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Main Authors: Dimitrios Karachalios (PKH).



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Abstract	The STQP describes the Test procedures for the EODHaM system.
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Signatures

Written by	Responsibility- Company	Date	Signature
Dimitrios Karachalios	Development (PKH)	28/06/2013	
Verified by			
Jens Stutte	WP 3 Leader (PKI)	01/07/2013	
Jordi Inglada	WP5 Participant (UPS)	05/07/2013	
Approved by			
Palma Blonda	Project Coordinator, CNR	05/07/2013	
Fifamè Koudogbo	Quality Team, AI	05/07/2013	

Table of Contents

1.	Scope of the SQTP document	5
1.1.	Prerequisites of BIO_SOS Processor Module Wrapper	5
1.2.	Prerequisites of EODHaM Business Process Management.....	5
1.3.	Prerequisites of EODHaM Metadata Catalogue	5
1.4.	Prerequisites of EODHaM BIO_SOS FTP Repository	6
2.	Test Procedure of Business Process Composition and Deployment	7
3.	Test Procedure of Business Process Execution.....	11
4.	Test Procedure of Wrapper BIO_SOS Processor Module.....	12
5.	Test Procedure for interaction of EODHaM system with Metadata Catalogue.....	13
6.	Test Procedure for interaction of EODHaM system with the BIO_SOS FTP Repository.....	14
7.	References	15
8.	Appendix I. Acronym and Abbreviation List.....	17

1. Scope of the SQTP document

This document describes detailed instructions for the execution and evaluation of results for a given BIO_SOS Business Process of Processing chain activities. In that test are described all the steps that specifying the sequence of actions and results during the execution of Business Process in the EODHaM system.

1.1. Prerequisites of BIO_SOS Processor Module Wrapper

A set of conditions have to be satisfied before the execution of the EODHaM Business Process execution. For the building block of the integrated BIO_SOS Processor with the Wrapper Module the following conditions must be true.

- The BIO_SOS Processor is integrated and configured successfully with the Wrapper Module.
- Tomcat is up and run, and the Wrapper Module is successfully deployed.
- Tomcat publishes the end point of the Wrapper BIO_SOS Processor web service.
- The endpoint of the BIO_SOS Processor web service is reachable by the internet.

1.2. Prerequisites of EODHaM Business Process Management

A set of conditions have to be satisfied before the execution of the EODHaM Business Process execution. For the building block of the EODHaM Business Process Management based on the jBPM the following conditions must be true.

- The incorporated H2 database of the jBPM is up and run successfully.
- The JBOSS AS is up and run successfully.
- The EODHaM JBPM management console is reachable to the <http://biosos.planetek.it/jbpm-console> link.
- The EODHaM JBPM Guvnor Repository console is reachable to the <http://biosos.planetek.it/drools-guvnor> link.
- The EODHaM BPM administrator in the role of EODHaM Business Process Manager can successfully make an authenticated log in to the consoles.
- The Eclipse JBPM BPMN2 tooling (or other qualified BPMN2 editor) is installed and can communicate with the JBPM. The EODHaM Business Process Manager can use the tool to create or modify a Business Process BPMN workflow.

1.3. Prerequisites of EODHaM Metadata Catalogue

A set of conditions have to be satisfied before the execution of the EODHaM Business Process execution. For the building block of the Metadata Catalogue the following conditions must be true.

- The BIO_SOS Metadata Catalogue web service is up and run successfully.
- The system communication between the Wrapper BIO_SOS Processor Module and the BIO_SOS Metadata Catalogue is established, using the exposed system communication interface of the Metadata Catalogue.

- The Metadata Catalogue can receive Metadata with the established communication Interface with the different Wrapper BIO_SOS Processors that are participating to the executed Business Process Processing chain.
- The Metadata Catalogue can store the received Metadata.

1.4. Prerequisites of EODHaM BIO_SOS FTP Repository

A set of conditions have to be satisfied before the execution of the EODHaM Business Process execution. For the building block of the BIO_SOS FTP Repository the following conditions must be true.

- The FTP Repository is up and run successfully.
- The upload and the download tasks are well executed.

