



**COPADATA**  
do it your way

# zenon manual

## Scheduler

v.7.50





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# 1. Welcome to COPA-DATA help

## GENERAL HELP

If you cannot find any information you require in this help chapter or can think of anything that you would like added, please send an email to [documentation@copadata.com](mailto:documentation@copadata.com) (<mailto:documentation@copadata.com>).

## PROJECT SUPPORT

You can receive support for any real project you may have from our Support Team, who you can contact via email at [support@copadata.com](mailto:support@copadata.com) (<mailto:support@copadata.com>).

## LICENSES AND MODULES

If you find that you need other modules or licenses, our staff will be happy to help you. Email [sales@copadata.com](mailto:sales@copadata.com) (<mailto:sales@copadata.com>).

# 2. Scheduler

The Scheduler allows the automatic execution of actions at a defined time or in a defined time grid. This can for example be changing the value of a variable, executing a System function and much more.



### License information

*Part of the standard license of the Editor and Runtime.*

The Scheduler works with the absolute times in the Schedules (on page 6). Therefore, the following functions are not available in the Scheduler:

- ▶ Relative Times, e.g. Shift start, shift end,...

- ▶ User defined events

### **CHANGE BETWEEN SCHEDULER AND PFS**

The Scheduler is used if the module Production & Facility Scheduler (PFS) is not licensed. Its functionality is similar to the PFS, but the functional range is limited.

- ▶ Updating the Scheduler to the PFS is possible at any time by licensing the module, the defined scheduler data is compatible.
- ▶ However, data created in the PFS cannot be used in the Scheduler!

## **3. Tool bar and context menu**



Parameters	Description
<b>Create...</b>	Depend on the selected element, a new element is created and the respective dialog is opened.
<b>Cut</b>	Cuts the selected element.
<b>Copy</b>	Copies selected element.
<b>Paste</b>	Pastes the element from the clipboard.
<b>Delete</b>	Deletes selected element
<b>Help</b>	Opens online help.

#### SCHEDULER CONTEXT MENU

Menu item	Action
<b>Create...</b>	Depend on the selected element, a new element is created and the respective dialog is opened.
<b>Insert</b>	Pastes the element from the clipboard.
<b>Save</b>	Saves all changes made in the Scheduler.
<b>Undo</b>	Cancel the action carried out and discards the changes.
<b>Settings...</b>	Opens dialog with options for settings.
<b>Help</b>	Opens online help.

#### SCHEDULE GROUP CONTEXT MENU

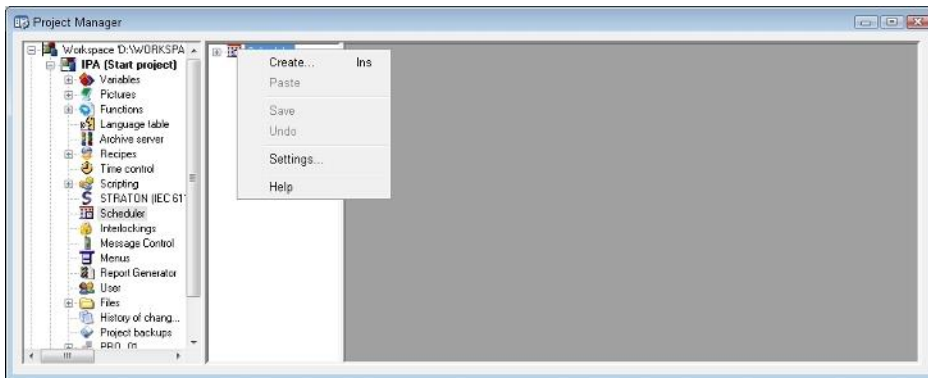
Parameters	Description
<b>Copy</b>	Copies the selected schedule group to the clipboard.
<b>Rename</b>	Makes it possible to rename the schedule group.
<b>Delete</b>	Deletes the selected schedule group.
<b>Help</b>	Opens online help.

## 4. Schedule groups

As many schedule groups as desired can be created in the Scheduler. Each schedule group contains schedules for week days, special days (national holidays), and as many special schedules as desired. Schedule groups can be used in order to, for example, display schedules for individual machines or departments.

A new schedule can be created in the detail view of the Scheduler.

