PERFECTION IN AUTOMATION
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mvHighlight
mapp View project

Date: October 20, 20162016

Project Number: AT-xx-xxxxxx

I Versions

Version	Date	Comment	Edited by
1.0	Sep 29, 2016	First Edition	

Table 1: Versions

II Distribution

Name	Company, Department	Amount	Remarks

Table 2: Distribution

III Safety Notices

Safety notices in this document are organized as follows:

Safety notice	Description
Danger!	Disregarding the safety regulations and guidelines can be life-threatening.
Warning!	Disregarding the safety regulations and guidelines can result in severe injury or heavy damage to material.
Caution!	Disregarding the safety regulations and guidelines can result in injury or damage to material.
Information:	Important information used to prevent errors.

Table 3: Safety notices

IV Table of Contents

1 Introduction

This documentation explains the functions and implementation of the mapp View project **mvHighlight**.

The project can be transferred to the Automation Runtime simulation ARsim and will show different use cases. The structure of the mapp View visualization in the Logical and Configuration View is based on the different use cases.

Browser URL
http://localhost:81/index.html?visuId=mvHighlight

1.1 Overview of functions and use cases

- **Login procedure** from the start page of the visualization
- **Widget overview** – simple, composed, graphical and system Widgets
- **Table Widget** – displays data in a table
- **Documentation** – showing a PDF document
- **User and Limits** – role dependent limits for Input Widgets
- **Rights and Roles** – role dependent restrictions for visibility and / or operability
- **Client informations** – system variables for client / session specific informations
- **Web Viewer** – implementation of the web based Automation Runtime “System Diagnostics”
- **Events** – modal and modeless dialogs, use case for a MessageBox
- **Media** – showing a video
- **Units** – displays an engineering unit of a OPC UA node in different display units
- **Gallery** – shows how a second visualization can be shown in an area of a page
- **Variable list** – shows an individual value out of a list of OPC UA nodes
- **Themes** –implementation of a day / night view
- **Styles** - shows the possible usages for styles
- **Expression** – use case for calculations in the visualization – result used for visibility / operability
- **Keyboard** – implementation of key actions in a visualization
- **Chart** – implementation of a OnlineChart

2 General description

This capture describes each Page of the mvHighlight project.

Browser URL:

Local visualization

http://localhost:81/index.html?visuId=mvhighlight

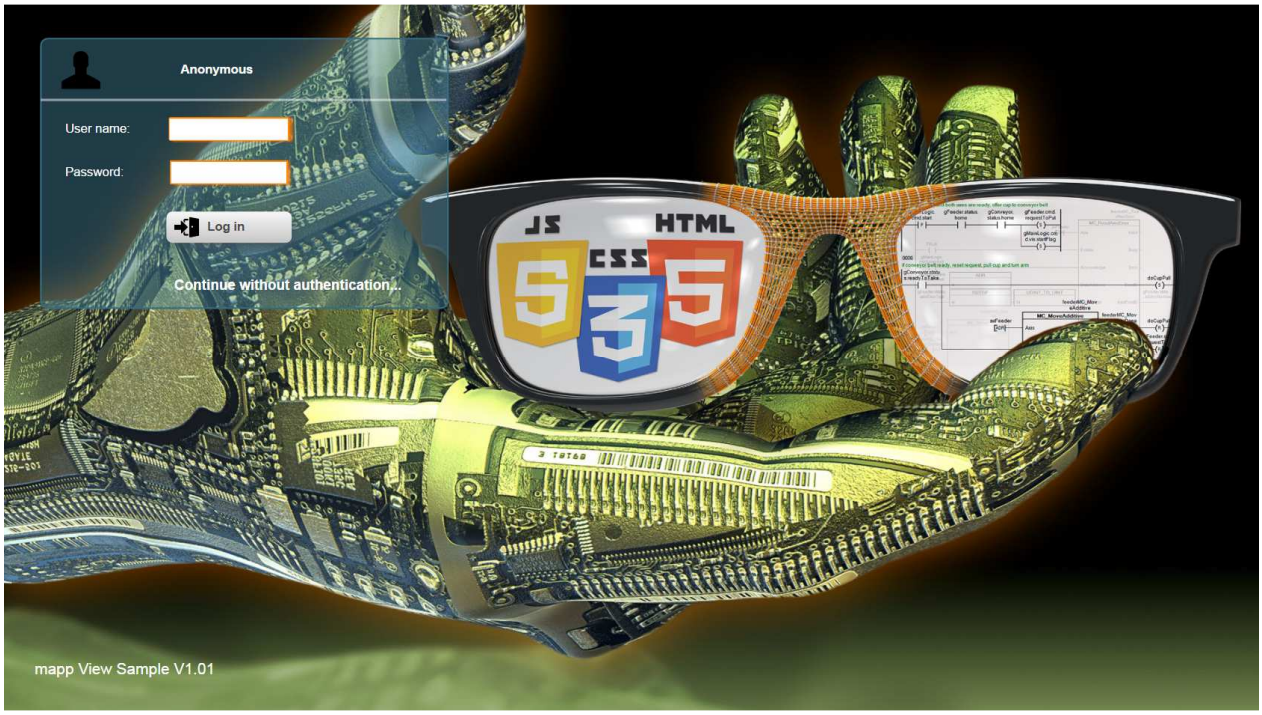
Service visualization

http://localhost:81/index.html?visuId=mvService

2.1 MainPage

The **MainPage** is used as a start page in the visualization.

For the presentation no authentication is necessary – “Continue without authentication..:” will navigate to the **NavigationPage**.



Use case	description
User login	In case of different users working on a machine each user must login to receive rights defined in his role **Available user names / passwords** User: kirk – password: 7777 User: spock – password: 0000
Anonymous login	Allows an operator to use the visualization without authentication (presentation mode)

2.2 NavigationPage

From the **NavigationPage** the user can navigate to all pages in the visualization.

