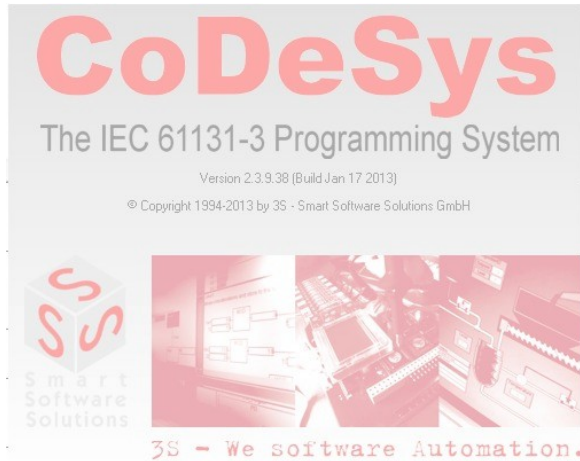


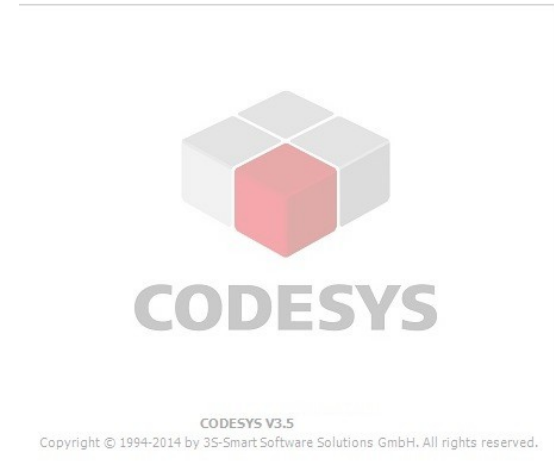


Visualization CODESYS 2.3 vs. CODESYS 3

Task Settings



- **Single Task (User)**

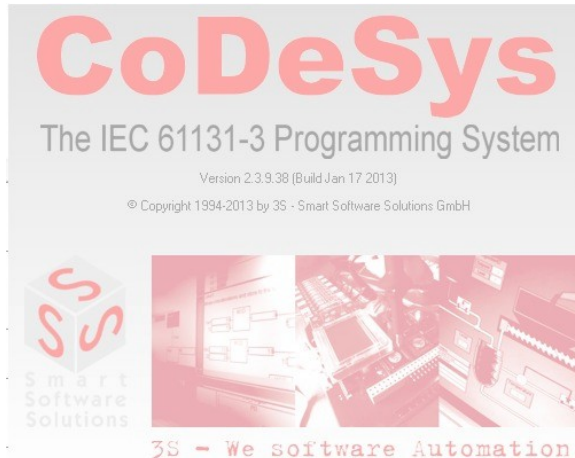


- **Own visualisation task**

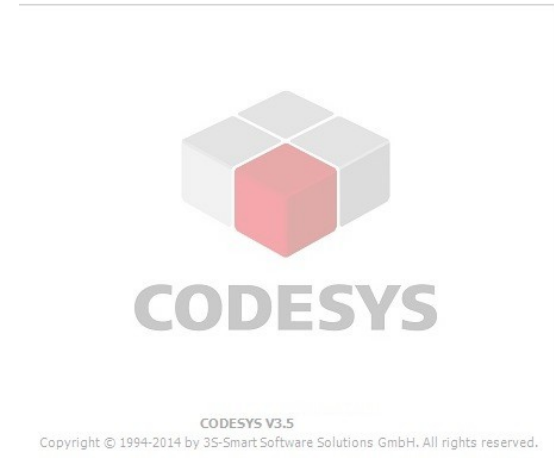


Visualization CODESYS 2.3 vs. CODESYS 3

Implementation concept of the visualization



- **3S Web Visu instead of target Visu. Allow ifm specific features like 'OverlayVisu'.**

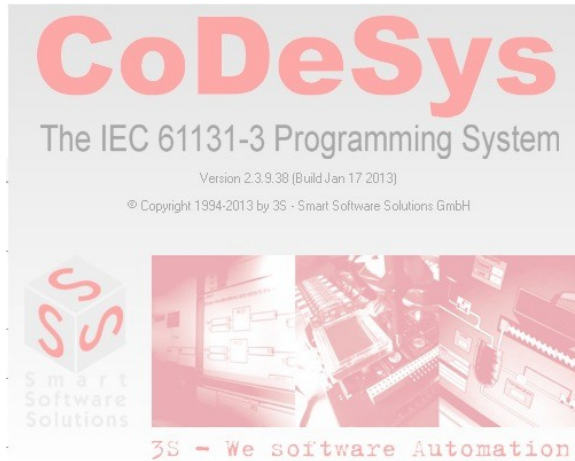


- **3S target visualization.**
- **Advantage: Benefit of all CODESYS releases.**
- **But no advantage in competition**

