

**Rockwell Automation**

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# FactoryTalk ProductionCentre培训

对象介绍 – 控件对象

ISPB (信息软件部门)

2016年9月18日



PUBLIC INFORMATION



Allen-Bradley • Rockwell Software

**Rockwell  
Automation**

- **课程名字：**

FTPC对象培训 – 控件对象

- **课程描述：**

本课程介绍FactoryTalk ProductionCentre的控件对象

- **目标受众：**

业务用户，项目经理，开发人员

- **培训目标：**完成该课程之后，学员将能够

- 了解FTPC的用户界面控件
- 创建FTPC的用户界面





- **课堂纪律：**
  - 关闭手机铃声，设置为静音模式
  - 举手提问、发言



FTP对象介绍

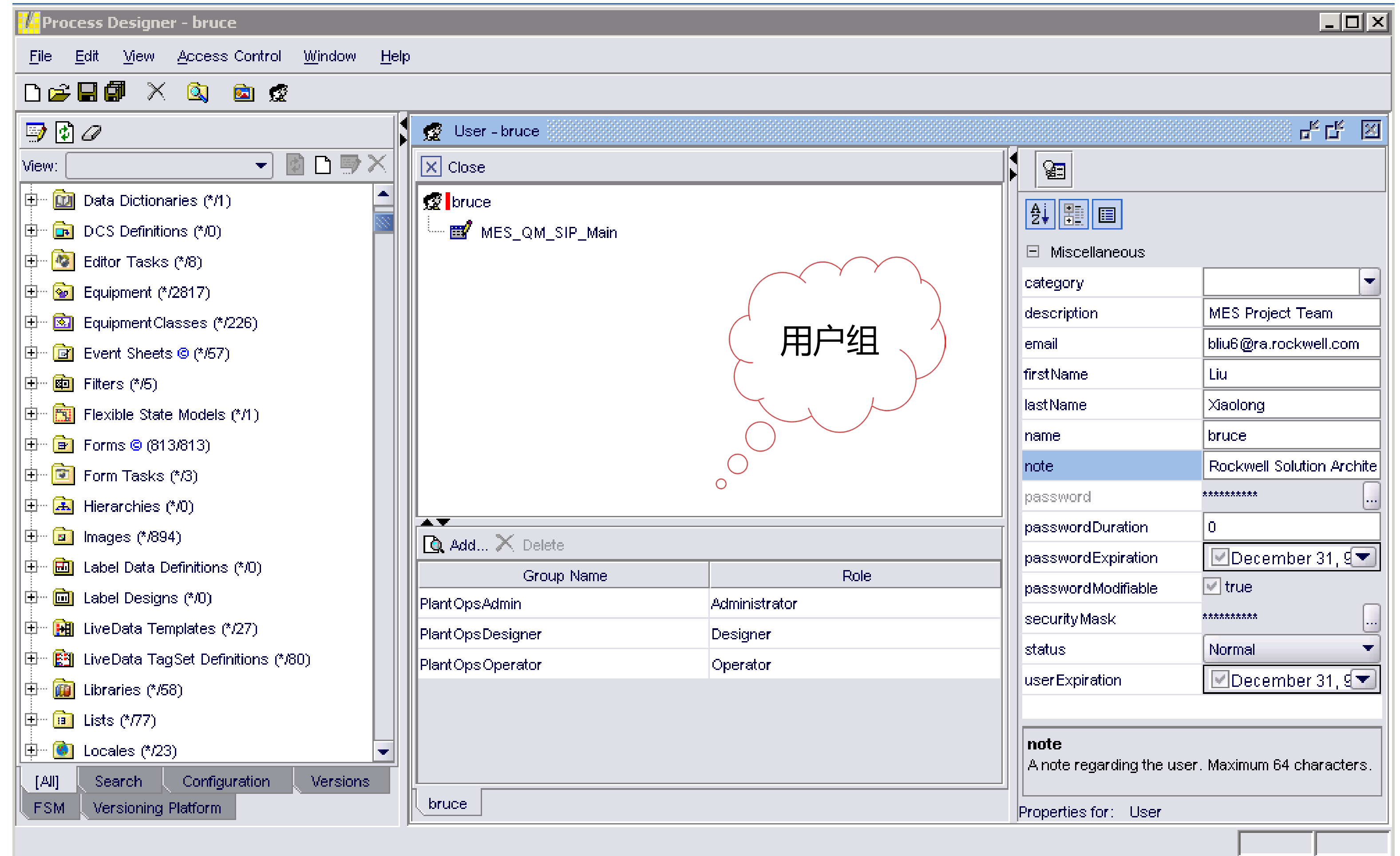
FTP控件介绍

QA

# FTPC对象介绍

## ■ User 用户对象

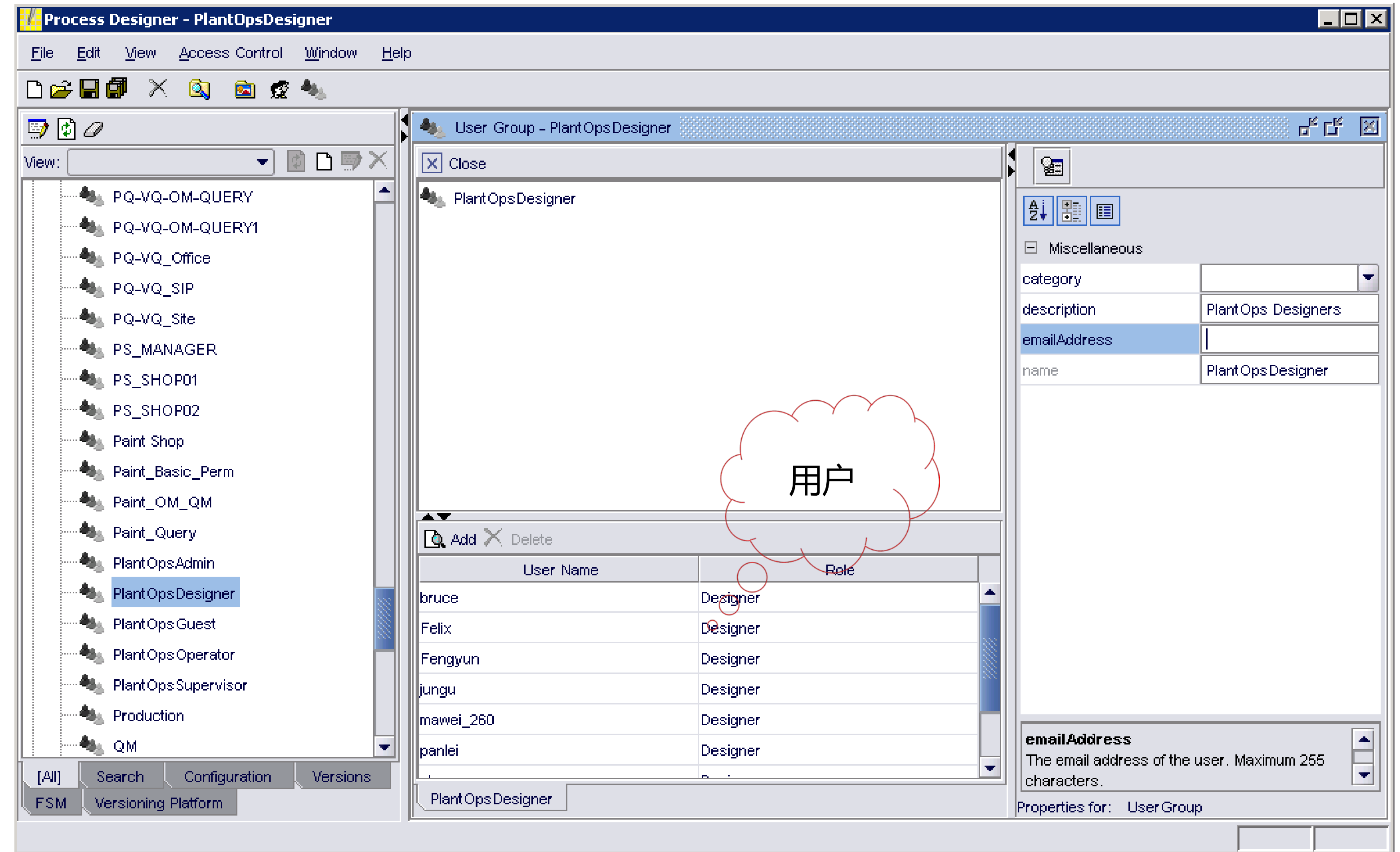
- ❑ 设置用户名、描述信息
- ❑ 设定用户密码
- ❑ 设定密码有效期
- ❑ 设定用户账号状态
- ❑ 设定用户账号失效日期
- ❑ 关联用户默认页面
- ❑ 关联用户默认班次
- ❑ 关联用户组



