra-UK)
 - Development of the Abstract Test Suite highlighted a number of minor issues to be addressed:
 - A few typographic errors;
 - Clarification that collection level properties are held at the Group Layer level (and inherited by any nested layers);
 - Addition of 'nearestValue = 1' as mandatory for the 'time' dimension
 - Addition of sub-section on outline map presentation

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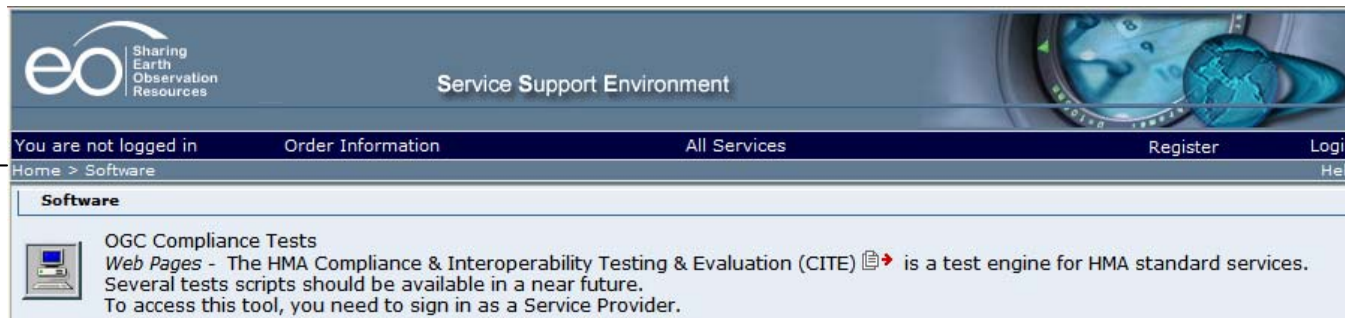
➤ Project information

- Evolution of specifications
- Conformance Testing
 - OGC 07-038: CIM Extension Package
 - OGC 06-131: EO Extension Package
 - OGC 07-118: User Management for EO
- Uptake and (Open-source) implementations

➤ Conformance Testing (CITE)

- To support GMES missions to test their HMA-compliant EO interfaces.
- Use same open-source conformance test engine as OGC (TEAM engine) with CTL scripts OGC 06-126.
- Host conformance tests at ESRIN, accessible via public Web pages.
- Use common approach for SOAP and asynchronous operations test, based on contribution from ESA ERGO project.
- Main contribution:
 - CITE Abstract and Executable Test Suites (ATS and ETS) including executable CTL scripts contributed to OGC CITE WG.
 - SOAP tests very relevant for INSPIRE.

➤ Deployment of CITE test environment in permanent testbed at ESRIN





eo Sharing Earth Observation Resources

Service Support Environment

You are not logged in Order Information All Services Register Login

Home > Software Help

Software

 OGC Compliance Tests
Web Pages - The HMA Compliance & Interoperability Testing & Evaluation (CITE)  is a test engine for HMA standard services. Several tests scripts should be available in a near future. To access this tool, you need to sign in as a Service Provider.

TEAM Engine

(Test, Evaluation, And Measurement Engine)




Welcome

The Test, Evaluation, And Measurement (TEAM) Engine is a test script interpreter. It executes test scripts written using the [Compliance Test Language \(CTL\)](#) to verify that an implementation of a specification complies with the specification.

The following test suites are available:

- [WRS 1.0 Conformance Test Suite \(M1\)](#)
Verify that a WRS catalogue implementation satisfies all applicable constraints.
[Test data](#)
- [Earth Observation \(EO\) Products Extension Package Conformance Test Suite \(0.1\)](#)
Verify that a WRS catalogue implementation satisfies all applicable constraints for the EO package.
[Test data](#)

 It may be necessary to load test data before running a test suite!

[Start Testing](#)

Problems? Email the [webmaster](#)

➤ Conformance Testing (CITE) Activities:

- OGC 06-131 EO Extension Package for ebRIM
 - IGN
 - CNR-IMAA
- OGC 07-038 ISO Extension Package for ebRIM
 - IGN
 - CNR-IMAA
 - Conterra (definition of conformance test levels + INSPIRE guidance)
- OGC 07-118 User management for EO
 - Terradue and RAL
 - Intecs

- WP 1 – Improve HMA-T Phase 2 Testing Policies
- WP 2 – Develop CITE test scripts for OGC 06-131 – EO Extension Package of CSW-ebRIM
- WP 3 – Develop CITE test scripts for OGC 07-038 – CIM Extension Package of CSW-ebRIM