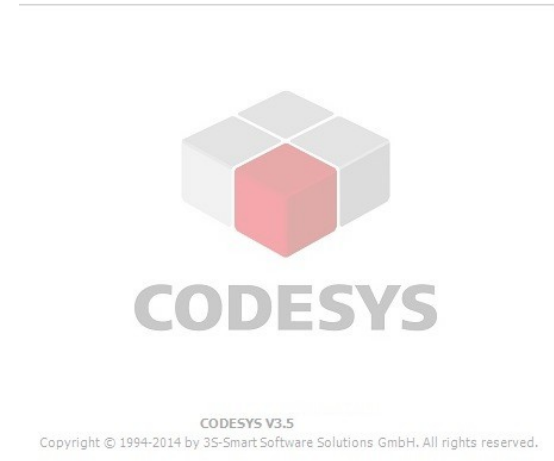


Visualization CODESYS 2.3 vs. CODESYS 3

Key support



- **Hardware Keys (PLC-configuration)**
- **Disadvantage: Key Event not synchronone to visualization**

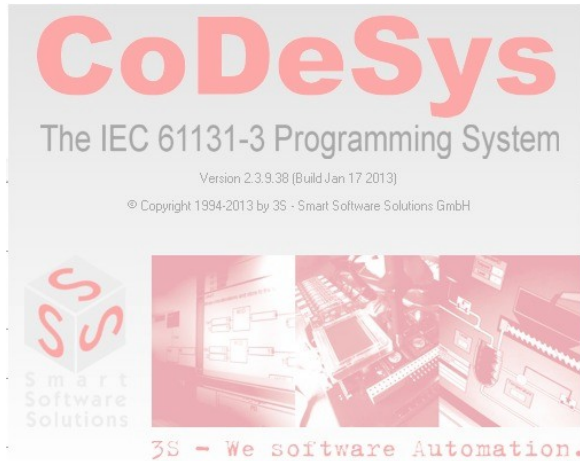


- **Hot keys inside the visualization, no PLC configuration**

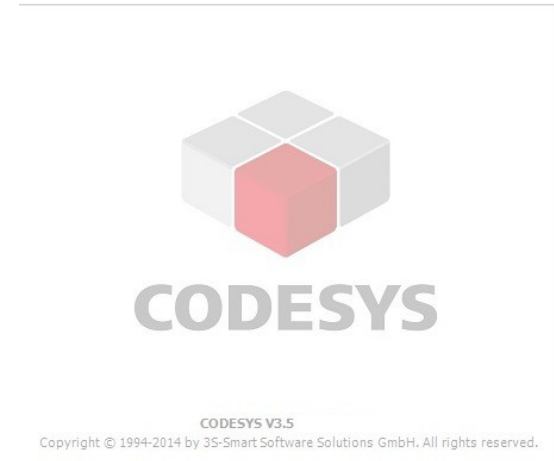


Visualization CODESYS 2.3 vs. CODESYS 3

Page control



- **Currentvisu**
- **Zoom to Vis**

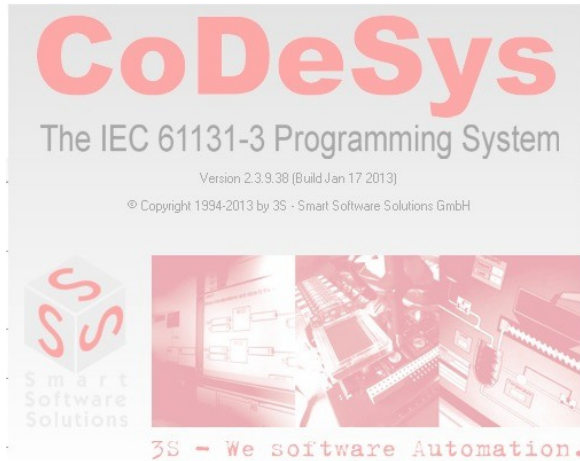


- **Frames**
- **Currentvisu**
- **Action 'Change shown Visualization'**

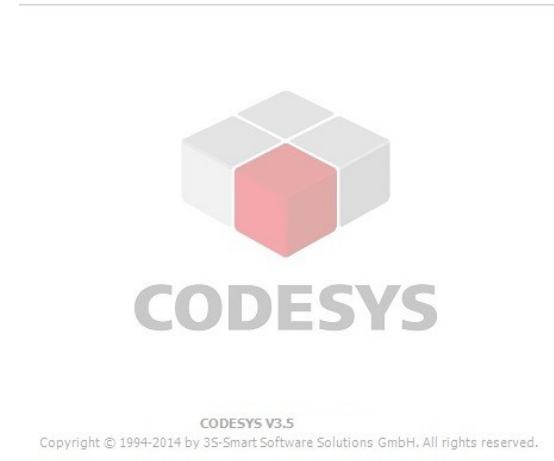


Visualization CODESYS 2.3 vs. CODESYS 3

Images



- **'Single images'** dispersed over the whole project

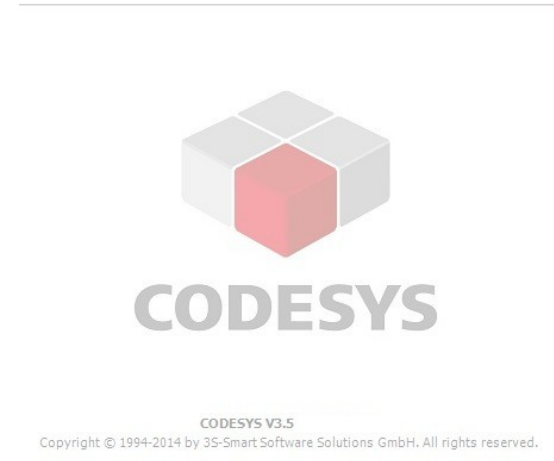
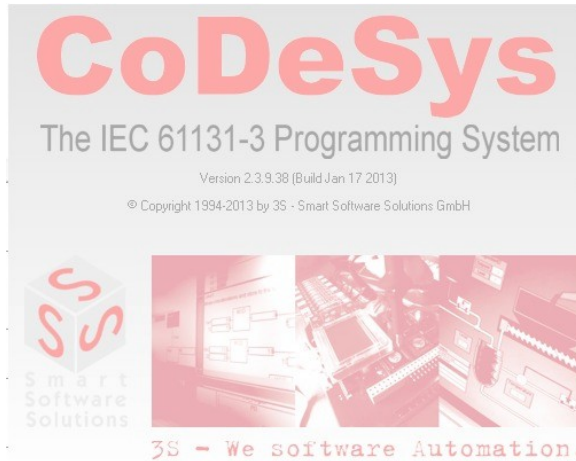


- **Image pool, easier to handle. Identified by an ID for the whole project**



Visualization CODESYS 2.3 vs. CODESYS 3

Bitmaplist



- **One image list for the whole project, difficult handling. Changes are difficult.**

