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# **HMA-T**

## **IMAA-CNR/PIN Activity Report and Acceptance Test Plan**

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## 1 Introduction

This document summarizes the results of the activities performed by IMAA-CNR/PIN in the HMA Testbed project, as well as the related acceptance test plan.

The operational goals of IMAA-CNR/PIN in HMA-T were:

- OG 01- enabling support of HMA catalog interfaces in GI-cat
  - “COTS and/or Open Source Component Implementation and Test” of the SoW referring to the GI-cat open-source catalogue middleware and the HMA catalogue interfaces (06-131, 07-038)
- OG 02- Conformance testing
  - “Conformance Testing” of the SoW for the HMA catalogue interfaces
  - Implementation of conformance test scripts compatible with the OGC CITE initiative

The above goals have been pursued and achieved through the following activities:

1. Definition of ATS for the EO and the CIM EP
2. Implementation of ETS for the EO and the CIM EP
3. Implementation of a Reference Implementation (RI) of the EO and the CIM EP onto GI-cat
4. Artifact documentation, according to the ESA documentation requirements.

Moreover, other collateral activities have been performed, that were not initially tasked to IMAA-CNR/PIN.

The following sections detail the performed activities and the related acceptance test procedures, to be executed in the context of an Acceptance Review.

## 2 Definition of ATS for the EO and the CIM EP

The activity led to the definition of the following ATS's for the EO and the CIM EP's:

- The EO EP ATS (HMAT-TS-0001-CNR, revision 1.1.0, 15 may 2009) targets the EO EP specification, version 0.2.2, with incorporation of relevant parts of version 0.2.4 (2009-05-07)
- The CIM EP ATS (HMAT-TS-0002-CNR, revision 1.0.2, 1 april 2009) targets the CIM EP specification, version 0.1.9.

Both the documents have been presented at the AR-1/CDR meeting, 18 february 2009. They were accepted pending some actions to be implemented and a decision was taken to cease their maintenance, since they were to be integrated into the Annex A of the respective specifications. However, parts of the comments and suggested improvements, as well as editorial remarks, have been included in a final minor and bugfix revision, respectively.

The EO EP ATS has been subsequently integrated into the Annex A of the EO EP specification (06-131r6).

**2.1 Acceptance tests**

1. Verify the delivery of HMAT-TS-0001-CNR in MS-Word format (done at AR-1).
2. Verify the traceability to the specification requirements.
3. Verify its integration in Annex A of the EO EP specification (06-131r6) according to the following authorship table:

A.1.1	IGN/CNR
A.1.2	CNR
A.1.3	IGN
A.1.4	IGN/CNR
A.1.5	IGN/CNR
A.1.6	IGN/CNR
A.1.7	IGN
A.1.8	IGN/CNR
A.1.9	IGN/CNR
A.1.10	IGN/CNR
A.1.11	IGN/CNR
A.1.12	IGN/CNR
A.1.13	IGN/CNR
A.1.14	IGN/CNR
A.1.15	IGN/CNR
A.1.16	IGN/CNR
A.1.17	IGN/CNR
A.1.18	IGN/CNR
A.1.19	IGN/CNR
A.1.20	IGN/CNR
A.1.21	IGN/CNR
A.1.22	IGN/CNR
A.1.23	CNR
A.1.24	IGN
A.1.25	IGN/CNR
A.1.26	IGN
A.2.1	IGN/CNR
A.2.2	IGN/CNR
A.2.3	IGN/CNR
A.3.1	IGN/CNR
A.3.2	IGN/CNR
A.3.3	IGN/CNR
A.4.1	IGN/CNR
A.4.2	IGN/CNR
A.4.3	IGN/CNR
A.4.4	IGN/CNR

4. Verify the delivery of HMAT-TS-0002-CNR in MS-Word format (done at AR-1).
5. Verify the traceability to the specification requirements.

**3 Implementation of the ETS for the EO and the CIM EP**

A preliminary version of the ETS for the EO and the CIM EP was presented at the AR-1/CDR

meeting, 18 february 2009. The definitive Acceptance Review for the ETS's was postponed, to allow for the reorganization of the ETS's according to the final revision of the specifications.

Following a series of communications (telecons, mailings and the document "Comments on EO EP Compliance Test implementation in the framework of HMA-2", sent by IMAA-CNR/PIN on may 19th, 2009), it was clarified that the activity was expected to result in complete and exhaustive test suites for the whole EO and CIM EP protocol stacks.

At the technical progress meeting held in Frascati on june 11th, 2009, it was agreed that, given the ongoing evolution of the EO and CIM EP specifications, the ETS's by IMAA-CNR/PIN would align to the specifications available at the date of AR-2 (held in Frascati on july 15-16th, 2009). IMAA-CNR/PIN was asked to edit the EO EP and put all HMA specific issues in an annex, what resulted in a draft version of the EO EP (july 11th, 2009), to become version 0.2.5 (august 3rd, 2009).