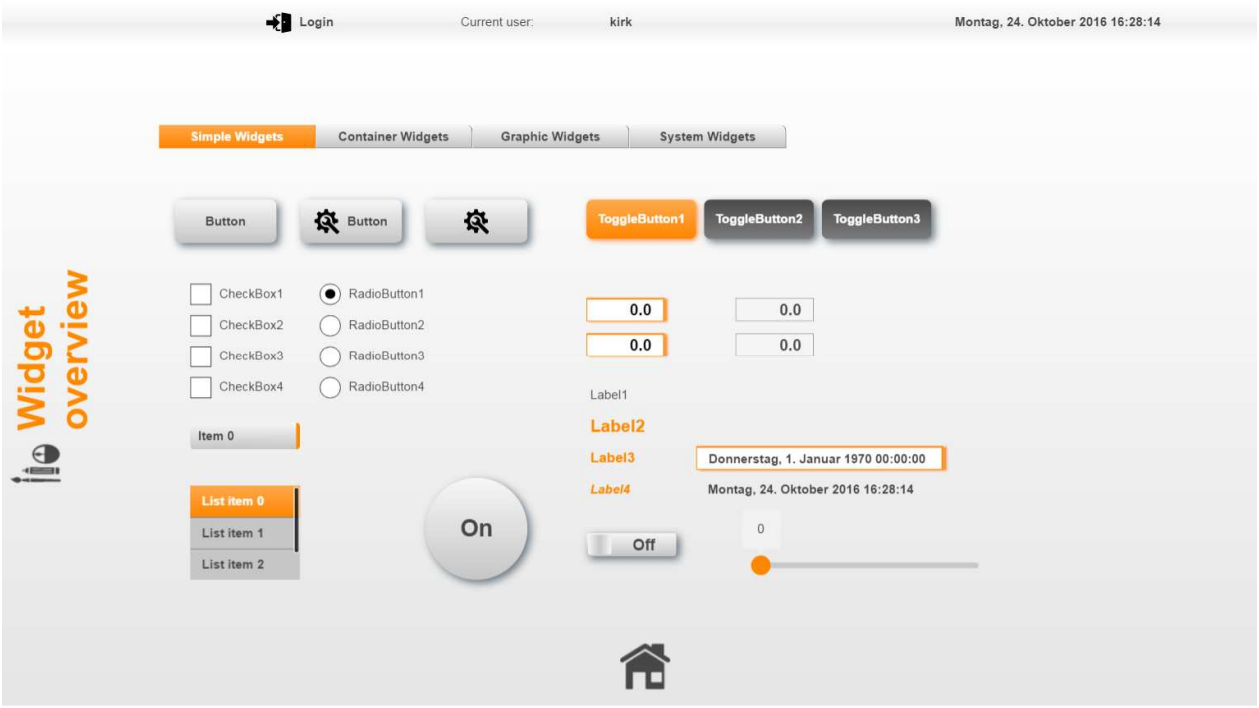
Use case	description
Show / hide apps	In a FlyOut widget the user can change the visability of NavigationButton Widgets on the screen. The FlyOut Widget is placed in a Content used only on the NavigationPage. SessionVariables used for visability state FlyOut: ToggleButton toggles the visability state – binding on session var NavigationButton: visible binding on session var
Logout	Allows an operator to logout from the visualization. The MainPage is shown after logout to provide a possible login for the next user.

3 Functionality

3.1 Widget overview

The **WidgetOverviewPage** shows most oft he Widgets in four Tab

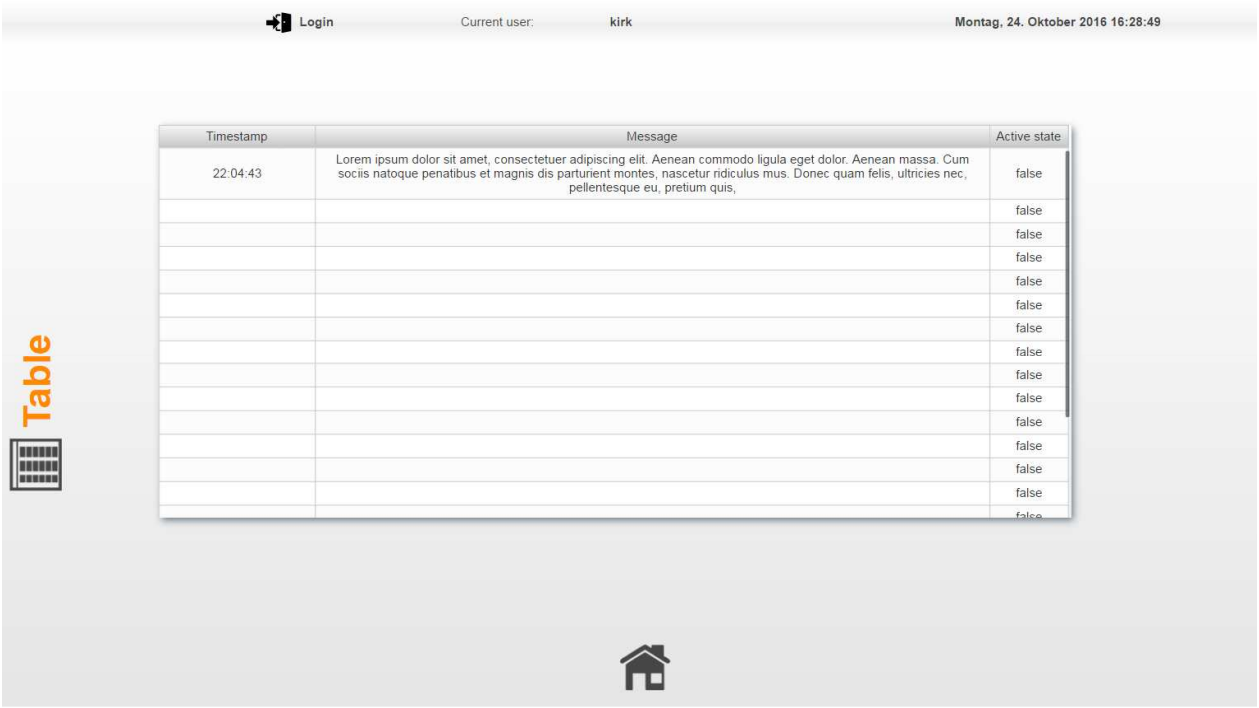
Simple Widgets: different simple Widgets
Container Widgets: GroupBox with absolute and relative positioning (see use case)
Graphic Widgets: Radial Gauge and Image Widgets
System Widgets: Widgets for system functions



Use case	description
GroupBox absolute /relative	Show the difference of absolute and relative positioning Hide Button A: absolute positions of other Widgets remain in left GroupBox Widgets in document flow will be shifted when a Widget is invisible
Enable / Visible behavior	Each child Widget in a GroupBox will inherit the enable or visible state of the parent GroupBox
Brease-Brease Binding	The visible and enable behavior is done with brese-brease binding between the CheckBox and the GroupBox / ButtonA Widget No additional variable is required Affected binding file: Simulation.binding

3.2 Table

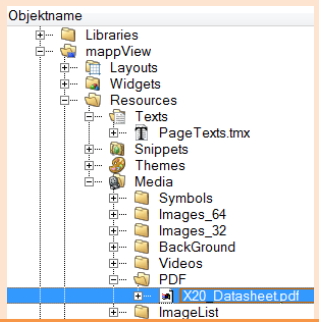
The **TablePage** shows the usage of a Table and TableItem Widget



Use case	description
Table / TableItem	A Table Widget is used as a container for one or more TableItem Widget(s) Affected program: Table – Variable definition with String Arrays Affected binding: Table.binding Enter text in watch in variable of program Table