- **Different image pools are possible. Changes can be handled in an easy way.**

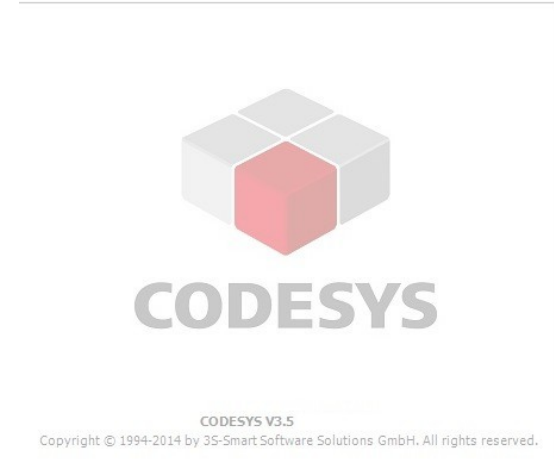


Visualization CODESYS 2.3 vs. CODESYS 3

Images types



● **BMP, JPG, PNG**

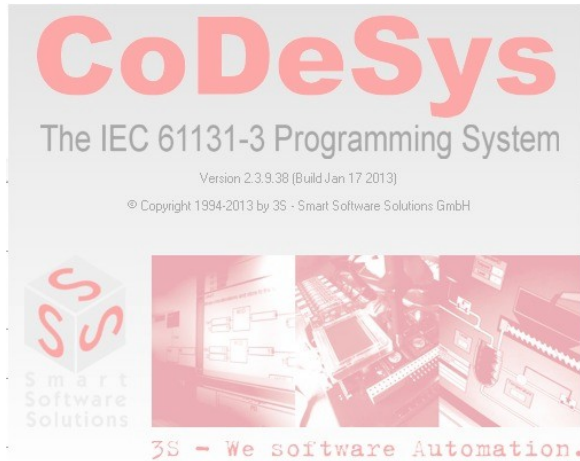


● **BMP, JPG, PNG, **svg****

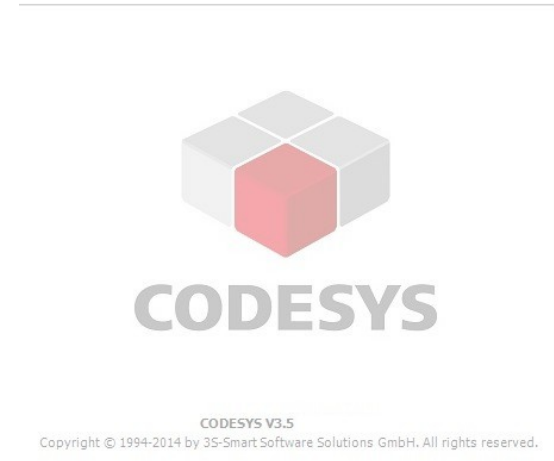


Visualization CODESYS 2.3 vs. CODESYS 3

Rotation of bitmaps



● No



● Yes



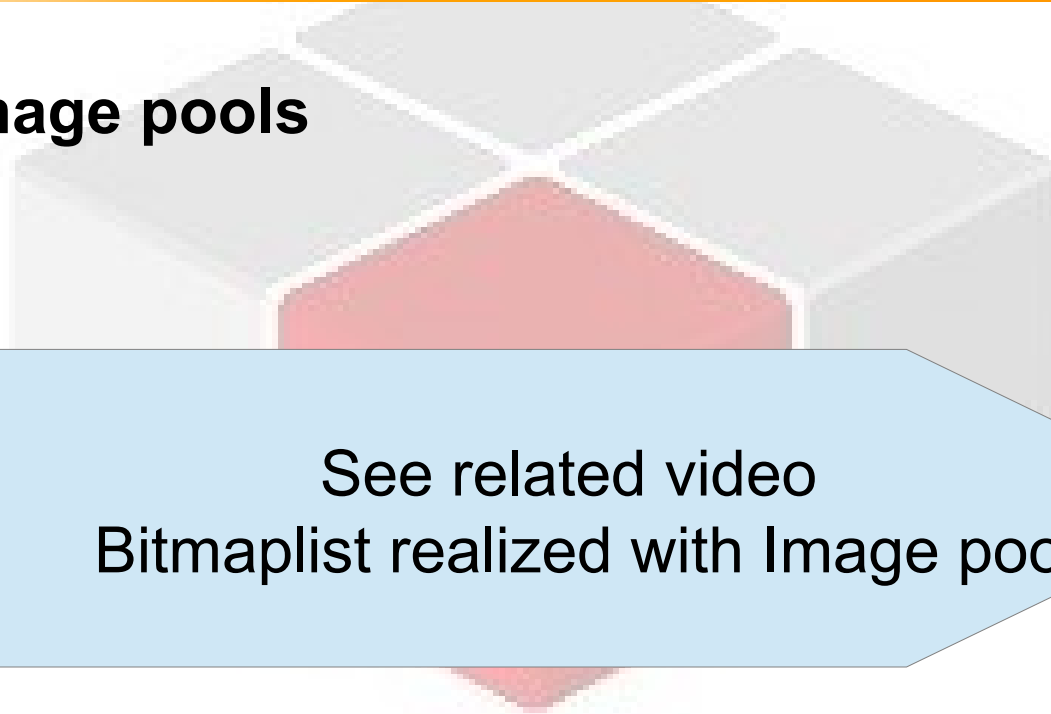
Using the CODESYS 3 visualization features

- **Image pools**
- **Working with frames**
- **Page control**
- **How to use keys**
- **WEB visualization**
- **Alarm, trace, trend ?**
- **Polygone, Polyline etc.**
- **Textlist and Language switching**
- **Bitmap rotation**



Using the CODESYS 3 visualization features

- **Image pools**



See related video
Bitmaplist realized with Image pool

CODESYS



Using the CODESYS 3 visualization features

- **Working with Frames**

1. A frame can be used as a visualization 'placeholder' like in CODESYS 2.3 (See sample `Frame_Simple_1`)

CODESYS



Using the CODESYS 3 visualization features

- **Working with Frames**

- 2. Switching between Frames by button or keys (See sample Frame_Simple_2)**

The screenshot displays the CODESYS 3 visualization editor interface. On the left, a green rectangular frame is visible in the design area, labeled "Frame". The right side of the editor shows a configuration table for the selected frame.

Clipping	<input type="checkbox"/>
Show frame	<input type="checkbox"/>
Scale type	Fixed
Deactivate the background drawing	<input type="checkbox"/>
Configure...	
References	
+ Frame1	
+ Frame2	
+ Frame3	
+ Frame4	
Position	
X	430
Y	80
Width	360

Overlaid on the bottom is the "Frame Configuration" dialog box. It is divided into two main sections:

- Available Visualizations:** Shows a tree view under "Frame_Simple_2" with a sub-folder "Frames" containing "Frame1", "Frame2", "Frame3", and "Frame4". A search filter "Filtering by type or instance" is present.
- Selected Visualizations:** Lists the selected frames: "Frame 1", "Frame 2", "Frame 3", and "Frame 4". It includes control buttons for "Add", "Delete", "Move Up", and "Move Down".



