

Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



## HoliDes Platform Builder user handbook

Project Number:	332933
Classification:	Confidential
Work Package(s):	WP1
Milestone:	MS5
<b>Document Version:</b>	V5.0
Issue Date:	September 2016
Document Timescale:	Project Start Date: October 1, 2013
Start of the Document:	16
Final version due:	23
Deliverable Overview:	<b>Main document</b> : D1.7–HF-RTP Version 2.0 inc. Methodology and Requirements Analysis update. <confidential></confidential>
Compiled by:	Jordi Fonoll - ATOS
Authors:	Jordi Fonoll - ATOS
Reviewers:	Morten Larsen - AWI, Fabio Tango - CRF
Technical Approval:	Jens Gärtner, Airbus Group Innovations
Issue Authorisation:	Sebastian Feuerstack, OFF

© All rights reserved by HoliDes consortium

This document is supplied by the specific HoliDes work package quoted above on the express condition that it is treated as confidential to those specifically mentioned on the distribution list. No use may be made thereof other than expressly authorised by the HoliDes Project Board.



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



	DISTRIBUTION LIST			
Copy type <sup>1</sup>	Company and Location	Recipient		
Т	HoliDes Consortium	all HoliDes Partners		

<sup>&</sup>lt;sup>1</sup> Copy types: E=Email, C=Controlled copy (paper), D=electronic copy on Disk or other medium, T=Team site (AjaXplorer)

15/09/2016	Named Distribution Only	Page 2 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



RECORD OF REVISION			
27.04.2015	Status Description	Jordi Fonoll - ATOS	
09.06.2015	Including Get My Projects screen	Jordi Fonoll - ATOS	
10.06.2015	Version 1.0	Jordi Fonoll - ATOS	
28.10.2015	New design based on bootstrap .css	Jordi Fonoll - ATOS	
02.11.2015	Version 1.1	Jordi Fonoll - ATOS	
11.11.2015	Rephrased some parts of the text	Linda Onnasch - HFC	
12.11.2015	Corrected comments proposed by partners	Jordi Fonoll - ATOS	
16.12.2015	Added further MTT's to one project. PB app version 2.0	Jordi Fonoll - ATOS	
11.02.2016	Corrected comments proposed by partners.	Jordi Fonoll - ATOS	
04.04.2016	Added connectivity functionality. PB app version 3.0	Jordi Fonoll - ATOS	
10.05.2016	Added regulations functionality. PB app version 4.0	Jordi Fonoll - ATOS	
19.08.2016	Added land page, new menu, navigation bar in the PB app version 5.0	Jordi Fonoll - ATOS	
02.09.2016	External Review	Morten Larsen, AWI, Fabio Tango, CRF	
09.09.2016	Final version	Sara Sillaurren, TEC	

15/09/2016	Named Distribution Only	Page 3 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



# **Table of Contents**

1	Introc	luction	6
2	Defini	tions, acronyms and abbreviations	7
3		standing how PB works	
		e navigation bar in the main screen	
		e navigation bar in the land page screen	
		e navigation bar in rest of the PB screens	
	3.4 Me	nu to redirect to the functionalities	13
4	Scree	ns	16
		Main Screen	
		Preliminary MTTs List Screen	
	4.1.3	RTP Instance Screen	22
	4.1.4	My Projects Screen	24
	4.1.5	My Projects Details Screen	25
	4.1.6	MTT database	28
	4.1.7	MTTs statistics	33
	4.1.8	MTTs Connectivity	
	4.1.9	Adaptation framework	35

15/09/2016	Named Distribution Only	Page 4 of 36
	Proj. No: 332933	-



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



# **List of Figures**

Figure 1 PB navigation bar in the main screen	8
Figure 2 PB navigation bar in the land page	
Figure 3 PB navigation bar user menu	10
Figure 4 PB navigation bar in the rest of screens	11
Figure 5 PB How it works option	
Figure 6 PB menu bar 1	13
Figure 7 PB menu bar 2	14
Figure 8 PB main screen	16
Figure 9 PB sign up	17
Figure 10 PB search MTTs 1	
Figure 11 PB Search Mtts 2	
Figure 12 PB preliminary MTTs list	20
Figure 13 PB tool comparator	
Figure 14 PB HF-RTP instance screen	22
Figure 15 PB linking a project	
Figure 16 PB phase description	
Figure 17 PB my projects screen	
Figure 18 PB my projects details	
Figure 19 PB updating the project description	
Figure 20 Viewing MTTs in a project	27
Figure 21 PB features for MTT	
Figure 22 PB Insert MTTs in the database	
Figure 23 PB add URL related files for MTTs	
Figure 24 PB MTT repetition message	
Figure 25 PB list of MTTs	
Figure 26 Removing an MTT	
Figure 27 PB statistics	34
Figure 28 PB MTTs connectivity	
Figure 29 PB adaptation framework	36

15/09/2016	Named Distribution Only	Page 5 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



## **1** Introduction

This document is a user guide of the PB app to help a system engineer / developer who wants to apply HF methods within the system engineering process.

In this document the content (navigation bars, menu bars) is explained as well as how users can work with the PB app to find their MTTs (methods, techniques and tools) and how they can manage their projects. Moreover, it is described how one can add new MTTs to the PB system.

section 3 Understanding how PB works explains the content included in the navigation and menu bars.

section 4 Screens details the performance for each screen.

The following requisites are covered:

- Authentication/ Authorization for each user in order to access the PB.
- Filtering by domain, regulations, related activity and HF issue to find the appropriate MTTs.
- How the user can save their projects and manage them easily.
- Managing the MTTs database to include new MTTs.
- MTTs statistics per user.
- MTTs graphic visualization.
- Adaptation framework to build a specific AdCos requirement.