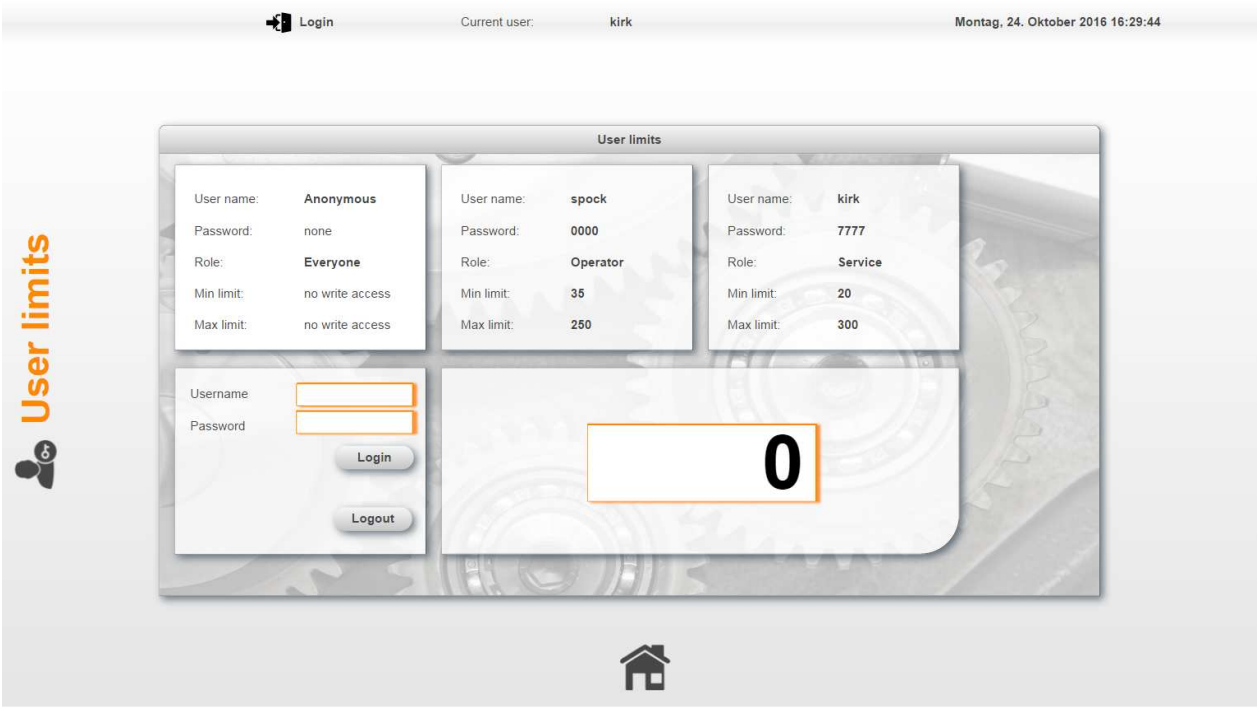
3.3 Documentation

The **DocuPage** shows how to implement PDF documents in the visualization.

Use case	description
User documentation in the visualization	Documents are available in the project structure in Automation Studio 

3.4 User limits

The **UserLimitPage** explains that for OPC UA variables each role can be defined with different limits.

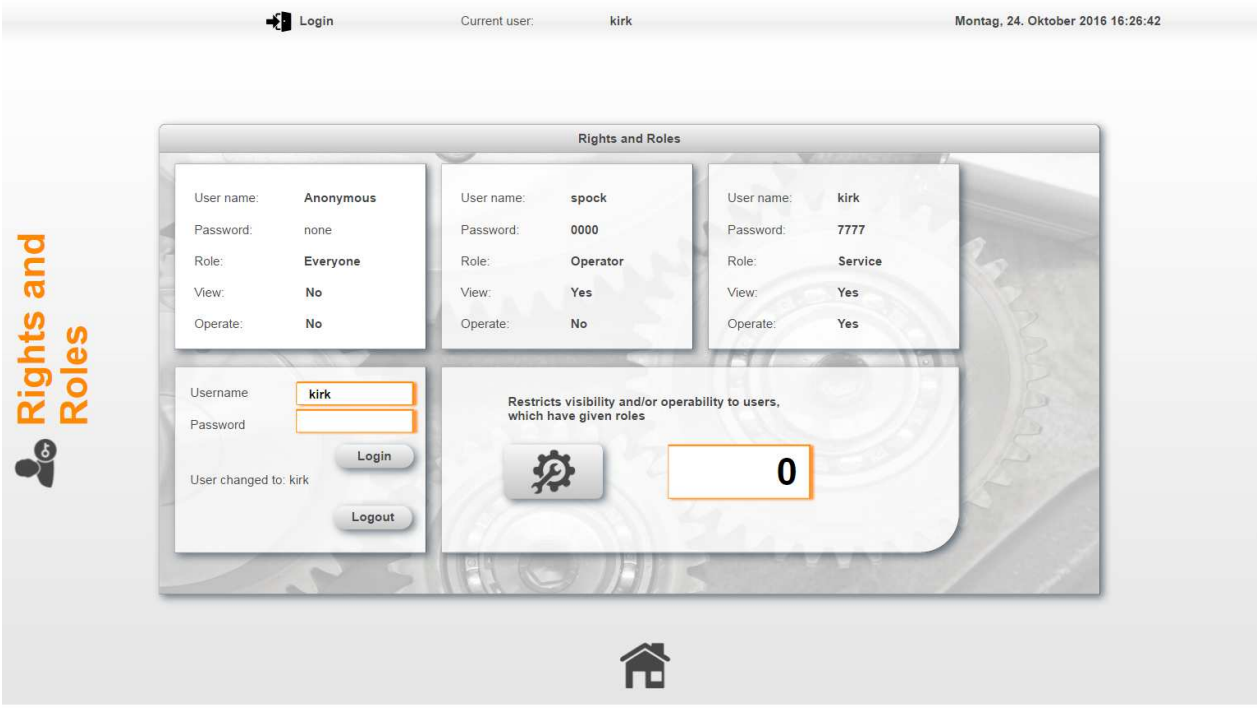


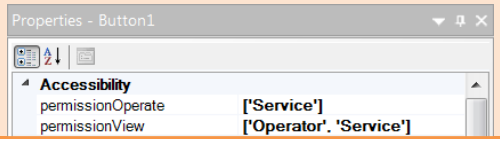
Use case	description
Login for different roles	In the login area enter the user name and password for different roles Everyone: default role – no write access Service / Operator have different min and max limits Affected program: Simulation / variable userLimitValue

