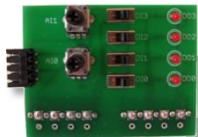


## PG5 Starter Training *File system application*

Daniel Ernst | EN02 | 2012-02-26

# File system application

## Introduction



### Material required

- Notebook or computer
- PCD1 E-Controller
- USB cable
- Training board
- Ethernet cable
- (Energy Meter starter box)

### Software required

- PG5 Core at least Version 2.1.027
- Saia® Web Editor 5 (included in PG5 Core)
- Java at least Version XXX

### Lessons required

- Lesson 1
- Lesson 2
- Lesson 3 PG5 Core
- Lesson 4 Web Editor
- (Energy Meter application)

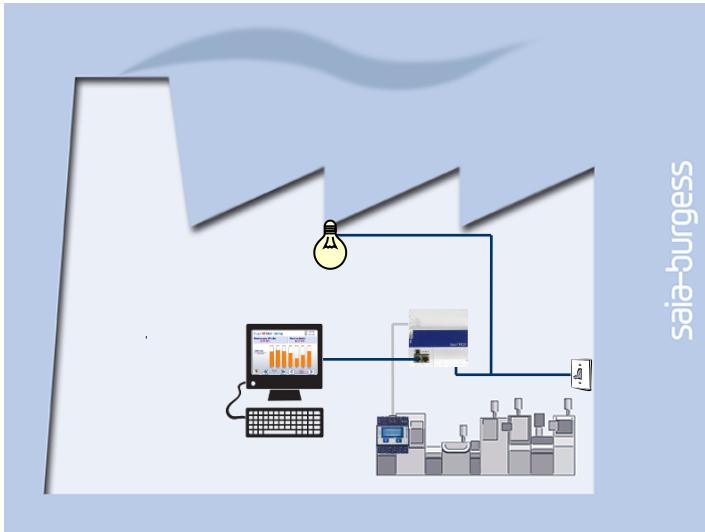
### Aims of the file system application

- Create a CSV file with Energy Meter data or other data
- Basic understanding of the file system function



# File system application

## Introduction



saia-burgess

### Explanation / Introduction

- The Energy Meter variable must be written to a file, so that the course of energy generated can be displayed visually.  
(If the Energy Meter application has not been completed, any variable can be written to the file instead.)

### What is necessary to achieve this?

- Program produced in Lessons 3 and 4
- Ethernet connection to Saia® PCD1 E-Controller
- Monitor with web browser
- (Energy Meter starter box)
- (Program from Energy Meter application)

A	B	C	D	E	F
4					
5		Nummer	Parameter-Name	Wert	Einheit
6			1	1	-
7			2		1400 °C/10
8			3 Türfreigabe: 1=Seite 1/ 2=Seite 2		2 -
9			4 Manteltemperatur		1300 °C/10
10					



# File system application

## Introduction



Microsoft Excel - Export\_De.xls

C:\temp\Belimed\Version_1.2.7\Export_De.xls					
A	B	C	D	E	F
4					
5		Nummer	Parameter-Name	Wert	Einheit
6		1		1	1 -
7		2			1400 °C/10
8		3 Türfreigabe: 1=Seite 1/ 2=Seite 2			2 -
9		4 Manteltemperatur		1300	°C/10

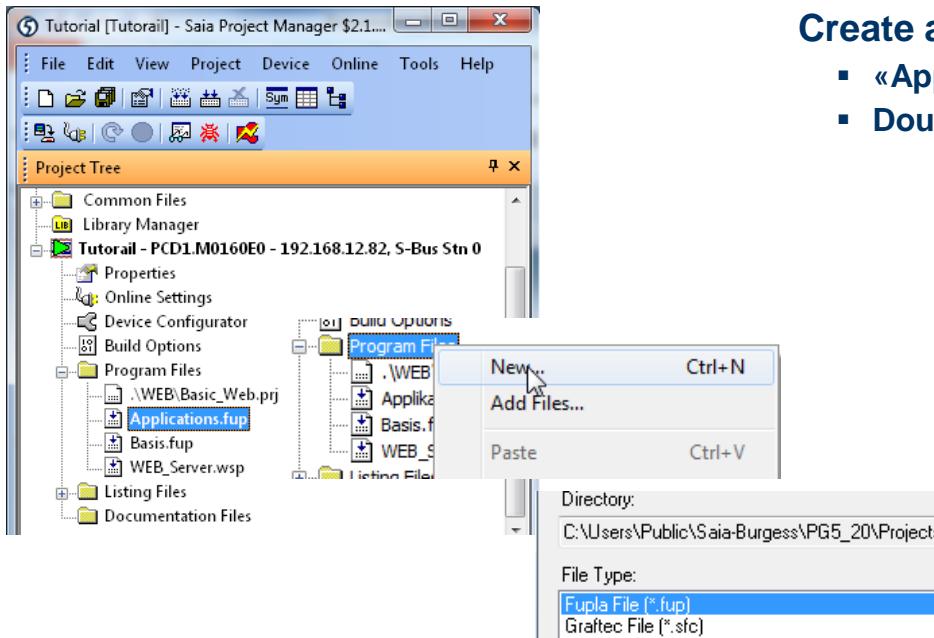
### AutomationServer

- The PCD's integral AutomationServer includes, among other things, a file system with which the user can store files.
- With this feature the PCD can, for example, log stored data in a CSV file (Excel-compatible) and then access these CSV files from a PC using TCP/IP.
- As a result values can, for example, be saved cyclically in the PCD and displayed using MS tools, such as Excel



# File system application

## Project Manager



### Create a new Fupla file

- «Applications.fup»
- Double click to open the file

If this step has already been done in another application tutorial, it may be skipped.



