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HMA-T G-POD Web Service

Acceptance Test Report

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Table of Contents

1	Introduction	1
1.1	Purpose of the Document	1
1.2	Objective.....	1
1.3	Content Overview	1
2	Applicable and Reference Documents.....	2
2.1	Applicable Documents	2
2.2	Reference Documents	2
3	Terms, Definitions and Abbreviated Terms.....	3
3.1	Definition of Terms	3
3.2	Abbreviated Terms	3
4	Test Results	4
4.1	Installation and Compatibility Test	4
4.2	Basic Functionality Tests.....	6
4.3	System Failure and Performance Tests	11
4.4	Task Management Tests	13

1 Introduction

1.1 Purpose of the Document

This document contains the HMA-T/G-POD Web Service verification and validation test results. The tests were performed during the HMA-T/G-POD Web Service Web Service Acceptance Review.

1.2 Objective

The document is an output of the HMA-T/G-POD Web Service Acceptance Review.

1.3 Content Overview

Section 1

This section.

Section 2

This section gives the list of all documents applicable to this document and the list of the project document used as reference.

Section 3

This section lists all abbreviation and terms used throughout the document.

Section 4

This section provide the HMA-T/G-POD Web Service Web Service test results

2 Applicable and Reference Documents

2.1 Applicable Documents

[ECSS-E40-1B]	Space Engineering Software Standards	ECSS-E-40 Part 1B	28-11-2003
[ECSS-E40-2B]	Space Engineering Software Standards	ECSS-E-40 Part 2B	31-03-2005
[ECSS-Q80B]	Product Assurance – Software Product Assurance	ECSS-Q-80B	10-10-2003

2.2 Reference Documents

[R1]	SoW For HMA Testbed HMA-T Phase 2	SPB-HMA-T-SOW-002	31-01-2008
[R2]	OGC 07-118 User Management Services For Earth Observation	07-118r1 User Management Interfaces for Earth Observation 0.0.2	23-04-2008
[R3]	HMA-T G-POD Job Submission Interface Control Document	T2-ESA-HMAT-ID-09-027 HMA-T G-POD Job Submission Interface Control Document [1.0]	06-07-2009
[R4]	HMA-T/G-POD Gateway System Requirements	T2-ESA-HMAT-RS-08-022	TBD
[R5]	HMA-T/G-POD Gateway System Architecture	T2-ESA-HMAT-DD-08-023	TBD
[R6]	ISO 19105:2000, "Geographic information – Conformance and testing"	N/A	N/A
[R7]	IGN - HMA-T Phase 2 Testing Policy	HMAT-TN-0001-IGN	

3 Terms, Definitions and Abbreviated Terms

3.1 Definition of Terms

EOG-Catalogue	Earth Observation G-POD catalogue
FAIRE	Intended as FAIRE G-POD Service
G-POD	Grid Processing on-Demand system and infrastructure
MySQL	MySQL Database engine
SVN	SubVersion (version control system)

3.2 Abbreviated Terms

ASAR	Advanced Synthetic Aperture Radar
ASP	Active Server Page
ATS	Abstract Test Suite
CE	Computing Element
ESA	European Space Agency
ETS	Executable Test Suite
HGWS	HMA-T/G-POD Web Service
H/W	Hardware
LGE	Light GRID Engine
S/W	Software
SPR	Software Problem Report
TBD	To Be Determined
TC	Test Case

4 Test Results

4.1 Installation and Compatibility Test

ID:	HGWS-GAT-TC-01
Purpose:	Verify that the HMA-T/G-POD web service is deployed correctly in the required environment. Covered requirements: <ul style="list-style-type: none"> • HGG-REQ-19 • HGG-REQ-20
Environmental Needs:	RDC connection to machine hosting the HGWS
Tested Items:	HMA-T/G-POD web service (deployment)
Inputs Specification:	N/A
Outputs Specification:	N/A
Test Pass/Fail Criteria:	Passed if: <ul style="list-style-type: none"> • The Internet Information Services is running with the correct version (6.0). • The necessary files for the HGWS are deployed in the directory managed by the web server. Failed otherwise
Detailed Procedure:	Logon on the Terradue Windows 2003 machine hosting the HGWS as an administrator. Run the Internet Information Services (IIS) Manager and check the Version in the main panel of the tree view's root entry. It should read "IIS V6.0". Check the entries under <i>G-POD Development Portal</i> and below the virtual directory entry ws. Check the contents of the physical directory to which the virtual directory is pointing – the directory should contain (among others) the following files: <ul style="list-style-type: none"> • hma.asmx • bin\MySQL.Data.dll • bin\Terradue.Ifz.Portal.Saml.dll (or bin\Terradue.Ifz.Portal.All.dll) The folder ..\conf\ should contain the configuration file hma.ini.
Passed:	
Failed:	
Comments:	
Related SPRs:	