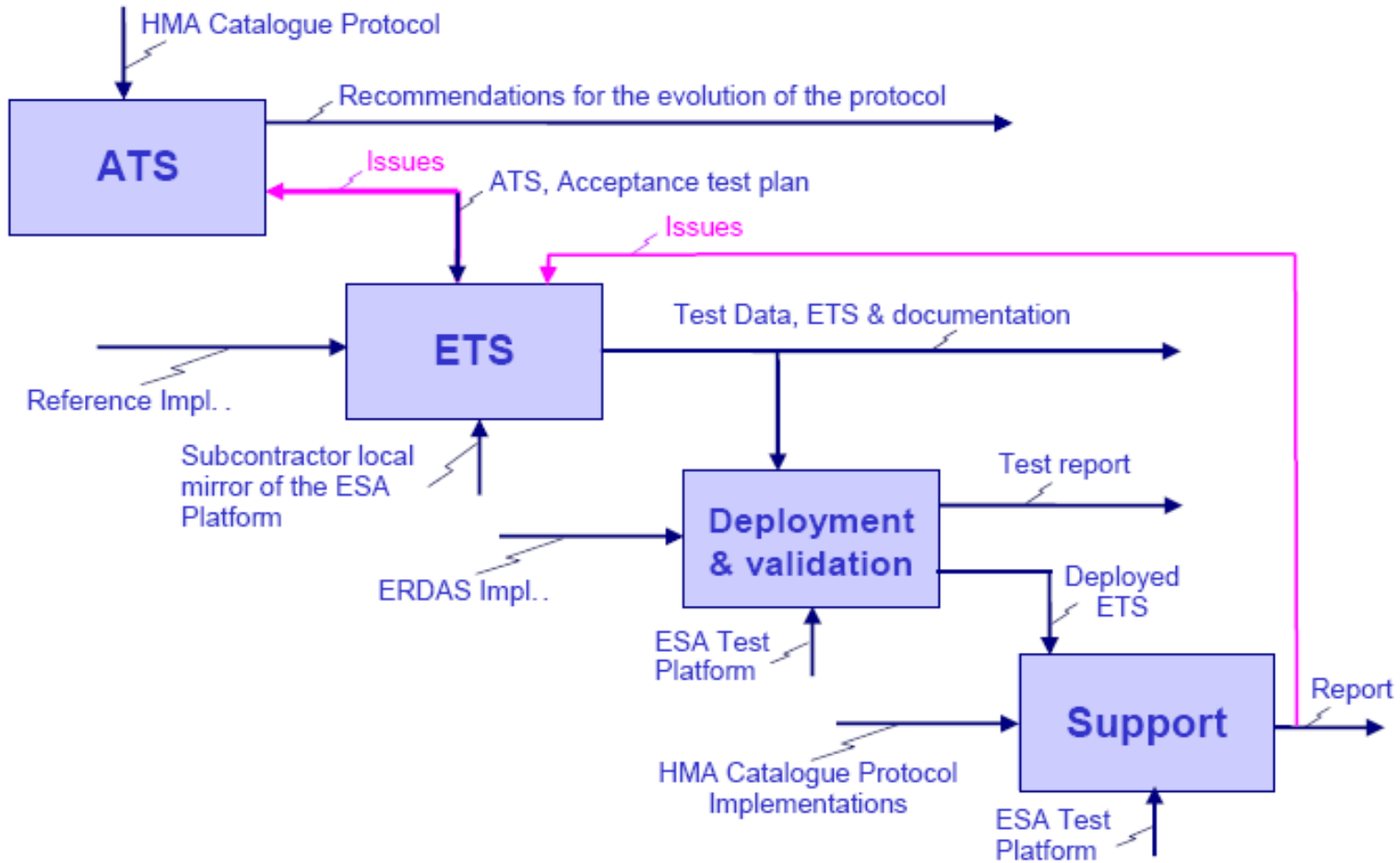
➤ Objectives

- Clarify the ATS and ETS development process for HMA-T protocols
 - Input, output, context of the process
- Specify general rules for building ATS and ETS for HMA-T protocols
 - Conformance levels, HMA test environment, documentation...
- Specify additional rules for Catalog protocols
 - Guidelines on what should be in each conformance level
- Harmonize ATS layout (template)

➤ Deliverable: HMA-T Phase 2 Testing Policy document

➤ Status

- First draft delivered in September 08
- Need to integrate feedback and existing documents from partners
- Second draft to be delivered end of December 08
- Will be made HMA-independent. Could be submitted to OGC as a “**CITE tests development process for EO software**” document



➤ Objectives

- Develop ATS and CTL test scripts for OGC 06-131 and OGC 07-038
- Harmonize with other partners' similar deliverables
- Deploy & validate in ESA test engine
- Submit harmonized ATS to EO EP and CIM EP SWG in OGC
- Submit harmonized ETS to OGC CITE SC

➤ Deliverables

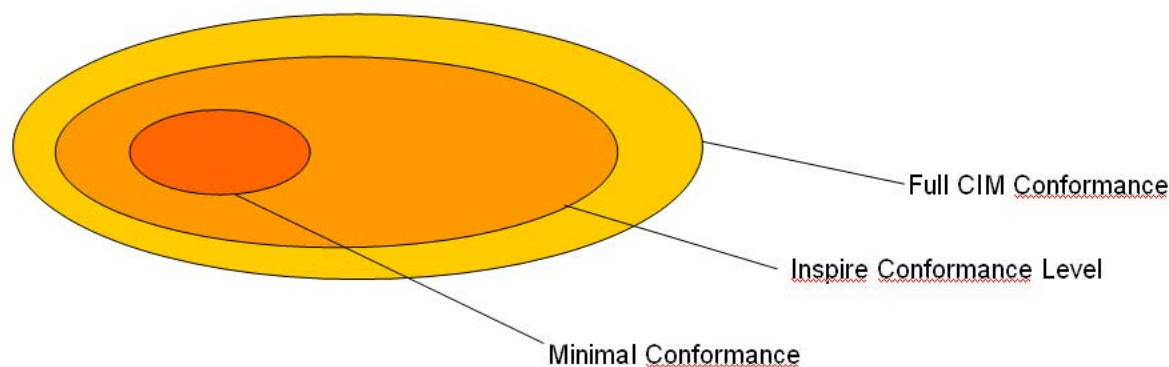
- ATS for OGC 06-131
- ETS for OGC 06-131
- ATS for OGC 07-038
- ETS for OGC 07-038

➤ Status

- Incremental deliveries of ATS / ETS per conformance level
- Final deliveries of ATS / ETS due before AR2 (end of March or April 09)

