System Test Plan

(Systemtestplan)

(TINF19C, SWE I Praxisprojekt 2020/2021)

Project: Modelling Wizard

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Version	Date	Author	Comment
0.1	22.10.2020	Jakob Schmidt	Created
0.2	08.04.2021	Jakob Schmidt	First Draft
0.3	20.04.2021	Jakob Schmidt	Second Draft
0.4	22.04.2021	Jakob Schmidt	Added more tests and test data

Content

1 Scope

The STP (System Test Plan) describes the test strategy and test planning.
It contains the tests required to check whether the requirements specified in the SRS (System Requirements Specification) [1] have been implemented in a functional manner.
The document derived from the STP is the STR (System Test Report) [2], which additionally specifies the test results.

2 Definitions

AML AutomationML
TS Testsuite
TC Testcase
GUI Graphical User Interface

3 Test Objects

The following test objects must be verified.

Ref.-ID.	Product Number	Product Name	Product Description
1	Version 2.0	Modelling Wizard	Plugin for AutomationML to create devices

4 Features

The following requirements must be verified if they are not classified as “not to be tested”. This table shows the test coverage between functionality and test suites or test cases. (copied)

Reg.-ID.	Functionality	Priority	Testsuite ID
LF10	Basic tests. Validation of input and output.	A	TS-001
LF20	Checks if generic data are added correctly.	A	TS-002
LF30	Checks if interfaces are added correctly.	A	TS-003
LF40	Checks if attachments are added correctly	A	TS-004
LF50	Check if the plugin was installed correctly	B	TS-001

5 Test Preparation Strategy

Since the Modelling Wizard does not have any Modules, the testing will be split into four parts. Three for the different types of data the Modelling Wizard can store and one for the basic functionality testing.

6 Test Execution Strategy

Although this is a further development of an already existing software, the number of bugs in the previous version makes a complete testing of the software necessary.
First the Basic functionality will be tested, to verify the program.
After that the generic data, interfaces and attachments will be tested, to verify the different features.

7 Test Equipment

The following equipment must be available for testing:

- A computer with Windows 7 or higher

- Installed AutomationML Editor (Downloadlink)
- Installed Modelling Wizard software

8 Test Schedule and Budget

No budget is needed for the tests, as they are all performed by hand.

9 Test Planning

Testsuite	Test Objective	Testplan Creator	Testplan Reviewer	Tester
TS-001	Basic functionality	Jakob Schmidt	…	Jakob Schmidt
TS-002	Generic data	Jakob Schmidt	…	Jakob Schmidt
TS-003	Interfaces			
TS-004	Attachments			

10 Reference/ Standards

[1] „SRS,“ [Online]. Available: https://github.com/DekaAthlos/TINF19C-ModellingWizard/wiki/1.-Software-Requirements--Specification.

[2] „STR,“ [Online]. Available: https://github.com/DekaAthlos/TINF19C-ModellingWizard/tree/master/PROJECT/STR.

11 Testcases

11.1 Testsuite <TS-001 Basic functionality>

11.1.1 Testcase <TC-001-001> (Create Device)

Testcase ID	**TC-001-001**	
Testcase Name	Create device	
Req.-ID.	LF10	
Description	This testcase verifies that a device can be created and saved.	
Test Steps		
Step	Action	Expected Result
1	Select the “File” dropdown and click on “new”.	A new empty Modelling Wizard window opens.
2	Fill “Vendors Name” and “Device Name” in the top navbar, with data from TD-001-001.	Data is entered.
	Click on “AutomationComponent{ Class: AutomationMLBaseRole}” in the top table.	The entry gets highlighted. A label with the entry name appears underneath the table.
	Click on the new label.	The label gets highlighted.
	Double click on the new label.	Underneath the label the “Attributes” table opens. “Manufacturer” and “Model” are already filled with data from “Vendors Name” and “Device Name”.
	Fill the red marked entries with data from TD-001-001.	Data is entered.
	Select the “File” dropdown and click on “save”.	A dropdown of the explorer opens, and the name of the file can be chosen.
	Enter a name and click “save”.	A popup opens and informs about the correct creation and the path of the file. If the name already the explorer will ask for confirmation of the saving.
	Confirm the message.	The popup closes.
	Open the file in AutomationML and verify that all data is saved.	The file gets opened and under Attributes all data can be found.