PB is the nomenclature used in this document that means Platform Builder.

15/09/2016	Named Distribution Only	Page 6 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



## 2 Definitions, acronyms and abbreviations

Acronym	Meaning
Business Process	It is the system life cycle development and management process that represents a whole given process, covering development phase and product management phase. Life cycle management comprises tasks of product management process as: traceability, configuration and versioning, user and process management. In the other hand, life cycle development covers tasks of development process (as requirements elicitation and formalization, design, implementation, validation and verification).
HF-RTP	Human Factor - Reference Technology Platform
HoliDes	Holistic Human Factors Design of Adaptive Cooperative Human-Machine Systems
MTTs	Methods, techniques and tools
PB	Platform Builder
RTP	Reference Technology Platform

15/09/2016	Named Distribution Only	Page 7 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



## **3** Understanding how PB works

This section explains the different parts that the application PB contains.

The PB has been designed including some common objects for all screens. These objects are detailed below:

### 3.1 The navigation bar in the main screen

HealiDes Platform Builder	Help 🗸
	Ontologies
	Version 5.0
Log in	
Username:	
1 hfuser1	
Password:	
Log in to the Platform Builder	
Sign up   Forgot Password?	

### Figure 1 PB navigation bar in the main screen

In the main screen the navigation bar appears:

- The HoliDes **logo** on the left side, followed by the name of the application PB.
- The dropdown list **help**:
  - Appears The ontologies web site.

15/09/2016	Named Distribution Only	Page 8 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



• The **version** of the PB.

### 3.2 The navigation bar in the land page screen.

Once a user has been logged in the PB, appears the Land page with three possible options and the information in the navigation bar, this section explains the operation of the navigation bar into the land page, the navigation bar is divided in the follow parts:



Figure 2 PB navigation bar in the land page

- The HoliDes **logo** on the left side, followed by the name of the application PB.
- The dropdown list **help**:
  - **Documentation** group:
    - **User's handbook**, clicking on it will download the version for the handbook for the users.

15/09/2016	Named Distribution Only	Page 9 of 36
	Proj. No: 332933	_



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



- **Analysis document**, documentation explaining the architecture of the PB.
- **Requirements specifications**, documentation explaining the functional and no functional requirements for the PB.
- Validation report, document with tests checking all the requirements proposed in the requirement specifications.
- **Videos**, link to the PB video channel tutorial.
- $\circ$  The **version** of the PB.

H®liDes	Platform Builder		<li>Help</li>	) - 💄 HF User 1 -
				C+ Logout
	Welcome t	to the HoliDes Platforn	n Builder	
	You can use it to create Human-Factors-RTP. It proposes you methods, techniques and tools (MT domain,	-instances for your system development life Ts) that suit your needs, based on what Hur , and in specific phases of system developm	man Factors issues you want to resolve, i	n your
	You can start directly by Creating an HF- RTP instance	For more on how the Platform Builder works, and what an HF-RTP is, go to	If you want to explore or manage the M go to	ITTs,
	0000000			

Figure 3 PB navigation bar user menu

• The dropdown list **User name** displays the user name on the right side. This is the name of the logged user, clicking on it appears the option:

15/09/2016	Named Distribution Only	Page 10 of 36
	Proj. No: 332933	-



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



• **Logout.** Clicking here you log out from the PB and your session will expire. If you want to access the application again you should enter user/password at the main menu.

### 3.3 The navigation bar in rest of the PB screens.

Once a user has been clicked some option in the PB land page, appears the screen chosen with several options and information in the navigation bar, for instance the navigation bar clicking the item: "Create an HF-RTP Instance" appears:

H®liDes	Platform Builder - Search Mtts	📌 Home	🕄 Help 🗕	💄 HF User 1 🗸
Create an HF-RTP instance	Domain (*)		umentation r's handbook	
My projects	Aeronautics ^	<ul> <li>Ana</li> </ul>		
MTTs database	Control Room Health	spe	uirements cifications dation report	
MTTs Statistics	Regulations	💷 Vide		
MTTs connectivity		How     Version	it works	
Adaptation framework			÷	
	HF Issue Related activity			
			*	
	×		Ψ.	
	Get my MTTs			

#### Figure 4 PB navigation bar in the rest of screens

- The HoliDes **logo** on the left side, followed by the name of the application PB and the functionality name (in this case Search Mtts).
- The **Home** option redirects to the main page.
- The dropdown list **help**:
  - **Documentation** group:

15/09/2016	Named Distribution Only	Page 11 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



- **User's handbook**, clicking on it will download the version for the handbook for the users.
- **Analysis document**, documentation explaining the architecture of the PB.
- **Requirements specifications**, documentation explaining the functional and no functional requirements for the PB.
- **Validation report**, document with tests checking all the requirements proposed in the requirement specifications.
- **Videos**, link to the PB video channel tutorial.
- The How it works help, provides some further information about the functionality in a modal screen, for instance in this case helps to the user how it's working the search criteria in the Search MTTs, look the picture below:

H®liDes	Platform Builder - Search Mtts 🕴 🕈 Home 🔮 Help 👻 🌡 HF User 1 👻
Create an HF-RTP Instance My projects MTTs database	Domain (*)         Help         ×           Aeronautics         Please select the criteria (4 list combos below) to get the MTTs proposed by the Platform Builder.         Please select the criteria (4 list combos below) to get the MTTs proposed by the Platform Builder.           Control Room         The Fields appearing in (*) are required to get a list of MTTs           Health         To Select/Deselect items push CTRL + click button
MTTs Statistics MTTs connectivity Adaptation framework	Regulations         Only one or non selection is possible for list           Click on GET My MTTs to access to the proposed Tools List by the Platform Builder
	HF Issue     Related activity       Cet my MTTs

#### Figure 5 PB How it works option

• The **version** of the PB.