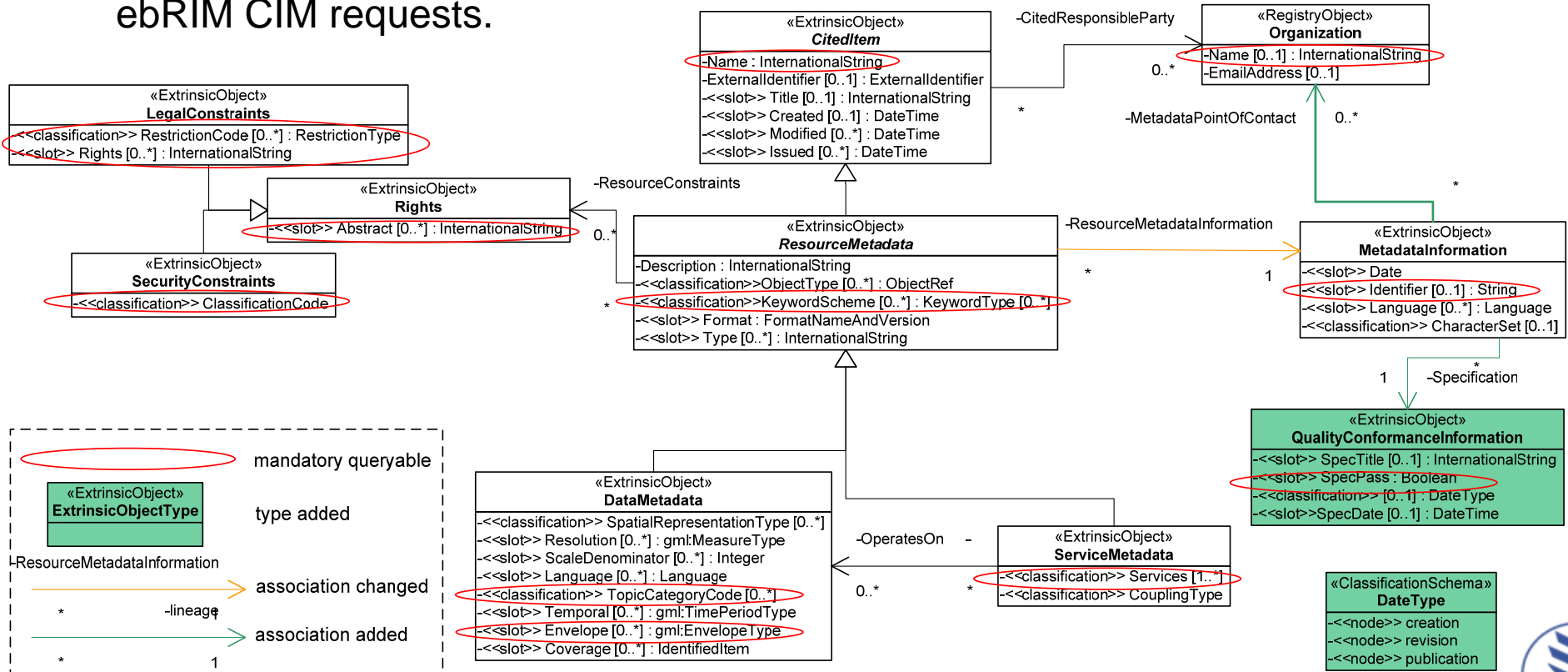
➤ CSW ebRIM CIM (OGC 07-038) Conformance Classes

- full support of all objects (ExtrinsicObjects, Associations, Slots etc.) in queries and resultsets and a full support of all filter capabilities is often not possible for implementations, especially when the implementation acts as proxy/facade in front of a legacy system or of an already existing catalogue service (e.g. a CSW ISO implementation).
- Therefore two conformance levels (Inspire and Base) of the CIM are described which restricts the amount of ExtrinsicObjects, Associations, Slots and filter capabilities



➤ Inspire Conformance Class

- main idea: metadata and service model which is semantically aligned with the Inspire Discovery Services
- This comprises exactly those CSW ebRIM CIM RegistryObjects and operations which are required to be able to map (within a bridge) Inspire discovery and CSW ebRIM CIM requests.



➤ HMA-T Overview

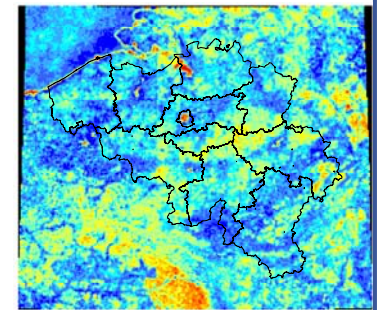
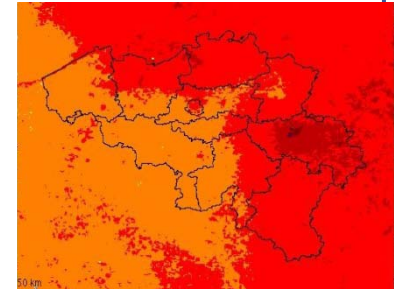
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➤ Conclusion

- Subproject carried out by GIM, VITO, ERDAS
- Objective 1: Apply EO Profile of GML (OGC 06-080) on VITO Product collections
 - Base products (VGT-P), Synthesis products (VGTS S-1, VGT-S10, VGT-D10)
 - Derived Products (DMP, NPP, NEP, VPI,)
- Focus on:
 - “Discovery Metadata” : required metadata elements (queryables and returnables) for catalogue use
 - “Exploitation Metadata”: all required information for correct interpretation of the product as mask (flag) values, band ranges, uom, ...

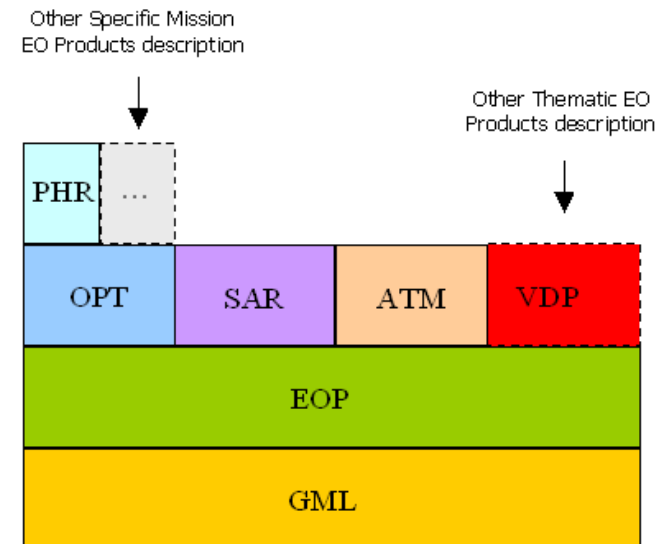


➤ Conclusion Metadata mapping:

