

PROTOTYPES FACT SHEET

Editor Name	Damiano Falcioni (BoC)
Submission Date	
Version	1.0
State	Extracted from D4.6-7-8
Confidentially Level	PU



Co-funded by the Horizon 2020
Framework Programme of the European Union

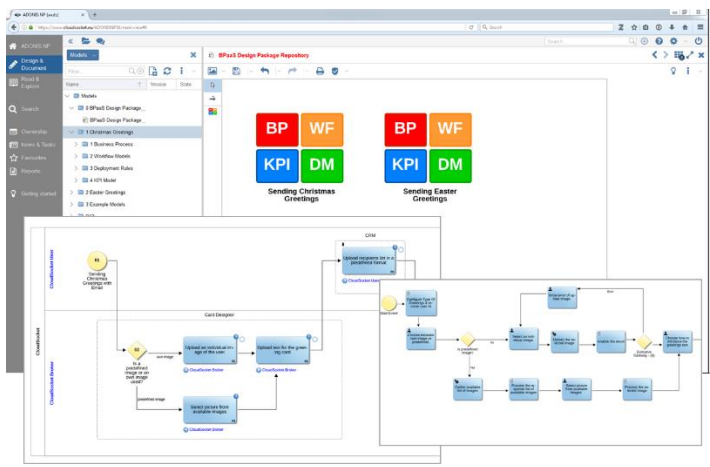
BPaaS Design Environment	
<p>The BPaaS Design Environment has the overall goal to model aspects of a BPaaS by focusing on higher levels of abstraction. This leads to a generation of a BPaaS Design Package which describes an un-allocated BPaaS at the IT/cloud level by including various types of information, such as a domain specific business process model, an executable workflow-model, a decision model and a set of KPIs/requirements mapping to these models. In addition, to enable the re-use of design knowledge as well as the automatic or semi-automatic alignment between business process and workflow models, the BPaaS Design Environment enables the storage, querying and retrieval of all model artifacts generated and their semantic annotation.</p>	
Component	Description
<p>BPaaS Design Tool</p>	<p>The BPaaS Design Tool has been created on the base of a metamodel and provides the possibility to model domain-specific business processes, execution workflows, decision models and key performance indicators.</p>  <p>The screenshot shows a web-based interface for the BPaaS Design Tool. It features a left-hand navigation pane with a tree view of design packages. The main area displays two workflow diagrams: 'Sending Christmas Greetings' and 'Sending Easter Greetings'. Each diagram consists of a sequence of tasks connected by arrows, with decision diamonds. Above the diagrams, there are four colored boxes representing components: BP (Business Process), WF (Workflow), KPI (Key Performance Indicator), and DM (Decision Model). The interface also includes a search bar and various tool icons.</p>
Access	<p>SaaS Deployment: https://www.cloudsocket.eu/BPAASDesigner/ Credentials: available on demand. Experimentation Version Download: https://www.adoxx.org/live/web/cloudsocket-developer-space/downloads</p>
License	Closed source
Manual	https://www.cloudsocket.eu/common-understanding-wiki/-/wiki/Main/Design+Environment+Components
Lead Partner	BOC

Table 1 – Prototype Components of Design Environment

BPaaS Allocation Environment	
<p>The goal of the BPaaS Allocation Environment is to configure allocation directives and rules for an executable workflow model to be deployed and executed in the cloud. An executable workflow model, as produced by the BPaaS Design Environment, does not contain information in terms of which concrete services can be exploited to realise the functionality of the workflow tasks. The respective selection of services per workflow task is supported by the BPaaS Allocation Environment. Similarly, driven by the same set of requirements, the same environment can also be used to address the selection of IaaS offerings to support the deployment and provisioning of (internal) BPaaS software components. Apart from these basic allocation decisions, the BPaaS</p>	

Allocation Environment covers the specification of adaptation rules that drive the adaptation behaviour of a BPaaS as well as the specification of SLAs and marketing meta-data (e.g. pricing) for a certain BPaaS. In the end, the resulting product is a BPaaS bundle that can be published in the Marketplace.