15/09/2016	Named Distribution Only	Page 12 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



- The dropdown list **User name** displays the user name on the right side. This is the name of the logged user, clicking on it appears the option:
  - **Logout.** Clicking here you log out from the PB and your session will expire. If you want to access the application again you should enter user/password at the main menu.

### 3.4 Menu to redirect to the functionalities

The figure below displays the PB menu (figure 3). The menu bar is placed on the left side of the screen (for a mobile device or small screens this menu appears on the top side).

The PB menu includes all the options that the user logged-in has as a rights.

The active screen is indicating with a strong **blue colour** in the PB menu. The options have been divided by horizontal bars grouped by functionalities taking into account the common features:

H®liDes	Platform Builder - Search Mtts	🔒 Home	🔂 Help 🚽	💄 HF User 1 👻
Create an HF-RTP instance	Domain (*)			
My projects	Aeronautics ^ Automotive			
MTTs database	Control Room Health			
MTTs Statistics	Regulations			
MTTs connectivity			*	
Adaptation framework			÷	
	HF Issue Related activity			
			*	
			*	
	Get my MTTs			

#### Figure 6 PB menu bar 1

15/09/2016	Named Distribution Only	Page 13 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



Create an HF-RTP instance My projects MTTs database MTTs Statistics MTTs connectivity Adaptation framework

Figure 7 PB menu bar 2

Functionalities grouped by screens that allow the users managing their projects:

- "Creating an HF-RTP instance":
  - Displays the "Search MTTs" screen, then searching and filtering by criteria proposed for the app appears the next screen:
  - "Preliminary MTTs", the user can select the MTT/MTTs for their project, and selecting it appears the screen:
  - "HF-RTP Instance" which the user can create a project, saving it correctly.
- "My projects":
  - The users can get information about the projects created and can follow the traceability of their HF-RTP instantiations.

15/09/2016	Named Distribution Only	Page 14 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



Functionalities grouped by screens that allow the users work with MTTs creating, managing or showing interesting information about MTTs.

- "MTTs database": managing MTTs (creating, deleting or viewing MTTs) only the users with special user rights can delete MTTs.
- "MTTs statistics": getting information about the number of MTTs used by user and domain.
- "MTTs connectivity": having a look at the "MTT connectivity" graphic the user can have a better vision of the purpose of the MTT.

Functionalities related with the AdCos:

• Adaptation framework: Set up the AdCos using cognitive loop primitives.

All the functionalities exposed above are explained in more detail in the *D1.7-Annex IV - HF-RTP Handbook* document section "Creating an HF-RTP Instance".

15/09/2016	Named Distribution Only	Page 15 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



## 4 Screens

This section explains the functionalities of the different sections of the PB.

### 4.1.1 Main Screen

The application can be accessed by the following link: <u>www.holides.eu/PlatformBuilder</u>

After typing in the URL, the main screen appears (figure 1), asking for user credentials (login and password).

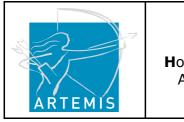
First step is register to the Platform Builder clicking on the "Sign up" link:

HONIDes Platform Builder		Heip 🕶
	Log in	
	Username:	
	Password:	
	·····	
	Log in to the Platform Builder	
	Sign up   Forgot Password?	

Figure 8 PB main screen

It appears a screen to introduce the user details as is detailed in the picture below:

15/09/2016	Named Distribution Only	Page 16 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



HeliDes Platform Builder			нер •
	Sign up	×	
	First name		
	Your first name		
	Last name		
	Your last name		
	Username		
	Username can contain any letters or numbers, without spaces		
	E-mail		
	Please provide your E-mail		
	Password		
	Password should be at least 6 characters		
	Password (Confirm)		
	Please confirm password		
	Register to Platform Builder		
		_	

Figure 9 PB sign up

Once the user has been registered will be able to access to the PB app.

In case of forgot the password or user, click on the link "Forgot your password" and contact with the mail address provided.

There are a generic option introducing a general user/password if some user has forgotten his/her credentials, it's possible to access to the PB with one of this user accounts:

User: hfuser1 Pwd: hfuser1

User: hfuser2 Pwd: hfuser2

### 4.1.1.1 Search MTTs

The objective of the PB is that users can search MTTs appropriate for their system development and create according instantiations (selected MTTs).

15/09/2016	Named Distribution Only	Page 17 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



This screen provides the possibility to choose between domains, regulations, human factors issues and related activities to filter / specify the MTT search, the figure below shows the graphical user interface (GUI) of this PB Input:

H®liDes	Platform Builder - Search Mtts			🔒 Home	🕄 Help 🗸	👤 HF User 1 👻
Create an HF-RTP instance	Domain (*)					
My projects	Aeronautics Automotive	*				
MTTs database	Control Room Health					
MTTs Statistics	Regulations					
MTTs connectivity					A.	
Adaptation framework						
	HF Issue		Related activity			
		A.				
		<b>.</b>			Ŧ	
	Get my MTTs					

Figure 10 PB search MTTs 1

The field Domain\* (\* means mandatory) includes four domains (Automotive, Aeronautic, and Control Rooms and Health).