Using the CODESYS 3 visualization features

- Working with Frames

3. Controlling Frames by PLC code (See sample Frame_Simple_3)

The screenshot displays the CODESYS 3 visualization editor interface. The main workspace shows a frame control element with the text "Switch Frame by" and a variable input field containing "%s". Below this, a dark grey frame is visible with the text "Frame 1" and a variable input field containing "%s". The Properties window on the right shows the following table:

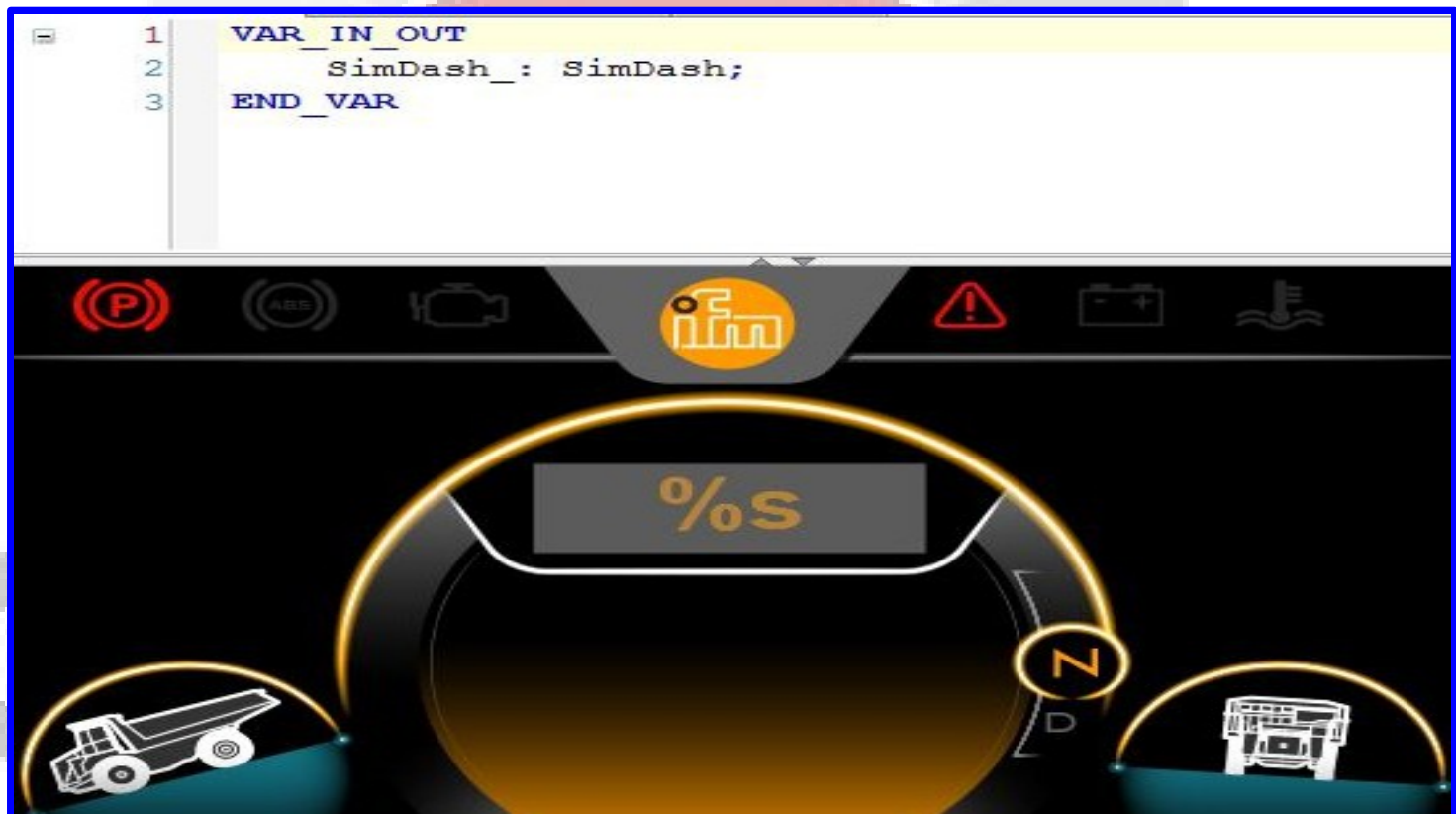
Property	Value
Show frame	<input type="checkbox"/>
Scale type	Anisotropic
Deactivate the background drawing	<input type="checkbox"/>
References	Configure...
Frame1	
Frame2	
Frame3	
Frame4	
Position	
X	50
Y	100
Width	670
Height	373
Center	
Colors	
Element look	
Texts	
Text properties	
Absolute movement	
Relative movement	
Text variables	
Text variable	
Tooltipvariable	
Dynamic texts	
Font variables	
Colorvariables	
Lookvariables	
Switch frame variable	
Variable	PLC_PRG.Visu_Index
State variables	