2. Test Procedure of Business Process Composition and Deployment

The Business Process Manager has to access the Eclipse tooling with the Eclipse Modeler plug-in installed on it.

- Under File -> select New -> Other -> JBPM Process Diagram

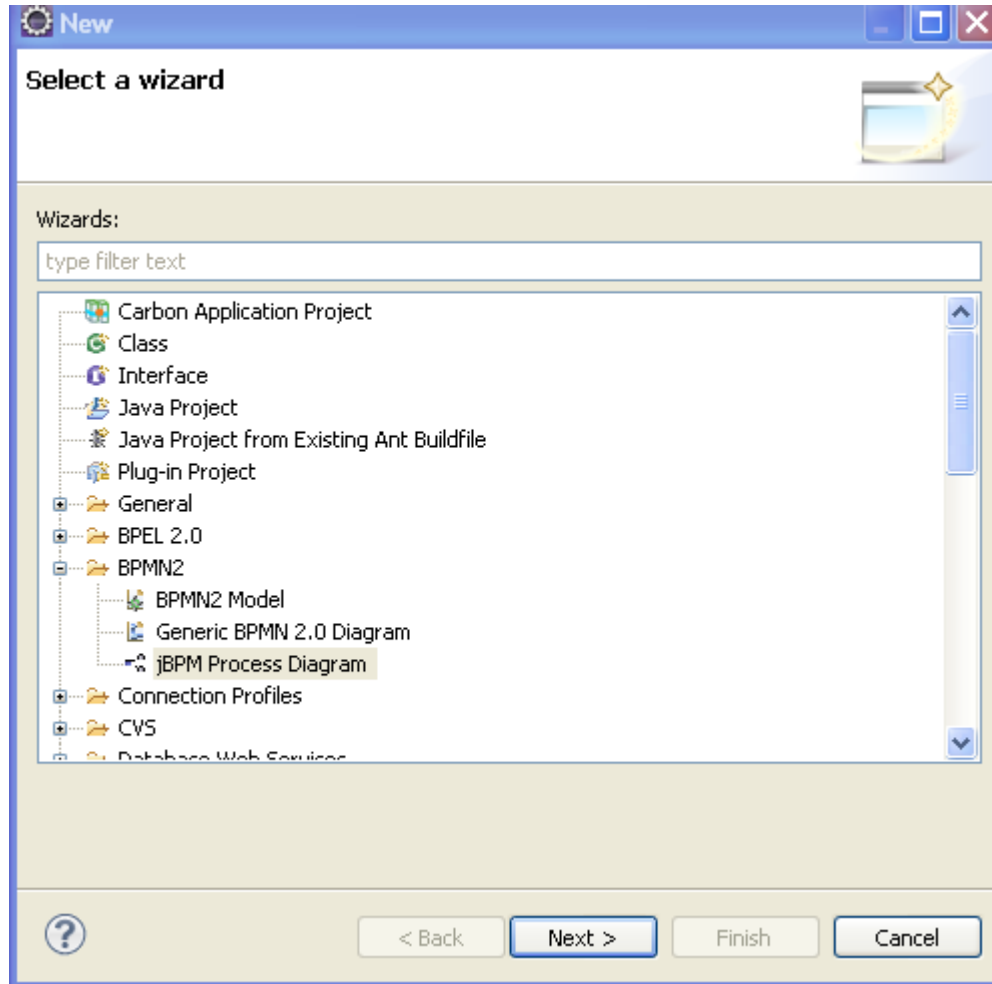


Figure 1 – New JBPM Process Diagram

A Process Diagram describes a sequence or flow of Activities in an organization with the objective of carrying out work. A Process is depicted as a graph of Flow Elements, which are a set of Activities, Events, Gateways, and Sequence Flows that define finite execution semantics. Processes can be defined at any level from enterprise-wide Processes to Processes performed by a single person. Low-level Processes can be grouped together to achieve a common business goal.

Using the available tools, the Business Process Manager defines the BIO_SOS Processing Chain BPMN2 diagram as shown on the next Figure.