The button "Get My HF-RTP" is disabled until the mandatory domains (currently only one) have been selected. The steps to search for MTTs are:

- 1- Select a domain
- 2- According to the chosen domain, the fields Regulations, HF Issues and Related Activity show related items retrieved from the database.
- 3- Choose the HF Issue, Regulation and / or Related Activity. These are non-mandatory criteria, so the user can also choose to omit these options.

15/09/2016	Named Distribution Only	Page 18 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



4- By clicking on "Get My HF RTP" a list of MTTs appears resulting from the selected criteria.

An example:

A user wants to search for MTTs applicable to the automotive domain that address the Human Factors Issue "Distraction". Accordingly, the user selects from the "**Domain**" list "**Automotive**". Based on this first selection, relevant items turn up in the selection fields "**HF Issues**", "**Regulations**" and "**Related activities**". The user clicks on "**Distraction**" in the HF Issue list and then clicks on "**Get my HF-RTP**".

H©liDes	Platform Builder - Search Mtts		🔒 Home	🚯 Help 👻	💄 HF User 1 👻
Create an HF-RTP instance	Domain (*)				
My projects	Aeronautics Automotive				
MTTs database	Control Room Health				
MTTs Statistics	Regulations				
MTTs connectivity	Detectability Concept applied by TWT	on of Advanced Driver Assistance Systems (RESPONSE3; Knapp et al. 2		^	
Adaptation framework	Human Machine Interaction and the Safety of Traff	Feedback: (National Highway Traffic Safety Administration (NHTSA); 20 c in Europe (HASTE Final Report: Carsten et al., 2005) ransport Information and control systems - Dialogue management princi		bliance 🖕	
	HF Issue	Related activity			
	Attention Behavior Distraction Safety Situational Awareness Task Performance Usability Workload Get my MTTs	<ul> <li>Requirements engineering Conceptualisation Design System implementation Evaluation Certification Deployment</li> </ul>		×	

#### Figure 11 PB Search Mtts 2

A new screen will appear with a list of MTTs that accomplish the selected criteria conditions. This new screen is detailed in the next section "Preliminary MTTs List Screen"

15/09/2016	Named Distribution Only	Page 19 of 36
	Proj. No: 332933	-



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



### 4.1.2 Preliminary MTTs List Screen

This screen proposes a list of MTTs that accomplish the criteria selection from the PB Input screen. The screen shows the user a list of details for each tool (termed comparator tool). Based on the detailed information on the proposed MTTs, the user can choose more than one MTT which fit best to his/her purpose.

This screen is divided in two sections:

### 4.1.2.1 Section 1 of the Preliminary MTTs List Screen

In the upper part of the screen appears a list of MTTs proposed by the system (taking into account the search done by the user in the PB input). This list contains the name, a description of the MTT and the connector to the OSCL for each MTT, also provides a field "Search" that allows the user to find MTTs filtering by word.

An example of the "Preliminary MTTS list" screen:

eate an HF-RTP instance		Search:	
y projects	мтт	Description	OSLC
Ts database	Surrogate Reference Task (SuRT)ign	Tool to simulate visual distraction as caused by executing a secondary task during operating	http://open- services.net/
Ts Statistics Ts connectivity	HFFiler	A tool that allows to include evaluations of system designs and prototypes conducted using less formalised methods in the HF-RTP.	http://open- services.net/
daptation framework	Means-end analysis	A method to break a system s (or a part of a system s) functionality down into functional units based on identification of goals, subgoals and objectives on the one end of the scale, and means (such as available system components) on the other. The layer in between will typically contain the functions, which should be as implementation-independent as possible.	http://open- services.net/
	COSMODRIVE	COSMODRIVE s objective is to virtually simulate human drivers perceptive and cognitive activities implemented when driving a car.	http://open- services.net/
	MOVIDA	MOVIDA is an integrative co-piloting system in charge to monitor car drivers visual distraction risk and to supervise a set of simulated Advanced Driving Aid Systems (ADAS for Collision Avoidance and Lane Change Assistance), in order to manage Human-Machine Interactions in an adaptive and cooperative way.	http://open- services.net/
	Showing 1 to 5 of 11 entri	es Previous 1	2 3 Next
	MTT comparator	Instance HF-RTP	

Figure 12 PB preliminary MTTs list

15/09/2016	Named Distribution Only	Page 20 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



### 4.1.2.2 Section 2 of the Preliminary MTTs List Screen

The screen further displays a MTTs comparator table, appearing in a modal window, detailing for each MTT the most relevant features, so the user can compare the most important or relevant aspects of the MTTs guiding his/her decision of choosing the MTT which fits best.

For example in this case, the Tool comparator table contains the MTTs Driver Distraction Classifier and V-HCD and their details:

H®liDes	Platform Builder - MTTs oreliminary list	🔒 Home 🛛 Help 👻 💄 HF User 1 🗸
Create an HF-RTP instance	MTT Comparator	services.net/
My projects	MTT features Value	http://open-
	Driver Distraction Classifier	services.net/
MTTs database	Resources computer	
MTTs Statistics	F Type of Empirical Method experiment	http://open- services.net/
MTTs connectivity	Resources eye-tracker	
Adaptation framework	Costs high	
Adaptation namework	Effort (time) high	
	Method Applied by non-expert	http://open-
	Measurement Source objective: performance	services.net/
	Resources participants	
	Time of Data Collection prospective	
	Time of Data Collection real-time	http://open-
	Resources simulation environment	services.net/
	Sh	2 3 Next
	MTT comparator Instance HF-RTP	

Figure 13 PB tool comparator

Selecting one or more than one MTT from the MTTs list and clicking on the button "Instance HF-RTP" the user can instantiate, create and save own projects.

