

Customer Requirements Specification

TINF21C, Software Engineering I
Praxisproject 2022/23

Project

AAS-Webclient

Customer

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<i>Version</i>	<i>Date</i>	<i>Author</i>	<i>Comment</i>
0.1	02.10.2022	Martin Rittmann	Created, first draft
0.2	23.10.2022	Martin Rittmann	Added Product Usage
0.3	02.11.2022	Martin Rittmann	Added non functional requirements
1.0	04.11.2022	Martin Rittmann	Final draft of the CRS

CONTENTS

GOAL	3
PRODUCT ENVIRONMENT	3
PRODUCT USAGE.....	4
BUSINESS PROCESSES	4
<BP.001>: Edit AASX-Server.....	4
<BP.002>: Find digital twin.....	4
USE CASES	5
<UC.001>: Add AASX-Server	5
<UC.002>: Delete AASX-Server	6
<UC.003>: Find digital twin	6
<UC.004>: Display digital twin	7
<UC.005>: Search for digital twin	7
<UC.006>: Filter entries	8
FEATURES.....	9
/LF10/ Import server.....	9
/LF20/ Server validation	9
/LF30/ Error handling	9
/LF40/ GUI	9
/LF50/ Display content in a clear way	9
PRODUCT DATA.....	9
/LD10/ Data	9
OTHER PRODUCT CHARACTERISTICS	10
/NF10/ GUI	10
/NF20/ Browser	10
/NF30/ Efficiency	10
/NF40/ Usability	10

Goal

The goal is to create a React based webpage for Asset Administration Shells (AAS) to provide a clearer presentation of digital twins based on AASX-Servers. The currently existing pages with similar functions provide a more technical view of digital twins and are therefore not user friendly. This webpage shall provide an easier way to browse and find digital twins with adding own AASX-Servers and search/filter functionalities. The frontend shall be designed in an intuitive way with reduced information, which could distract the user. The more specific and possibly confusing content shall only be delivered on request.

Product Environment

The Asset Administration Shell (AAS) is the Standard for modelling digital twins in Industry 4.0. Digital twins are models of so-called assets. Those can be tools, systems and products, etc. The twins shall be as similar to the really existing asset as possible, even if it hasn't even been built before. It should simulate a real asset in every (technical) detail. You can virtually build machines with digital twins or test them in virtual environments before building the machine to test its functionality, usability, etc.

Product Usage

The following business processes, use cases and features shall be supported by the system.

Business Processes

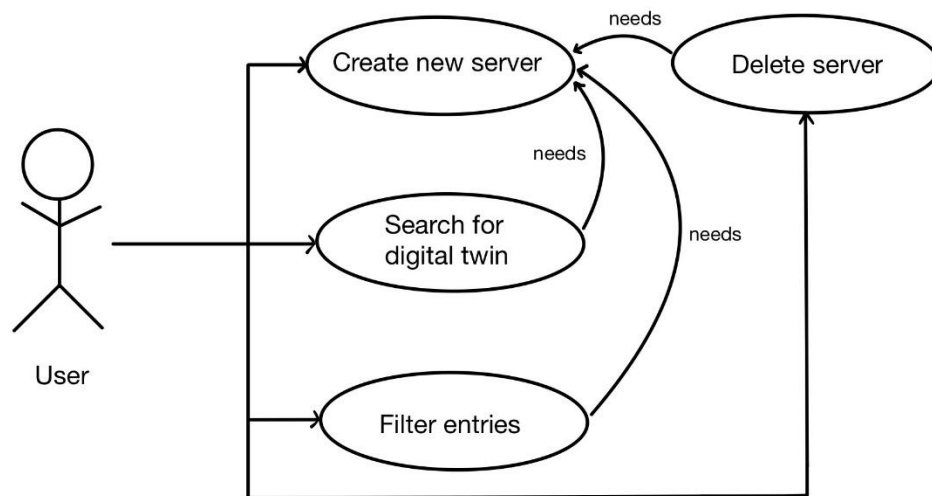
<BP.001>: Edit AASX-Server

Triggering Event:	User wants to edit an AASX-Server
Result:	The user can add and delete the AASX-Server, which includes the content shown on the webpage
Involved Roles:	User

<BP.002>: Find digital twin

Triggering Event:	The user wants to find a digital twin
Result:	The user can search, filter or browse through the digital twins shown on the webpage and receive further information at will.
Involved Roles:	User

Use Cases



<UC.001>: Add AASX-Server

Related Business Process:	<BP.001>: Edit AASX-Server
Use Cases Objective:	User wants to add an AASX-Server by inserting the server's URL manually into the webpage.
System Boundary:	The application itself.
Precondition:	The user needs to have the URL to the AASX-Server. The webpage must be open and connected to the Internet. There must not be a currently active AASX-Server. If so, delete it before adding a new one.
Postcondition on success:	The server's content is displayed on the webpage.
Involved Users:	Every end-user of the application.
Triggering Event:	When the user presses "new AASX-Server" on the webpage, enters the URL and presses "Save".