Name	Value	Value	Value	Value
userLimitValue				
Enable	True			
Audit Events	Off			
Authorization				
Inherit From Parent	Inherit None			
Rights / Roles	Service	Everyone	Operator	
Visible	☑	☑	☑	
Browse	☑	☑	☑	
Subscribe	☑	☑	☑	
Read	☑	☑	☑	
Write	☑	☐	☑	
EU Range Violation				
EU Range Violation	Accept			
Authorization				
EU Range	<Default>	Everyone	Service	Operator
Low	0	35	20	35
High	500	250	300	250
Authorization				

3.5 Rights and Roles

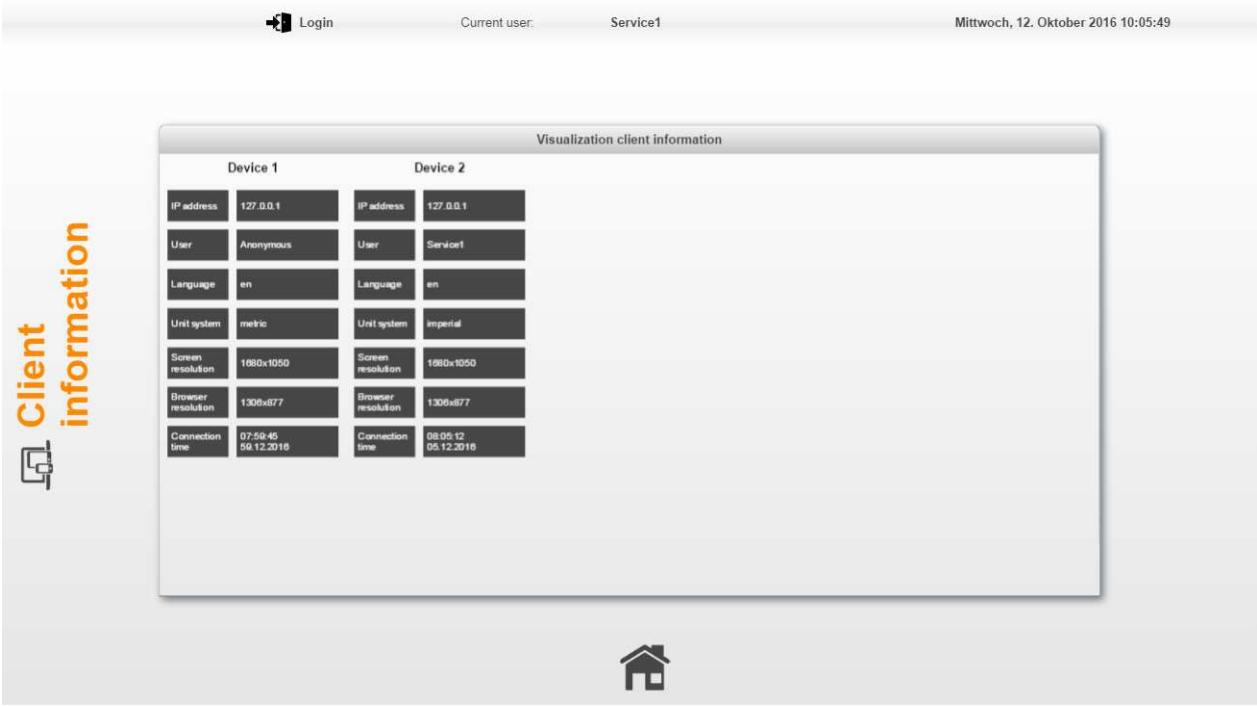
The **RightsRolePage** explains the Widget configuration to restrict the visibility and / or operability to users which have given roles.



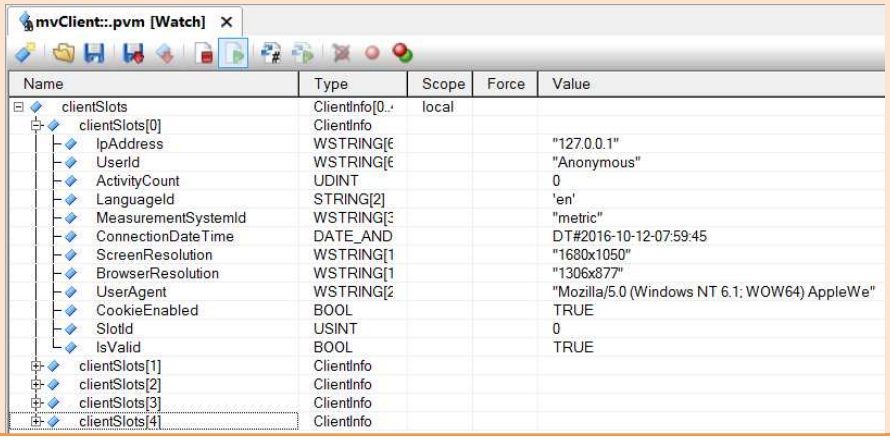
Use case	description
Login for different roles	In the login area enter the user name and password for different roles Everyone: default role – no view and operate rights Service / Operator have different view and operate rights Affected program: Simulation / variable userLimitValue 

3.6 Client information

The **ClientInfoPage** explains which kind of information is available in the PLC / visualization.



Use case	description
Multi Session	Open a second browser (Inkognito mode !) Change user / measurement sytem / language in each client session Affected program: mvclient Affected binding: SystemInfo.binding – information from mapp View to PLC ClientInfoPage.binding – bind OPC UA variables to Widgets