15/09/2016	Named Distribution Only	Page 21 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



Choosing an MTT/MTTs and clicking on instance HF RTP the new screen <u>RTP</u> instance screen appears.

### 4.1.3 RTP Instance Screen

This screen shows the MTTs selected in the previous screen, this is the final result of the PB app instantiation.

The table includes the MTT/MTTs selected in the previous screen (Preliminary MTT list) and the user can save it together with a description of the MTT (it's a mandatory field) for his/ her project, also should include a phase description.

H®liDes	Platform Builder - HF-RTP Instance A Home	Help 🗸 💄 HF User 1 🗸
Create an HF-RTP instance	Project description (*)	
My projects	Project test for Handbook	
MTTs database	Phase description (*)	
MTTs Statistics	Phase 1	
MTTs connectivity		
Adaptation framework	Link to project	
	Copy CSV Excel PDF Print Search:	
	MTT Description	OSLC
	V-HCD The Virtual Human Centred Design platform is an instance of the HF-RTP, specifically tailored to be used for the virtual prototy developping and testing of an AdCos based on MOVIDA.	yping, http://open- services.net/
	Driver Distraction Driver Distraction Classifier Classifier	http://open- services.net/
	Showing 1 to 2 of 2 entries	Previous 1 Next
	Save Instance HF-RTP	

#### Figure 14 PB HF-RTP instance screen

Clicking on "Link to project" is possible to create a MTT chain for a project existing (only in the same domain). For example in this example is possible to link with the projects that are appearing in the screen below:

15/09/2016	Named Distribution Only	Page 22 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



H®liDes	Platform Builder - HF-RTP Instance the Below	
Create an HF-RTP instance	Project description X	
My projects	Endect test for Hal Project select a project on the list below and click on "Link to project"	
NAME AND ADDRESS	Search:	
MTTs database	Phase description Project Description	
MTTs Statistics	Phase 1 Project 1	
MTTs connectivity	Project test 1	
Adaptation framework	Link to project Showing 1 to 2 of 2 entries Previous 1 Next	
	Copy CSV CSV Search:	
	MTT Description Of	SLC
		o://open- vices.net/
	Distraction Distraction Classifier	o://open- vices.net/
	Showing 1 to 2 of 2 entries Previous 1	Next
	Save Instance HF-RTP	

#### Figure 15 PB linking a project

Selecting one of the projects proposed the description of this project appears in the "HF-RTP instance" screen:

HoliDes	Platform Builder - HF-RTP Instance At Home 19 Help -	💄 HF User 1 👻
Create an HF-RTP instance	Project description (*)	
My projects	Project test 1	1
MTTs database	Phase description (*)	
MTTs Statistics	Phase 1	
MTTs connectivity		li
Adaptation framework	Link to project HF-RTP Instance linked with project Project least 1 Copy CSV Excel PDF Print Search:	
	MTT Description	OSLC
	V-HCD The Virtual Human Centred Design platform is an instance of the HF-RTP, specifically tailored to be used for the virtual prototyping, developping and testing of an AdCos based on MOVIDA.	http://open- services.net/
	Driver Distraction Driver Distraction Classifier Classifier	http://open- services.net/
	Showing 1 to 2 of 2 entries Previous	1 Next
	Save Instance HF-RTP	

### Figure 16 PB phase description

15/09/2016	Named Distribution Only	Page 23 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



Clicking on "Save Instance HF-RTP" the project will be saved.

The project will be stored in the database and can be reviewed in the  $\underline{My}$  <u>Projects</u> options menu detailed in the next section.

### 4.1.4 My Projects Screen

This screen shows the projects saved by the logged-in user.

A list of projects with the according descriptions is shown in a grid. Clicking on one of the projects and then clicking on "Show Project selected" redirects the user to the "My Project Details" screen for the selected project.

H®liDes	Platform Builder - My Projects	윰 Home	🕄 Help 🗸	L HF User	1 -
Create an HF-RTP instance		Search:			
My projects	Project Description	,			
MTTs database	Conform test				
MTTs Statistics	Project 1				
	Usability Testing, Development of a Cockpit Assistance System				
	Project test 1				
Adaptation framework	Showing 1 to 4 of 4 entries		Previous	1 Nex	t
	Show Project selected				

#### Figure 17 PB my projects screen

The screen provides a search field in the top right side working as a filter in the project search by word (this search could be useful in case that we have a lot of projects).

15/09/2016	Named Distribution Only	Page 24 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



### 4.1.5 My Projects Details Screen

This screen is only available from "My Projects". Selecting one project (for example the project linked in the section <u>HF-RTP Instance screen</u>) redirects the user to a screen like this:

HூliDes	Platform Builder - My projects details	atform Builder - My projects details Arr User		👤 HF User 1 🛨		
Create an HF-RTP instance						
	Project description					
	Edit					
	Description		Domain			
	Project test 1		Automotive			
	Development phases					
	Copy CSV Excel PDF Print	1				
	Description phase	мтт		OSLC		
	phase test 1	V-HCD		http://open-services.net/		
	phase test 1	Driver Distraction Classifie	۲	http://open-services.net/		
	Tool details					
				Search:		
	Tool features	Value				
		No data avail	able in table			
	Showing 0 to 0 of 0 entries				Previou	is Next

#### Figure 18 PB my projects details

The screen is divided in 3 parts:

### 4.1.5.1 **Project information part**

Includes the project description and the searches done in the PB input screen.