ID:	HGWS-GAT-TC-02
Purpose:	<p>Verify that the web service complies with the basic SOAP web service standards and with the specific requirements for the HMA-T/G-POD web service.</p> <p>Covered requirements:</p> <ul style="list-style-type: none"> • HGG-REQ-08 • HGG-REQ-10 • HGG-REQ-13 • HGG-REQ-14 • HGG-REQ-15 • HGG-REQ-16 • HGG-REQ-17 • HGG-REQ-18
Environmental Needs:	Web Browser
Tested Items:	HMA-T/G-POD web service (WSDL)
Inputs Specification:	N/A
Outputs Specification:	N/A
Test Pass/Fail Criteria:	<p>Passed if:</p> <ul style="list-style-type: none"> • The web service description complies with the requirements <p>Failed otherwise</p>
Detailed Procedure:	<p>Open the URL http://qpod-dev.terradue.com/ws/hma.asmx (the web service access point) in a web browser. Verify that the web service exposes all methods defined in the ICD [R3].</p> <p>Click on the Service Description link. This displays the WSDL of the web service. Check that all operations have the "document" style assigned and that all definitions for body and header elements have "literal" use.</p> <p>Click on one of the methods, such as <i>SubmitExt</i> to see the SOAP XML details. Verify that the supported message formats for request and response messages includes SOAP 1.2 and foresee the correct allocation of the request and response data within the SOAP body.</p> <p>Note that the position of the authentication token is not specified in the web service definition (HGG-REQ-14). The security (SAML) token can occur at any place within the SOAP envelope.</p>
Passed:	
Failed:	
Comments:	
Related SPRs:	

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4.2 Basic Functionality Tests

ID:	HGWS-GAT-TC-03	
Purpose:	<p>Verify that</p> <ul style="list-style-type: none"> The used SAML assertion has the correct format and attributes With correctly formatted request messages, the HMA-T/G-POD web service performs the requested operation on the G-POD portal and responds with the desired information <p>Covered requirements:</p> <ul style="list-style-type: none"> HGG-REQ-01 HGG-REQ-03 HGG-REQ-13 HGG-REQ-14 HGG-VAL-01 HGG-VAL-02 	
Environmental Needs:	<p>Bash shell on a Linux terminal</p> <p>Web Browser</p>	
Tested Items:	HMA-T/G-POD web service	
Inputs Specification:	<ul style="list-style-type: none"> SubmitExt_1.xml containing a request for a product download with a valid SAML token 	
Outputs Specification:	<ul style="list-style-type: none"> SubmitExt_1_Response.xml containing a valid task token 	
Test Pass/Fail Criteria:	<p>Passed if:</p> <ul style="list-style-type: none"> After sending the test request a new user and a new task have been created on the G-POD portal <p>Failed otherwise</p>	
Detailed Procedure:	G-POD web portal	<p>Login as an administrator.</p> <p>Make sure that no user named <i>SamITokenUser</i> exists (check and delete, if necessary, in the [Control Panel]).</p>
	Client host	<p>Run the command:</p> <pre>cd <TESTROOT>/HGWS-GAT-TC-03</pre> <p>Check the contents of the file SubmitExtRequest_1.xml: The file contains an encrypted SAML assertion and a SubmitExt element with in the message body.</p> <p>Run the command:</p> <pre>sh run.sh</pre> <p>This script sends a SOAP request for a task submission to the HGWS. Wait for the conclusion of the script. Check that the output contains a valid task token.</p>
	G-POD web portal	<p>In the [Control Panel], check that now a user <i>SamITokenUser</i> exists.</p> <p>Check the user information and privileges: The user should have 500 resources and should be assigned to the HMA-Test user group.</p> <p>Impersonate the user <i>SamITokenUser</i>.</p> <p>Check in [My Folder] that a task has been created.</p>

	Click [Exit] to return from the impersonation mode. Logout from the G-POD portal.
Passed:	
Failed:	
Comments:	
Related SPRs:	