- To do this, click on the `New schedule...` button



Parameters	Description
<b>New schedule group...</b>	Creates a new schedule group.
<b>Insert</b>	Inserts an existing schedule.
<b>Save</b>	Saves the changes.
<b>Undo</b>	After you have confirmed your choice, all changes you have made will be irrevocably discarded.
<b>Settings</b>	Calls up the settings pages for the Scheduler properties.
<b>Help</b>	Calls up the online help.

## 5. Switching points and Switching periods



### Information

*Per default switching points are always created as inactive in the Runtime and must be activated decidedly in order for them to work. Per default switching point are created as active in the Editor.*

## 5.1 Switching points (numeric)

A numeric switching point allows to set the value of a numeric variable (e.g. UINT, INT, etc.) once at a certain time.

To create a numerical switching point:

- ▶ In the context menu of the desired day and the corresponding time, click on `Create switching point (numerical)`.

Note: There is an MDI function available in Runtime.

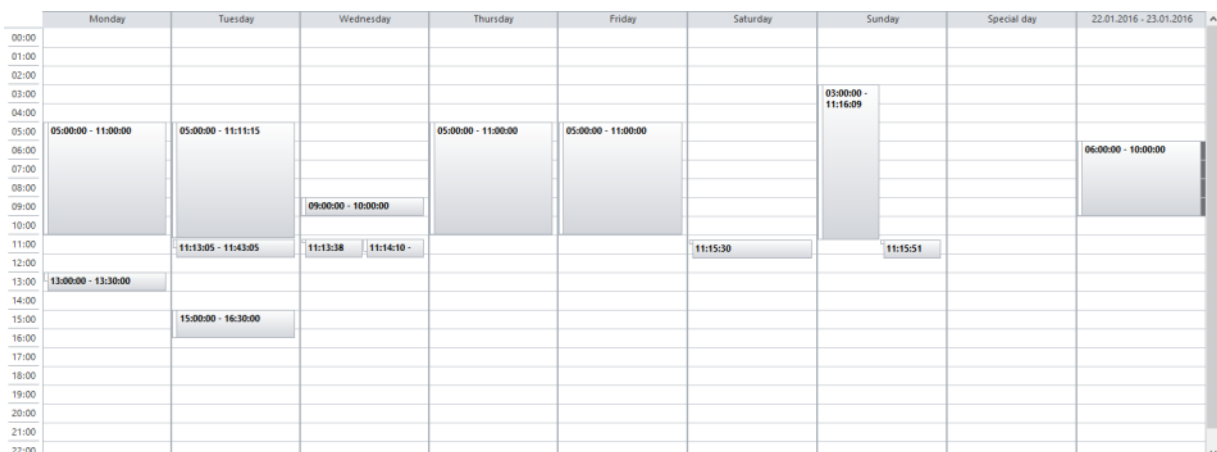
A new dialog opens. The start time can be entered. Variables and functions can be linked.

Note: Please note the following criteria when creating a switching point:

- ▶ Permitted time range with continuous process: 00.00.00 - 23:59:59
- ▶ Each switching point must be unique.

Parameters	Description
<b>Time of begin</b>	Point in time when the switching point (numerical) is to be executed.
<b>Variable/function list</b>	List with all variables and functions linked at the time of the switching point.
<b>Add variable</b>	Adds a new variable to the switching point.
<b>Add function</b>	Adds a new function to the switching point.
<b>Set value</b>	Opens dialog to write the set value of the variable selected in the list.
<b>Remove</b>	Removes the assignment of the variable or function to the switching point.

In the calendar display, switching points are shown with their time:





Note: When creating a switching point (numerical), a check is carried out to see whether the set time indications are unique. If this is not the case, a message is displayed in the form of a dialog and the times must be amended.



### Information

*There is the possibility to pre-select the scheduler objects with the mouse; when opening the object catalog these objects are displayed as selected objects. Additionally the start and end times are accepted according to the selected range.*

## 5.1.1 Add functions

Functions for the switching point can be selected. Any functions – even project overlapping – can be linked to the start or end time. In the process, it is possible to link several functions or functions that differ for start and end time.



### Information

*With the function “Execute VBA macro” also VBA macros can be executed at switching points.*

## 5.2 Switching periods (on/off)

The functionality of defining a switching period (on/off) is primarily for setting a binary variable to 0 or to 1 over a certain period of time.