Using the CODESYS 3 visualization features

- **Working with Frames**

A Frame can contain a complex variable interface like a struct or even a complete FBD





Using the CODESYS 3 visualization features

- **Working with Frames / Page control**
 4. **Using Frames in a complex project as one way of page control (See sample Frame_Real_Project).**

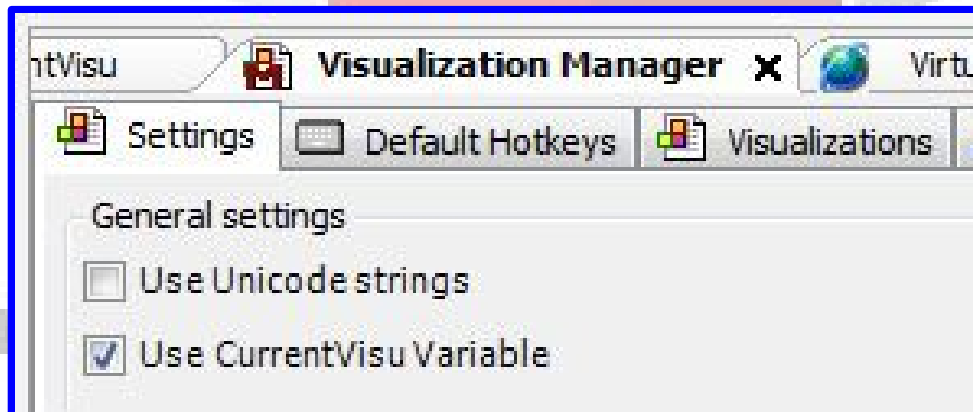
CODESYS



Using the CODESYS 3 visualization features

- **Page control (Currentvisu)**

```
CASE VisuCount OF
  0: VisuElems.CURRENTVISU:='P1';
  1: VisuElems.CURRENTVISU:='P2';
  2: VisuElems.CURRENTVISU:='P3';
END_CASE
```

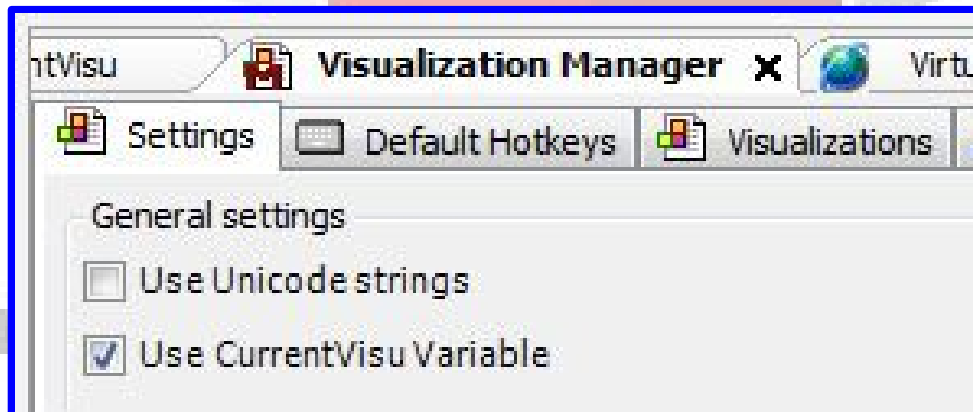




Using the CODESYS 3 visualization features

- **Page control (Currentvisu)**

```
CASE VisuCount OF
  0: VisuElems.CURRENTVISU:='P1';
  1: VisuElems.CURRENTVISU:='P2';
  2: VisuElems.CURRENTVISU:='P3';
END_CASE
```





Using the CODESYS 3 visualization features

- **Page control (Put on key event directly)**

KEY1_2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Execute SI-Code
KEY1_2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Execute ST-Code
KEY2_5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Change shown Visualization
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Change the language
					Close Dialog
					Execute command
					Execute mouse event
					Execute ST-Code
					Open Dialog
					Switch Framevisualization
					Toggle a Variable
					Write a Variable

CODESYS



Using the CODESYS 3 visualization features

● Page control with touch field

The screenshot displays the CODESYS 3 visualization editor interface. On the left, a graphical workspace shows a grid with two buttons labeled 'Key 1 Toggle' and 'Key 2 Tap', and a larger grey button labeled 'Page 2' with a plus icon. The right side of the editor shows the configuration panel for the selected 'Page 2' button. The 'Inputconfiguration' section is expanded, showing a table of events and their configurations:

Event	Configuration
OnDialogClosed	Configure...
OnMouseClicked	Configure...
OnMouseDown	Configure...
OnMouseEnter	Configure...
OnMouseLeave	Configure...
OnMouseMove	Configure...
OnMouseUp	Configure...