ID:	HGWS-GAT-TC-04
Purpose:	<p>Verify that</p> <ul style="list-style-type: none"> • Operations are logged in the defined log file • Requests are rejected with an appropriate error message if they <ul style="list-style-type: none"> - Contain incorrect parameters, - Use incorrect service configurations, - Do not contain authentication data where required, or - Contain invalid authentication data • For errors not depending on the client, e-mail alerts are sent to the administrator <p>Covered requirements:</p> <ul style="list-style-type: none"> • HGG-REQ-04 • HGG-REQ-05 • HGG-REQ-06 • HGG-REQ-07 • HGG-REQ-24 • HGG-REQ-26 • HGG-ATS-04 • HGG-ATS-05 • HGG-ATS-06 • HGG-ATS-07 • HGG-ATS-08
Environmental Needs:	<p>Bash shell on a Linux terminal</p> <p>Web Browser</p> <p>E-mail account and client</p>
Tested Items:	HMA-T/G-POD web service
Inputs Specification:	<p>XML test request files (files 1 – 8 include valid SAML security tokens). Note: the term <i>service configuration</i> used here refers to the request <i>ServiceName</i> parameter in order to not create confusion with actual G-POD service names (a G-POD service can be used by several HGWS service configurations).</p> <ul style="list-style-type: none"> • SubmitExt_1.xml – contains an empty request.

	<ul style="list-style-type: none"> • SubmitExt_2.xml – contains a request with empty service configuration name • SubmitExt_3.xml – contains a non-existing service configuration name. • SubmitExt_4.xml – contains a request with a task type referring to an unavailable order service. • SubmitExt_5.xml – contains a request using a task type for which no G-POD service is defined. • SubmitExt_6.xml – contains a request using a task type for which a non-existing G-POD service is defined. • SubmitExt_7.xml – contains a request service for which no Computing Element is defined. • SubmitExt_8.xml – contains a request using a task type for which a non-existing Computing Element is defined. • SubmitExt_9.xml – contains a request with no SAML token • SubmitExt_10.xml – contains a request with a signed but unencrypted SAML token • SubmitExt_11.xml – contains a request with an encrypted but unsigned SAML token • SubmitExt_12.xml – contains a request with an invalid signature • SubmitExt_13.xml – contains a request with a valid but untrusted signature • SubmitExt_14.xml – contains a request with an expired SAML token
<p>Outputs Specification:</p>	<p>The test generates 11 SubmitExtResponse XML files:</p> <ul style="list-style-type: none"> • SubmitExtResponse_1.xml with the error message (400) Bad Request • SubmitExtResponse_2.xml with the error message No service configuration name provided • SubmitExtResponse_3.xml with the error message Service configuration "NOT_DEFINED" is not defined • SubmitExtResponse_4.xml with the error message Service configuration "NOT_AVAILABLE" is temporarily not available • SubmitExtResponse_5.xml with the error message Service configuration "NO_SERVICE" does not refer to a G-POD service • SubmitExtResponse_6.xml with the error message G-POD service "INVALID_SERVICE" does not exist • SubmitExtResponse_7.xml with the error message No Computing Element is defined for service configuration "NO_CE" • SubmitExtResponse_8.xml with the error message G-POD Computing Element "INVALID_CE" does not exist • SubmitExtResponse_9.xml with the error message No authentication data found in request • SubmitExtResponse_10.xml with the error message No encrypted information found in message • SubmitExtResponse_11.xml with the error message No signature found in message • SubmitExtResponse_12.xml with the error message Could not verify signature • SubmitExtResponse_13.xml with the error message Could not verify signature

	<ul style="list-style-type: none"> SubmitExtResponse_14.xml with the error message The security token has expired on 2009-07-01 00:00:00 (UTC) <p>For the errors of the requests 3, 5, 6, 7 and 8, which indicate erroneous configurations of the HMA-T/G-POD web service, e-mails are sent automatically to the administrator notifying the error, the log entry and the original request.</p> <p>Since all requests fail, no tasks are created on G-POD.</p>	
Test Pass/Fail Criteria:	<p>Passed if:</p> <ul style="list-style-type: none"> All error messages are reported correctly All 5 e-mails are sent to the administrator <p>Failed otherwise</p>	
Detailed Procedure:	HGWS web service host	<p>Open the web service configuration file hma.ini for editing.</p> <p>In the [ErrorMail] section, change the key To to the address of an e-mail account accessible by you.</p>
	Client host	<p>Run the commands:</p> <pre>cd <TESTROOT>/HGWS-GAT-TC-04 sh run.sh</pre> <p>This script sends a SOAP request for a task submission to the HGWS. Wait for the submission of all tasks and the conclusion of the script. Check that the output contains the error messages described in the output specification.</p>
	G-POD web portal	<p>Check the log file <a href="http://gpod-dev.terradue.com/ws/testlog/<date>.hma.log">http://gpod-dev.terradue.com/ws/testlog/<date>.hma.log (<date> is in the format "yyyymmdd")</p> <p>Verify that the log file contains details and error messages of the above requests (except the first).</p>
	E-mail client	<p>Download the latest e-mails of the account defined at the beginning of the test procedure.</p> <p>Check that the 5 emails have arrived and contain the error message, the log entry and the SOAP request each.</p>