### Information

*At the begin of such a switching period the variable is set to `TRUE` and at the end it is set to `FALSE`. If you want it the other way round, you first create the switching point and then open its menu with a double-click. Here you can set the set values by hand (edit, set active or inactive or change the time).*

To create a switching period (on/off):

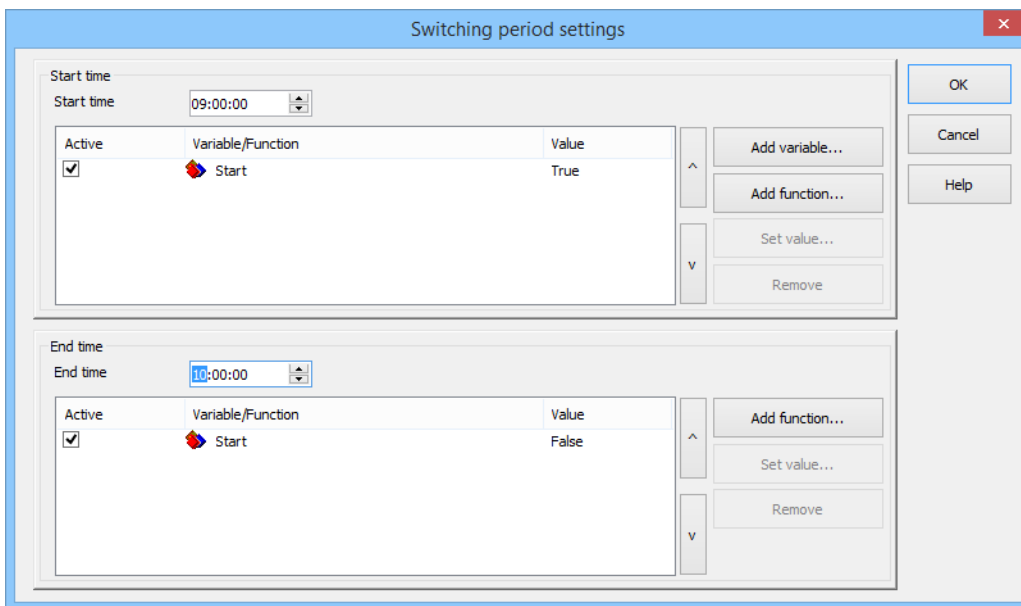
- ▶ In the calendar view of the Editor, click on `Create switching period (on/off)` in the context menu.

Note: There is an MDI function available in Runtime.

A new dialog opens. The start and end time can be entered. Variables and functions can be linked.

**Note:** Please note the following criteria when creating a switching period:

- ▶ End time should not be earlier than start time.
- ▶ Permitted time range with continuous process: 00.00.00 - 23:59:59
- ▶ Start time and end time should not be equal.
- ▶ Each switching period must be unique.



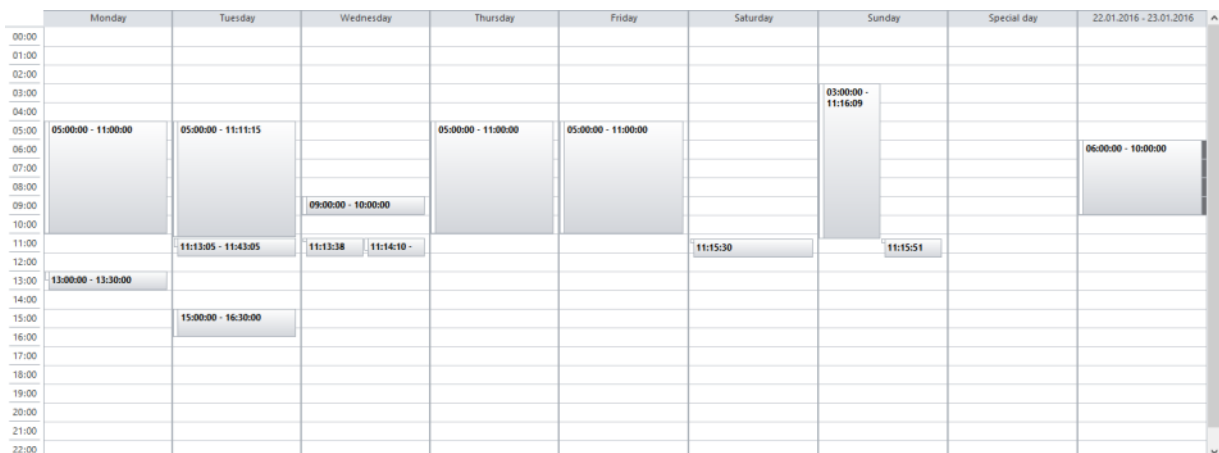
The dialog box 'Switching period settings' contains two sections: 'Start time' and 'End time'. Each section has a time input field and a table with columns 'Active', 'Variable/Function', and 'Value'. The 'Start time' section has a value of '09:00:00' and a table entry with 'Active' checked, 'Variable/Function' set to 'Start', and 'Value' set to 'True'. The 'End time' section has a value of '10:00:00' and a table entry with 'Active' checked, 'Variable/Function' set to 'Start', and 'Value' set to 'False'. To the right of each table are buttons for 'Add variable...', 'Add function...', 'Set value...', and 'Remove'. On the far right of the dialog are 'OK', 'Cancel', and 'Help' buttons.