# FTPC对象介绍

## ■ User Group 用户组对象

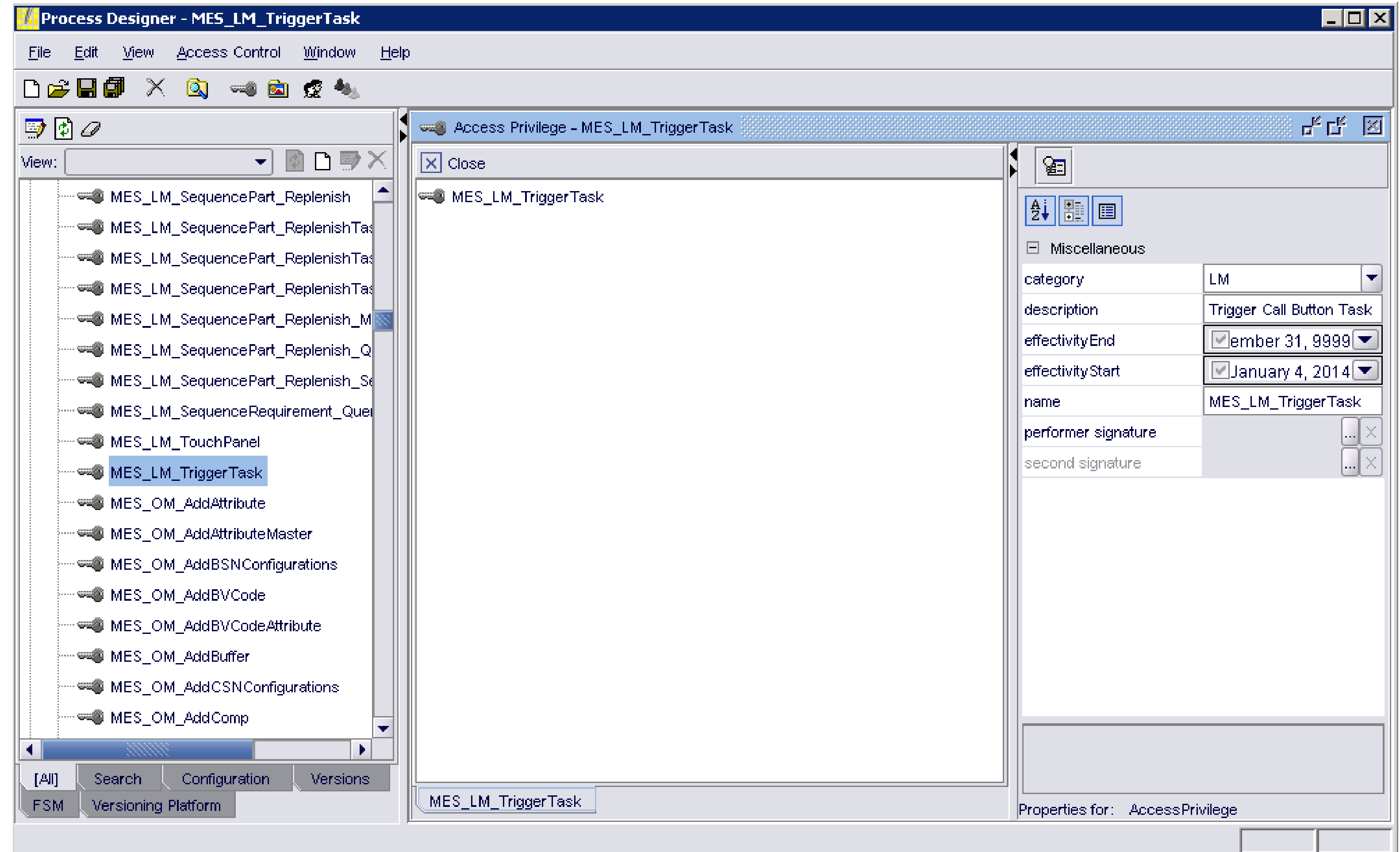
- ❑ 设置用户组名、描述信息
- ❑ 关联用户
- ❑ 关联班次
- ❑ 5个默认用户组
  - PlantOpsAdmin
  - PlantOpsDesigner
  - PlantOpsSupervisor
  - PlantOpsOperator
  - PlantOpsGuest



# FTPC对象介绍

- Access Privilege 访问权限

- ❑ 设定Performers用户组
- ❑ 设定Second Signers (Option)用户组
- ❑ 兼容JAAS (Java验证与授权API)
  - GuestPrivilege
  - OperatorPrivilege
  - SupervisorPrivilege
  - DesignerPrivilege
  - AdminPrivilege
  - PlantOpsNotRequiredPrivilege