# File system application

## Project Manager

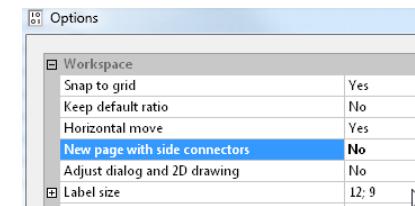
### Create a new Fupla page

- Select tab «Page»
- Right click and select «Insert Page»
- Rename the page as File\_System
- Enter comment «Log in CSV»

The screenshot shows the Saia Fupla Editor interface with the following details:

- Page Navigator:** On the left, it shows a tree view of COB Applications: 1: Energy\_Meter; Capture data, 2: File\_System; Log in CSV, and 3: Email; Send Data. The second item is circled in red.
- Properties Window:** In the center, the properties for the selected page are displayed. The Name is set to "File\_System" and the Comment is "Log in CSV". Both are circled in red.
- Page Navigator (Bottom):** At the bottom right, a smaller "Page Navigator" window is open, showing the same list of COB Applications. The second item is highlighted in blue.
- Symbol Editor:** On the right side, there's a "Symbol Editor" window with a table for defining symbols. It includes columns for Symbol Name, Type, Address/Value, Comment, Actual Address, Tags, and Scope.
- Status Bar:** At the bottom, the status bar displays "Ready", "Block: COB Application", "Page: File\_System", "80%", "Pos: 58x19", and "OFFLINE".

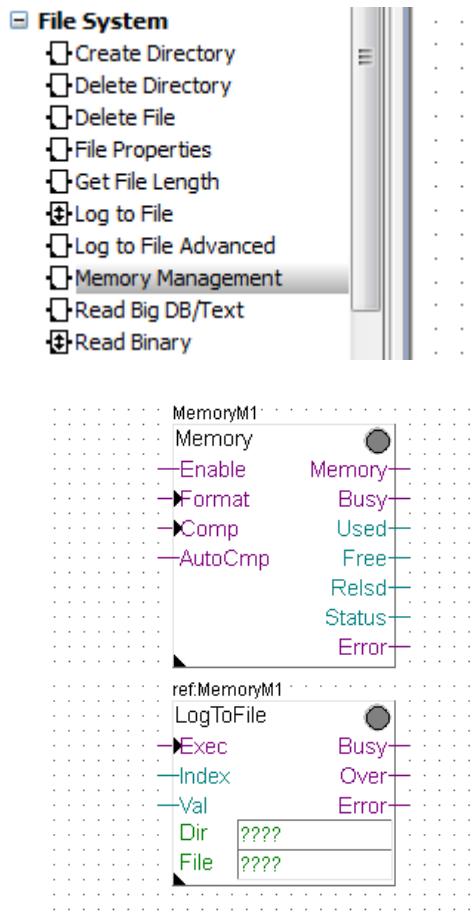
If you do not want connectors to be created automatically in a new Fupla page, this can be disabled with: View → Options → New page with side connectors = No





# File system application

## Program the file system



### File system

- To save data to the file system, the file system must be initialized
- It may also be necessary to create the directory structure in the file system. Subsequently, PCD data can be stored in a file on the file system

### Set up file system FBoxes

- Position the FBoxes: Memory Management and LogToFile
- Point search function in Navigator FBox
- Connect FBox inputs and outputs
- Connect a value that has been read by the Energy Meter