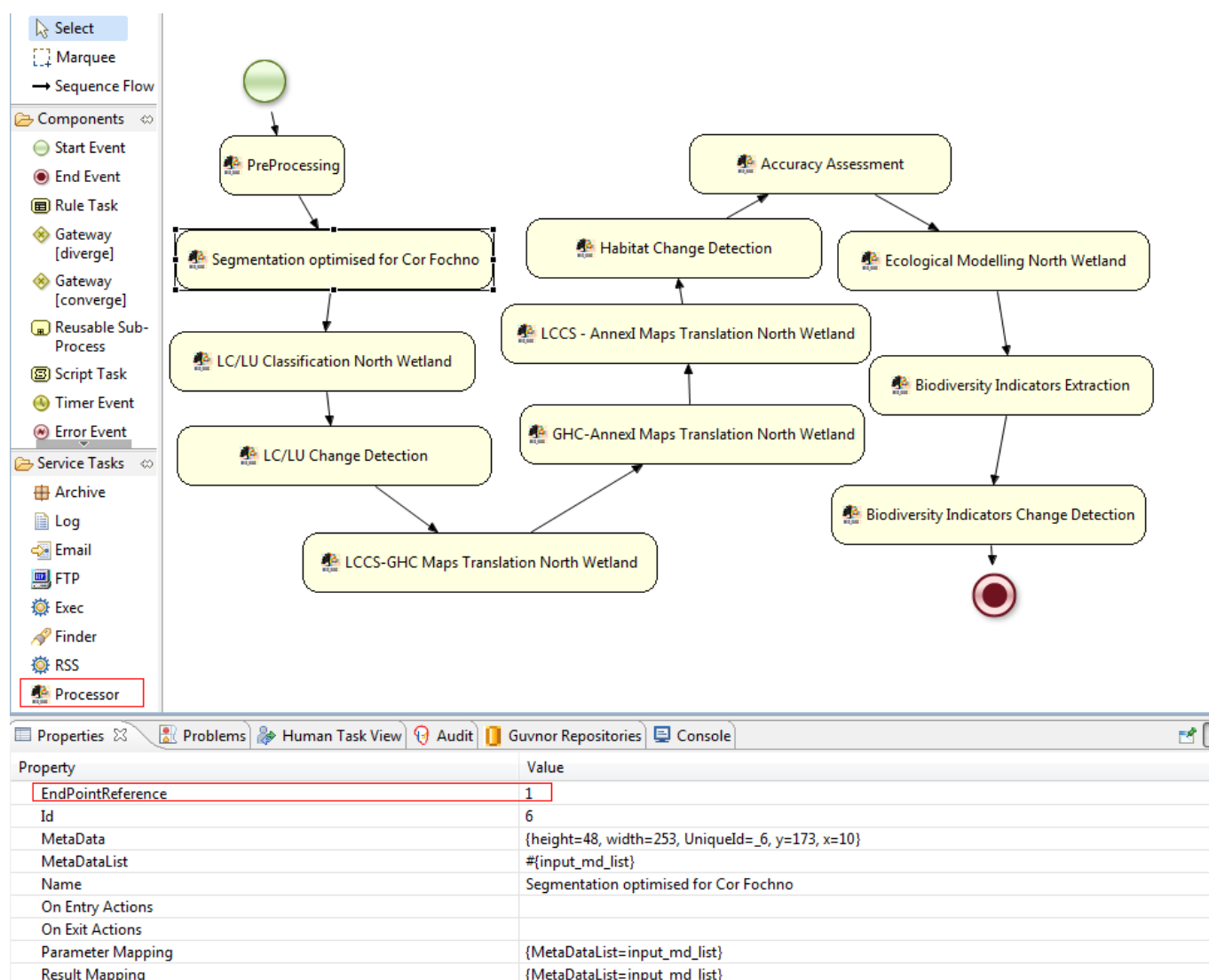


Figure 2 – BIO_SOS JBPM Business Process diagram

Note to take in consideration during development of the process flow:

The custom service task development for BIO_SOS that invokes a Processor has to be configured with a parameter for the value of the EndPointReference property.