The 'Tap' configuration is expanded, showing the following settings:

Property	Value
Variable	Tap FALSE
Tap on enter if captured	Checked

The 'OnMouseClicked' event list is also visible, containing the following actions:

- Close Dialog
- Open Dialog
- Change the language
- Change shown Visualization
- Execute command
- Switch Framevisualization
- Write a Variable
- Execute ST-Code
- Toggle a Variable

CODESYS



Using the CODESYS 3 visualization features

- **Key mapping**

The screenshot shows the 'Hotkeys Configuration' dialog box in CODESYS 3. The table below lists the configured key mappings:

Key	Key down	Shift	Ctrl	Alt	Action type	Action
KEY1_1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Toggle a Variable	Key1
KEY1_2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Execute ST-Code	Key2:=TRUE;
KEY1_2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Execute ST-Code	Key2:=False;
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Below the table, the visualization editor shows two objects on a grid: 'Key 1 Toggle' and 'Simple key sample'.



Using the CODESYS 3 visualization features

● WEB Visualization

The screenshot displays the CODESYS 3 configuration environment for WEB Visualization. On the left, the project tree shows the following structure:

- (PDM360 NG CAN Dev (de))
 - Logic
 - Application**
 - ImageList
 - Library Manager
 - Firefox (dropdown menu)
 - Visualization (+)
 - PLC_PRG
 - VISU_TASK
 - VisuElems. Visu_Prg
 - VisualizationManager
 - Target-Visualisierung
 - Web-Visualisierung (selected)

The right pane shows the configuration parameters for the selected visualization:

- Start Visualization: Visualization
- Name of .htm file: webvisu
- Update rate (ms): 200
- Communication Buffer Size: 50000
- Options:
 - Fixed
 - Isotropic
 - Anisotropic
- Client width: 1280
- Client height: 1024
- Presentation Options
 - Antialiased Drawing

A yellow box highlights the 'Firefox' dropdown menu and the 'Visualization' button. A yellow arrow points from the 'Name of .htm file' field to the browser window.



Using the CODESYS 3 visualization features

- **Alarm, Trace and Trend**
- **Currently partly supported only**
- **High CPU load !**



CODESYS



Using the CODESYS 3 visualization features

- **Polyline, Polygone e.g.**
- **Static handling is more flexible now**
- **Creating curves during runtime is possible (see sample 'CurveFrame')**

CODESYS



Using the CODESYS 3 visualization features

- **Textlist and Language handling**
 1. **Creating a simple text list (see sample textlist)**

ID	Default
0	This
1	is
2	a
3	very
4	simple
5	textlist
6	sample



Using the CODESYS 3 visualization features

- **Textlist and Language handling**
 2. Create a text list with different languages

ID	Default	German	English	Chinese
0	This	Dies	This	已选语言为中文
1	is	ist	is	水温
2	a	ein	a	油温
3	very	sehr	very	燃料
4	simple	einfaches	simple	引擎转数
5	textlist	Textlisten	textlist	系统设定
6	sample	Beispiel	sample	运行

CODESYS



Using the CODESYS 3 visualization features

- **Textlist and ways of Font handling**
 - 1. The font is controlled by PLC code**