Selecting a project enables the button "Edit" placed on the top left side of the table. When clicking on "Edit" a screen appears with the description of the project and the system now allows changes to this description by clicking on the update button. An example:

15/09/2016	Named Distribution Only	Page 25 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



H©liDes	Platform Builder - My projects details	orm Builder - My broiects details from the form		
Create an HF-RTP instance		Update the project description		
My projects	Project description: Project test 1			
MTTs database	Edit			
MTTs Statistics	Description			
MTTs connectivity	Project test 1			
Adaptation framework	Development phases			
	Copy CSV Excel PDF Print			
	Description phase	МТТ	OSLC	
	phase test 1	V-HCD	http://open-services.net/	
	phase test 1	Driver Distraction Classifier	http://open-services.net/	
	Tool details			
			Search:	
	Tool features	Value		
		No data available in table		

Figure 19 PB updating the project description

When changes are saved ("update") the new project description appears in the project grid.

### 4.1.5.2 Tool name and description part

Shows the information about the MTT/MTTs selected: MTT name, description and the OSCL connector. This section shows the tool chain created for this project:

15/09/2016	Named Distribution Only	Page 26 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



HூliDes	Platform Builder - My projects details			🔒 Home	🖯 Help 🗸	👤 HF User 1 🗸
Create an HF-RTP instance						
My projects	Project description					
MTTs database	Edit		Domain			
MTTs Statistics	Description	Description				
MTTs connectivity	Project test 1		Automotive			
Adaptation framework						
	Description phase	MTT		OSLC		
	phase test 1	V-HCD		http://open-services.net/		
	phase test 1	Driver Distraction Classifier			http://open-services.net/	
	Tool details					
			Search:			
	Tool features	Value				
	• V-HCD					

#### Figure 20 Viewing MTTs in a project

### 4.1.5.3 Tool details part

Includes the most relevant aspects for each tool.

It's possible to filter by the field "search" placed on the right and top side of this grid.

Clicking on an MTT in the "Development phases" section, shows the features of the tool selected:

15/09/2016	Named Distribution Only	Page 27 of 36
	Proj. No: 332933	5



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



H€NiDes	Plat	form Builder - My projects details		🕈 Home 🛛 Help 👻 💄 HF User 1 👻					
Create an HF-RTP instance		Description phase	МТТ	OSLC					
My projects		phase test 1	V-HCD	http://open-services.net/					
MTTs database		phase test 1	Driver Distraction Classifier	http://open-services.net/					
MTTs Statistics		Tool details	- -						
WT IS COMPECTIVITY				Search:					
Adaptation framework		Tool features	Value						
		• V-HCD							
		Costs							
		Effort (time) high							
		Interpretation of Outcome	aps and Pro-SIVIC software						
		Measurement Source							
		Method Applied by	domain experts						
		Method Applied by	HF-expert						
		Resources computer							
		Resources	simulation environment						

Figure 21 PB features for MTT

### 4.1.6 MTT database

Provides the possibility to manage MTTs.

The users can include new MTTs. These MTTs are then available to other users. Some users (depending on the rights assigned) can delete MTTS, only is possible delete an MTT if the MTT has never been used in an HF-RTP Instance.

By clicking on the menu "MTTs database" the "MTT administrator tool" appears.

The tool is divided in 2 parts.

### 4.1.6.1 Inserting new MTTs to the PB app

Includes the possibility to insert a new MTT to the system, providing the MTT name, description and detail (this information is required).

15/09/2016	Named Distribution Only	Page 28 of 36
	Proj. No: 332933	



#### Figure 22 PB Insert MTTs in the database

To insert new details for the tool, select "Detail" and "description detail" in the list combos and click on the button "+". The grid below will appear with the new detail.

Repeat this action for each detail of the MTT.

To insert URL files related with MTT, click on Related Files section and add the file path in "URL related file" and click on the "+" button, repeat this action for each related file:

15/09/2016	Named Distribution Only	Page 29 of 36
	Proj. No: 332933	-



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



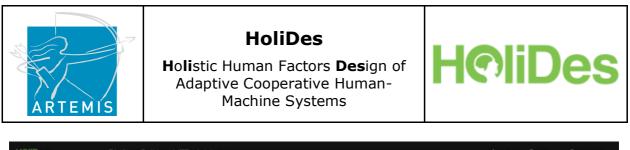
H≪liDes	Platform Builder - MTTs database	3	🔒 Home	🖯 Help 🚽	👤 HF User 1 🗸
Create an HF-RTP instance	MTT description (*)			Insert N	лtt
My projects	MTT Name (*)	MTT Description (*)			
MTTs database	HDC	HDC Tool			
MTTs Statistics					
MTTs connectivity	MTT details				
Adaptation framework	Related properties (*)				
	MTT related files				
	URL related file				
	http://www.solvusoft.com/en/file-ex	xtensions/file-extension-hdc/			
	Files list				
	File URL				
	-	No data available in table			

#### Figure 23 PB add URL related files for MTTs

Once you finish click on the button "Insert MTT" and the MTT will be stored in the database.

To avoid possible MTTs repetitions in the database, the PB search in the database for the MTT "name" provided, if the PB found some coincidence it will ask to the user like the example below:

15/09/2016	Named Distribution Only	Page 30 of 36
	Proj. No: 332933	5



HeniDes	Platform Builder - MTTs database ft Home	O Help - 1 HF User 1 -
Create an HF-RTP instance	Information	
My projects	Add new MTT There are MTTs inserted with similar name. Do you want to procedeed inserting this MTT in the Platform Builder?	
	MTI descriptio	Insert Mtt
MTTs database	MTT Name (*)	
MTTs Statistics	Anaconda veloconda rost	
MTTs connectivity		
Adaptation framework	MTT details	
	Related properties (*)	
	MTT related files	
	URL related file	
	Files list	
	File URL	
	No data available in table	

#### Figure 24 PB MTT repetition message

If the user click on "YES" the MTT will be inserted in the PB, if not ("NO" option), it will return to the insert MTT screen again.