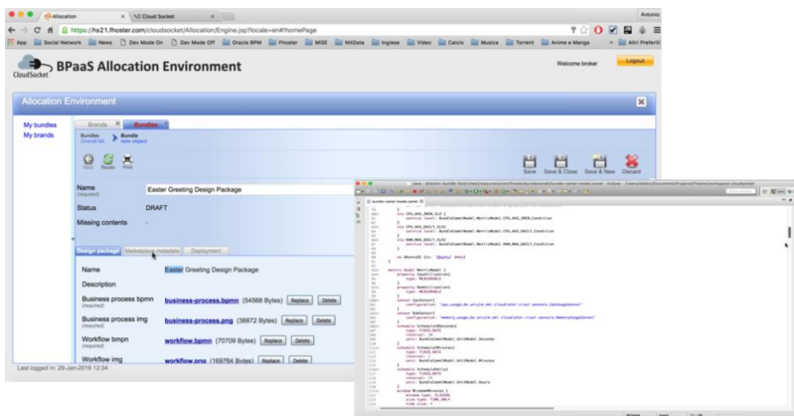
Component	Description
Allocation Tool	<p>It is responsible for selecting a BPaaS Design Package (previously created via the Design Environment) and creating a BPaaS Bundle ready to be published in the Marketplace and deployed in the Execution Environment.</p> 
Access	<p>SaaS Deployment:</p> <p>https://hs21.fhoster.com/cloudsocket/Allocation_demo/Engine.jsp (user credentials on demand through YMENS IdM. Logging as a broker profile will enable the feature to publish the bundle in the Marketplace)</p> <p>https://hs21.fhoster.com/cloudsocket/Allocation_demo/ApplicationResource.jsp?application=Allocation (guest account, using the Allocation Tool as guest you can explore all the functionalities but you cannot publish in the Marketplace)</p> <p>Credentials: available on demand using the YMENS IdM</p>
License	Proprietary
Manual	https://www.cloudsocket.eu/common-understanding-wiki/wiki/Main/Allocation+Environment+Components
Lead Partner	FHOSTER

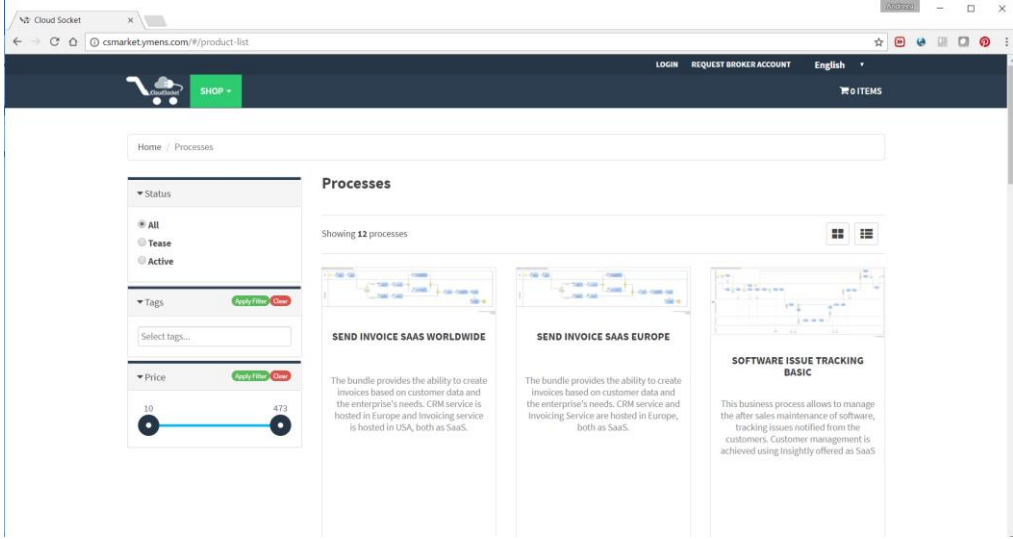
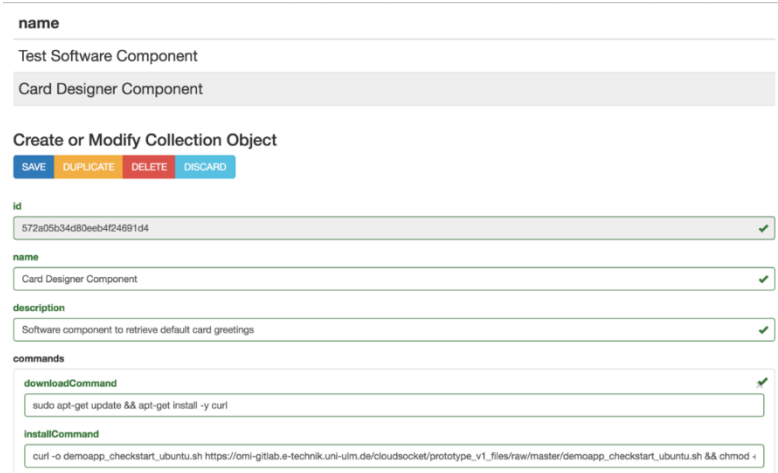
Table 2 - Prototype Components of Allocation Environment