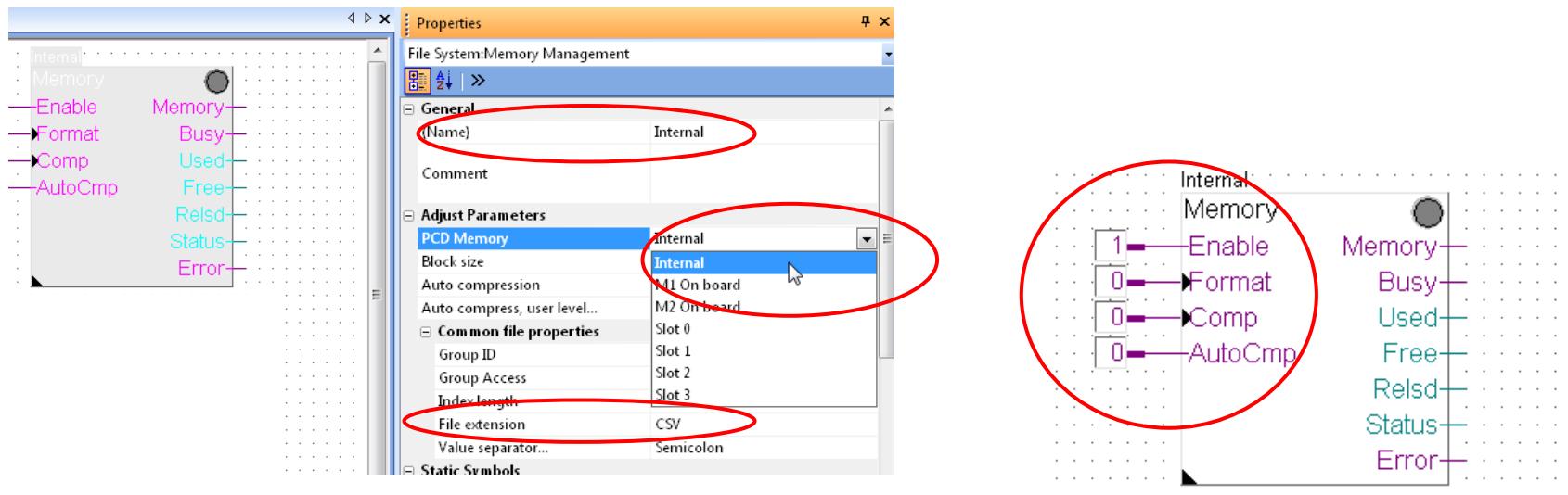


# File system application

## Program the file system

### Set up initialization

- In the FBox Memory options, select «Internal» (for internal memory)
- Rename FBox as «Internal»
- Select file extension «CSV»
- Connect FBox inputs (FBox Enable = 1)

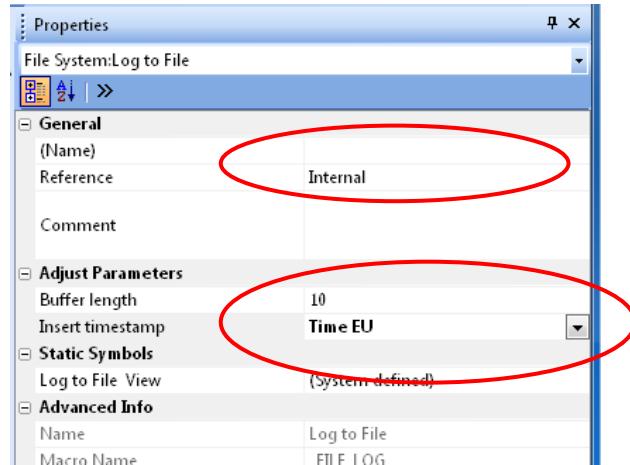


FBox inputs must always have a signal applied



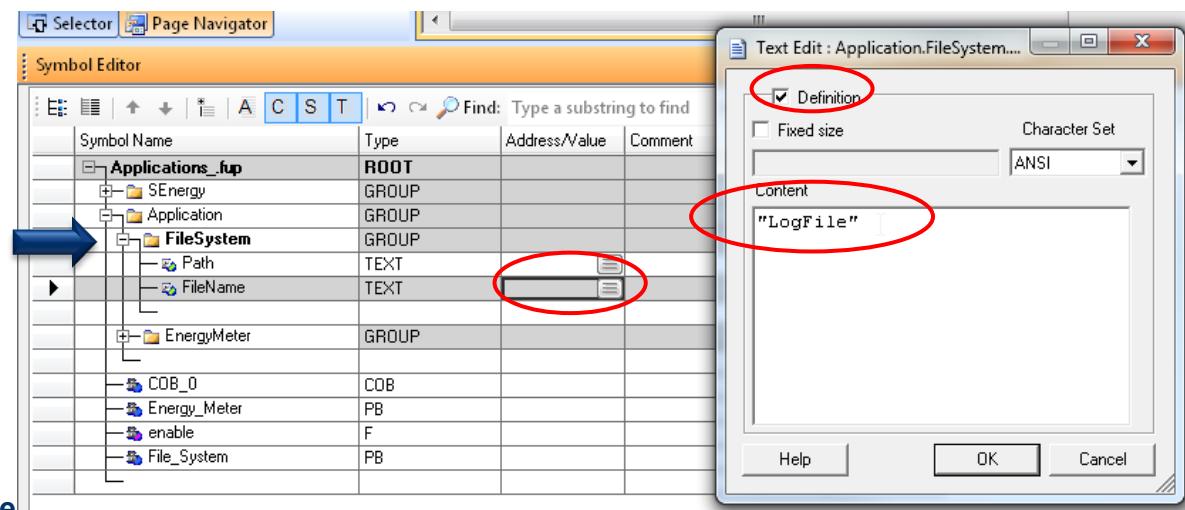
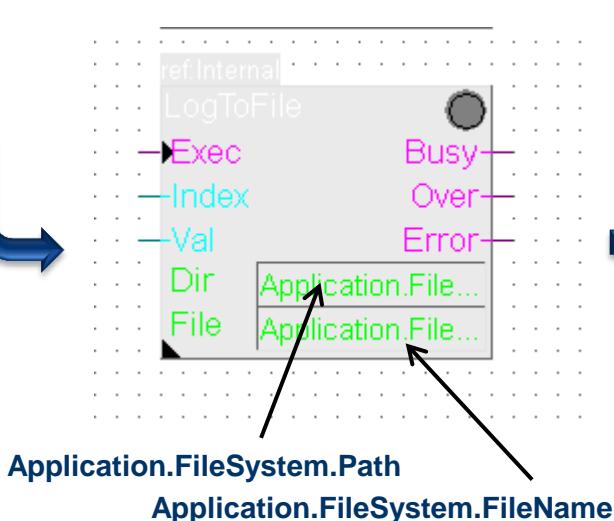
# File system application