- Access Privilege **访问权限（续）**

- ❑ FSMConfigurationDesigner: 允许用户保存FSM变更。是建立Java类和FSM关联关系必须的权限
- ❑ OpenCloseForm: 允许用户在Shop Operations中打开或关闭页面
- ❑ PDCreate: 允许用户在Process Designer中创建或保存对象.
- ❑ PDDelete: 允许用户在Process Designer中删除对象.
- ❑ PDUDADesigner: 允许用户在Process Designer中更改UDADefinition对象
- ❑ PDUpdate: 允许用户在Process Designer中更改或保存对象
- ❑ ProcessDesigner: 允许用户登录Process Designer
- ❑ ProcessModeler: 允许用户登录Process Designer 但是访问不了forms, subroutines, 或event sheets对象
- ❑ RuntimeOptions: 允许用户在Shop Operations修改站点、区域，或禁用自动超时和时间脚本
- ❑ ShopOperations:允许用户执行操作员事务
- ❑ UserAuthentication:允许用户在登录Shop Operations Server 调用中间件方法来验证用户身份
- ❑ VersioningPlatformDesigner: 允许用户启用、配置或禁用版本平台特性



# FTPC对象介绍



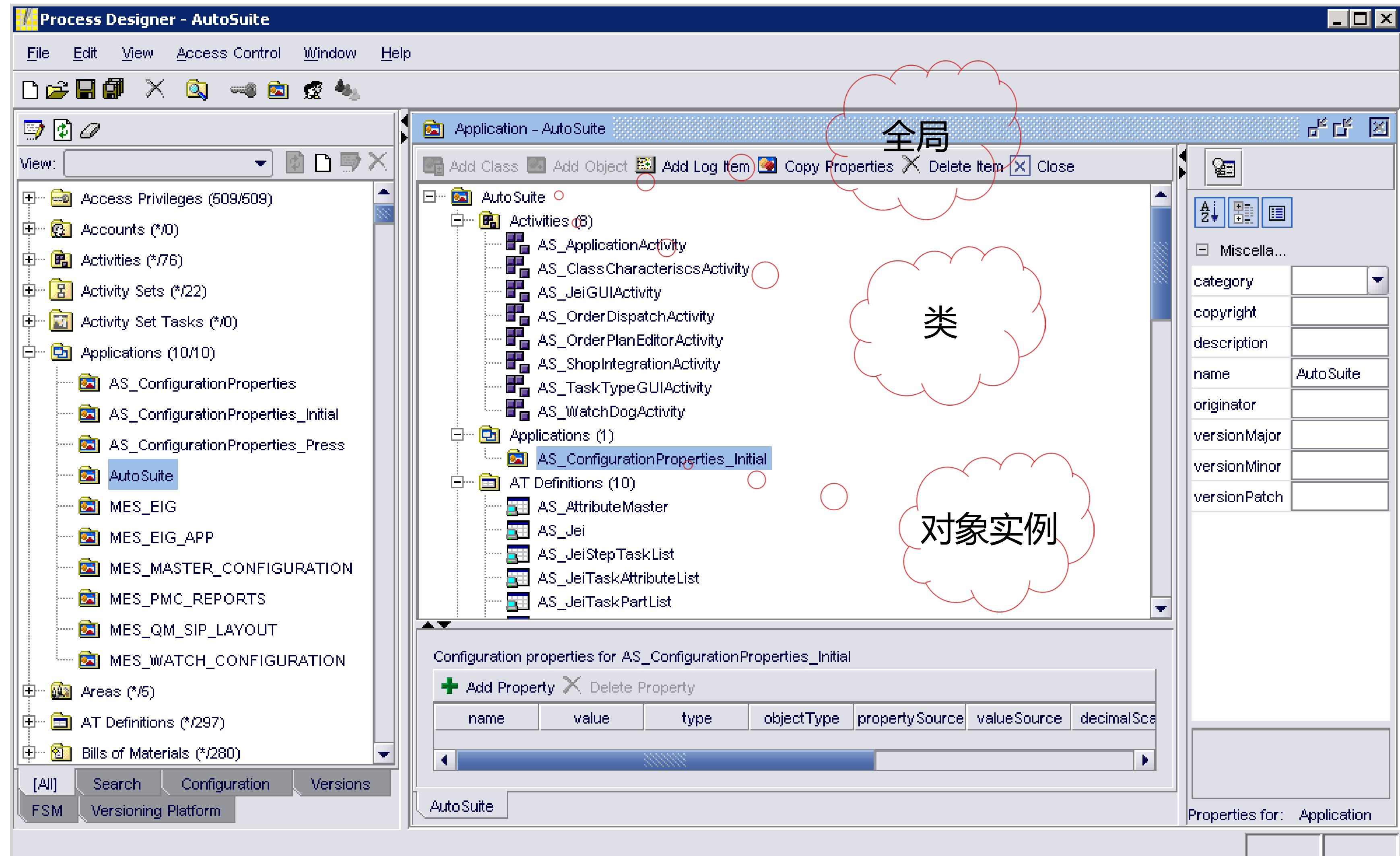
■ Access Privilege 访问权限（续）

Access Privileges	User Group				
	PlantOpsAdmin	PlantOpsDesigner	PlantOpsSupervisor	PlantOpsOperator	PlantOpsGuest
FSMConfigurationDesigner	x	x			
OpenCloseForm	x	x	x		
PDCreate	x	x			
PDDelete	x	x			
PDUDADesigner	x	x			
PDUpdate	x	x			
ProcessDesigner	x	x			
ProcessModeler	x	x			
RuntimeOptions	x	x	x		
ShopOperations	x	x	x	x	
UserAuthentication	x	x	x	x	x
VersioningPlatformDesigner	x	x			
Backward Support Access Privileges					
GuestPrivilege	x	x	x	x	x
OperatorPrivilege	x	x	x	x	
SupervisorPrivilege	x	x	x		
DesignerPrivilege	x	x			
AdminPrivilege	x				
PlantOpsNotRequiredPrivilege - The system will not perform authorization for this privilege. Use it on a method that does not require any authorization.					

# FTPC对象介绍

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- Application 程序对象
  - 管理Process Designer对象
  - 配置属性
    - 可按全局、类、实例三级定义
  - 程序debug日志



# Rockwell Automation

## ❏ 定义表名称

## 设置表增长类型

## ❏ 设置数据管理类型

## 设置日志等级

## 创建表字段定义

## 创建索引、排序

## 创建子表

applicationTable	defaultValue	description	name	nullable	objectType	textLength	type
		sequence Description	description	<input checked="" type="checkbox"/> true		80	String
			digit_count	<input type="checkbox"/> false			Long
			effective_end	<input type="checkbox"/> false			DateTime
			effective_start	<input type="checkbox"/> false			DateTime
			increment	<input type="checkbox"/> false			Long
			initial_value	<input type="checkbox"/> false			Long
			market	<input checked="" type="checkbox"/> true		80	String
	Name should be lowercase		max_value	<input type="checkbox"/> false			Long
			name	<input type="checkbox"/> false		80	String
			order_type	<input type="checkbox"/> false		80	String
			project	<input type="checkbox"/> false		80	String
		BSN, VIN or other	sequence_type	<input type="checkbox"/> false		80	String
	Input description of the field name		status	<input type="checkbox"/> false			Boolean
			usersequence_name	<input checked="" type="checkbox"/> true		80	String
			year	<input type="checkbox"/> false		80	String