BPaaS Marketplace and Execution Environment


The BPaaS Execution Environment deploys and executes a BPaaS bundle, once this has been purchased by a customer at the BPaaS Marketplace. The BPaaS deployment proceeds according to the deployment plan included in the bundle, along with additional configuration activities taken to enable the proper deployment of the workflow into a workflow engine and of the monitoring infrastructure. Once a BPaaS is successfully deployed, it can be run and managed by the BPaaS Customer. In addition, it is automatically monitored in a cross-layer manner and adapted, when needed, in order to keep up with the SLOs promised in the enclosed SLA of the BPaaS bundle.

BPaaS Marketplace

Component	Description
-----------	-------------

<p>yCONNECT</p>	<p>It is an online frontstore through which customers discover, analyse and purchase BPaaS bundles by also initialising the respective BPaaS deployment in the cloud environment. Therefore, it is responsible for linking the Allocation to the Execution Environment, giving the client the opportunity to buy and configure the BPaaS bundles received from the Allocation and to send the configured bundles to the Execution for provisioning.</p> 
<p>Access</p>	<p>SaaS Deployment: http://csmarket.ymens.com/ Credentials: available on demand.</p>
<p>License</p>	<p>Proprietary</p>
<p>Manual</p>	<p>https://www.cloudsocket.eu/common-understanding-wiki/-/wiki/Main/Marketplace+Component</p>
<p>Lead Partner</p>	<p>YMENS</p>
<p>Repository Manager</p>	<p>It is responsible for managing the information related to different entities such external services, software components, and cloud providers. It is a transversal component allowing the population, browsing and search of this information using standard web technologies.</p> 
<p>Access</p>	<p>SaaS Deployment: http://134.60.64.221/ (user credentials on demand) Download: as docker images</p>