## Program the file system



### Configure the LogToFile FBox

- The LogToFile FBox writes data to the file
- Set Reference «Internal»  
This FBox must reference the Memory FBox name! (In this example: Internal)
- Set timestamp to EU time
- Enter symbol «Application.FileSystem.Path» in DIR field
- Enter symbol «Application.FileSystem.FileName» in File field
- Enter filename «LogFile» in symbol «FileName»



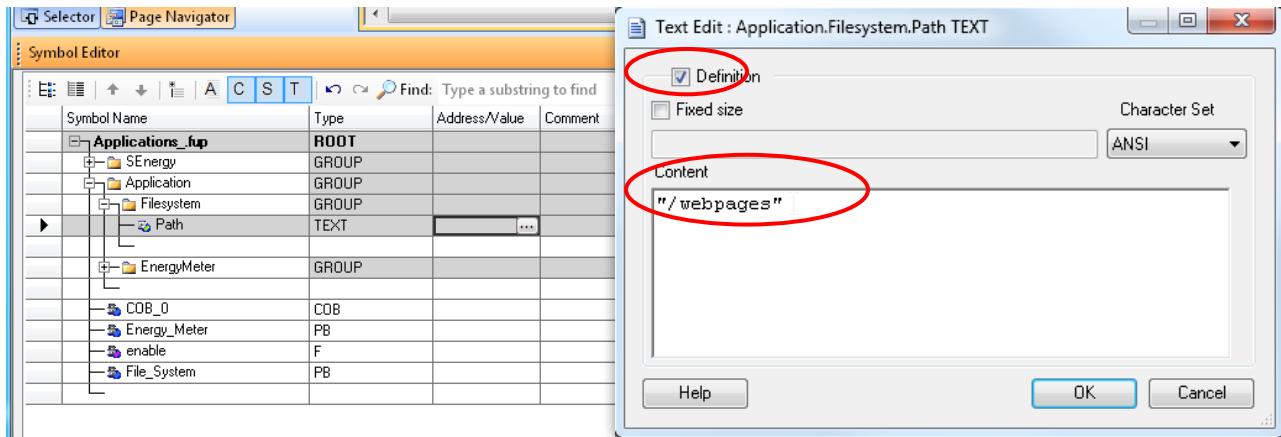


# File system application

## Program the file system

### Configure the LogToFile FBox

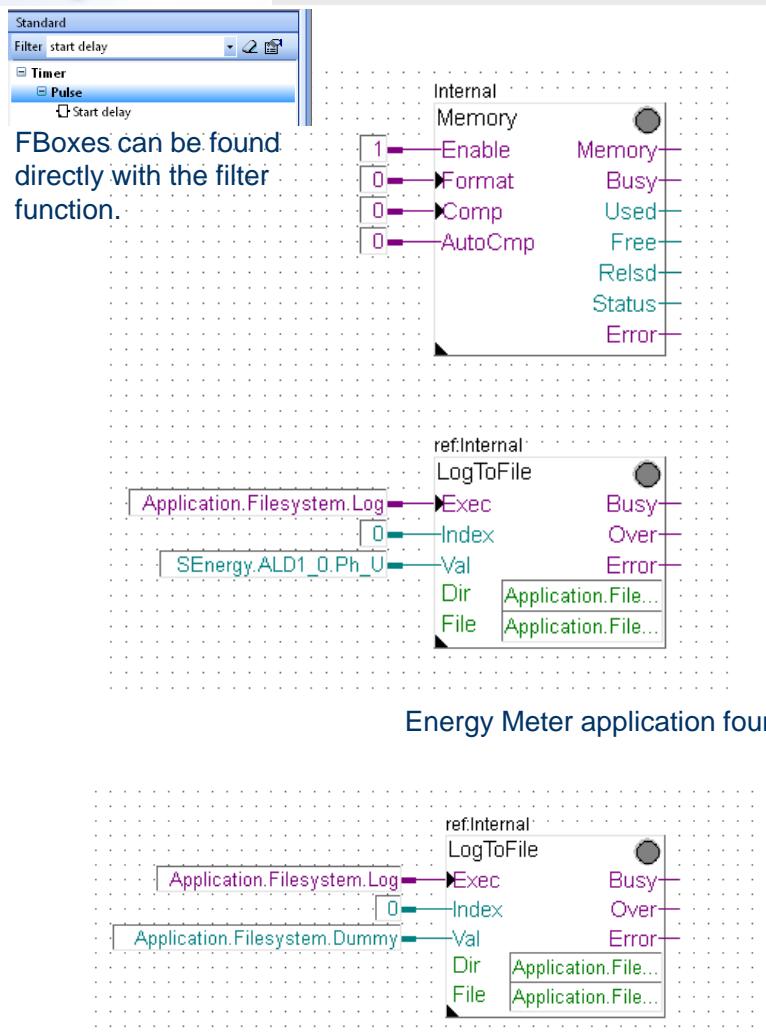
- Enter path «/Webpages» in symbol created: «Application.FileSystem.Path»
- The path «/Webpages» is now created. It contains all web pages. It cannot therefore be created first.