Uncheck the 'nullable' checkbox if the field mandatory

Choose correct data management, growth type and logging level

Create indexes if the table is big

Change the text length if it's longer than the default value 80

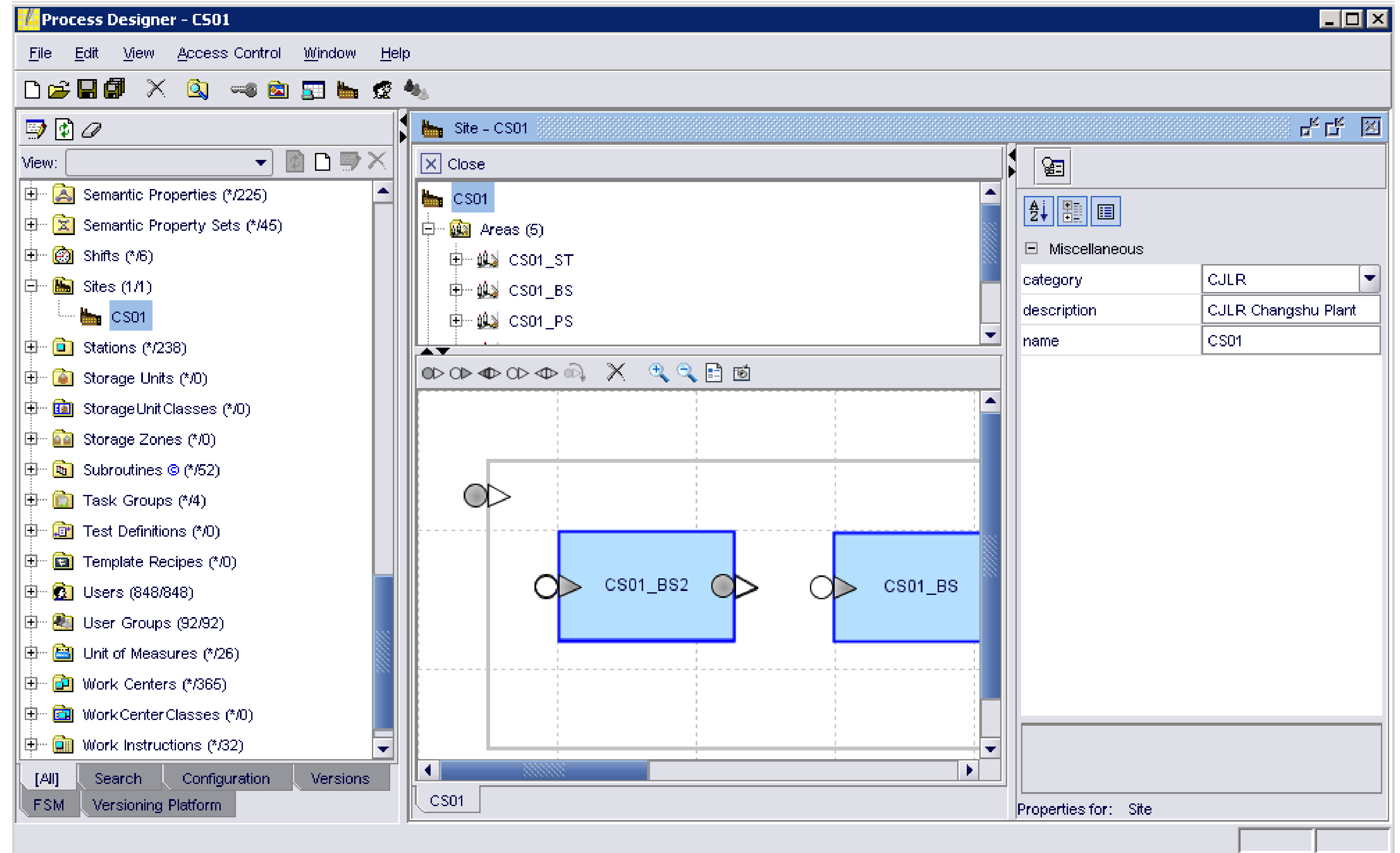
Indexes

description	name	unique
	column	sortDesc

Properties for: ATDefinition

# FTPC对象介绍

- Site 工厂
  - 定义名称
  - 关联区域 ( Area )
  - 关联位置 ( Location )
  - 关联工作指令 ( Work Instruction )
  - 关联工作计划 ( Work Schedule )