### Information

*Only binary variables can be selected.*

Switching periods are displayed with their start and end time in the calendar view:



## 5.3 Editing switching points and switching periods

There are two possibilities for editing switching points and switching periods:

1. Double-click
  - Double click on the switching point or the switching period that you want to edit.
2. Context Menu
  - In the context menu of the switching point or switching period to be edited, click on `Edit switching point/ switching period`.

The same dialog that is also used when a new switching point or switching period is created is used.

## 5.4 Deletion of switching points and switching periods

To delete switching points or switching periods:

1. Click on the existing switching point or the switching period.
2. Click on `Delete switching point/switching period` in the context menu.
3. Confirm in the dialog by clicking on `Yes`.

## 5.5 Copying switching points and switching periods

You can copy this to execute identical switching points or switching periods on several days. To do this, proceed as follows:

- ▶ Open the context menu of the element to be copied and select **Copy**
- ▶ Open the context menu of a time range that is not assigned on the target day and select **Insert**

The copied switching point or switching period is inserted on the target day with the same start and end time. The element cannot be inserted if one of these times is already occupied.

## 5.6 Tooltips

Tool tips in the Scheduler visualize the respective status of a calendar entry and provide further information about the respective status.

### DISPLAY OF THE TOOL TIP:

To have a tooltip displayed, go to a switching point or switching period in the calendar display. The tool tip appears automatically when the mouse is positioned over the switching point or the switching period.

### STRUCTURE:

The tool tip consists of:

#### Switching period

- ▶ Start time
  - Linked variables
  - Values
  - Functions
- ▶ End time
  - Linked variables
  - Values
  - Functions

#### Switching point

- ▶ Start time
  - Linked variables
  - Values
  - Functions

## 6. Special schedules

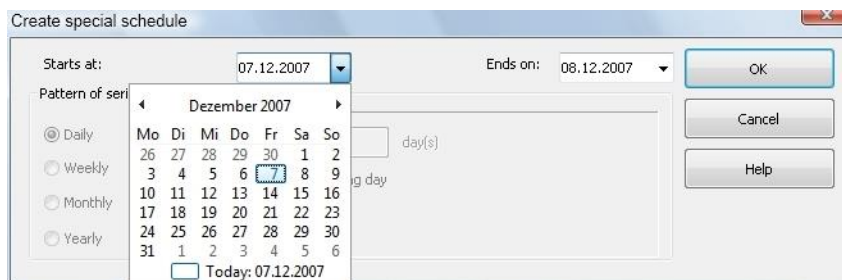
Additional to the legal holidays any number of special schedules can be created (e.g. company holidays). These can be created as special schedules with the context menu of the scheduler. Here the same rule

as with holidays is valid; if a special schedule exists, the switching points of the standard schedule are overwritten.

To create a special schedule:

- ▶ In the schedule, click on any desired line, and then on `Create special schedule` in the context menu.

The following dialog then opens:



- ▶ Define the time of the special schedule in this dialog.

The special day is entered in the table as an additional column to the week days.