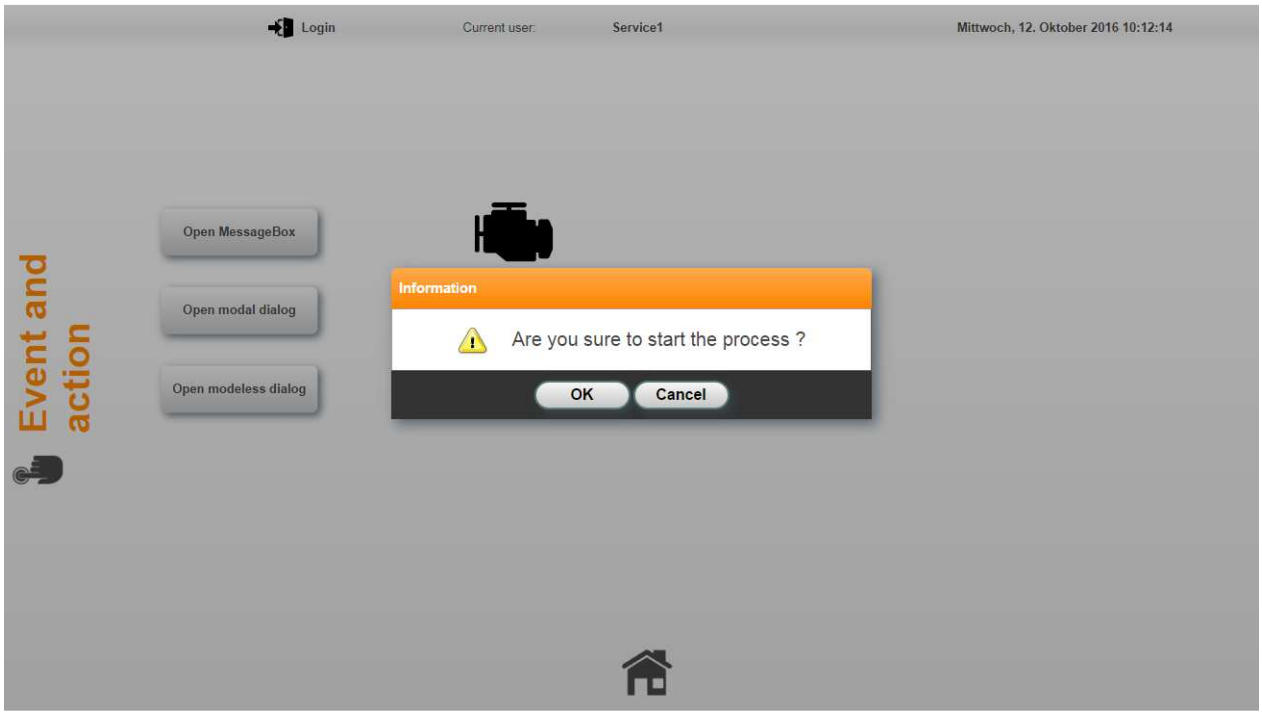
3.7 Web Viewer

The **WebViewerPage** shows the implementation of the Automation Runtime System Diagnostics Manager (SDM).

Use case	description
Service information	Show the System Diagnostics in a Visualization

3.8 Event and action

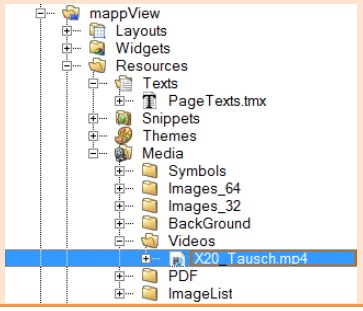
The **EventPage** shows the usage of a MessageBox and for modal and modeless Dialogs.



Use case	description
MessageBox	A button click opens a MessageBox In the result handler of the MessageBox an action can be configured for the defined MessageBox type (e.g. OKCancel) Affected Eventbinding: EventBinding.eventbinding
Modal dialog	A button click event opens a modal Dialog. Show that the lower content can not be modified during the dialog is open Affected Eventbinding: EventBinding.eventbinding
Modeless dialog	A button click event opens a modeless Dialog. Show that the lower content can be modified during the dialog is open The dialog stays open also if a page is changed. Affected Eventbinding: EventBinding.eventbinding

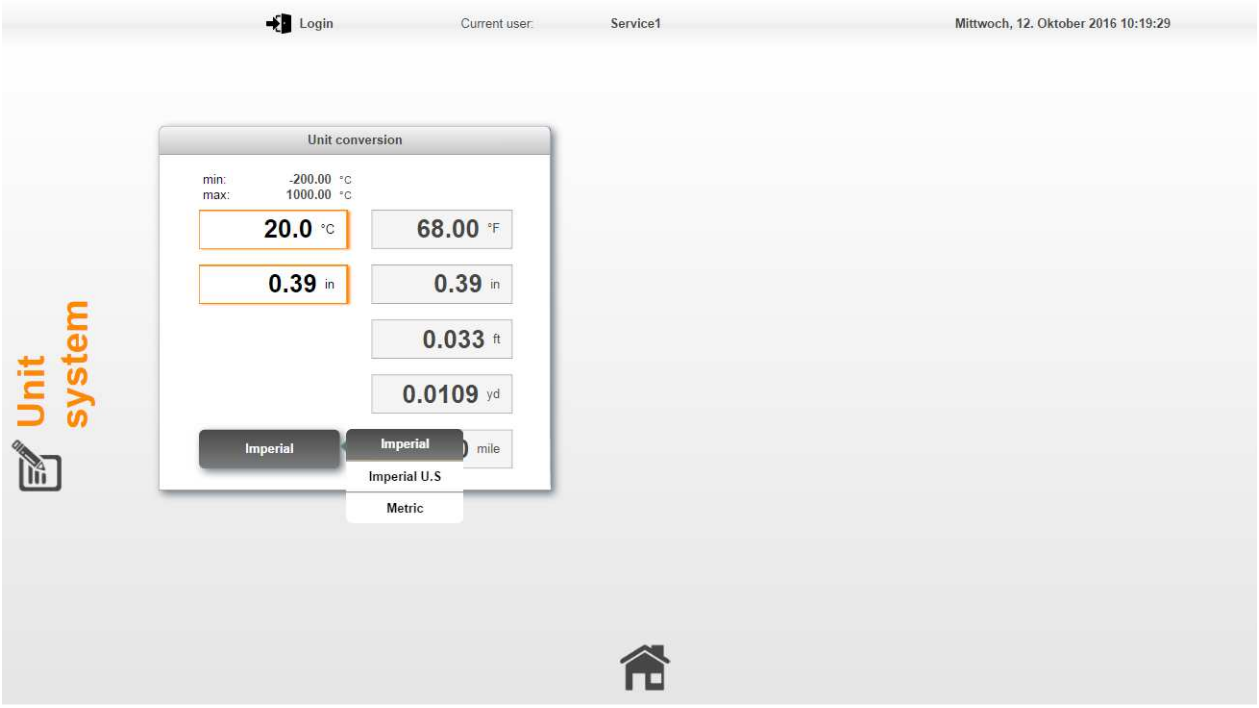
3.9 Video Player

The **MediaPage** shows how to use videos additional operator help.

Use case	description
Service information	Show the video implementation Documents are available in the project structure in Automation Studio 