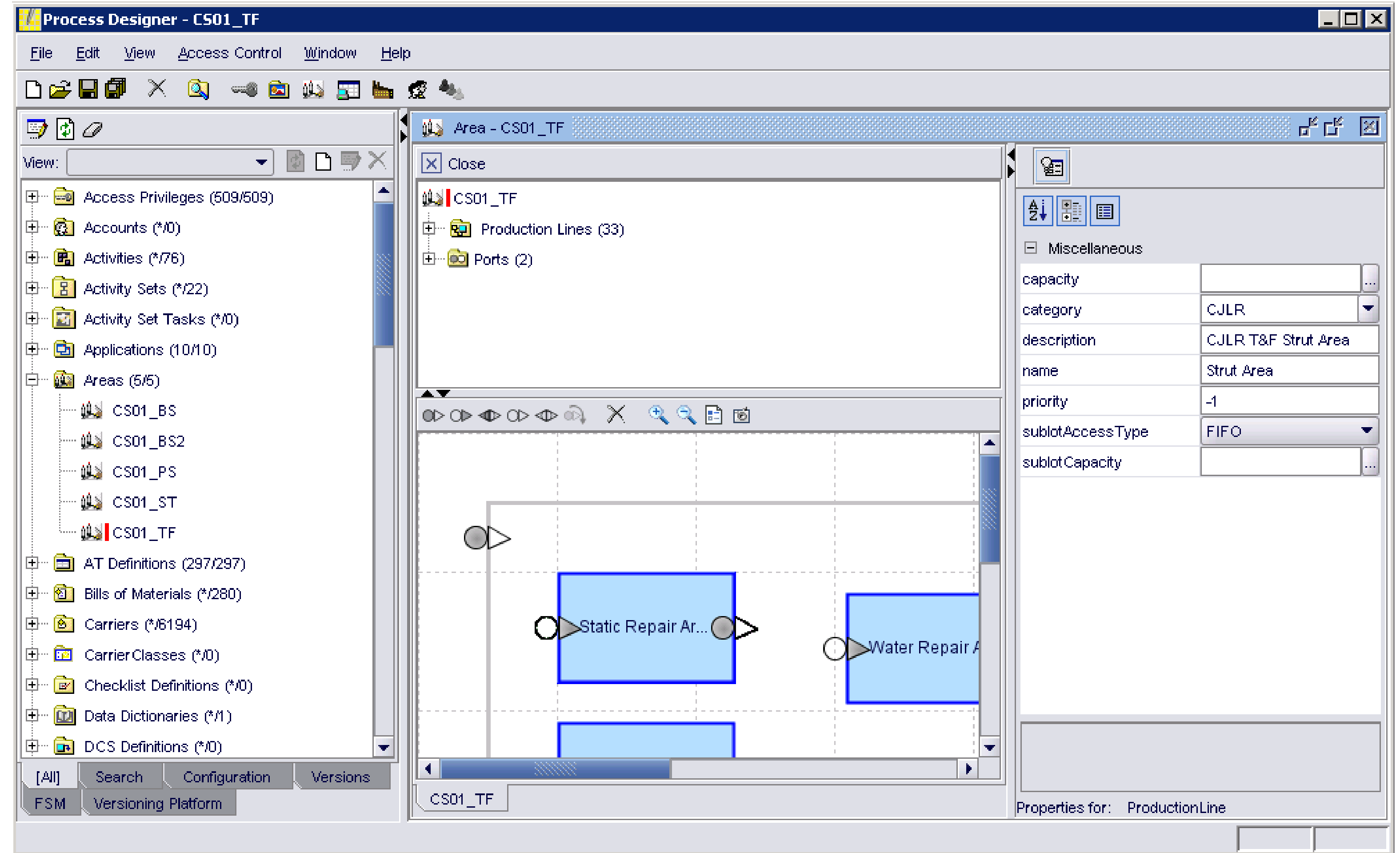




# FTPC对象介绍

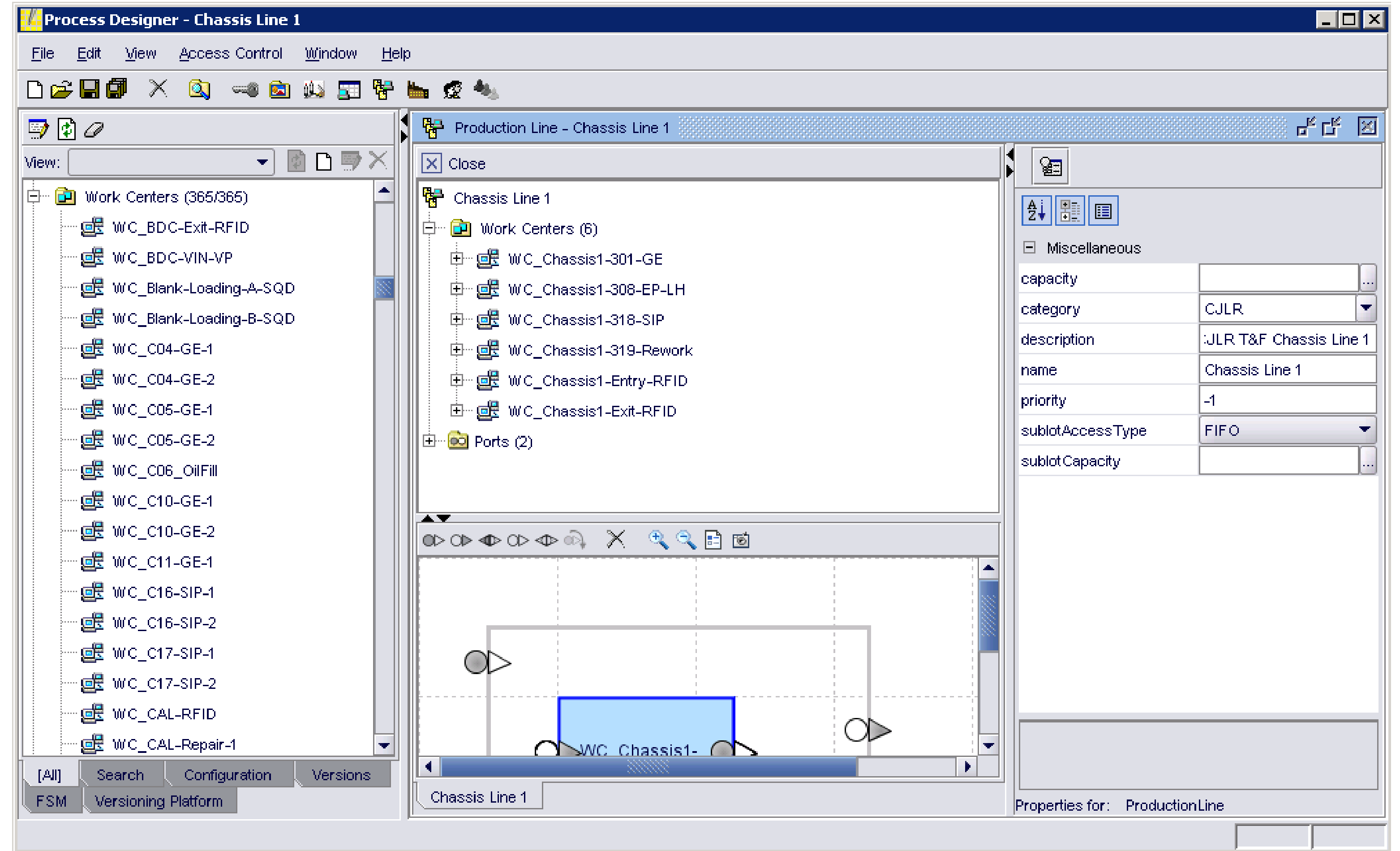
## ■ Area 区域

- ❑ 定义名称
- ❑ 关联生产线 ( Production Lines )
- ❑ 关联货架 ( Carriers )
- ❑ 关联位置 ( Location )
- ❑ 关联生产缓冲区 ( Production Queue )
- ❑ 关联资源路径 ( Resource Route )
- ❑ 关联存储单元 ( Storage Unit )
- ❑ 关联工作中心 ( Work Center )
- ❑ 关联工作指令 ( Work Instruction )
- ❑ 关联工作计划 ( Work Schedule )