- EO Profile of GML (with minor corrections/adaptations) is well suited for product discovery for all VITO EO Product collections =>Comments to be published on OGC EO EP SWG WIKI and ESA HMA WIKI
- For the “exploitation metadata” for derived products a specific application schema is being developed that
 - inherits from the eop schema
 - borrows some element names from ISO19115 (/2)
 - namespace is TBD: e.g. VGT or VDP - Vegetation Derived Products

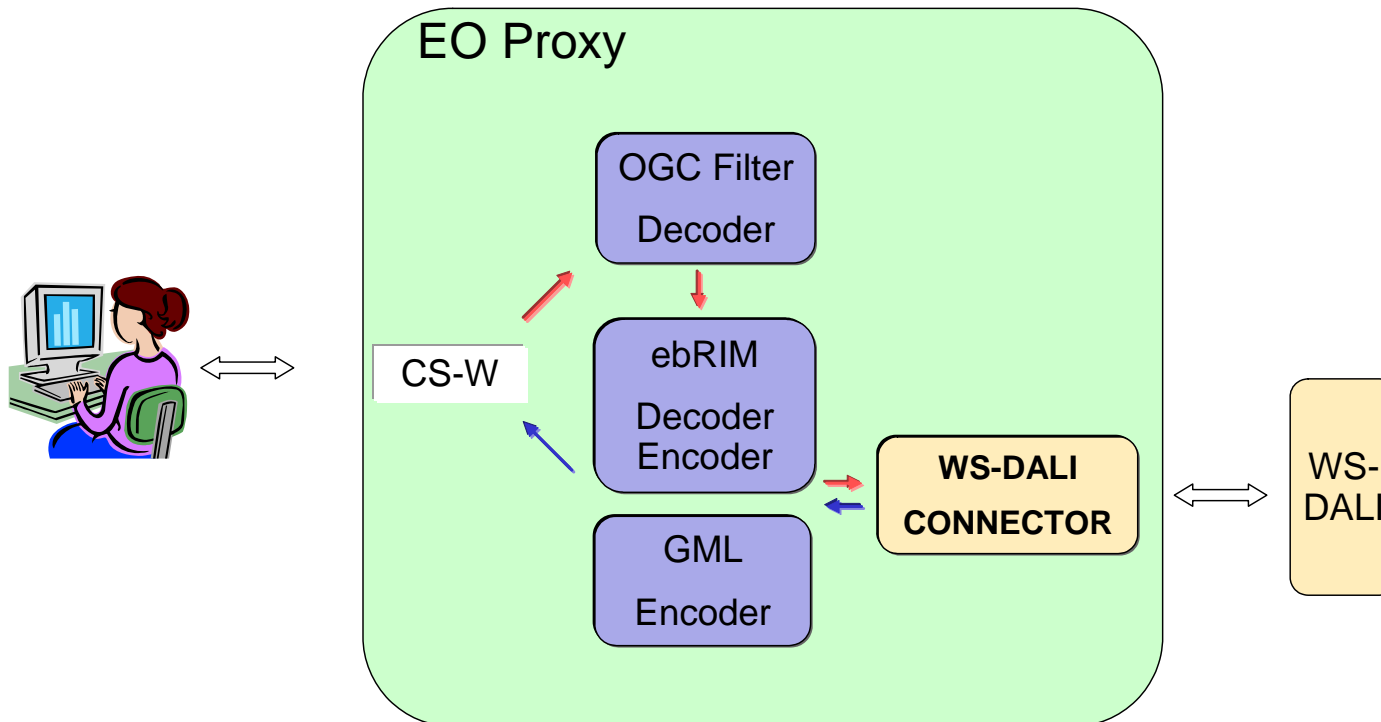
➤ Objective 2: HMA Product implementation

- VGT4Africa Product collections
- Will use the derived schema
- ERDAS Apollo Catalogue with custom harvesters