<UC.002>: Delete AASX-Server

Related Business Process:	<BP.001>: Edit AASX-Server
Use Cases Objective:	Deleting a prior added AASX-Server and its content from the webpage.
System Boundary:	The application itself.
Precondition:	An AASX-Server has been added before.
Postcondition on success:	No content of the deleted server is displayed anymore.
Involved Users:	Every end-user of the application.
Triggering Event:	When the user presses "delete AASX-Server".

<UC.003>: Find digital twin

Related Business Process:	<BP.002>: Find digital twin
Use Cases Objective:	The digital twins are displayed alphabetically sorted on the webpage. The user can scroll through them.
System Boundary:	The application itself
Precondition:	The user added a working AASX-Server.
Postcondition on success:	The user can browse through all content of the server and find digital twins coincidentally.
Involved Users:	Every end-user of the application.
Triggering Event:	When the user wants to look through all content of the server without the need to find a specific digital twin.

<UC.004>: Display digital twin

Related Business Process:	<BP.002>: Find digital twin
Use Cases Objective:	User can see the information of a specific digital twin
System Boundary:	The application itself
Precondition:	The user added a working AASX-Server.
Postcondition on success:	The user can see the information regarding a specific digital twin
Involved Users:	Every end-user of the application.
Triggering Event:	The user expands an entry of a digital twin on the webpage

<UC.005>: Search for digital twin

Related Business Process:	<BP.002>: Find digital twin
Use Cases Objective:	Search for a specific digital twin by serial number or by free text search.
System Boundary:	The application itself
Precondition:	The user added a working AASX-Server.
Postcondition on success:	A reduced number of digital twins is displayed on the webpage in the same way it was displayed before the search.
Involved Users:	Every end-user of the application.
Triggering Event:	The user enters a serial number or text in the search bar and presses "search" or Enter and wants to find a specific digital twin.

<UC.006>: Filter entries

Related Business Process:	<BP.002>: Find digital twin
Use Cases Objective:	Filter all content on the webpage to only show type models, instance models, filter by manufacturer name or manufacturing year. Filter can be used together.
System Boundary:	The application itself.
Precondition:	The user added a working AASX-Server.
Postcondition on success:	The entries are specified and displayed on the webpage.
Involved Users:	Every end-user of the application.
Triggering Event:	The user enters wished filtering criteria in designated area.

Features

/LF10/ Import server

The webpage should be able to import a server by its URL and display its content.

/LF20/ Server validation

The system shall be able to detect false server-URLs when adding a new server and throw an error to the user.

/LF30/ Error handling

The system shall be able to handle errors (no entries found, unexpected errors, false server-URL, ...)

and throw an error to the user.

/LF40/ GUI

The webpage should display a graphical user interface. The user will interact with this GUI for every other functionality of the webpage.

/LF50/ Display content in a clear way

The entries including the digital twins are shown in a clear and readable way as a list one entry under the other.

Product Data

/LD10/ Data

The data displayed in the webpage is delivered through an AASX-Server with REST-Calls. There is no functionality to export data or import other data than an AASX-Server by its URL.

Other Product Characteristics

This section describes the already known non-functional requirements for the product.

/NF10/ GUI

The webpage shall display a graphical user interface (GUI) to the user. This GUI must display every function provided to the user in a simple and intuitive way. It will be the only way to interact with the application.

/NF20/ Browser

The webpage shall work in every Browser supporting the HTML 5 standard.

/NF30/ Efficiency

The webpage shall add servers and apply filters in the fastest way possible as well as the user being able to find desired results with the lowest possible amount of steps.

/NF40/ Usability

A user searching a specific product shall find that product as fast as possible, intuitively know how the webpage works and there shall be enough online documentation for new users. No further training or experience is required.