### 4.1.6.2 List of MTTs of the PB

The user can view all the MTTs inserted in the system. Filtering by word in the "Search" field allows the user to access MTTs easily.

15/09/2016	Named Distribution Only	Page 31 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



H©liDes	Platform Builder -	MTTs database		A Home	🔂 Help 🚽	👤 HF Use
Create an HF-RTP instance	Add new MTT	View MTTs				
My projects	List Tools					
MTTs database			Search:			
MTTs Statistics	Name	Description				
ITTs connectivity		ANaConDA (Adaptable NAtive-code CONcurrency-focused Dynam				
daptation framework	ANaConDA	analysers for multi-threaded C/C programs on the binary level. The as noise injections techniques to increase chances to find concurre		as well		
	BAD MoB	Bayesian Autonomous Driver Mixture-of-Behaviors (BAD MoB) moo dynamic Bayesian networks that can be utilized to provide prediction drivers.				
	CASCaS	By applying the Human Operator Model CASCaS (cognitive model performance of the human can be predicted for this scenario. Main an assistante system. Predicted can be. Task Execution Times, Eff Distribution, Reaction Times, Effects of Routine Learning. Situation events (e.g. flashing warnings, flight annunciation changes),	ly applied for comparison of different ver- ort for Eye and Head Movements, Gaze	sions of		
	Cognitive Distraction Classifier	The cognitive distraction classifier allows users to evaluate whether when developing new HMI diplays. This evaluation is based on auc and behavioural driving data.				
	CONFORM	Tool to learn the natural operator behavior. Tool to classify the behavior of the current operator to it.	avior of different operators into cluster an	d map		
	Showing 1 to 5	of 37 entries Previous	1 2 3 4 5 8	Next		
	Details for M	т				
			Search:			
	Tool featu	res	Value			
	No data available in table					
	Showing 0 to (	) of 0 entries	Previous	Next		
	MTT related f	lee				

#### Figure 25 PB list of MTTs

A new option has been included "remove MTT" only for users with rights provided by PB administrator.

Selecting the MTT that we wish to remove and clicking on "Remove MTT", for example last MTT inserted like "AnaConDa" tool:

15/09/2016	Named Distribution Only	Page 32 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



H®liDes	Platform Builder -		😭 Home	🖯 Help 🗸	Administrator -
Create an HF-RTP instance My projects	Add new MTT	Delete Mtt		5	
	List Tools	This action will remove the MTT from the database.			
MTTs database		Do you want to proceed?			
MTTs Statistics	Name				
MTTs connectivity			r creating dynamic		
Adaptation framework	ANaConDA	analysers for multi-threaded C/C programs on the binary level. The framework provides a monit as noise injections techniques to increase chances to find concurrency-related errors in testing in			
	Anaconda				
	BAD MoB	Bayesian Autonomous Driver Mixture-of-Behaviors (BAD MoB) models are human behaviour midynamic Bayesian networks that can be utilized to provide prediction about the behavior and inte drivers.			
	CASCaS	By applying the Human Operator Model CASCaS (cognitive model) during a simulation of a cert performance of the human can be predicted for this scienario. Mainly applied for comparison of an assistante system. Predicted can be: Task Execution Times, Effort for Eye and Head Movem. Distribution, Reaction Times, Effects of Routine Learning. Situation Awareness Distribution, Forg- events (e.g. flashing warnings, flight annunciation changes).	different versions of ents, Gaze		
	Cognitive Distraction Classifier	The cognitive distraction classifier allows users to evaluate whether a driver is distracted from hi when developing new HMI diplays. This evaluation is based on audio-signals, video recordings and behavioural driving data.			
	Showing 1 to 5 of	rf 38 entries Previous 1 2 3 4 5	8 Next		

#### Figure 26 Removing an MTT

Clicking on "YES" button will remove the MTT from the database. Clicking on "No" button or closing the window the MTT will be in the PB database.

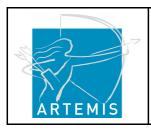
### 4.1.7 MTTs statistics

This screen provides a graphic environment on the frequency of use regarding the available MTTs, detailing how often MTTs were selected by users.

Clicking on the "Statistics" in the option menu directs the user to the statistics screen.

A selection of the field domain is required to enable the button "Generate Stats".

15/09/2016	Named Distribution Only	Page 33 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



H®liDes	Platform Builder - Statistics			📌 Home	🖯 Help 🗸	👤 HF User 1 👻
Create an HF-RTP instance My projects	Choose a domain (*)	Aeronautics Automotive Control Room Health	Generate Stats	I		
MTTs database						
MTTs Statistics						
MTTs connectivity		Tools used by undefined				
Adaptation framework		20%	20%	<ul> <li>Driver Distraction Classifier</li> <li>Methods and techniques for the driver adaptive parameterization of a highly automated driving system</li> <li>Surrogate Reference Task (SuRT)ign</li> <li>Theatre Technique for acceptance tests and systems variants exploration during AdCoS design</li> <li>V-HCD</li> </ul>		

#### Figure 27 PB statistics

### 4.1.8 MTTs Connectivity

This screen provides a graphic environment.

The goal of this functionality is to show the MTTs selected before into a picture (V-model design picture). The MTTs will be as a rectangular shapes of different colours which are corresponding with different related activities: analysis, evaluation, design, conceptualization, deployment, certification and system implementation.