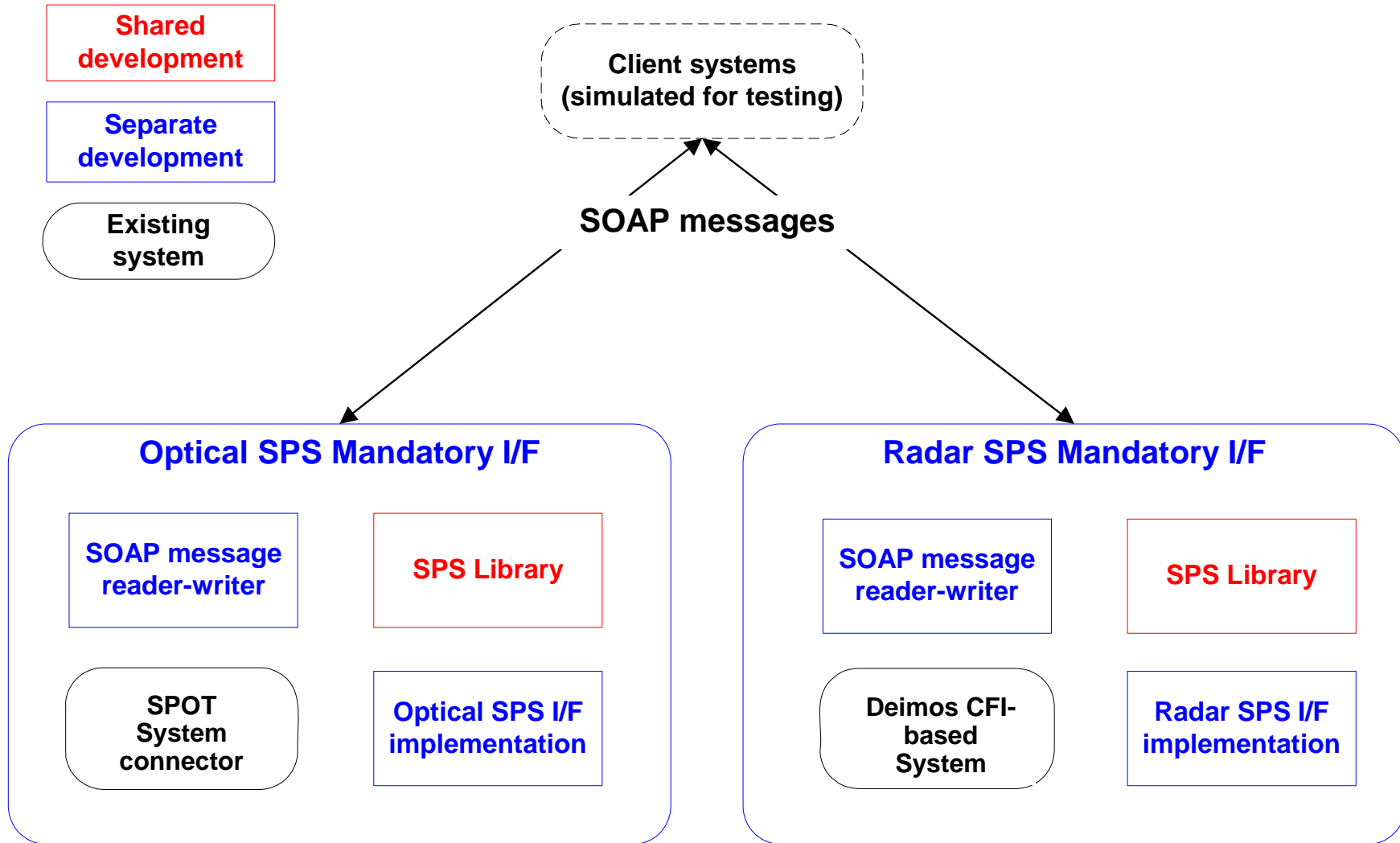


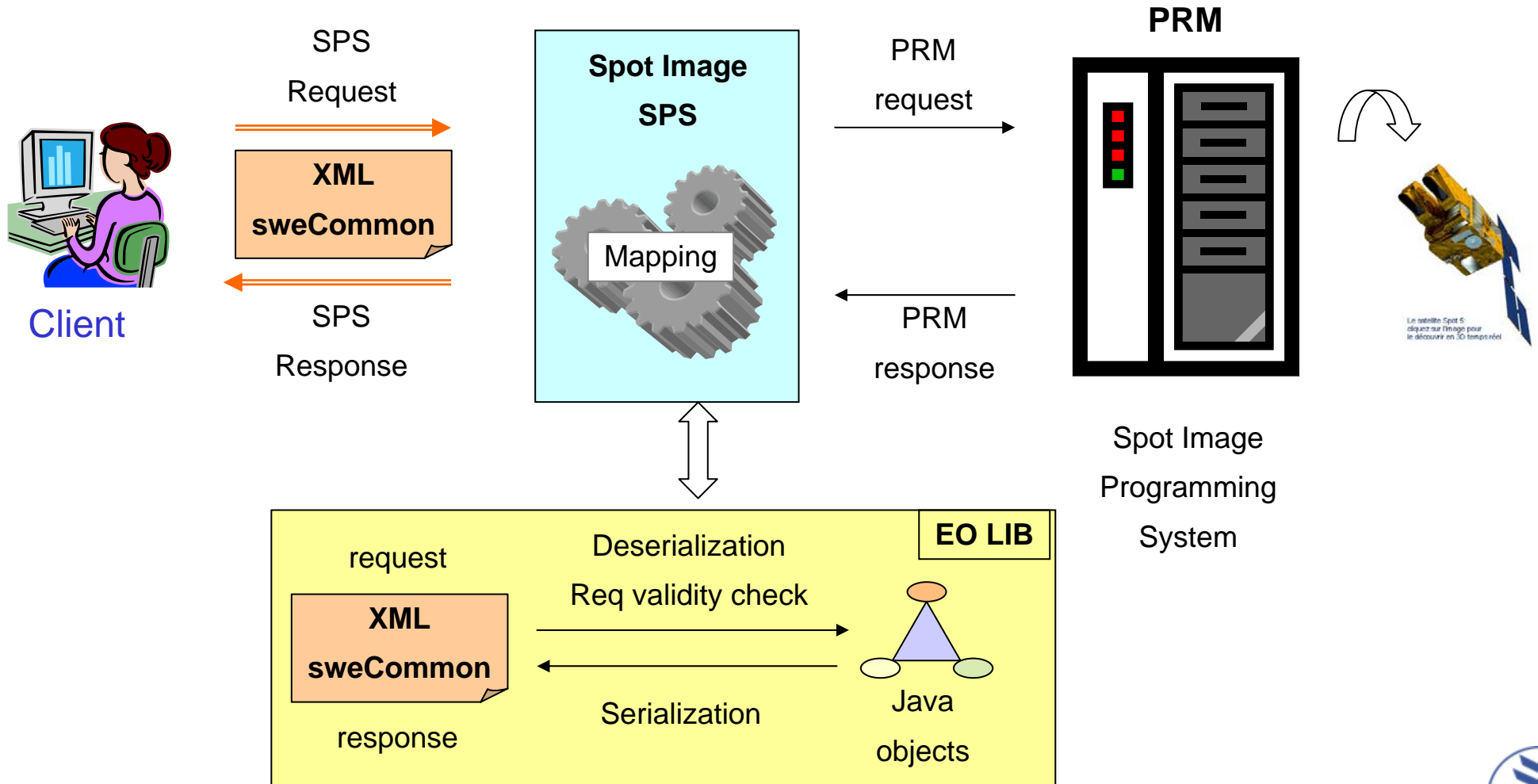
➤ Support uptake of HMA standards

- OGC 06-131 EO Extension Package for ebRIM for WS-Dali (Spot Image, ERDAS)



- Support uptake of HMA standards
 - OGC 07-018 EO Profile of SPS implementation for Radar – Earth Explorer (Deimos) and Optical (Spot Image)
 - Deliver a SPS EO Library
 - Test evolution towards new SPS 2.0 specification.