The value of this parameter is numeric. The application resolves that value in one configuration file, the biosos_endpoint.conf

For example:

Value of 0: is the EndPointReference that corresponds to
biosos-processor.planetek.it/biosos/preprocessing

Value of 1: is the EndPointReference that corresponds to
Biosos-processor.planetek.it/biosos/derivedem and so on.

After the development and definition of the BPMN2 jBPM diagram that correspond to a specific Processing chain of BIO_SOS activities specific for each BIO_SOS site, deploy the BPMN Process to the Guvnor Repository using the corresponding tool available from eclipse as shown to the next Figure.

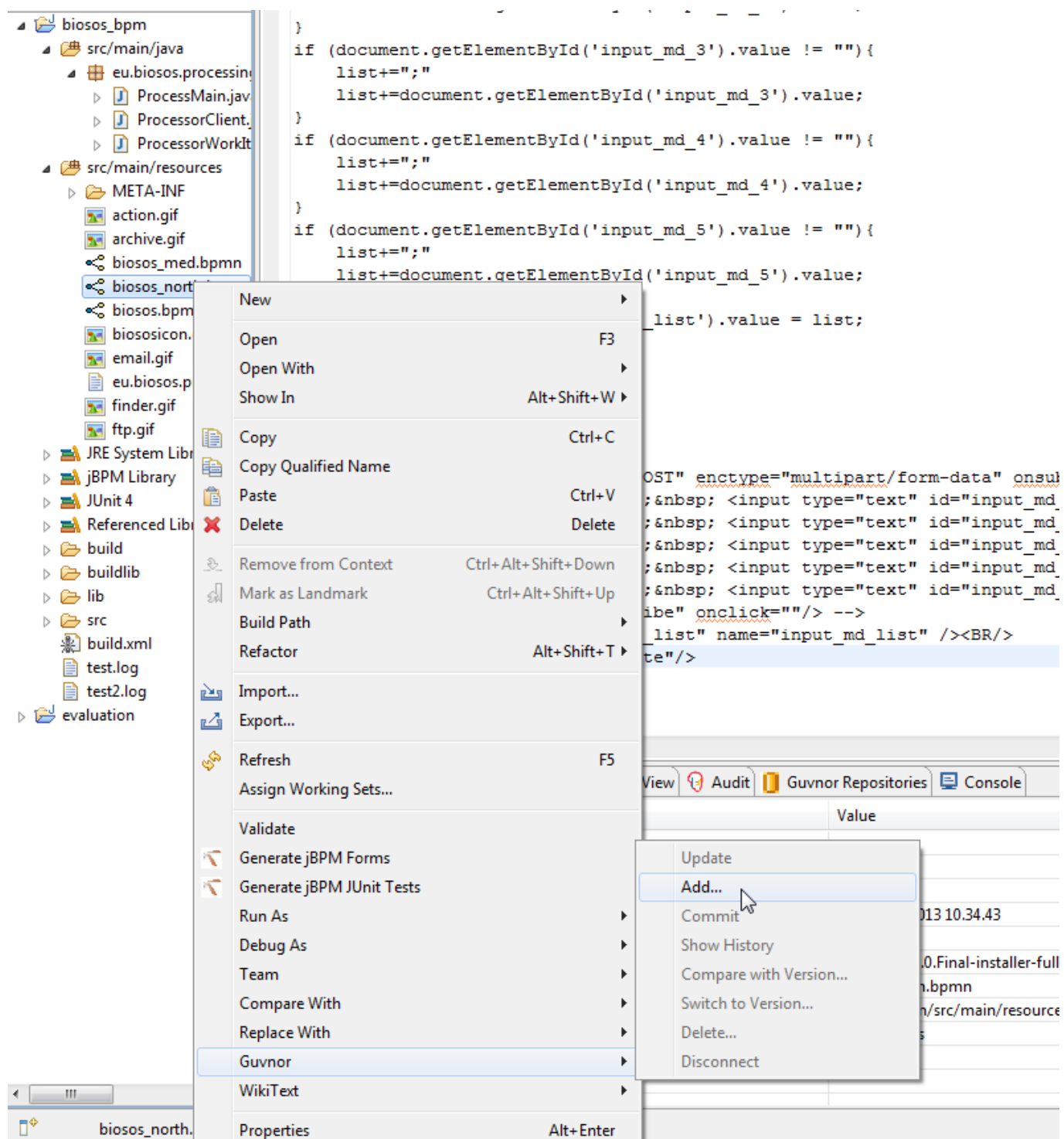


Figure 3 – Add the Process to the Guvnor Knowledge Repository

The next step for the Business Process Manager is to access the Guvnor Repository and control that the Business Process is stored successfully.