CloudSocket

	<ul style="list-style-type: none">• mongodb: https://hub.docker.com/_/mongo/• restheart: https://hub.docker.com/r/softinstigate/restheart/ <p>Restheart SchemaForm UI: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/restheart-schemaform-ui</p> <p>Registry Client Library: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/registry-client.</p>
License	GNU AGPL v3.0
Manual	https://www.cloudsocket.eu/common-understanding-wiki/wiki/Main/Repository+Manager+Component
Lead Partner	FHOSTER, ATOS
BPaaS Execution Environment	
Component	Description
Workflow Engine	<p>It is responsible for managing the deployment, execution and management of the different workflow instances of a purchased BPaaS workflow at the execution phase.</p> 
Access	<p>http://134.60.64.132/activiti-explorer/ (deployed as part of a bundle)</p> <p>Credentials: available on demand using the YMENS IdM</p> <p>Download Engine: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/workflow-engine</p> <p>Download Workflow Parser: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/workflow-parser.</p> <p>Automatic deployment for the continuous integration and the automatic testing: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/workflow-meta/tree/master</p> <p>Credentials: A UULM GitLab account is required in order to access the resources.</p>
License	Apache License Version 2.0
Manual	https://www.cloudsocket.eu/common-understanding-wiki/wiki/Main/Workflow+Engine+Component
Lead Partner	ATOS

CloudSocket

Cloud Provider Engine	This component is responsible for the provisioning, deployment and lifecycle management of all the required components of a BPaaS, including software components and VMs across multiple cloud providers (IaaS/PaaS)
<i>Access</i>	Cloudiator REST API: http://134.60.64.155:9000/ Execution Environment Entrypoint: http://134.60.64.155:9012/job Credentials: Available on demand Download Cloudiator: https://github.com/cloudiator/ Download Execution Environment Entrypoint: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/execution-environment-simple-entrypoint Credentials: A UULM GitLab account is required in order to access the resources.
<i>License</i>	Apache License Version 2.0
<i>Manual</i>	Cloudiator: http://cloudiator.org/docs/introduction.html Execution Environment Entrypoint: https://www.cloudsocket.eu/common-understanding-wiki/-/wiki/Main/Execution+Environment+Entrypoint
<i>Lead Partner</i>	UULM
Monitoring Engine	This component is responsible to monitor deployed BPaaS bundles and correlate/aggregate monitoring data from different levels, from atomic services or cloud components up to the level of workflows.
<i>Access</i>	WEB UI: http://134.60.64.155:8080/ REST API: http://134.60.64.155:8080/api/v1/datapoints Credentials: Available on demand Download Visor: https://github.com/cloudiator/visor
<i>License</i>	Apache License Version 2.0
<i>Further Details</i>	https://github.com/cloudiator/visor
<i>Manual</i>	https://github.com/cloudiator/visor/blob/master/documentation/README.md
<i>Lead Partner</i>	FORTH, UULM
Adaptation Engine	This component is responsible for reconfiguring the BPaaS (via, e.g. service substitution, as well as horizontal and vertical scaling) to resolve the problematic situations identified by triggered adaptation rules.
<i>Access</i>	Composed Monitor: http://134.60.64.155:9000/api/composedMonitor Horizontal Out Scaling Action: http://134.60.64.155:9000/api/componentHorizontalOutScalingAction

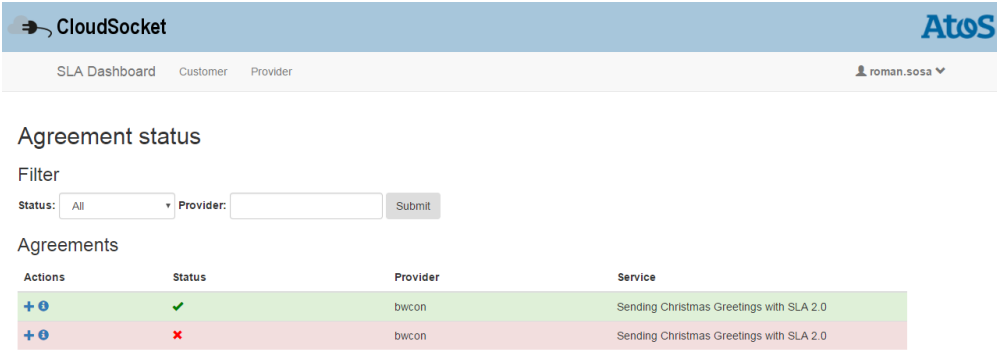
	<p>Horizontal In Scaling Action: http://134.60.64.155:9000/api/componentHorizontalInScalingAction</p> <p>Credentials: Available on demand</p> <p>Download: https://github.com/cloudiator/axe-aggregator</p>
License	Apache License Version 2.0
Further Details	https://github.com/cloudiator/visor
Manual	https://github.com/cloudiator/axe-aggregator
Lead Partner	FORTH, UULM
SLA Engine	<p>The SLA Engine represents the component responsible for generating, storing and observing the formal documents describing electronic SLAs between customers and service providers.</p> 
Access	<p>SLA Core instance http://134.60.64.232:8080/api</p> <p>SLA Dashboard instance: http://134.60.64.232:8000</p> <p>Download: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/sla-framework</p> <p>Credentials: A UULM GitLab account is required in order to access the resources.</p>
License	Apache License Version 2.0
Manual	https://www.cloudsocket.eu/common-understanding-wiki/-/wiki/Main/SLA+Engine+Component
Lead Partner	ATOS