3.10 Unit system

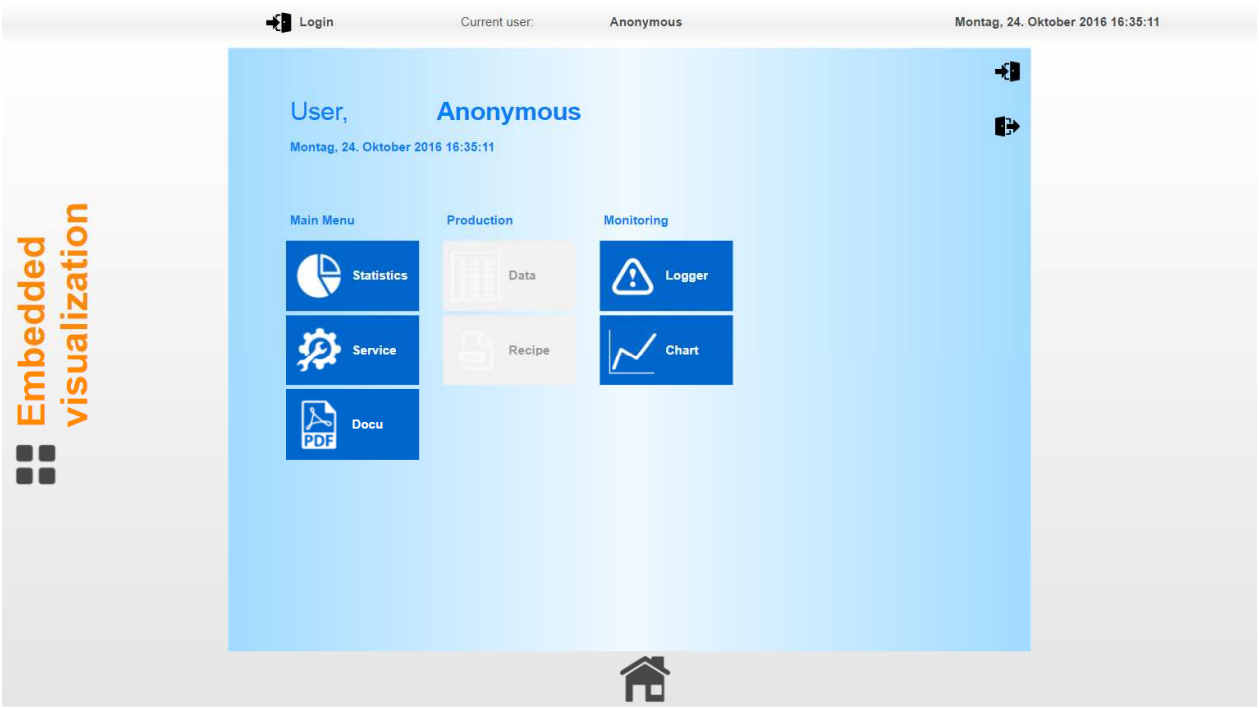
The UnitsPage shows how OPC UA nodes with a defined Engineering Unit can be used in a Widget with different format / unit configuration based on the selected measurement system.



Use case	description
Measurement system	Change measurement system and show the effect in the numeric Widgets Affected Program: Simulation

3.11 Embedded visualization

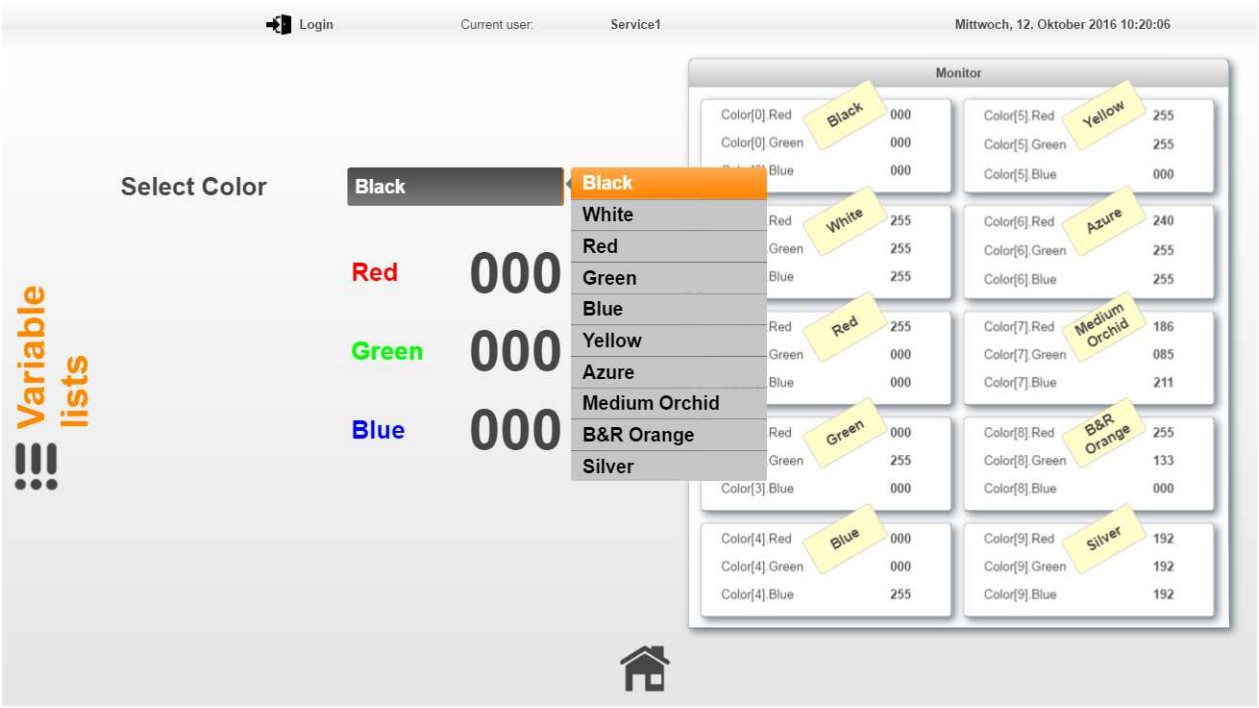
The **EmbVisuPage** shows how to assign a second visualization (Service.vis).



Use case	description
Login	A login of the main visualization has also an effect to the embedded visualizations. Affected binding: Mobile.binding
Pages	Implementation of different service informations

3.12 Variable lists

The VarListPage explains how to point to a defined variable depending on a certain selection.