How it's working the MTTs connectivity?

- 1- Clicking on the "MTTs connectivity" in the option menu directs the user to the MTTs connectivity screen.
- 2- Selecting some of the combos appearing in the top size of the screen: domain, HF issues, related activity or regulations, a list of MTTs will appear in the right size into the "List of MTTs".
- 3- Selecting the MTTs from the "List of MTTs", will appear in the V-model as a rectangular shape with a colour for each related activity associated.

15/09/2016	Named Distribution Only	Page 34 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



4- Clicking on "Select all MTTs", will appear all the MTTs from the "List of Mtts" in the V-Model picture and deselecting "Select all MTTs" all the MTTs in the V-model picture will be deleted.

H®IDes	Platform Builder - MTT connectiv	ity		🕈 Home 🚯 Help 👻 💄 HF User 1 👻
Create an HF-RTP instance	Domains	HF Issues	Related activity	
My projects	O Aeronautics	Attention	Requirements engineering	*
	C Automotive	🕑 Behavior	Conceptualisation	
MTTs database	Control Room	C Distraction	🕑 Design	
	O Health	- Safety -	O System implementation	-
	Conceptualizati MOVIDA Means-end a BAD MoB RTMaps Driver Distract Empirical an	DAD BAD MOB V-HCD HFFiler HFFiler V-HCD V-HCD	Deployment leans-end analy MOVIDA Iffeation RTMaps Empirical analy	Select all MTT'S List of MTTs C BAD MoB C Driver Instantion Classifier C Driver Intention Recognition C Empirical analysis C HFFiler Means-end analysis C MOVIDA C RTMaps C V-HCD

### Figure 28 PB MTTs connectivity

### 4.1.9 Adaptation framework

This screen allows the users to build their AdCos requirement kernel.

15/09/2016	Named Distribution Only	Page 35 of 36
	Proj. No: 332933	



Holistic Human Factors **Des**ign of Adaptive Cooperative Human-Machine Systems



realizes	Planom Builder - Adaptation Iraniework
Create an HF-RTP Instance	Built your AdCoS Requirement kernel by using our Adaptation Framework
My projects	
MTTs database MTTs Statistics MTTs connectivity	Set-up your ABCoS by using Cognitive Loop primitives. Cognitive Loop primitives are single simplified entities that allow an <b>agent</b> (human or machine) to interact on an <b>object</b> (a user interface, a task, a task distribution or a process) that are nucleived in the original <b>process</b> . You can choose Cognitive loop primitives in the followings:
Adaptation framework	M means Machine, H means Human, Ul means User Interface, T means Task, TD means Task Distribution, P means Process For example, the loop * means that a machine control an user interface to manage a process
	Patient       Dirk       Workbad       Can         Postform       Dirk       Workbad       Lane         Balancing       Change       Change
	Add Loop Remove Loop Reset All
	Loop         Agent         Object         Process           II HL4 T         Bipply advisor         grandry disply         pattern to stationing           II HP =         practitioner         pattert positioning         pattert positioning
	Generate
	Cognitive Loop used in your AdCos:
	AGC-S Requirements.
	Requirements for MACHINE display advisor - Workbad :: display advisor may need to inspect its states (introspection)
	Requirements for USER INTERFACE guinty display on PROCESS patient positioning - shatalon/warmess - display advisor must be able to perceive and evaluate putty display site(s) - shatalon/warmess - display advisor must be able to perceive and evaluate the patient positioning environment (in which the gantry display is) - shatalon/warmess - display advisor must be able to perceive and evaluate the patient positioning environment (in which the gantry display is) - decisionhaking. Information presented on the gantry display and about the patient positioning environment must allow the display advisor to decide if the gantry display needs to be changed - decisionhaking. Information presented on the gantry display and about the patient positioning environment must allow the display advisor to decide if the gantry display needs to be changed - usability - display advisor must be able to access the controls must allow changing the gantry display - shatalon/warmess - display advisor must be able to access the controls must allow changing the gantry display - available, - display advisor must be able to access the controls must allow changing the gantry display - shatalon/warmess - display advisor must be able to access the controls must allow changing the gantry display - shatalon/warmess - display advisor must be able to access the controls must allow changing the gantry display - shatalon/warmess - display advisor must be able to access the controls must allow changing the gantry display - shatalon/warmess - display advisor must be able to access the controls must allow changing the gantry display - shatalon/warmess - display advisor must be able to access the controls must allow changing the gantry display - shatalon/warmess - display advisor must be able to access the controls must allow changing the gantry display - decision that allow - display advisor must be able to access the controls must allow - display advisor to decide how the gantry display and badvisor to decide on the gantry display and badv
	Requirements for HUMAM practicioner - workinal : gracuitioner working must stay in acceptable bounds - trigging - practicioner fusing must stay in acceptable bounds for the operation perform in the loop - cognitive-gracuity-link. The operations research for practicioner must stay below its cognitive capacity limits - visual/Diraction : practitioner must not be visually distancial in operations where visual perception and evaluation are involved - situationAwarriess - practitioner may need to inspect its states (introspection)
	Requirements for PROCESS patient positioning on PROCESS patient positioning - situation/warmess - practitioner must be able to precise and evaluate the state of the patient positioning is controled - situation/warmess - practitioner must be able to precise and evaluate the patient positioning environment in which patient positioning is controled - decision/taking

#### Figure 29 PB adaptation framework

15/09/2016	Named Distribution Only	Page 36 of 36
	Proj. No: 332933	