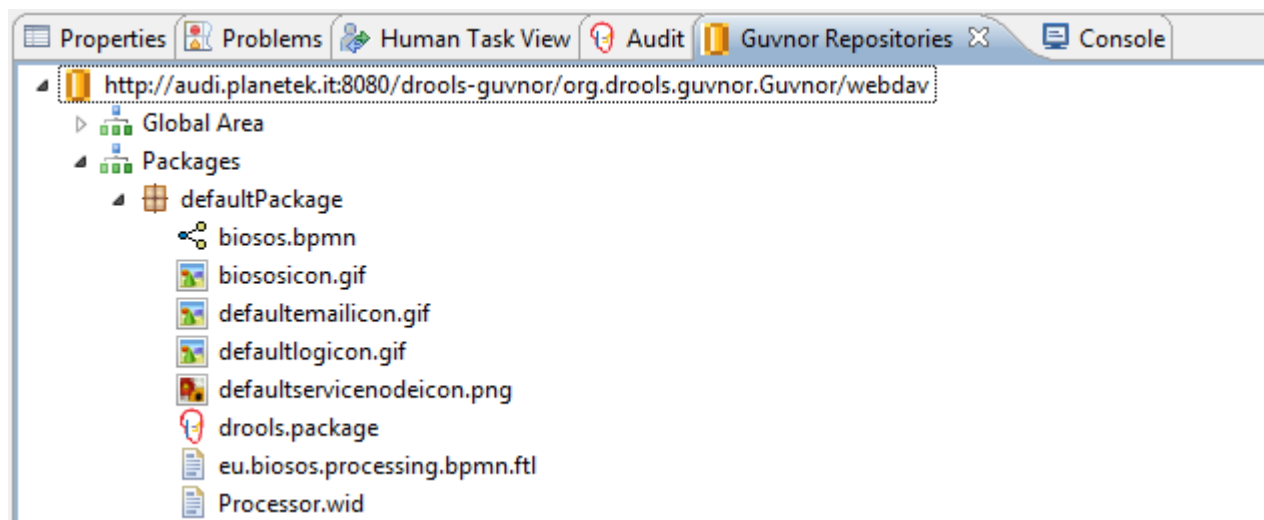


Figure 4 – Guvnor Repository

The Business Process Manager has to control that the deployment was made successfully. With that action that test procedure is considered completed.

3. Test Procedure of Business Process Execution

For the execution of the BIO_SOS Business Process, the Business Process Manager has to make an authenticated log in to the JBPM management console.

From the Processes List, confirm that appears the previous Business Process deployed to the Guvnor Repository and then select to Start a new execution of the selected Process.

The screenshot shows the JBPM console interface for creating a new process instance. On the left, there is a sidebar with 'Tasks' and 'Processes' tabs, and a 'Process Overview' link. The main area is titled 'New Process Instance: eu.biosos.processing.bpmn' and 'Processing Chain'. Below the title, there are five input fields for metadata, each labeled 'metadata for [1st/2nd/3rd/4th/5th] input file:'. At the bottom, there are two buttons: 'Describe' and 'Execute'.

Figure 5 – Execution of Processing Chain -

During Business Process execution, the Business Process Manager can have a real time monitoring report, using the tools offered by the jBPM console.

To see the status of the executed Process, the BP manager has to access the Process Overview list. The status of the executed Process must have the indication “RUNNING” .

Detailed information about the active step of the Processing chain of the Process Instance Activity can be obtained, by clicking the Diagram button.

In that point of the Process, each participating BIO_SOS Processor is invoked by the Process through the Wrapper Module.

The process continues the sequence actions and that test procedure is considered successful when the Business Process is completed successfully.