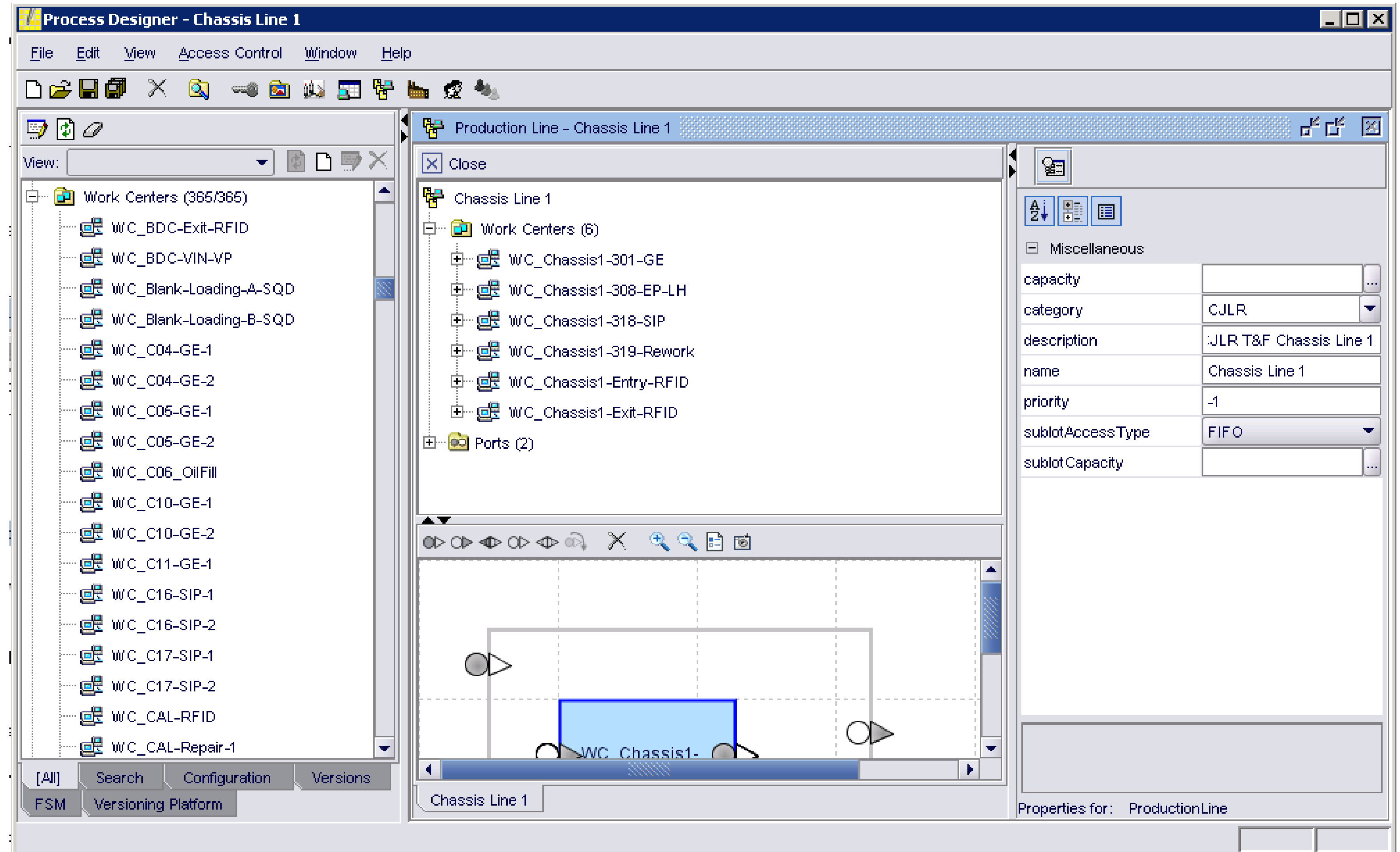
# FTPC对象介绍

- Production Line **生产线**
  - ❑ 定义名称
  - ❑ 关联货架 ( Carriers )
  - ❑ 关联位置 ( Location )
  - ❑ 关联生产缓冲区 ( Production Queue )
  - ❑ 关联资源路径 ( Resource Route )
  - ❑ 关联存储单元 ( Storage Unit )
  - ❑ 关联工作中心 ( Work Center )
  - ❑ 关联工作指令 ( Work Instruction )
  - ❑ 关联工作计划 ( Work Schedule )



# FTPC对象介绍

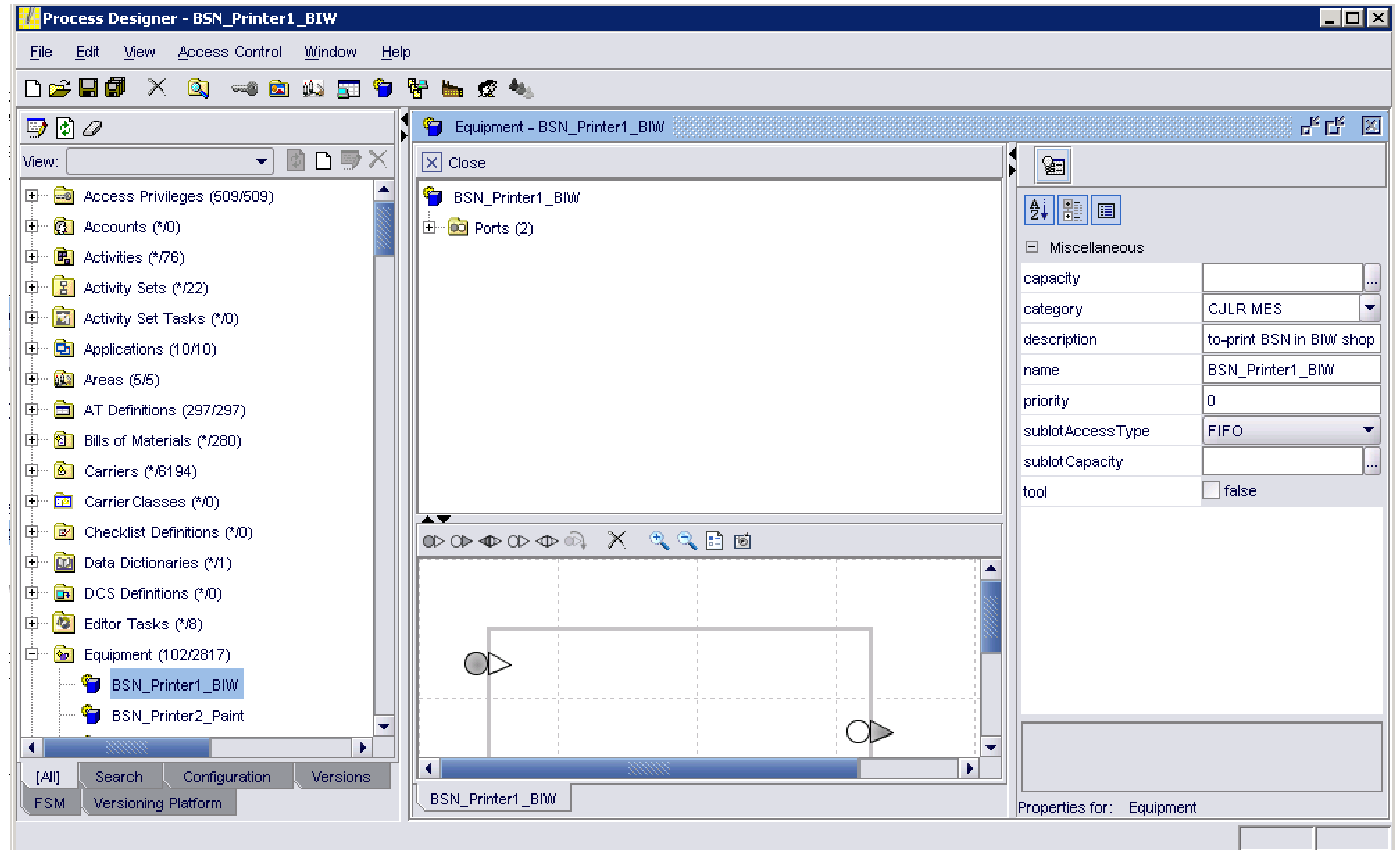
- Work Center **加工中心**
- ❑ 定义名称
- ❑ 关联货架 ( Carriers )
- ❑ 关联位置 ( Location )
- ❑ 关联生产缓冲区 ( Production Queue )
- ❑ 关联资源路径 ( Resource Route )
- ❑ 关联存储单元 ( Storage Unit )
- ❑ 关联工作中心 ( Work Center )
- ❑ 关联工作指令 ( Work Instruction )
- ❑ 关联工作计划 ( Work Schedule )