Table 3 - Prototype Components of Marketplace and Execution Environment

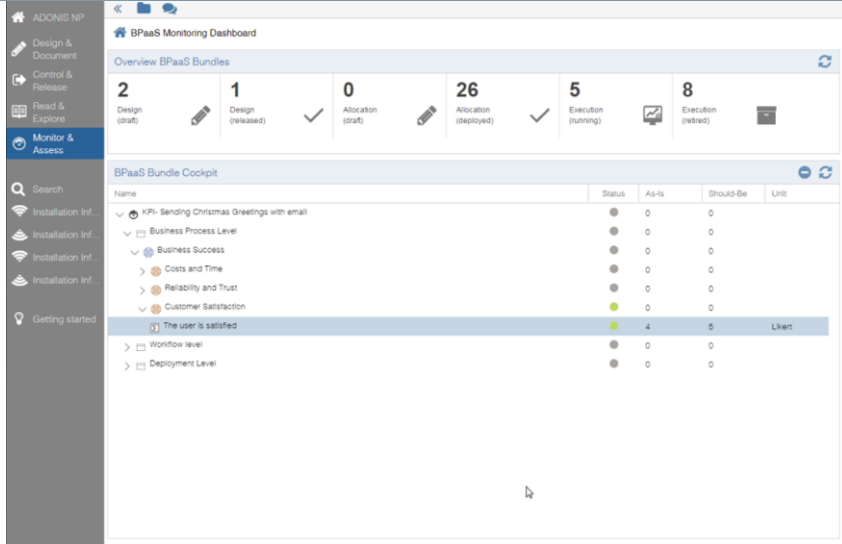
BPaaS Evaluation Environment

The BPaaS Evaluation Environment has the overall goal to evaluate a BPaaS in order to provide optimisation suggestions to the broker. This evaluation comes in various forms: (a) the assessment & drill-down of KPIs, (b) the derivation of best deployments for the BPaaS, and (c) the discovery of bottlenecks and problematic business model parts via process mining. Thus, the externally seen functionality of the BPaaS Evaluation Environment maps to initiate the performance of analysis tasks as well as the retrieval and graphical presentation of the various evaluation / analysis results produced according to suitable graphic metaphors by a business dashboard.