Testdata	TD-001-001					
Dataset	**Vendor Name**	**Device Name**	**ManufacturerURI**	**Device Class**	**Product Code**	**Validation**
1	DHBW	Server	-	-	-	Valid
2	DHBW	Server	-	-	-	Valid
3	Null	Null	-	-	-	Fail

11.1.2 Testcase <TC-001-002> (Open device, save changes)

Testcase ID	**TC-001-002**
Testcase Name	Open device, save changes
Req.-ID.	LF10
Description	This testcase verifies that a device can be loaded with its data, that the data can be changed and that it can be saved again.

Test Steps

Step	Action	Expected Result
1	Select the “File” dropdown and click on “open”.	The explorer opens, and the file can be chosen.
	Choose the test file from TD-001-002 and click “open”	“Vendor Name” and “Device Name” gets filled. The Name of the file will be displayed in the top right corner. All generic data, interfaces and attachments will be accessible over their tabs.
	Click on “AutomationComponent{ Class: AutomationMLBaseRole}” in the top table.	The entry gets highlighted. A label with the entry name appears underneath the table.
	Click on the new label.	The label gets highlighted.
	Double click on the new label.	Underneath the label the “Attributes” table opens. “Manufacturer” and “Model” are already filled with data from “Vendors Name” and “Device Name”.
	Fill the red marked entries with data from TD-001-002.	Data is overwritten.
	Select the “File” dropdown and click on “save”.	A dropdown of the explorer opens, and the name of the file can be chosen. The Name should be the same, if “Vendor Name” and “Device Name” have not changed.
	Enter a name and click “save”.	A popup opens and informs about the correct creation and the path of the file. If the name already the explorer will ask for confirmation of the saving.
	Confirm the message.	The popup closes.
	Open the file in AutomationML and verify that all data is saved.	The file gets opened and under Attributes all data can be found.

Testdata	TD-001-002				
Dataset	**File**	**ManufacturerURI**	**Device Class**	**Product Code**	**Validation**
1	DHBW_Testfile_01.amlx	-	-	-	Valid
1	DHBW_Testfile_02.amlx	DHBW_URI	Computer	000419000	Valid
1	null	-	-	-	Valid

11.1.3 Testcase <TC-001-003> (Load standard libraries)

Testcase ID	**TC-001-003**	
Testcase Name	Load standard libraries	
Req.-ID.	LF10	
Description	This testcase verifies that the standard libraries can be loaded into the Modelling Wizard.	
Test Steps		
Step	Action	Expected Result
1	Select the “Standard Libraries” dropdown in the top navbar.	The explorer opens, and the library file can be chosen.
	Choose one library that is not already loaded and click open	The library will be loaded and can be found on the right sight under “Role Class Library” or “Interface Class Library”

11.1.4 Testcase <TC-001-004> (Load external libraries)

Testcase ID	**TC-001-004**	
Testcase Name	Load external libraries	
Req.-ID.	LF10	
Description	This testcase verifies that the external libraries can be loaded into the Modelling Wizard.	
Test Steps		
Step	Action	Expected Result
1	Select the “File” dropdown and click on “Load Library”.	A dropdown of the libraries opens, and one can be chosen.
	Choose one library that is not already loaded.	The library will be loaded and can be found on the right sight under “Role Class Library” or “Interface Class Library”

11.2 Testsuite <TS-001 Generic data>

11.2.1 Testcase <TC-002-001> (Create device with attributes)

Testcase ID	**TC-002-001**	
Testcase Name	Create device with attributes	
Req.-ID.	LF20	
Description	This testcase verifies that a device with data in the attributes and the header of “Generic Data” can be created and saved.	
Test Steps		
Step	Action	Expected Result
1	Select the “File” dropdown and click on “new”.	A new empty Modelling Wizard window opens.
2	Fill “Vendors Name” and “Device Name” in the top navbar, with data from TD-002-001.	Data is entered.
	Click on “AutomationComponent{ Class: AutomationMLBaseRole}” in the top table.	The entry gets highlighted. A label with the entry name appears underneath the table.
	Click on the new label.	The label gets highlighted.
	Double click on the new label.	Underneath the label the “Attributes” table opens. “Manufacturer” and “Model” are already filled with data from “Vendors Name” and “Device Name”.
	Fill the entries with data from TD-002-001	Data is entered.
	Click on “Header” besides “Attributes”	The “Header” table opens
	Fill the entries with data from TD-002-001	Data is entered
	Select the “File” dropdown and click on “save”.	A dropdown of the explorer opens, and the name of the file can be chosen.
	Enter a name and click “save”.	A popup opens and informs about the correct creation and the path of the file. If the name already the explorer will ask for confirmation of the saving.
	Confirm the message.	The popup closes.
	Open the file in AutomationML and verify that all data is saved.	The file gets opened and under Attributes all data can be found.