# FTPC对象介绍

- Equipment 设备

- ❑ 定义名称
- ❑ 关联设备 ( Equipment )
- ❑ 关联位置 ( Location )
- ❑ 关联资源路径 ( Resource Route )
- ❑ 关联工作指令 ( Work Instruction )
- ❑ 关联工作计划 ( Work Schedule )

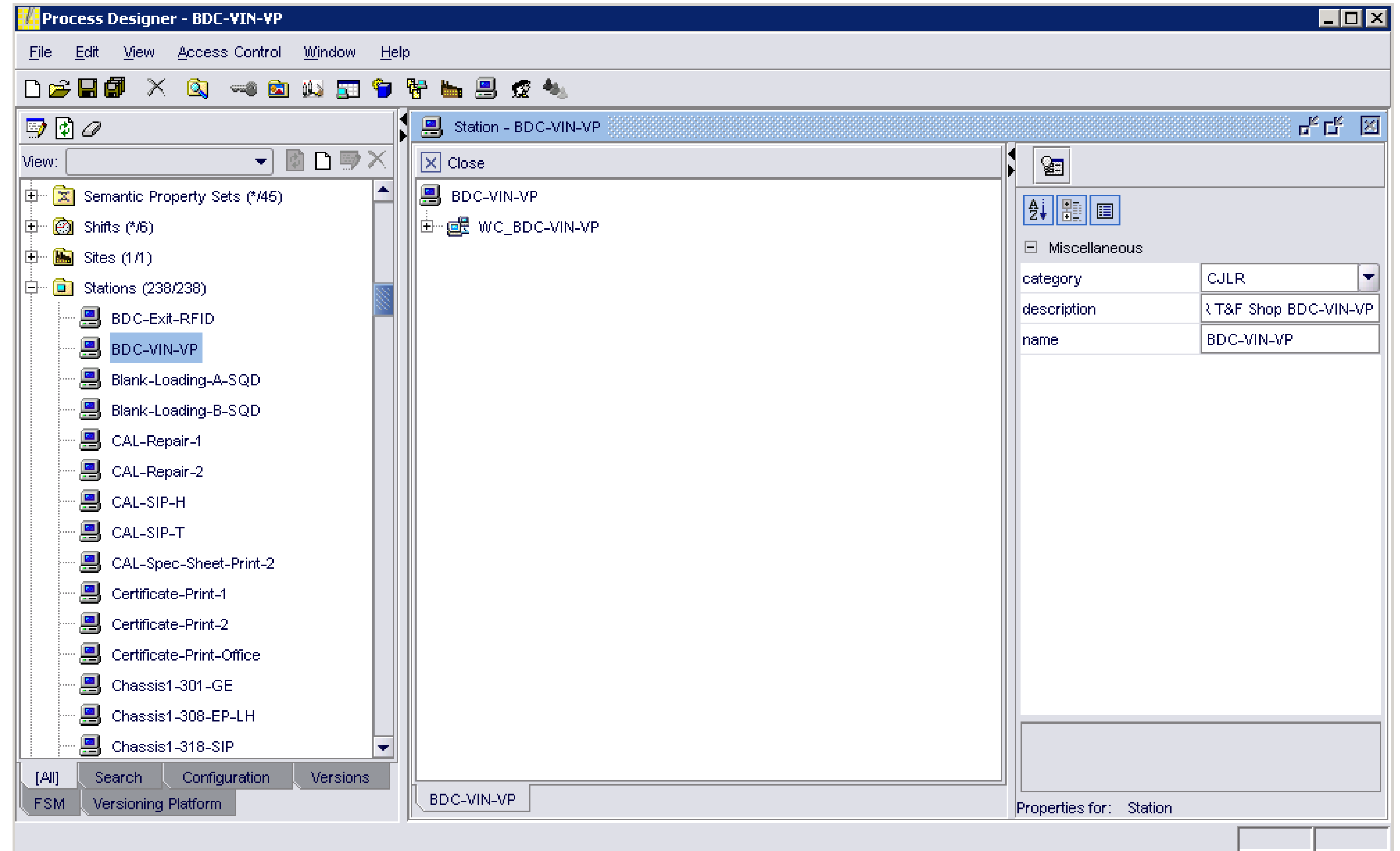




# FTPC对象介绍

- Station 站点

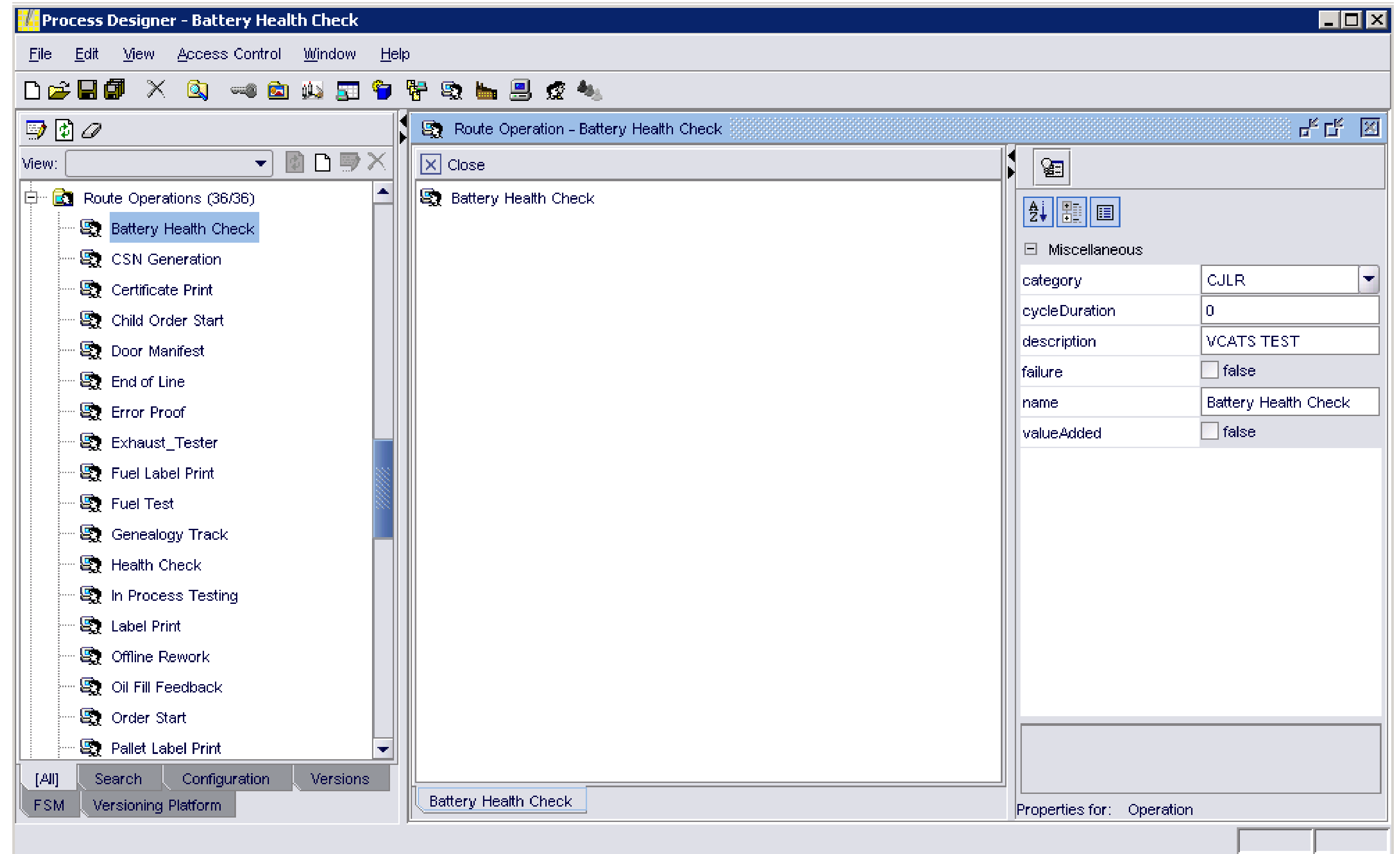
- 定义名称
- 关联页面 ( Form )