Passed:	
Failed:	
Comments:	
Related SPRs:	

ID:	HGWS-GAT-TC-05
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<p>Purpose:</p>	<p>Verify that the default user settings in the configuration file update also the permissions of existing users at a new submission request and that group permissions also apply for users connecting via the HMA-T/G-POD web service.</p> <p>Covered requirements:</p> <ul style="list-style-type: none"> • HGG-ATS-09 • HGG-ATS-10 	
<p>Environmental Needs:</p>	<p>RDC connection to machine hosting the HGWS Bash shell on a Linux terminal Web Browser</p>	
<p>Tested Items:</p>	<p>HMA-T/G-POD web service</p>	
<p>Inputs Specification:</p>	<ul style="list-style-type: none"> • SubmitExt_1.xml containing a request for a "FAIRE 2.0" task submission with a valid SAML token 	
<p>Outputs Specification:</p>	<ul style="list-style-type: none"> • SubmitExt_1_Response.xml containing a valid task token 	
<p>Test Pass/Fail Criteria:</p>	<p>Passed if:</p> <ul style="list-style-type: none"> • The first and second run fail with the error messages described in the detailed procedure • The third run successfully submits the task <p>Failed otherwise</p>	
<p>Detailed Procedure:</p>	<p>HGWS web service host</p>	<p>Open the web service configuration file hma.ini for editing.</p> <p>In the [Global] section, set the existing keys to the following values:</p> <pre>DefaultUserResources = 300 DefaultUserGroups = HMA-Test, Cloud Computing</pre>
	<p>Client host</p>	<p>Run the command:</p> <pre>cd <TESTROOT>/HGWS-GAT-TC-05 sh run.sh</pre> <p>You should receive the following error message:</p> <pre>Could not create task: No permission to run service "FAIRE2" for user saml.token.user@terradue.com</pre>
	<p>G-POD web portal</p>	<p>In the [Control Panel], check the user information and privileges of the user <i>Sam/TokenUser</i>.</p> <p>The user should now have 300 resources and should be assigned to the HMA-Test and Cloud Computing user groups, as defined before in the configuration file.</p> <p>Still in the [Control Panel], edit the user group HMA-Test.</p> <p>In the group's [Services] Section, check the service FAIRE 2.0.</p> <p>Click [Submit].</p>
	<p>Client host</p>	<p>Run again the command</p> <pre>sh run.sh</pre> <p>You should receive the following error message:</p> <pre>Could not create task: Your current permissions don't allow you to use the necessary datasets for this service. Please try again later or contact Administrator if this situation persists.</pre>

	G-POD web portal	In the [Control Panel], edit again the user group HMA-Test. In the group's [Dataset] section, check all Envisat ASAR datasets. Click [Submit].
	Client host	Run again the command <code>sh run.sh</code> Now the task submission should be successful and the stdout should show a task token.
	G-POD web portal	In the [Control Panel], edit again the user group HMA-Test. In the group's [Services] Section, uncheck the service FAIRE 2.0. In the group's [Dataset] section, uncheck all Envisat ASAR datasets. Click [Submit].
	HGWS web service host	Reopen the web service configuration file hma.ini for editing. In the [Global] section, restore the previous values: <code>DefaultUserResources = 500</code> <code>DefaultUserGroups = HMA-Test</code>

Passed:	
Failed:	
Comments:	
Related SPRs:	

4.3 System Failure and Performance Tests

ID:	HGWS-GAT-TC-06
Purpose:	Verify that the web service recovers without further user intervention after a system failure. Covered requirements: <ul style="list-style-type: none"> • HGG-REQ-22
Environmental Needs:	RDC connection to machine hosting the HGWS Bash shell on a Linux terminal
Tested Items:	HMA-T/G-POD web service
Inputs Specification:	<ul style="list-style-type: none"> • SubmitExt.xml containing a request for a product download with a valid SAML token
Outputs Specification:	<ul style="list-style-type: none"> • SubmitExt_1_Response.xml containing a valid task token

Test Pass/Fail Criteria:	Passed if: <ul style="list-style-type: none"> The task is submitted at the second run of the script Failed otherwise	
Detailed Procedure:	HGWS web service host	Run the Internet Information Services (IIS) Manager. Select the entry <i>G-POD Development Portal</i> : Click on the [Stop Item] button.
	Client host	Run the commands: <pre>cd <TESTROOT>/HGWS-GAT-TC-06 sh run.sh</pre> Wait for the conclusion of the script (the request will time out).
	HGWS web service host	Restart the Internet Information Services.
	Client host	Run again the command: <pre>sh run.sh</pre> Wait for the conclusion of the script. Check that the output contains a valid task token.