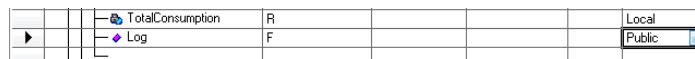
# File system application

## Activate file system FBoxes



### Activation of FBoxes

- Define symbol «Application.FileSystem.Log» as a flag (F) to trigger the «Write» command
- The «Application.FileSystem.Log» symbol must be public, as it will be accessed later by the web project



If the «Energy Meter application» lesson has already been completed:

- Apply symbol «SEnergy.ALD1\_0.Ph\_U» to input «Val» → The content of this symbol (i.e. Voltage in this case) will be written to the file

If the «Energy Meter application» lesson has not yet been completed:

- Define symbol «Application.Filesystem.Dummy» as a register (R) → The content of this symbol will be written to the file

Compile and download project

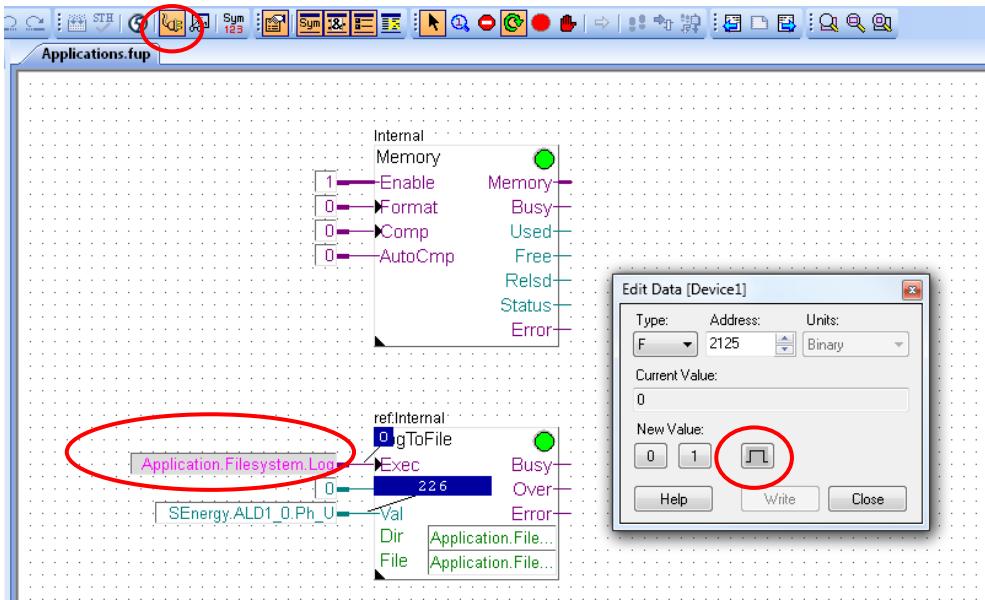


# File system application

## Compile and download project

### Generate first log entries

- Go online
- Use zoom to view value at «Value» input
- Double click on «Application.FileSystem.Log»
  - With the pulse symbol, a value can be written into the file. By repeatedly pressing, multiple values can be written.





# File system application

## Download CSV file

The screenshot shows a Firefox browser window with the URL `192.168.12.82/logfile.csv`. A download dialog box is open, asking if the user wants to download `logfile.csv`. The file is identified as a Microsoft Excel Comma Separated Values File (405 Bytes) from the IP address `192.168.12.82`. The user has selected the option to open the file with Microsoft Excel (Standard). Below the dialog, a Microsoft Excel spreadsheet is displayed, showing a table with 12 rows of data. The first few rows are:

	A	B
1	02:28:11	6507
2	02:28:11	6507
3	02:28:12	6507
4	02:28:12	6507
5	02:28:13	6507
6	02:28:13	6507
7	02:28:13	6507
8	02:28:14	6507
9	02:28:14	6507
10	02:28:14	6507
11	02:28:15	6507
12	02:28:15	6507