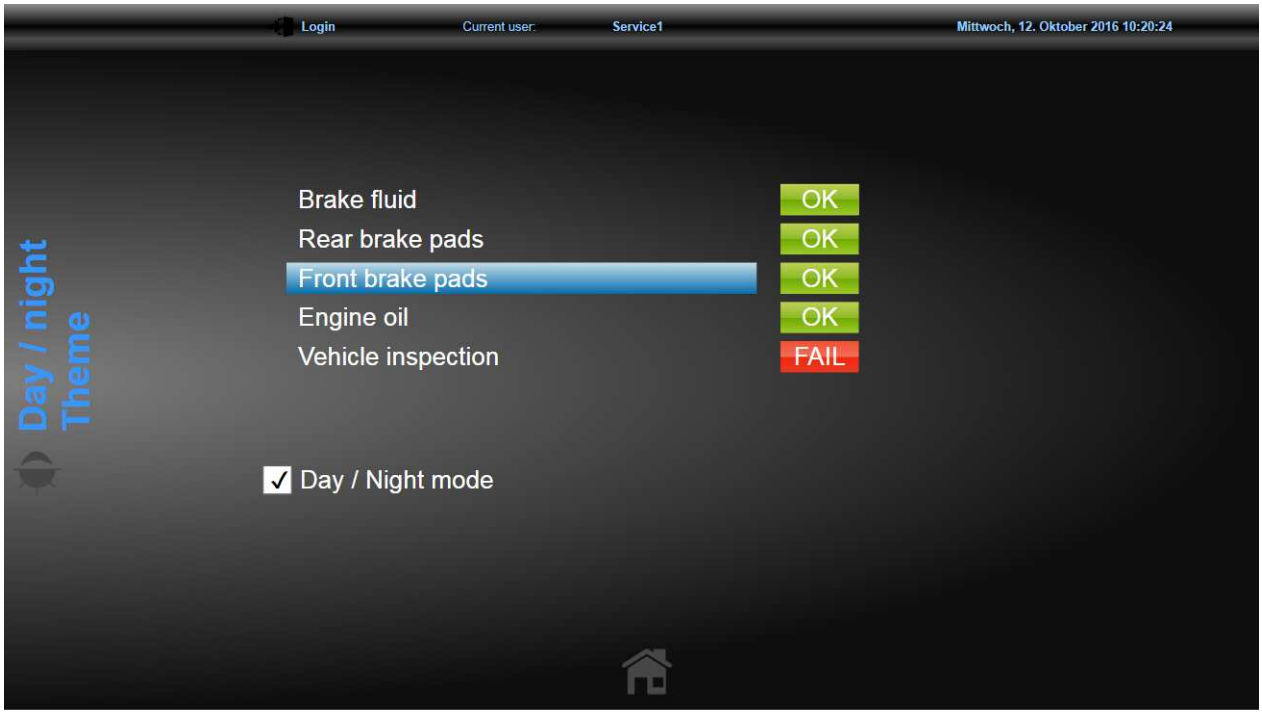


Use case	description
Select item	Select an item in the DropDownBox Widget. The selection points to an element out from a list of variables. Affected program: Lists Affected binding: ListBinding.binding The selectedIndex property of the DropDownBox is used for a selector within a list of OPC UA variables. The selected source is binded to a single widget as a target.

```
<Binding mode="oneWay">
    <Source xsi:type="listElement">
        <Selector xsi:type="brease" widgetRefId="DropDownBox1" contentRefId="VarListContent" attribute="selectedIndex" />
        <be:List xsi:type="be:opcUa" attribute="value">
            <bt:Element index="0" refId="::Lists:Color[0].Red" />
            <bt:Element index="1" refId="::Lists:Color[1].Red" />
            <bt:Element index="2" refId="::Lists:Color[2].Red" />
            <bt:Element index="3" refId="::Lists:Color[3].Red" />
            <bt:Element index="4" refId="::Lists:Color[4].Red" />
            <bt:Element index="5" refId="::Lists:Color[5].Red" />
            <bt:Element index="6" refId="::Lists:Color[6].Red" />
            <bt:Element index="7" refId="::Lists:Color[7].Red" />
            <bt:Element index="8" refId="::Lists:Color[8].Red" />
            <bt:Element index="9" refId="::Lists:Color[9].Red" />
        </be:List>
    </Source>
    <Target xsi:type="brease" widgetRefId="NumericOutput1" contentRefId="VarListContent" attribute="value"/>
</Binding>
```

3.13 Day/night Theme

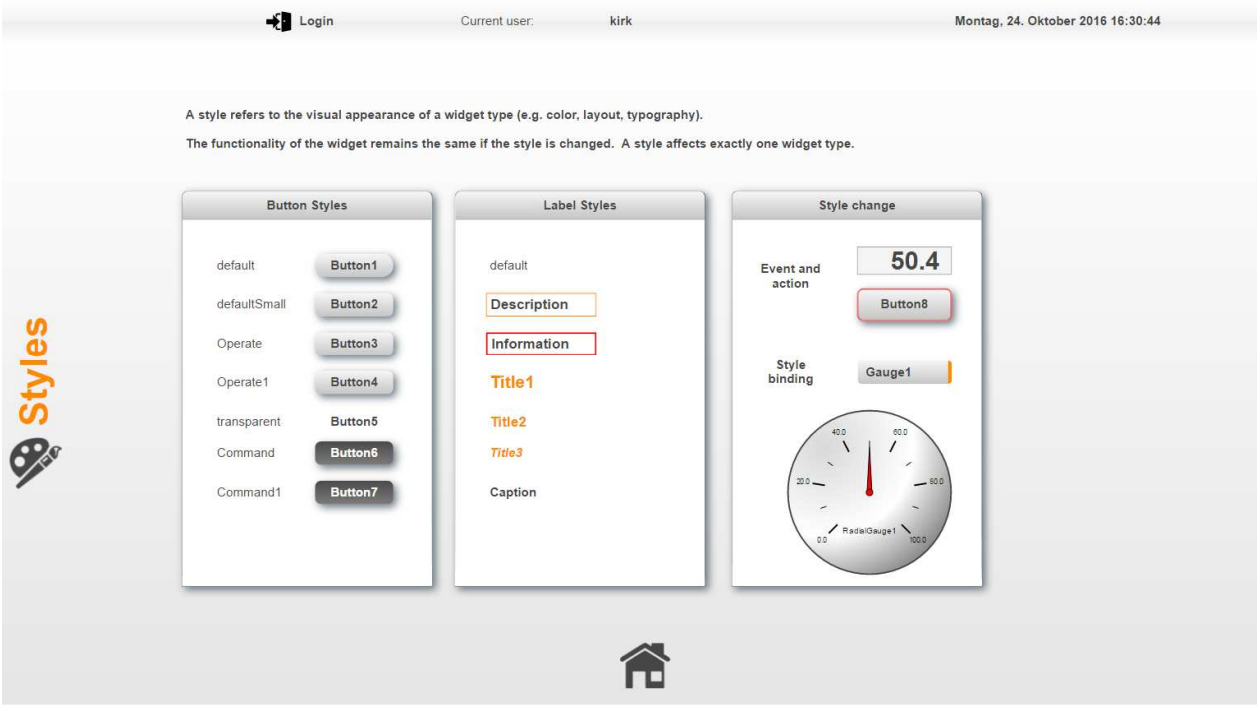
The **ThemePage** explains how to change a Theme for e.g. day / night view.