Component	Description
Semantic KnowledgeBase	A semantic KnowledgeBase organised in the form of a Triple Store on top of which lies a REST API allowing the management of the stored semantic information. Such information enables performing the different types of analysis offered by the BPaaS Evaluation Environment.
Access	http://134.60.64.222:8080/evaluation/ Download: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/skb/repository/archive.zip?ref=master . Credentials: A UULM GitLab account is required in order to access the resources.
License	GPL v2
Manual	https://www.cloudsocket.eu/common-understanding-wiki/-/wiki/Main/Semantic+Knowledge+Base
Lead Partner	FORTH
Harvesting Engine	Collects information from the BPaaS Execution Environment and the registries of the Repository Manager, semantically uplifts and links this information according to two ontologies developed in T3.3 and stores this information in the Semantic KB in order to support all types of analysis functionality realised in the BPaaS Evaluation Environment.
Access	Download: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/harvester/repository/archive.zip?ref=master Credentials: A UULM GitLab account is required in order to access the resources.
License	Mozilla Public Licence (MPL) 2.0
Manual	https://www.cloudsocket.eu/common-understanding-wiki/-/wiki/Main/Harvesting+Engine
Lead Partner	FORTH
Conceptual Analytics Engine	Provides an API through which KPI assessment and drill-down can be performed on top of the Semantic KnowledgeBase (Semantic KB).
Access	http://134.60.64.222:8080/evaluation/ Credentials: available on demand. Download: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/evaluation/repository/archive.zip?ref=master .

	Credentials: A UULM GitLab account is required in order to access the resources.
<i>License</i>	Mozilla Public Licence (MPL) 2.0
<i>Manual</i>	https://www.cloudsocket.eu/common-understanding-wiki/-/wiki/Main/Conceptual+Analytics+Engine
<i>Lead Partner</i>	FORTH
Deployment Discovery Engine	Provides an API through which a ranked list of relevant deployment(s) for a certain BPaaS can be derived out of the execution history, recorded in the Semantic KB, of this BPaaS as well as of other BPaaS that are similar to it.
<i>Access</i>	http://134.60.64.222:8080/evaluation-dd/ Credentials: available on demand. Download: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/evaluation-dd/repository/archive.zip?ref=master Credentials: A UULM GitLab account is required in order to access the resources.
<i>License</i>	Mozilla Public Licence (MPL) 2.0
<i>Manual</i>	https://www.cloudsocket.eu/common-understanding-wiki/-/wiki/Main/Deployment+Discovery+Engine
<i>Lead Partner</i>	FORTH
Process Mining Engine	Provides an API through which certain process mining algorithms can be executed over the workflow execution history recorded in the Semantic KnowledgeBase (Semantic KB).
<i>Access</i>	http://134.60.64.222:8080/evaluation-pm/ Credentials: available on demand. Download: https://omi-gitlab.e-technik.uni-ulm.de/cloudsocket/evaluation-pm/repository/archive.zip?ref=master Credentials: A UULM GitLab account is required in order to access the resources.
<i>License</i>	Mozilla Public Licence (MPL) 2.0
<i>Manual</i>	https://www.cloudsocket.eu/common-understanding-wiki/-/wiki/Main/Process+Mining+Engine
<i>Lead Partner</i>	FORTH
Hybrid Business Dashboard	Enables the visualisation of the analysis information via the use of suitable metaphors. Guides the user in properly performing the different types of analysis

CloudSocket

	 <p>The screenshot shows the 'BPaaS Monitoring Dashboard' with an overview of bundles: 2 Design (draft), 1 Design (released), 0 Allocation (draft), 26 Allocation (deployed), 5 Execution (running), and 8 Execution (retired). Below this is a 'BPaaS Bundle Cockpit' table with columns for Name, Status, Axis, Should Be, and Unit. The table lists various components like 'KPI- Sending Christmas Greetings with email', 'Business Process Level', 'Business Success', 'Costs and Time', 'Reliability and Trust', 'Customer Satisfaction', 'The user is satisfied', 'Window level', and 'Deployment Level'.</p>
<p>Access</p>	<p>SaaS Deployment: https://www.cloudsocket.eu/BPAASDesigner/ Credentials: available on demand.</p>
<p>License</p>	<p>Closed source</p>
<p>Manual</p>	<p>https://www.cloudsocket.eu/common-understanding-wiki/-/wiki/Main/Design+Environment+Components</p>
<p>Lead Partner</p>	<p>BOC</p>