Passed:	
Failed:	
Comments:	
Related SPRs:	

ID:	HGWS-GAT-TC-07
Purpose:	Verify that the web service responds correctly to 20 parallel requests without interference. Covered requirements: <ul style="list-style-type: none"> HGG-REQ-23 HGG-REQ-30 HGG-REQ-33
Environmental Needs:	Bash shell on a Linux terminal
Tested Items:	HMA-T/G-POD web service
Inputs Specification:	<ul style="list-style-type: none"> 20 files SubmitExt_xx.xml containing each a request for a product download with a valid SAML token of a different user (xx stands for numbers of 01 to 20)
Outputs Specification:	<ul style="list-style-type: none"> 20 files SubmitExt_xx.xml (1 for each request file) all containing valid task tokens
Test Pass/Fail	Passed if:

Criteria:	<ul style="list-style-type: none"> All 20 tasks are submitted Failed otherwise	
Detailed Procedure:	Client host	Run the commands: <pre>cd <TESTROOT>/HGWS-GAT-TC-07 sh run.sh</pre> Wait for the conclusion of the script. The script pauses for 60 seconds before displaying the responses, since the simultaneous user creation submission of 20 tasks might require some time on G-POD. Check the stdout of the responses. There must be 20 response messages each of which must contain a task token.

4.4 Task Management Tests

ID:	HGWS-GAT-TC-08	
Purpose:	Verify that the web service allows managing a complete task of the G-POD "Download of EO Products" service, including submission, monitoring and result publication. Covered requirements: <ul style="list-style-type: none"> No specific requirement 	
Environmental Needs:	Bash shell on a Linux terminal	
Tested Items:	HMA-T/G-POD web service	
Inputs Specification:	<ul style="list-style-type: none"> SubmitExt.xml containing a request for a product download with a valid SAML token Status.xml containing a status request template with a valid SAML token Results.xml containing a results request template with a valid SAML token 	
Outputs Specification:	A .tgz file containing the task results	
Test Pass/Fail Criteria:	Passed if: <ul style="list-style-type: none"> The task is submitted and monitored correctly The result file corresponds to the output specification Failed otherwise	
Detailed Procedure:	Client host	Run the commands: <pre>cd <TESTROOT>/HGWS-GAT-TC-08 sh run.sh</pre> Wait for the submission of the task. Check the stdout for the task token. The task status is polled ca. every 60 seconds. Wait for the completion of the task (when the status changes to DONE) At this point the URL of the task result is requested. Below the completion messages in the stdout must be displayed the URL of the .gzip file containing the task result. The file is downloaded automatically, wait for the download completion.

	Check the contents of the downloaded file.
Passed:	
Failed:	
Comments:	
Related SPRs:	

ID:	HGWS-GAT-TC-09	
Purpose:	Verify that the web service allows managing a complete task of the G-POD "MGVI Regional" service, including submission, monitoring and result publication. Covered requirements: <ul style="list-style-type: none"> No specific requirement 	
Environmental Needs:	Bash shell on a Linux terminal	
Tested Items:	HMA-T/G-POD web service	
Inputs Specification:	<ul style="list-style-type: none"> SubmitExt.xml containing a request for the G-POD "MGVI Regional" service with a valid SAML token Status.xml containing a status request template with a valid SAML token Results.xml containing a results request template with a valid SAML token 	
Outputs Specification:	A .tgz file containing the task results	
Test Pass/Fail Criteria:	Passed if: <ul style="list-style-type: none"> The task is submitted and monitored correctly The result file corresponds to the output specification Failed otherwise	
Detailed Procedure:	Client host	Run the commands: <pre>cd <TESTROOT>/HGWS-GAT-TC-09 sh run.sh</pre> Wait for the submission of the task. Check the stdout for the task token. The task status is polled ca. every 60 seconds. Wait for the completion of the task (when the status changes to DONE) At this point the URL of the task result is requested. Below the completion messages in the stdout must be displayed the URL of the .gzip file containing the task result. Download the result file from that URL and check its



		contents.
Passed:		
Failed:		
Comments:		
Related SPRs:		