Testdata				TD-002-001									
Dataset		**Vendor Name**	**Device Name**	**ManufacturerURI**	**Device Class**	**Product Code**	**Temperature Min**	**Temperature Max**	**City**	**Website**	**(Header) Copyright**	**(Header) ID**	**Validation**
1	Values	DHBW	Server	uridhbw	Computer	00041800	15	45	Berlin	ML.com	MIT license	ID-001	Valid
	Default	-	-	-	-	-	20	40					
	Units	-	-	-	-	-	Degree	Degree	Names	Urls			
2	Values	DHBW	Server	uridhbw	Computer	00041800	15	45	Berlin	ML.com	MIT license	ID-002	Valid
	Default	-	-	-	-	-	20	40	default	default			
	Units	-	-	-	-	-	Degree	Degree	Names	Urls			

11.2.2 Testcase <TC-002-002> (Create device with role classes)

Testcase ID	**TC-002-002**
Testcase Name	Create device with role classes
Req.-ID.	LF20
Description	This testcase verifies that a device with loaded classes from “Role Class Library” can be created and saved.

Test Steps

Step	Action	Expected Result
1	Select the “File” dropdown and click on “new”.	A new empty Modelling Wizard window opens.
2	Fill “Vendors Name” and “Device Name” in the top navbar, with data from TD-002-001.	Data is entered.
	Click on the library “Library Name” (Data from TD-002-001) on the right side under “Role Class Library”	The entry gets highlighted.
	Drag and drop the library onto the “Generic Information” table.	The library gets added at the last position.
	Click on the library in the “Generic Information” table.	The entry gets highlighted. A label with the entry name appears underneath the table.
	Click on the new label.	The label gets highlighted.
	Double click on the label.	Underneath the label the “Attributes” table opens. If the class consists of sub classes, these are displayed as indented labels.
	Fill the entries with data from TD-002-002	Data is entered.
	Click on the label of the subclass.	The label gets highlighted.
	Double click on the subclass.	Underneath the label the “Attributes” table for the specific subclass opens.
	Fill the entries with data from TD-002-002	Data is entered
	Select the “File” dropdown and click on “save”.	A dropdown of the explorer opens, and the name of the file can be chosen.
	Enter a name and click “save”.	A popup opens and informs about the correct creation and the path of the file.

		If the name already the explorer will ask for confirmation of the saving.
	Confirm the message.	The popup closes.
	Open the file in AutomationML and verify that all data is saved.	The file gets opened and under Attributes all data can be found.

Testdata		TD-002-002								
Dataset		**Vendor Name**	**Device Name**	**Library Name**	**Spec Version**	**DocLang**	**refURI**	**MIMEType**	**Version**	**Validation**
1	Values	DHBW	Server	“AutomationML ComponentBase RCL” >> “AdditionalDevic eDescription{Cla ss: External Data}”-	1.0.0	En	001	.doc	1.0.0	Valid
	Default	-	-		1.0.0	En	000	.docx	1.0.0	
	Units	-	-		Version numbers	Country Code	digits	Word	Version numbers	
Dataset		**Vendor Name**	**Device Name**	**Library Name**		**refURI**	**MIMEType**			**Validation**
2	Values	DHBW	Server	“AutomationMLComponentStandardRCL” >> “Component Icon{Class: Icon}”		001	.png			Valid
	Default	-	-			000	.jpg			
	Units	-	-			digits	Picture			