### Attention

*It is not possible to execute several special days at the same time. i.e. in a period in which a special day already is already configured, another one cannot be configured.*

## 6.1 Delete a special schedule

To delete a special schedule:

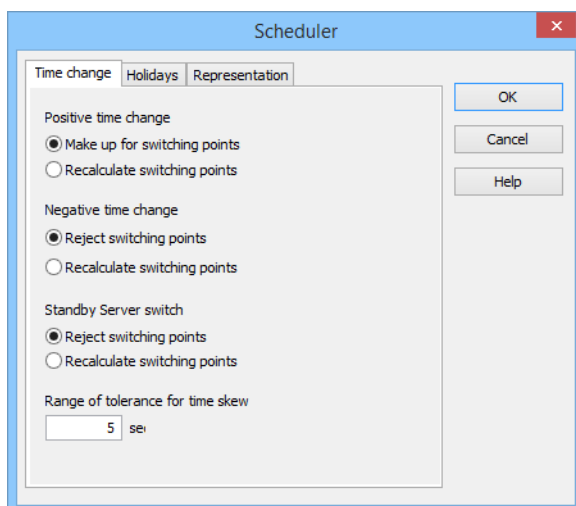
1. Click on the existing schedules.
2. Click on `Delete special schedule` in the context menu.
3. Confirm in the dialog by clicking on `Yes`.

## 7. Settings options for the Scheduler

The settings of the Scheduler can be defined with the context menu of the detail view and the command **Settings**.

### 7.1 Time change

You get to the following dialog with the possibilities for settings by clicking on `Settings` in the context menu:



In this configuration it can be set, which time changes are the basis for calculation.

Parameters	Description
<b>Positive time change</b>	The time is set ahead, the Systemtime is set into the future (e.g. summer time)
<b>Make up for switching points</b>	Actions between the current time and the newly set time, are executed directly after the time setting.
<b>Recalculate switching points</b>	Actions between the current time and the newly set time, are ignored and not executed. Switching points are recalculated.
<b>Negative time change</b>	The time is set back, the Systemtime is set into the past (e.g. winter time)
<b>Reject switching points</b>	Switching points are recalculated. Switching points are calculated when the original time is reached.
<b>Recalculate switching points</b>	Action, between the current time and the newly set time, are recalculated. (That means that when the defined time is reached, they are executed.) This causes a double execution of switching points in the corrected time period.
<b>SB Switch</b>	Standby Server switch, valid for timeout during redundance switch.
<b>Reject switching points</b>	The execution of switching points starts according to the current position of the Standby. Switching points in the switching period might not be executed.
<b>Recalculate switching points</b>	The switching points are recalculated and executed according to the new time. This might cause a double execution of switching points.
<b>Tolerance zone for time deviation</b>	Tolerance, in how far the systemtime can be changed, without causing a recalculation of switching points according to the criteria described above.



### Attention

*Always carry out a switch to daylight saving time/standard time with the automatic Windows time switching. Never change the time manually, because this could lead to errors with times that are relevant to zenon.*

## 7.2 Holidays

National holidays according to the country can be added automatically.



The basis data for the holidays can be found in the zenon program folder in the file **Feiertage.txt** and can be edited with any text editor.

Entries specific to a country start by naming the country, enclosed in square brackets, followed by the international telephone country code.

The definition of holidays can be found in the following line, the name and date of the holiday.

[Austria] 45
All Saint's Day, 1998/11/01
All Saint's Day, 1999/11/01
All Saint's Day, 2000/11/01
All Saint's Day, 2001/11/01
All Saint's Day, 2002/11/01
Ascension Day, 1998/05/21
Ascension Day, 1999/05/13
Ascension Day, 2000/06/01
Ascension Day, 2001/05/24
Ascension Day, 2002/05/09
...

The correct definition is essential for identifying the model to be used.

The input can be corrected by double-clicking on the plan.



## 7.3 Display

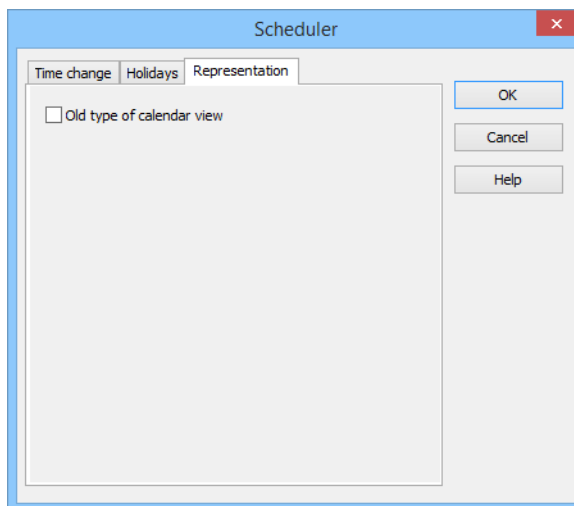
In the Editor, there is the possibility to select between the old and the new display type in the detail view of the scheduler.