### Download csv file with browser

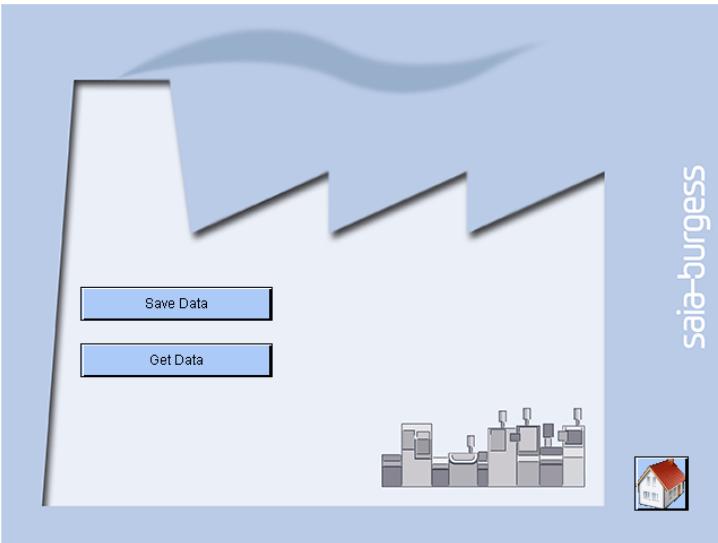
- Enter path in browser  
`<IP Controller>/<Filename.csv>`
- In this example:  
`192.168.12.82/logfile.csv`
- Save and open file
- For each pulse, the value at the «Val» input has been written to the file

# File system application

## Create web project

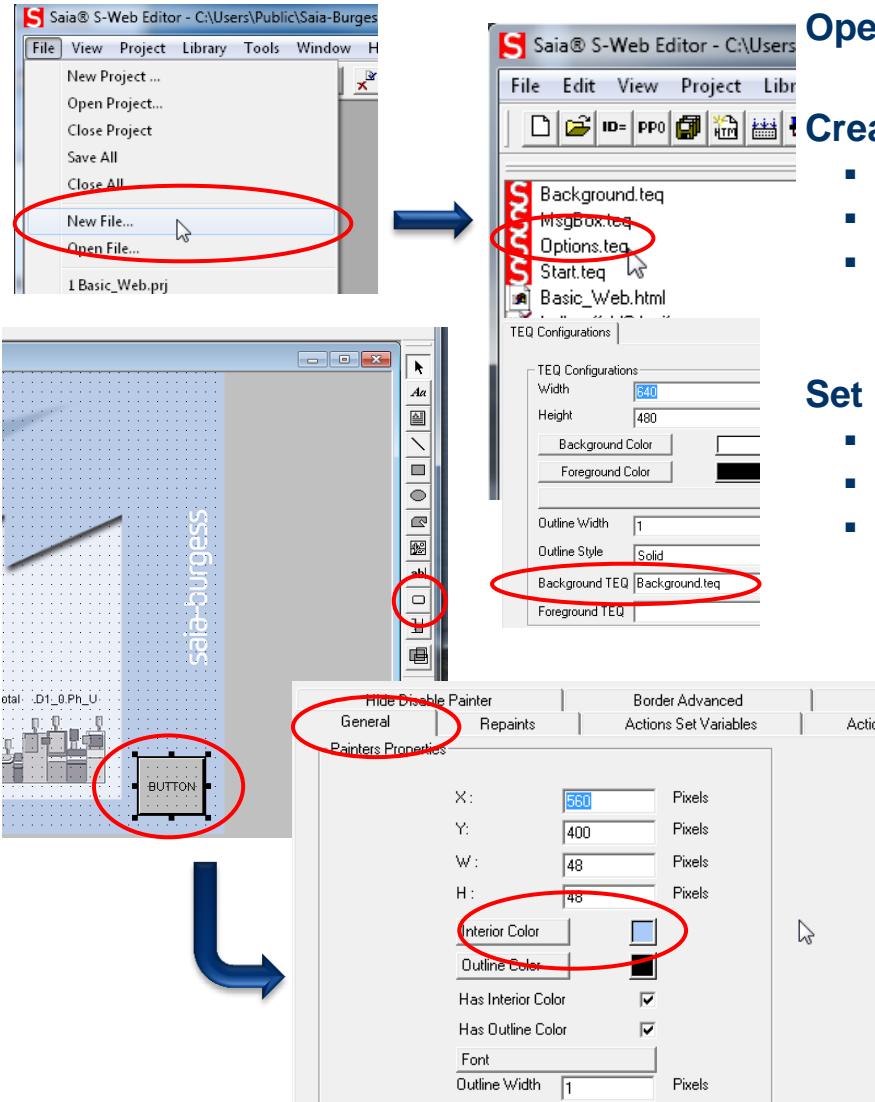
**Writing a value to the file should be possible via the web interface**

**In addition, it must be possible to download the file in the browser**



# File system application

## Create web project



Open the old web project from Lesson 4

### Create a new page «Options»

- Create a new file «Options.teq»
- Right click on drawing area to open Teq View Configurations
- Select Background.teq as the background

