

Processing framework & chaining needs and work Plan

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12/05/2016

Issue/Revision: 1.0

Reference: EMSS-EOPG-HO-16-020

Status: Draft

ESA UNCLASSIFIED - For Official Use

- Application Management
- Workflow Definition
- Application execution

- Assumption: An application is packaged in an Application Deployment Package (ADP) which contains:
 - The Application (e.g. container, executable)
 - Deployment information (e.g. CPU, RAM, OS requirements)
 - Execution information (e.g. execution command, input/output data definition)
- Exploitation Platform needs:
 - Application registration within platform registry
 - Application compatibility with platform federation verification
 - Application management (update, remove, ACL setting) by application responsible
 - ADP Export ADP within the federation
 - Application development and packaging on the platform
- Standards/Technical solutions: OASIS CAMP, Atomic App

- Definition: A Workflow is an Application resulting by linking together other applications registered in the platform.
- Exploitation platform needs:
 - Relate the input of an Application with the output of another in order to perform chaining, fork and join of applications
 - Check input/output compatibility based on data types semantic
 - Define conditions on branch execution (e.g. product availability)
 - Workflow description in a standard format
 - Workflow registration within platform registry
 - Application management (update, remove, ACL setting) by workflow responsible
- Standards: WfMC XPD, OASIS BPEL

- Exploitation platform needs:
 - Authorized users Application launch and monitor
 - Event based Application launch
 - Batch and interactive application support
 - Different frameworks support (e.g. stand-alone IPF, Hadoop, HPC)
 - Delegated processing (Launch an application on a federated platform)
 - Workflow execution support
 - Massive input processing support
 - Information and estimates on application resource usage provision
 - Most appropriate execution environment selection (e.g. based on data proximity, performances)
 - Interaction with ICT layer to deploy/release application and needed resources
 - Interaction with Data Access layer for data discovery and access resolution
- Standards: OGC WPS, OASIS TOSCA, OASIS CAMP

Priority	Application management	Workflow definition	Application execution
High	<ul style="list-style-type: none"> ADP definition for basic application Define ADP management API 	<ul style="list-style-type: none"> Basic Workflow definition (chaining, fork, product type based compatibility) 	<ul style="list-style-type: none"> User launched application Batch & interactive application Workflow execution Consumption report Delegated processing
Medium	<ul style="list-style-type: none"> ADP and API enhancement for parallelizable application 	<ul style="list-style-type: none"> Conditional branches and join support 	<ul style="list-style-type: none"> Event based execution Consumption estimation Execution environment selection Massive input processing
Low	<ul style="list-style-type: none"> ADP and API enhancement for specific framework On-platform development 	<ul style="list-style-type: none"> Data semantic based compatibility 	<ul style="list-style-type: none"> Support for different frameworks