To do this:

1. Click on **Settings** in the context menu of the Scheduler in the detail view.

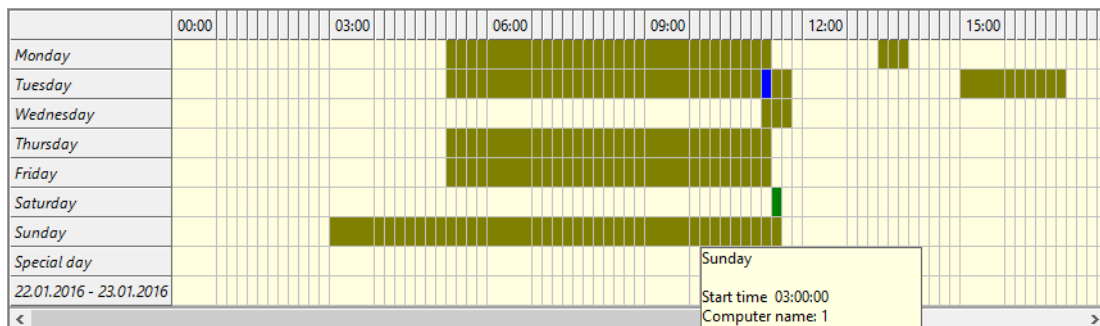
A new dialog opens.

2. Click on the **Display** tab.

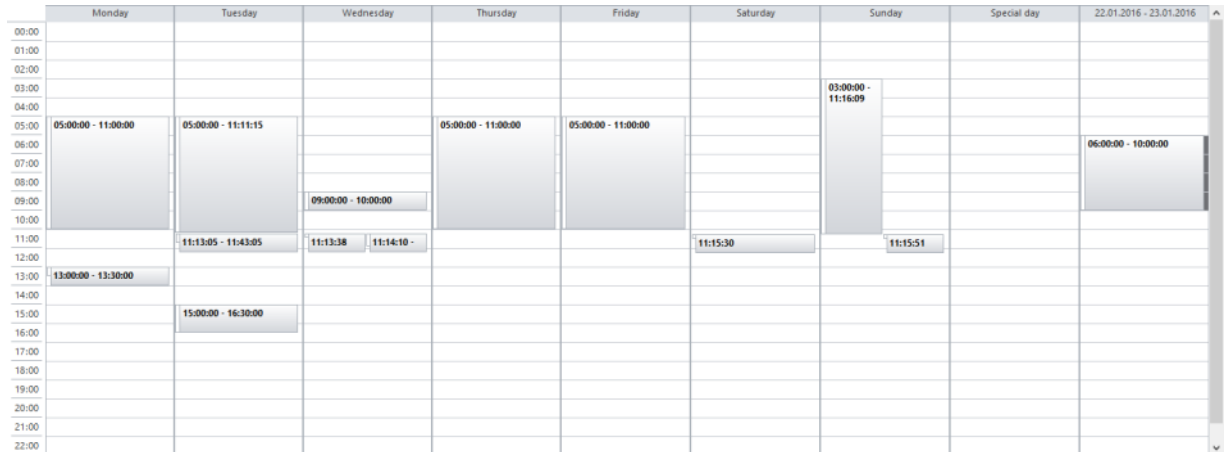


3. Activate the **Old type of calendar view** option if you want to work with the old display type.

### OLD DISPLAY TYPE:



## NEW DISPLAY TYPE:



- ▶ Deactivate the Old type of calendar view option if you want to work with the new display type.

Note: This option is not activated by default for newly-created projects in zenon version 7.50. This means that the new calendar display type is offered by default.

## 8. Schedules for integration projects

If a schedule with data of a sub project should be executed, the according function of the sub project has to be called.

The data for the scheduler always come from the project, from which the screen switch function is.