Given the HMA-T project constraints, it was also agreed that the ETS's may be jointly developed by the HMA-T partners in charge, preserving the respective authorship. To this end, an instance of an SVN and a reference TEAM Engine were set up, along with appropriate policies for their coordinate use.

Hence, at the date of the AR-2, the status of the specification was the following:

- the EO EP was at version 0.2.4 (may 27th, 2009); a draft version 0.2.5 was also available;
- the CIM EP was at version 0.1.10 (june 2nd, 2009); this specification had major flaws and needed a "complete cleaning", resulting in version 0.1.11 (july 14th, 2009), that also has problems (resolution is ongoing).

At present, the HMA-T project baseline includes EO EP version 0.2.4 and CIM EP version 0.1.10. EO EP version 0.2.5 has been submitted to OGC for standardization. CIM EP version 0.1.11 could not be submitted due to objections by SWG members. Yet a new revision of the specification is expected for the beginning of december.

Given the above, and since the attempted coordinated development proved to be scarcely beneficial to the work, IMAA-CNR/PIN preferred to branch out its own implementation of the ETS's for the EO and the CIM EP, as follows:

- The EO EP ETS targets the final version 0.2.5 of the EO EP specification and is fully implemented.
- The CIM EP ETS targets the last stable version 0.1.9 of the CIM EP. and is fully implemented, as allowed by the status of the specification.

### 3.1 Acceptance tests

1. Deploy the IMAA CTL scripts codebase onto the HMA-T reference TEAM Engine (via the provided update feature).
2. Run the ETS's against the HMA-demo GI-cat server instances (EO and CIM) and verify that they succeed as expected, in conformance with the related sessions of the Acceptance Test Report (HMAT-ATR-0001-CNR).
3. Run the ETS's against the HMA-demo-wrong GI-cat server instance (containing predefined uncorrect control data) and verify that they fail as expected, in conformance with the related session of the Acceptance Test Report (HMAT-ATR-

0001-CNR).

## 4 Implementation of a RI of the EO and the CIM EP onto GI-cat

This activity led to the implementation of the EO and CIM EP onto the IMAA-CNR/PIN catalog solution (GI-cat), in particular complying with the respective ETS's and with the ebRIM AP ETS, being developed within the HMA-T project.

Compliance with the recently released ETS for OGC CSW 2.0.2 specification was also assessed.

Moreover, the activity included support to implement interoperability with the Spacebel catalog client.

### 4.1 Acceptance tests

1. Deploy the fresh installations of GI-cat (EO and CIM).
2. Browse and query the freshly installed GI-cat instances (EO and CIM) by means of the GI-go catalog client.
3. Run the ETS's against the freshly installed GI-cat instance and verify that they succeed as expected, in conformance with the related session of the Acceptance Test Report (HMAT-ATR-0001-CNR).

## 5 Artifact documentation, according to the ESA documentation requirements

The performed activities have been documented according to ESA Software Validation Specification (SVS) Document Requirements Definitions (DRD), with the exception of the documentation of GI-cat, that was allowed in a format of choice by IMAA-CNR/PIN.

### 5.1 Acceptance tests

1. Verify the delivery of the EO and CIM EO Test design documents (ATS in OGC terminology) and their conformance to the DRD (implied by the acceptance tests in section 2.1).
2. Verify the delivery of the EO and CIM Test cases documents (respectively HMAT-SVTS-0001-CNR and HMAT-SVTS-0002-CNR) and their conformance to the DRD.
3. Verify the delivery of the EO and CIM EO Test procedures documents (ETS Documentation in OGC terminology; respectively HMAT-SVTS-0003-CNR and HMAT-SVTS-0004-CNR) and their conformance to the DRD.
4. Verify the delivery of the EO and CIM EO Test scripts (ETS/CTL in OGC terminology) and their conformance to the DRD (implied by the acceptance tests in section 3.1).
5. Verify the delivery of the Acceptance Test Report (ATR; HMAT-ATR-0001-CNR) and its conformance to the DRD.
6. Verify the delivery of GI-cat documentation (HMAT-TS-0003-CNR).

## 6 Additional Activities

IMAA-CNR/PIN performed the following collateral activities, considered useful to the assigned tasks:

- Definition of best practices for improved ETS documentation and implementation of functionalities for extracting and formatting it (contributed to the CITE TEAM Engine codebase).
- Improved readability of the test logs and implementation of appropriate log consolidation functionalities in the TEAM Engine Manager (contributed to the CITE TEAM Engine codebase).
- Contributions to the definition of a shared SVN policy for coordinating the joint development efforts.
- Contributions to the definition of the test documentation requirements for the HMA-FO and HMA-T Phase 2 project (Annex L of ECSS-E-ST-40C, march 6th, 2009).
- Contributions and co-editing of the EO EP specification (06-131r6).
- Contributions and bug reports on the CSW 2.0.2 ETS (reported to the CITE TEAM Engine mailing list).