Le satellite Spot 5 dépose sur l'image pour le découvrir en 3D temps réel

➤ Support uptake of HMA standards

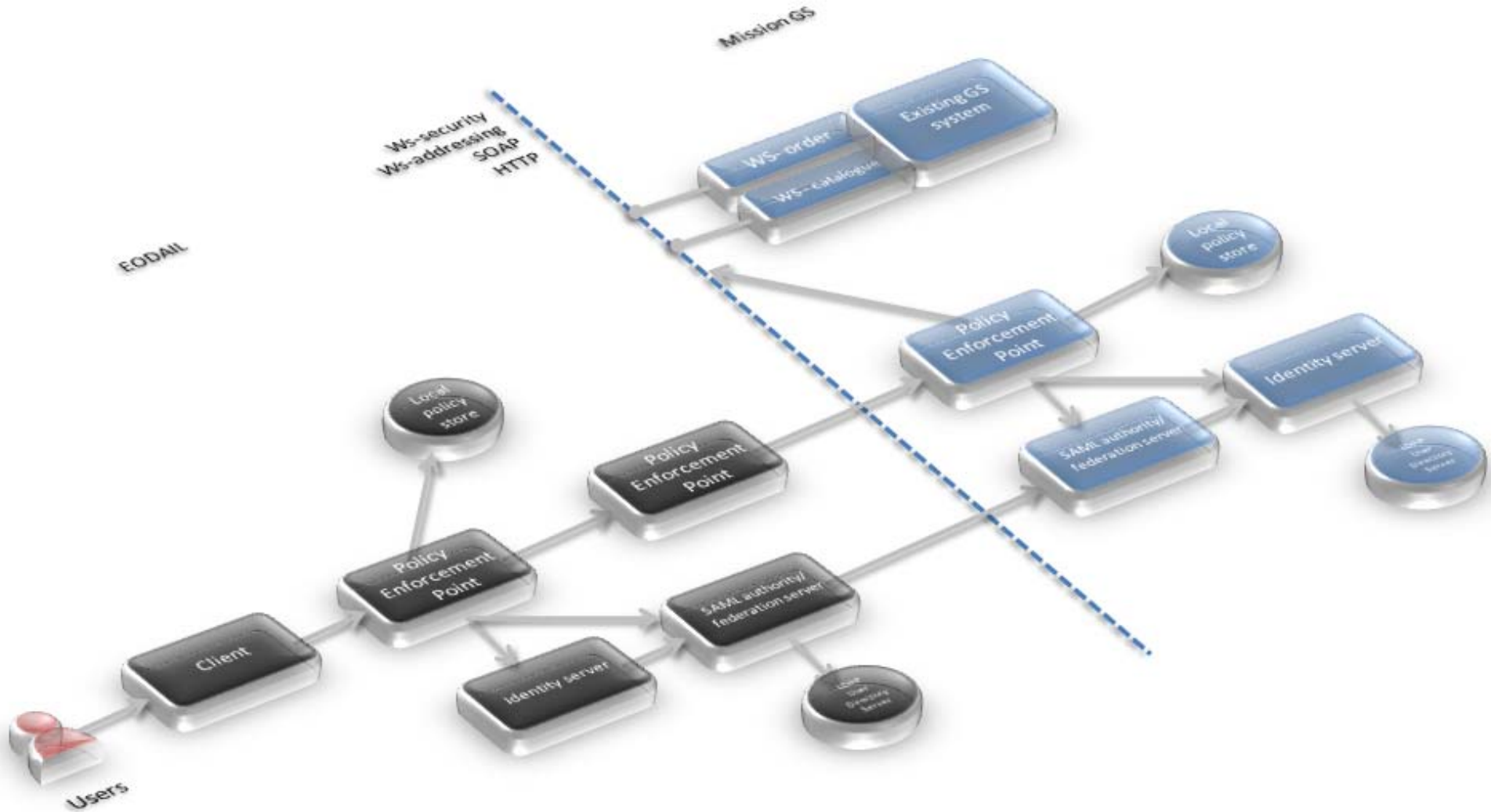
- OGC 07-118 User Management integration with G-POD Grid (Terradue)
- Objectives:
 - Harmonization of auth/N and auth/Z between G-POD and HMA
 - Assess the potential of 07-118 in a Grid infrastructure
 - Promote the usage of 07-118
 - Output: Prototype SOAP Gateway implementing 07-118 integrated in G-POD (reference platform @Terradue)

- **Open-source** support of HMA standards
 - OGC 07-118 User Management - Open-source SSE toolbox implementation (Intecs)

- Support the user management interfaces for Earth Observation services specified in the OGC 07-118 IPR in an open-source implementation.

- The use cases described in OGC 07-118 IPR will be supported:
 - Authorization: A service request sent to the service provider (SP). This service request is a call of any of the operations defined in the catalogue (OGC 06-131), ordering (OGC 06-141) or programming (OGC 07-018) specifications but is not limited to these. The service requests can also be synchronous as well as asynchronous via ws-addressing.

- Toolbox is a Web Application that lets users wrap legacy services in order to provide them SOAP interfaces.
- Toolbox has been developed in previous ESA projects (MASS, NSI, SAS) in order to integrate existing EO services into the SSE portal.
- The Toolbox will be updated in the ERGO project to support the HMA EO catalogue specification.



- The SSE Toolbox will be updated in this project in order to provide functionalities to create, store and manage policies to define Policy Enforcement Points.
- Both gateway and stand alone configurations will be deployed and tested in the HMA prototype.
- The Toolbox will be configured in order to support one or more HMA interfaces and it will be integrated in the prototype configuring the enforcement and policy rules in the Toolbox security module.

- Within the HMA-E Intecs is developing a SOA Test Tool.
- The STT will be integrated in the Toolbox and will be based on the OGC Team Engine
- The CTL language has been extended to support SOAP (currently only synchronous operation are allowed).