4. Test Procedure of Wrapper BIO_SOS Processor Module.

During the Business Process execution a parallel test procedure has to be made for the verification of the functionality of the BIO_SOS Processor Module.

The BIO_SOS Processor Module is invoked by the JBPM Process.

It is expected two different messages that activate two different operations.

If the message is of the operation type “describeProcessing “, the BIO_SOS Processor actions are the following:

- Receive the describeProcessing message and extract the path of the metadata files.
- Download the referred metadata files from the FTP Repository.
- Make a simulation using the internal BIO_SOS Processor Module
- Create the metadata output, corresponding to the hypothetical product, which can be produced if input dataset as decrypted on the metadata input files were given to the processor for processing elaboration.
- Export the metadata result file and upload it, on the Metadata Catalogue.
- Upload the metadata file result to the appropriate folder of the FTP Repository.
- Return the Response to the Business Process as reply to the descriProcessing operation.

If the message is of the operation type “executeProcessing”, the BIO_SOS Processor actions are the following:

- Receive the executeProcessing message and extract the path of the metadata files.
- Download the referred metadata files
- Extract from the metadata, the path location of the input data.
- Download the inputdata from the FTP Repository.
- Make the Processing elaboration using the internal Processor Module and produce the desired BIO_SOS products.
- Export the metadata result file of the products and upload them to the Metadata Catalogue.
- Upload the metadata files corresponding to the products on the appropriate folder of the FTP Repository.
- Upload the BIO_SOS products on the appropriate folder of the FTP Repository.
- Return the Response to the Business Process as reply to the executeProcessing operation.

5. Test Procedure for interaction of EODHaM system with Metadata Catalogue

During the Business Process execution a parallel test procedure has to be made for the verification of the correct interaction between the EODHaM system and the Metadata Catalogue.

The Metadata Catalogue is exposed to the EODHaM system, through a system communication interface. Each Wrapper BIO_SOS Processor Module has to be able to send the necessary metadata to the Metadata Catalogue.

The Metadata Catalogue has to be able to store the metadata that has received from the BIO_SOS Processors Modules.

6. Test Procedure for interaction of EODHaM system with the BIO_SOS FTP Repository

During the Business Process execution a parallel test procedure has to be made for the verification of the functionality of the FTP Repository.

The FTP Repository has to be up and permit the basic expected functionalities

- Authorized access
- Download and Upload operations.

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8. Appendix I. Acronym and Abbreviation List

ADD	Architecture Design Document
API	Application Programming Interface
AIQ	System Assembly Integration and Qualification Plan
BIO_SOS	BIOdiversity multi-SOource monitoring System: from Space TO Species
BPEL	Business Process Execution Language
BPEL4WS	Business Process Execition Language for Web Services
BPM	Business Process Management
BPMN	Business Process Model and Notation
BIO_SOS	Biodiversity Multi-Source Monitoring System: From Space To Species
CEOS	Committee of Earth Observations
CERTH	Informatics And Telematics Institute Of The Centre For Research And Technology – Greece
CIBIO	Research Center in Biodiversity and Genetic Resources (Portugal)
CNR	Consiglio Nazionale delle Ricerche
DN	Digital Number
EO	Earth Observation
EODHaM	EO Data for Habitat Monitoring
EU	European Union
FP7	Seventh Framework Program
FTP	File Transfer Protocol
INSPIRE	Infrastructure for Spatial Information in Europe
ISO	International Organization for Standardization
JBoss	JavaBeans Open Source Software Application Server
JBPM	Jboss Business Process Management Suite
ODE	Orchestration Director Engine
PKH	Planetek Hellas
PKI	Planetek Italia
QA4EO	Quality Assurance Framework for Earth Observation
QAP	Quality Assurance Plan
QI	Quality Indicator
RDS	Relational Database Service
SOA	Service Oriented Architecture
SOAP	Simple Object Access Protocol

SDD	Service Design Document
SLA	Service Level Agreement
UDDI	Universal Description Discovery and Integration
WP	Work Package
WS	Web Service
WSDL	Web Service Description Language
XML	eXtensible Markup Language