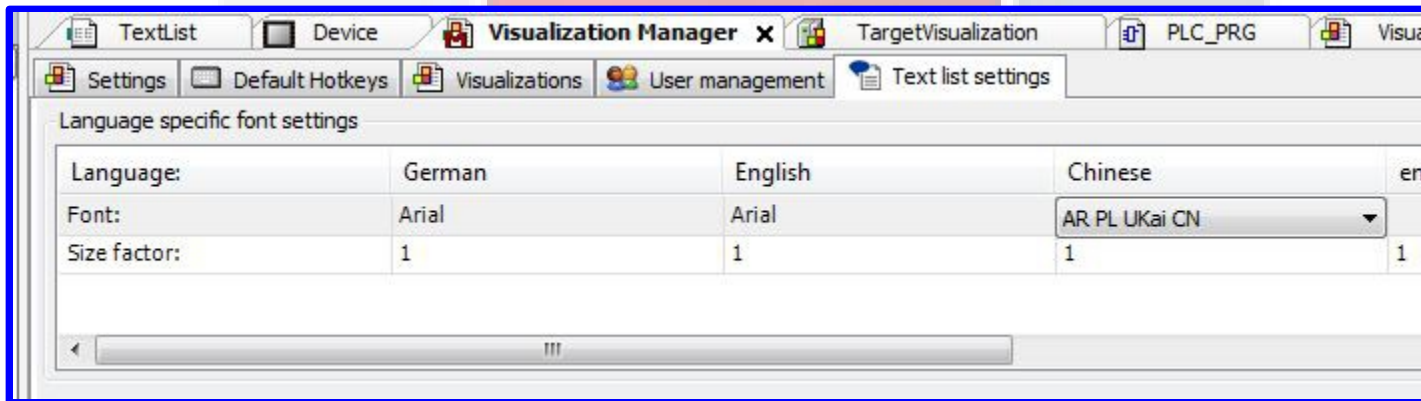
The screenshot shows a visualization editor interface. At the top, the text "%s" is displayed. Below it, there are two buttons: a blue one labeled "English" and a red one labeled "Chinese". To the right, a properties panel is visible, showing various settings for the text object. The "Font" section is expanded, showing "Font color" (black), "Transparency" (255), "Absolute movement", "Relative movement", "Text variables", "Text variable", "Tooltip variable", "Dynamic texts", and "Font variables". The "Font name" is set to "PLC_PRG.Fontname".

```
PROGRAM PLC_PRG
VAR
    TON1: TON;
    Pulse: BOOL;
    CTU1: CTU;
    TextIndex: WORD;
    TextIndexSTR: String;
    Language: STRING;
    Fontname: STRING:='ukai.ttc'; // Font is used
END_VAR
```



Using the CODESYS 3 visualization features

- **Textlist and ways of Font handling**
 1. The font is defined in the visualization manager
 2. The font is defined in the visualization manager



CODESYS



Using the CODESYS 3 visualization features

- **Textlist and Language handling**
 2. Create a text list with different languages (see samples TextListLanguageFont_1 / ...Font_2)

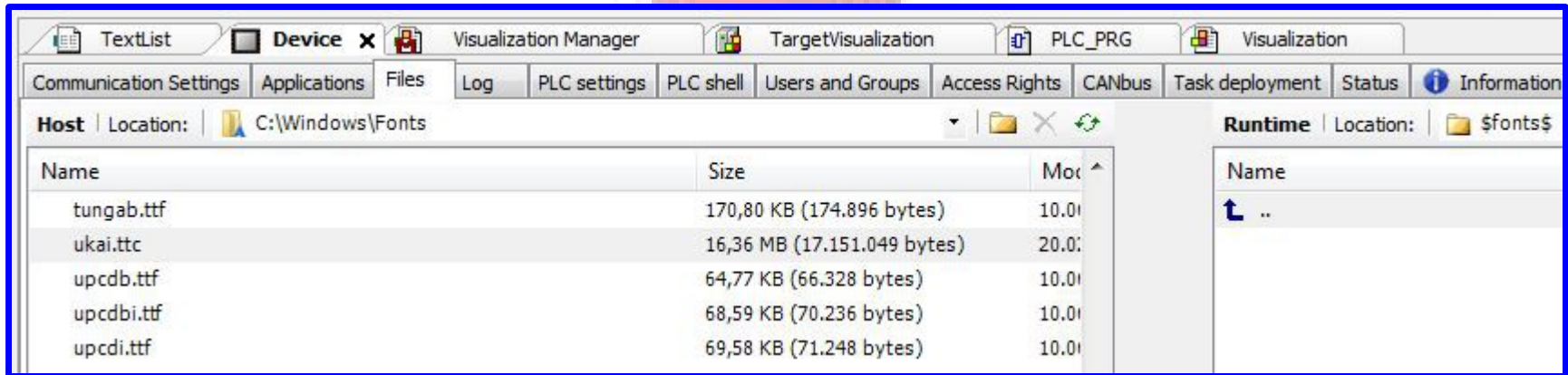
ID	Default	German	English	Chinese
0	This	Dies	This	已选语言为中文
1	is	ist	is	水温
2	a	ein	a	油温
3	very	sehr	very	燃料
4	simple	einfaches	simple	引擎转数
5	textlist	Textlisten	textlist	系统设定
6	sample	Beispiel	sample	运行

CODESYS



Using the CODESYS 3 visualization features

- See samples TextListLanguageFont_1 / ...Font_2
- Note: Transfer specific fonts (Chinese e.g.) to location / \$fonts\$
- Use embedded FTP client of CODESYS 3





Using the CODESYS 3 visualization features

● Bitmap Rotation

Tooltip	
<input checked="" type="checkbox"/>	Text properties
<input checked="" type="checkbox"/>	Bitmap ID variable
<input type="checkbox"/>	Absolute movement
<input checked="" type="checkbox"/>	Movement
	Rotation
	Scaling
	Interior rotation
	PLC_PRG.count
<input type="checkbox"/>	Relative movement

CODESYS