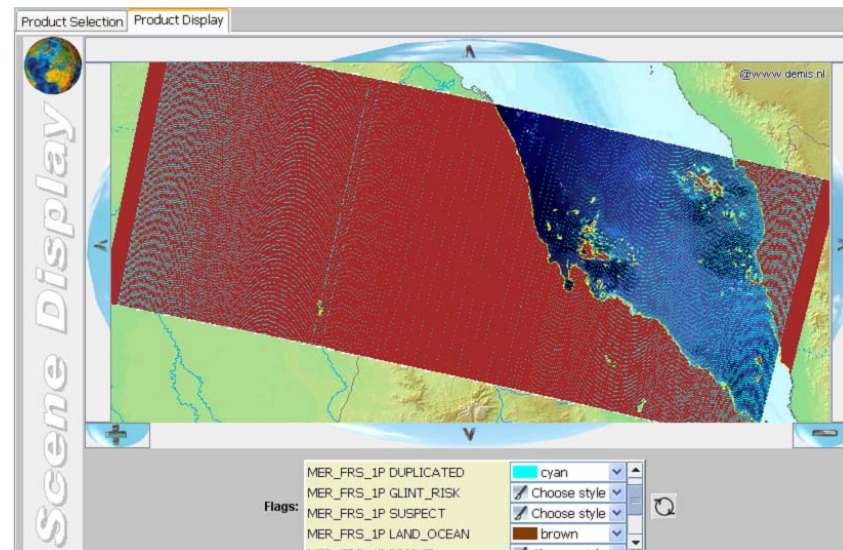
- A new <soap-request> tag has been defined
- Prototype limitations: only synchronous operations are supported

```
<soap-request>
  <url>http://213.215.135.199:8080/TOOLBOX/services/LandsatDataProvisionCatalogueProxy</url>
  <soapaction>CSW-Discovery.getRecords</soapaction>
  <body>
    <GetRecords maxRecords="10" outputFormat="application/xml"
      outputSchema="csw:HmaRecord" resultType="results" >
      .
      .
    </GetRecords>
  </body>
</soap-request>
```

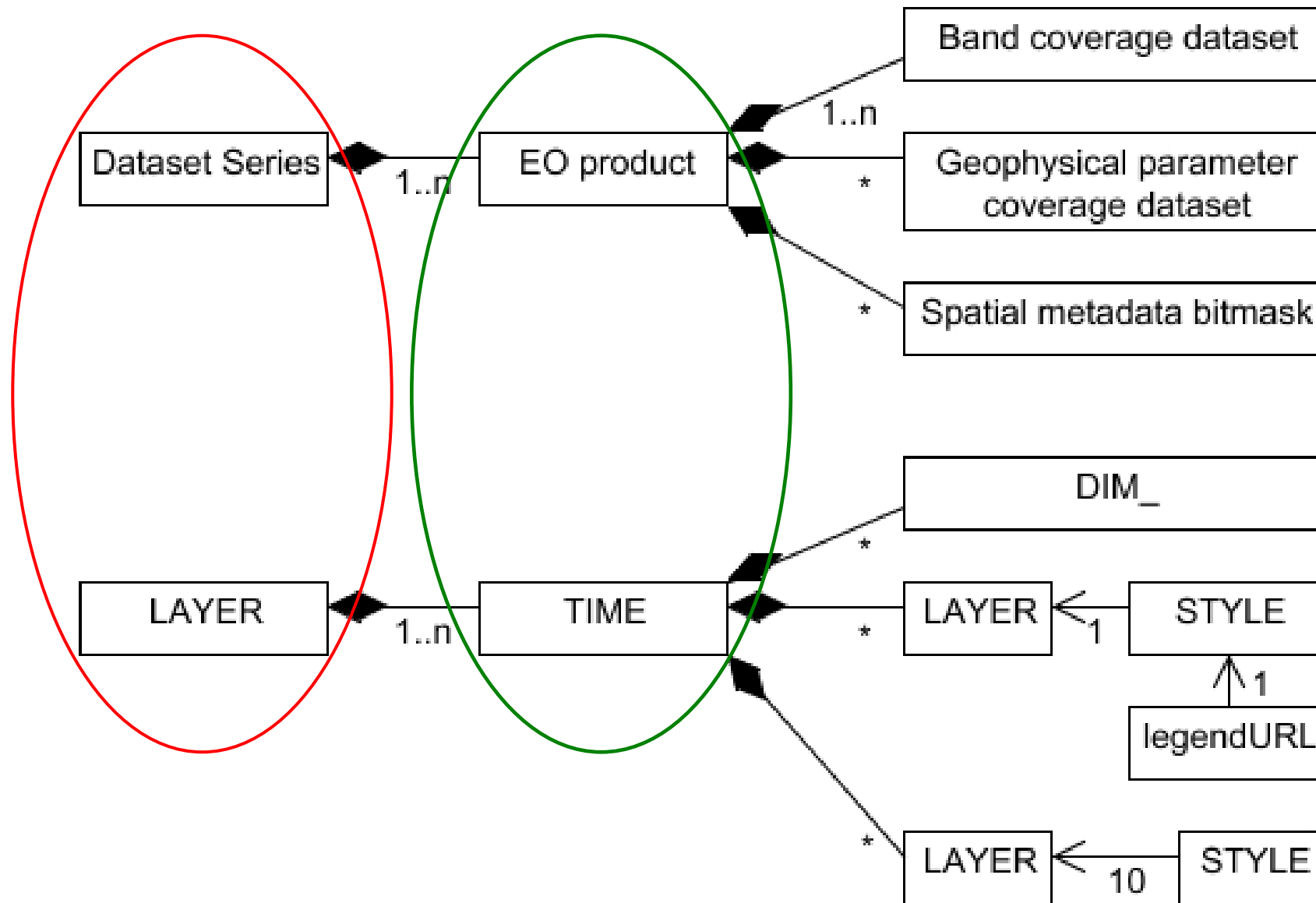
➤ Open-source support of HMA standards

- OGC 06-131 EO Extension Package for ebRIM implementation in opensource Gi-cat (CNR-IMAA)
- OGC 07-038 ISO Extension Package for ebRIM implementation in opensource Gi-cat (CNR-IMAA)
- OGC 07-018: SWE-Common library (Spotimage)
- OGC 07-063 EO Profile WMS open-source implementation – based on UMN Mapserver (Infoterra-UK)