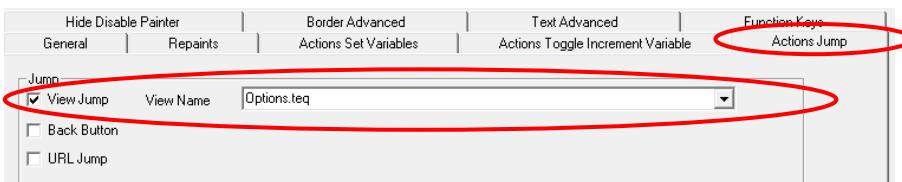
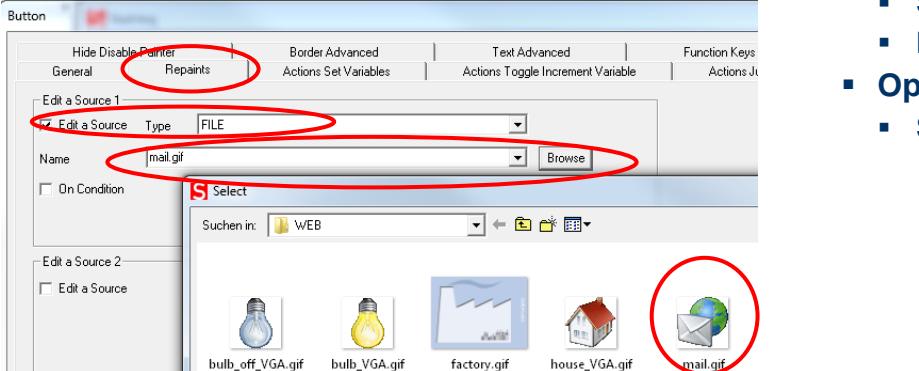
### Set up jump to new page

- Open page: Start.teq
- Place a button
- Open the options
  - Change the colour
  - Under «Repaints», select «Edit a Source» and link to file: mail.gif
  - Open tab «Actions Jump» and set up a «View Jump» to the new page: Options.teq

# File system application

## Create web project

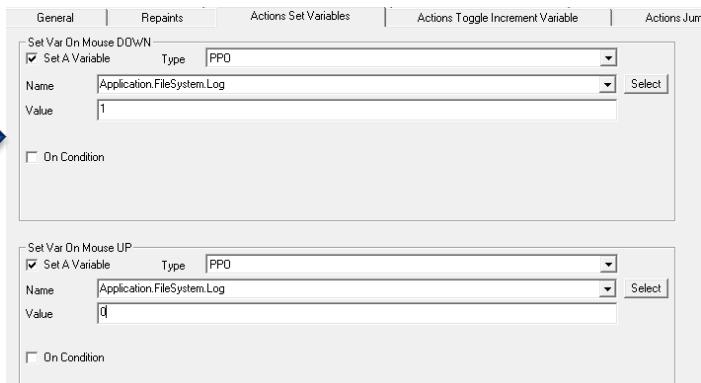
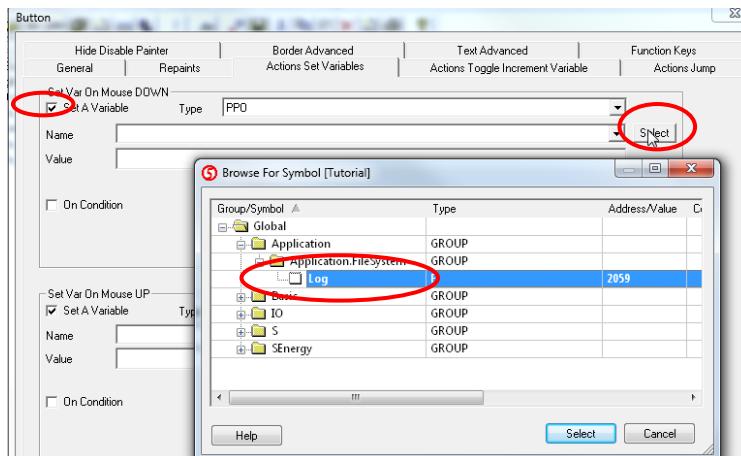
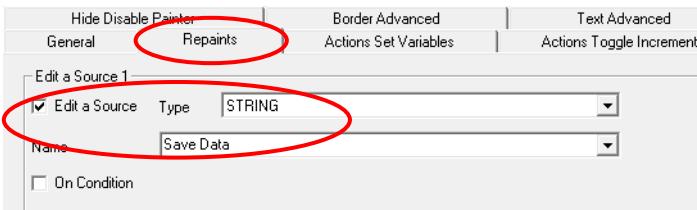
- Open tab «Repaints»
  - Select «Edit a Source», Type = File
  - Browse to select file: mail.gif
- Open tab «Actions Jump»
  - Set up a «View Jump» to the new page: Options.teq