11.3 Testsuite <TS-003 Interfaces>

11.3.1 Testcase <TC-003-001> (Create device with interfaces)

Testcase ID	**TC-003-001**	
Testcase Name	Create device with interfaces	
Req.-ID.	LF30	
Description	This testcase verifies that a device with additional interfaces can be created and saved.	
Test Steps		
Step	Action	Expected Result
1	Select the “File” dropdown and click on “new”.	A new empty Modelling Wizard window opens.
2	Fill “Vendors Name” and “Device Name” in the top navbar, with data from TD-003-001.	Data is entered.
	Click on the “Interfaces” tab below the top navbar.	The Interfaces view opens.
	Click on the interface “Interface Name” (Data from TD-003-001) on the right side under “Interface Class Library”	The entry gets highlighted.
	Drag and drop the interface onto the “Interfaces” table.	The interface gets added at the last position.
	Click on the interface in the “Interfaces” table.	The entry gets highlighted. A label with the entry name appears underneath the table.
	Click on the new label.	The label gets highlighted.
	Double click on the label.	Underneath the label the “Attributes” table opens.
	Fill the entries with data from TD-003-001.	Data is entered.
	Select the “File” dropdown and click on “save”.	A dropdown of the explorer opens, and the name of the file can be chosen.
	Enter a name and click “save”.	A popup opens and informs about the correct creation and the path of the file. If the name already the explorer will ask for confirmation of the saving.

	Confirm the message.	The popup closes.
	Open the file in AutomationML and verify that all data is saved.	The file gets opened and under Attributes all data can be found.

Testdata	TD-003-001

Dataset		Vendor Name	Device Name	Interface Name	Direction	Validation
1	Values	DHBW	Server	“AutomationMLInterfaceClassLib” >> “AutomationMLBaseInterface” >> “ Order{Class: AutomationMLBaseInterface}”	Top	Valid
	Default	-	-		Top	
	Units	-	-		Directions	
2	Values	DHBW	Server	“AutomationMLInterfaceClassLib” >> “AutomationMLBaseInterface” >> “ Order{Class: AutomationMLBaseInterface}”	-	Valid
	Default	-	-		-	
	Units	-	-		-	

Dataset		Vendor Name	Device Name	Library Name	refURI	MIMEType	Validation
3	Values	DHBW	Server	“AutomationMLComponentBaseICL” >> “2DReference{Class: ExternalDataReference}”	001	.png	Valid
	Default	-	-		000	.jpg	
	Units	-	-		digits	Picture	

11.4 Testsuite <TS-004 Attachments>

11.4.1 Testcase <TC-004-001> (Create device with attachments)

Testcase ID	**TC-004-001**	
Testcase Name	Create device with attachments	
Req.-ID.	LF40	
Description	This testcase verifies that a device with attachments can be created and saved.	
Test Steps		
Step	Action	Expected Result
1	Select the “File” dropdown and click on “new”.	A new empty Modelling Wizard window opens.
2	Fill “Vendors Name” and “Device Name” in the top navbar, with data from TD-004-001.	Data is entered.
	Click on the “Attachments” tab below the top navbar.	The attachment view opens.
	Click on the “Add” button in the upper left corner.	A dropdown list opens.
	Choose the “Dropdown” (Data from TD-004-001).	The name gets added to the two text fields underneath.
	Click “Select File” button	An explorer opens.
	Search the test file (Data from TD-004-001) and click open	The “Element Name” and the “File Path” in the “Attachable Information” table get filled with the test data.
	Select the “File” dropdown and click on “save”.	A dropdown of the explorer opens, and the name of the file can be chosen.
	Enter a name and click “save”.	A popup opens and informs about the correct creation and the path of the file. If the name already the explorer will ask for confirmation of the saving.
	Confirm the message.	The popup closes.
	Open the file in AutomationML and verify that all data is saved.	The file gets opened and under Attributes all data can be found.

Testdata	TD-001-001				
Dataset	**Vendor Name**	**Device Name**	**Dropdown**	**Test file**	**Validation**
1	DHBW	Server	Certificate	DHBW.pdf	Valid
2	DHBW	Server	Component Icon	DHBW.png	Valid

Testdata	TD-003-001

Dataset		Vendor Name	Device Name	Interface Name	Direction	Validation
1	Values	DHBW	Server	“AutomationMLInterfaceClassLib” >> “AutomationMLBaseInterface” >> “ Order{Class: AutomationMLBaseInterface}”	Top	Valid
	Default	-	-		Top	
	Units	-	-		Directions	
2	Values	DHBW	Server	“AutomationMLInterfaceClassLib” >> “AutomationMLBaseInterface” >> “ Order{Class: AutomationMLBaseInterface}”	-	Valid
	Default	-	-		-	
	Units	-	-		-	

Dataset		Vendor Name	Device Name	Library Name	refURI	MIMEType	Validation
3	Values	DHBW	Server	“AutomationMLComponentBaseICL” >> “2DReference{Class: ExternalDataReference}”	001	.png	Valid
	Default	-	-		000	.jpg	
	Units	-	-		digits	Picture	