Use case	description
Day / Night mode	In the project two different Themes are necessary where all used Styles for the required Widget types are available. Affected Theme: DayTheme / NightTheme Affected EventBinding: DayNightEventBinding.eventbinding Note: the visualization is using the BuRTheme1 for all other pages. Changing to this page or leaving this page will also change the Theme

3.14 Styles

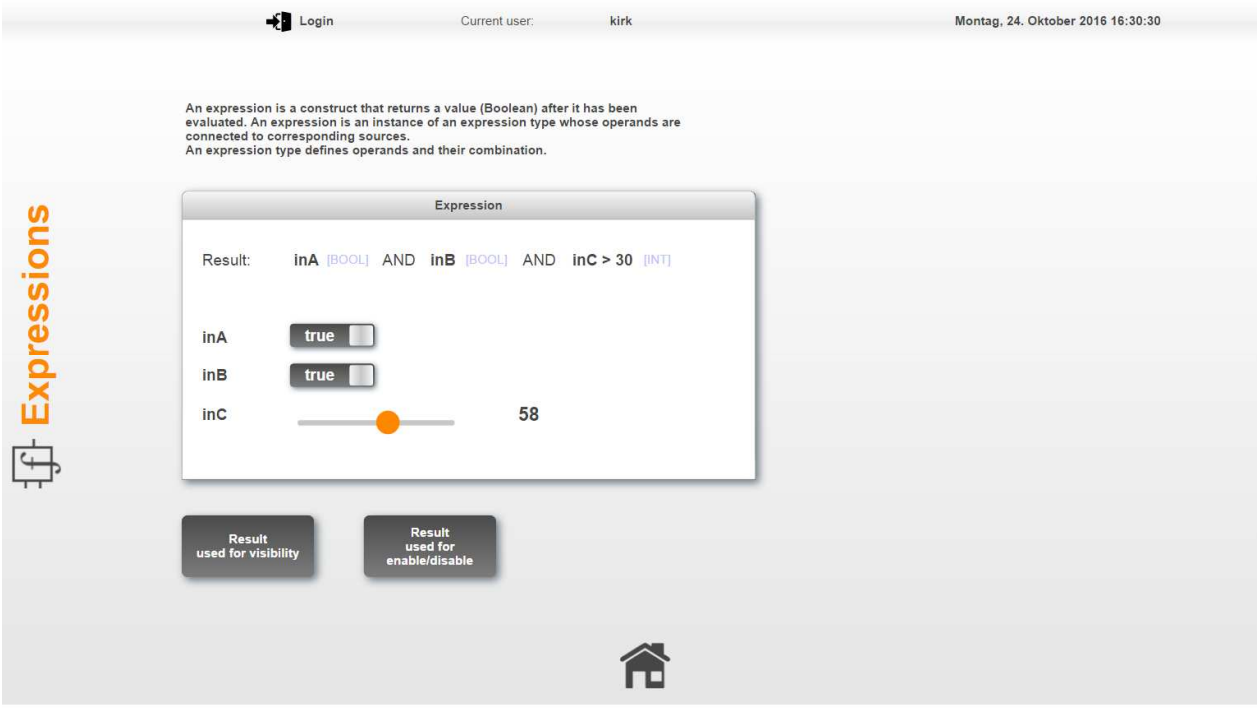
The **StylePage** shows the available Styles for different Widget types from the BuRTheme1. It also explains how to change a style of a Widget during runtime depending on process states (e.g. error).



Use case	description
Button styles	Press a button and explain the difference for operation and command styles Operation: operations inside the visualization Command:affect to PLC variables
Style change	Change a style during runtime Affected program: Simulation – variable indicateStyle Affected Eventbinding: StyleBinding.eventbinding

3.15 Expressions

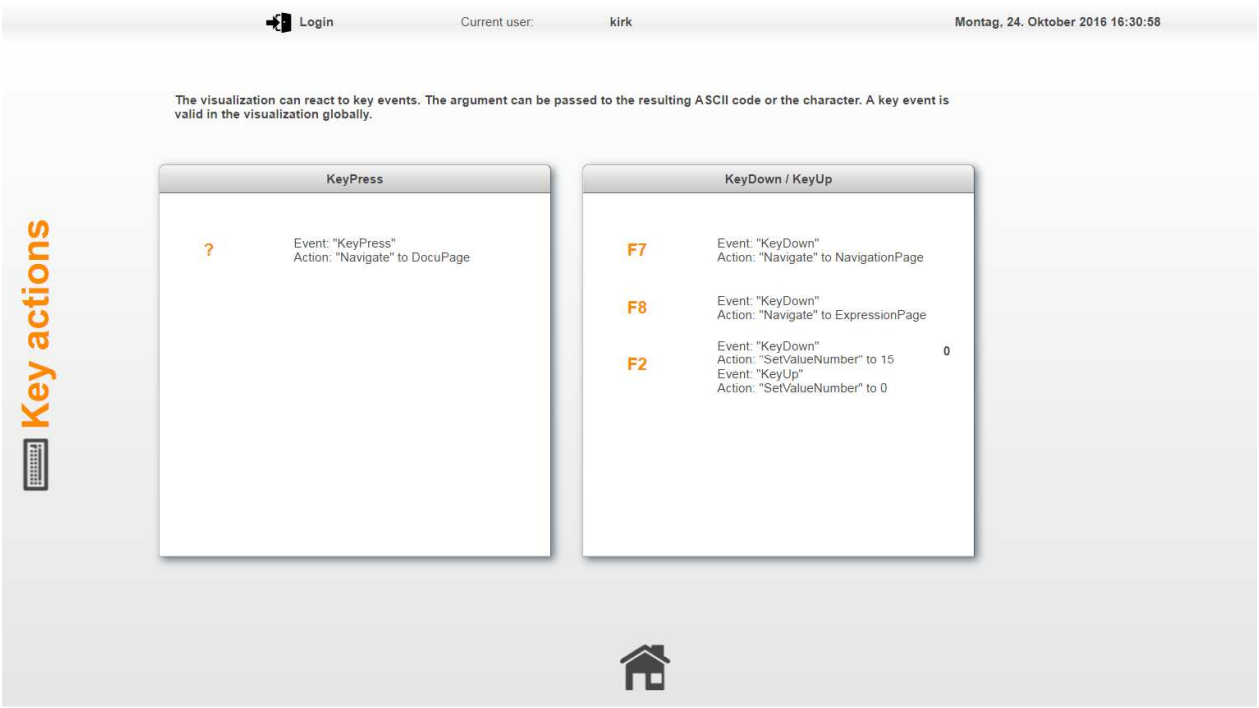
The **ExpressionPage** explains the usage of expressions where the result can be used for visible / enable binding to Widgets.



Use case	description
Visible / Enable behavior	The result of a operation is used to affect the visibility or operability of Widgets. Result = true: Widget is enabled or shown Result = false: Widget is disabled or hided Affected Binding:Expression.binding Affected session Variables: Expression1, Expression2, Expression3

3.16 Key actions

The **KeyboardPage** shows use cases for keyboard events.



Use case	description
Keyboard events	Shows how the keyboard events can be used Affected EventBinding: Keyboard.eventbinding

3.17 LineChart

The **ChartPage** shows a online chart with three graphs.

Use case	description
Chart	Shows how a OnlineChart is configured. Affected binding: Chart.binding