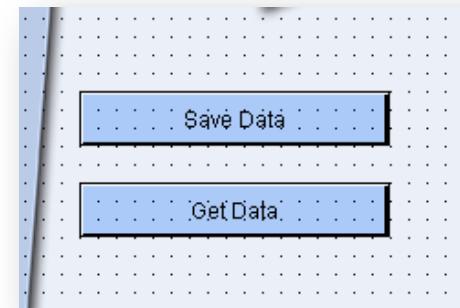
# File system application

## Create web project



### Write data at click of button

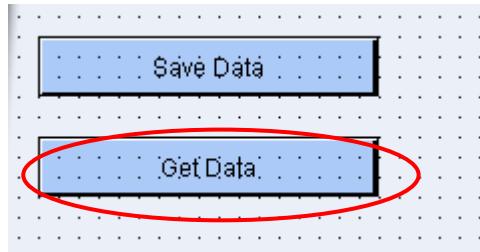
- Open page: Options.teq
- Insert a button and change colour
- Rename button as «Write Data»
- Select function «Set A Variable On Mouse Down» from tab «Actions Set Variables»
- Type PPO
- Select the «Log» symbol (triggers writing of log data)
- Enter Value = 1
- Do the same for «Set a Variable on Mouse Up», but enter Value = 0
- Exit with OK
- A mouse click on the button will trigger a pulse at the flag «Log» and the current value will be written to the \*.csv file





# File system application

## Create web project

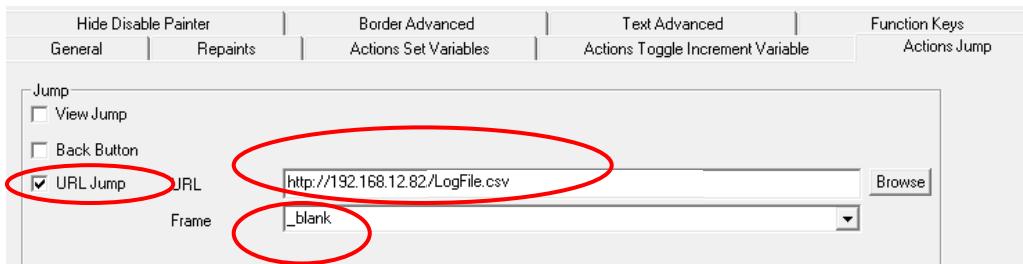


### Open CSV file at click of button

- Open page: FileSystem.teq
- Insert a button
- Rename button as «Get Data»
- Set up a URL jump to the file  
`http://<IP Controller>/<Path within web page Folder>/<Filename.csv>`  
<http://192.168.12.82/LogFile.csv>

### Set up a jump back to the start page

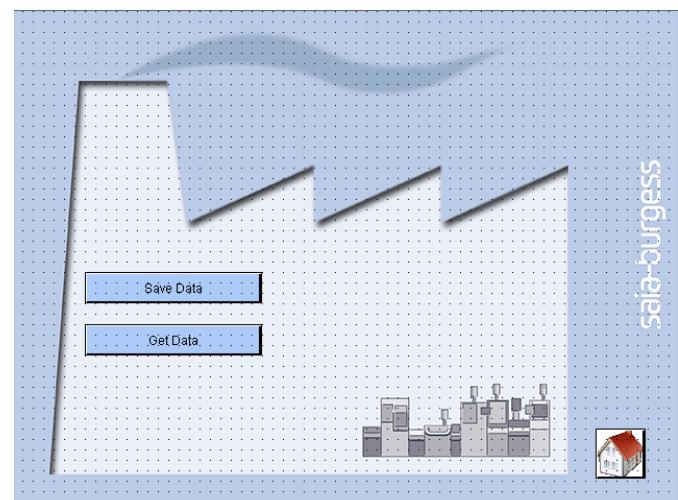
- Open page: FileSystem.teq
- Place a button and specify image: house\_VGA.gif
- Set up a «View Jump» to page: Start.teq



If the file is not stored in a Webpages subfolder, the absolute path must be indicated.

The absolute path is:

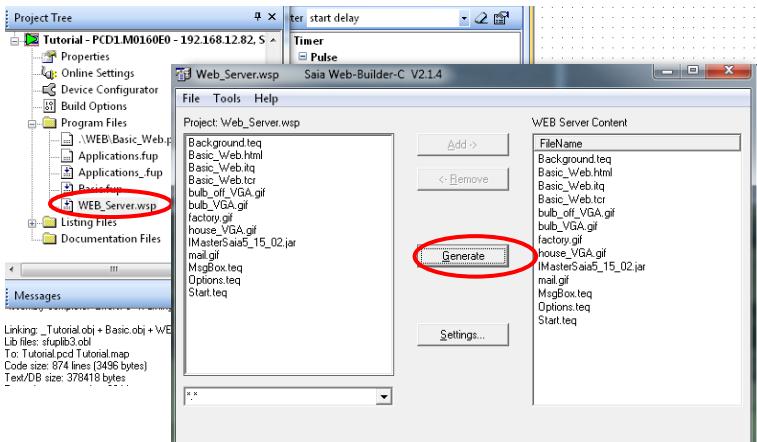
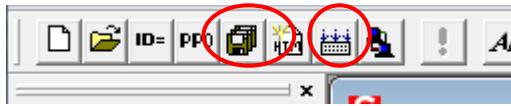
<http://192.168.12.82/INTFLASH:/WEBPAGES/LogFile.csv>





# File system application

## Download project



### Compile Web Editor project

- Save and compile with web project
- Exit the Web Editor

### Add new file to Web Build

- Open WEB\_Server.wsp
- Add all files to WEB Server Content
- Create with «Generate Build»
- Exit

### Compile and download project



# File system application

## Test the web visualization