- To evolve a consistent interpretation of the OpenGIS Web Map Server standard as a basis for interoperable WMS serving of EO products

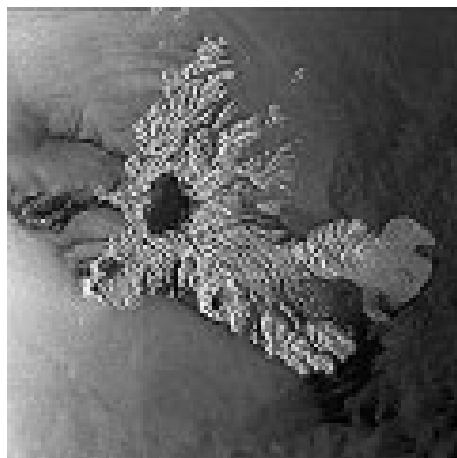


- To enable and promote interoperability between CSW and WMS services:
 - providing users with a mechanism to evaluate EO products before order / dissemination;
 - providing users with a seamless process for discovery -> evaluation -> order / dissemination.



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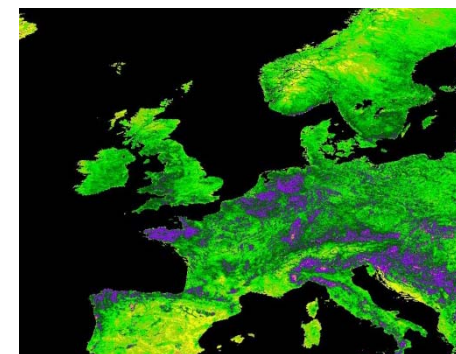
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&LAYERS=MER_RR__2P&STYLES=&FORMAT=image/png
&TIME=2002-07-01/2002-07-02
    
```



greyscale
(SAR)



false colour
(optical)



pseudo-colour
(geo/bio-physical)

Copyright ESA 2006

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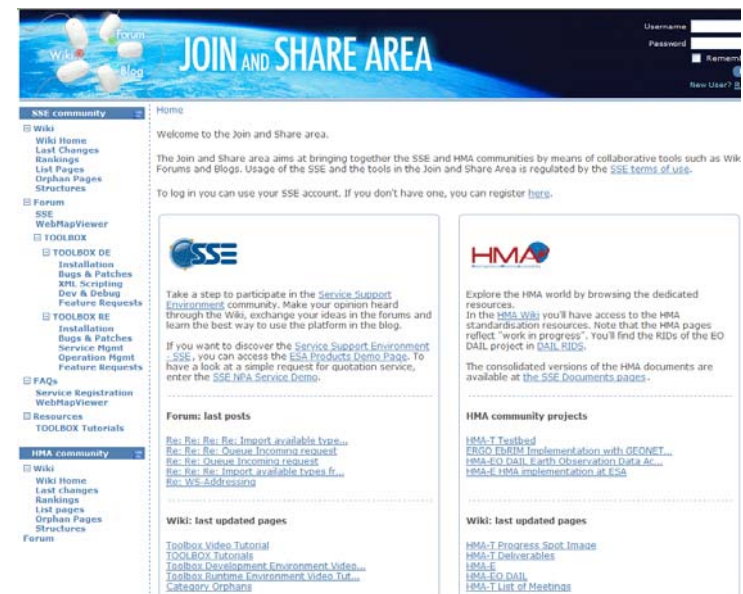
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➤ Conclusion

- HMA-Testbed supports evolution and uptake of
 - OGC Best Practice and Discussion Paper documents:
 - OGC 06-080 GML 3.1.1 Application Schema for EO Products
 - OGC 06-131 ebRIM extension package for EO
 - OGC 06-141 Ordering
 - OGC 07-018 Sensor Planning Service Application Profile for EO Sensors
 - OGC 07-038 CIM using the ebRIM profile of CS-W
 - OGC 07-063 Web Map Services Application Profile for EO Products
- HMA-Testbed will in 2009 contribute to OGC
 - Test Policy Document
 - Corresponding CITE implementations: ATS and ETS.
 - Selected open-source implementations

➤ More information ?

- HMA-T Wiki
 - <http://wiki.services.eoportal.org>
- Email
 - Yves.coene@spacebel.be
 - Pier.giorgio.marchetti@esa.int



JOIN AND SHARE AREA

Welcome to the Join and Share Area.

The Join and Share Area aims at bringing together the SSE and HMA communities by means of collaborative tools such as Wikis, Forums and Blogs. Usage of the SSE and the tools in the Join and Share Area is regulated by the [SSE terms of use](#).

To log in you can use your SSE account. If you don't have one, you can register [here](#).

Forum: last posts

- [Re: Re: Re: Re: Import available type...](#)
- [Re: Re: Re: Queue Incoming request](#)
- [Re: Re: Queue Incoming request](#)
- [Re: Re: Re: Import available types fr...](#)
- [Re: WS-Addressing](#)

Wiki: last updated pages

- [Toolbox Video Tutorial](#)
- [TOOLBOX Tutorials](#)
- [Toolbox Development Environment Video...](#)
- [Toolbox Runtime Environment Video Tut...](#)
- [Category: Graphics](#)

HMA community projects

- [HMA-T Testbed](#)
- [FRGO FRIM Implementation with GEONET...](#)
- [HMA EO Data: Earth Observation Data ac...](#)
- [HMA-E: HMA implementation at ESA](#)

HMA-T Testbed

- [HMA-T Deliverables](#)
- [HMA-E](#)
- [HMA-EO Data](#)
- [HMA-T List of Meetings](#)