- 关联位置 ( Location )
- 关联加工中心 ( Work Center )
- 关联工作指令 ( Work Instruction )



# FTPC对象介绍

## Route Operation 工艺路径操作

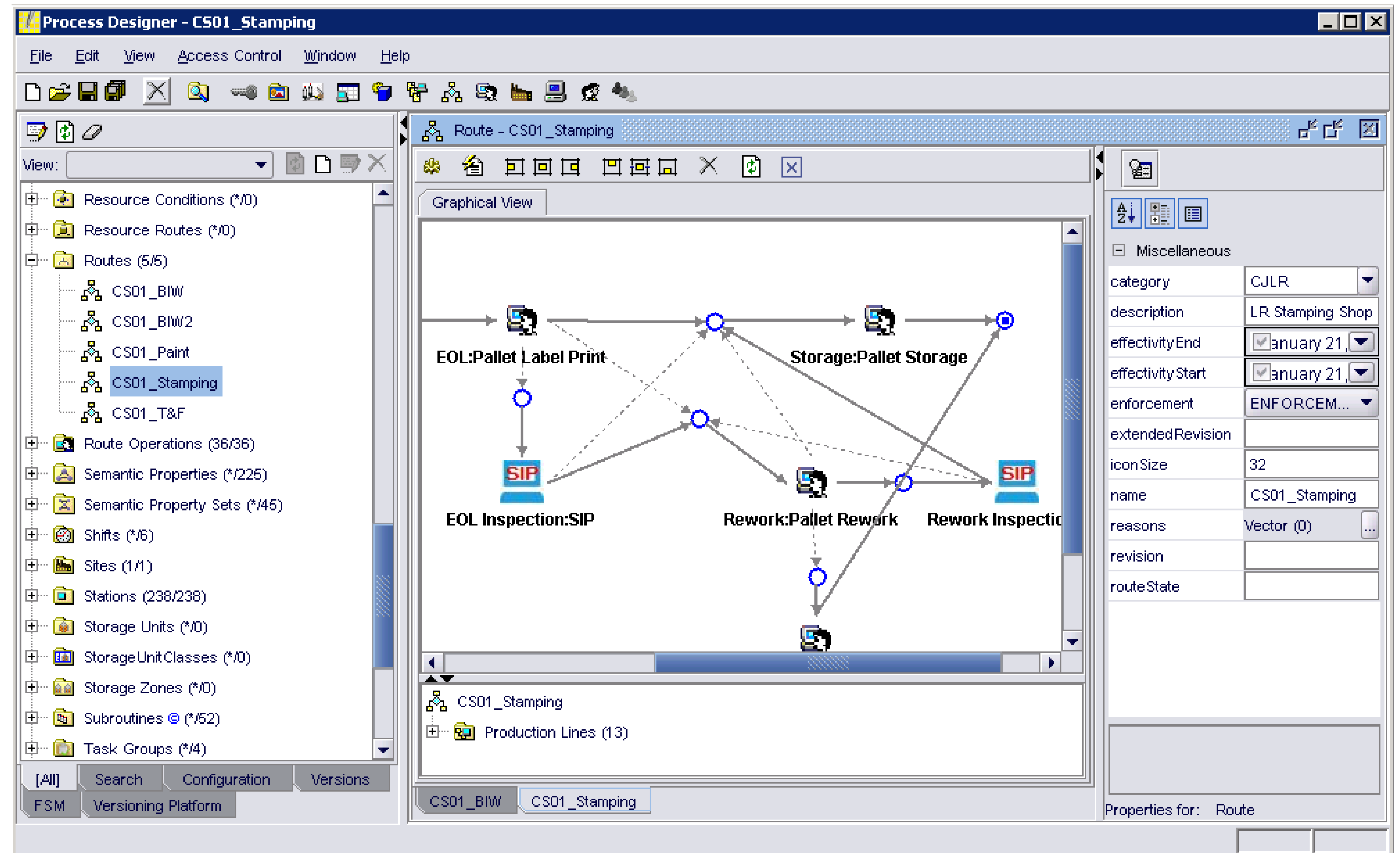
- ❑ 定义名称
- ❑ 关联页面 ( Form )
- ❑ 关联清单 ( Checklist )
- ❑ 关联图像 ( Image )
- ❑ 关联数据采集 ( Data Collection )
- ❑ 关联工作指令 ( Work Instruction )



# FTP对象介绍

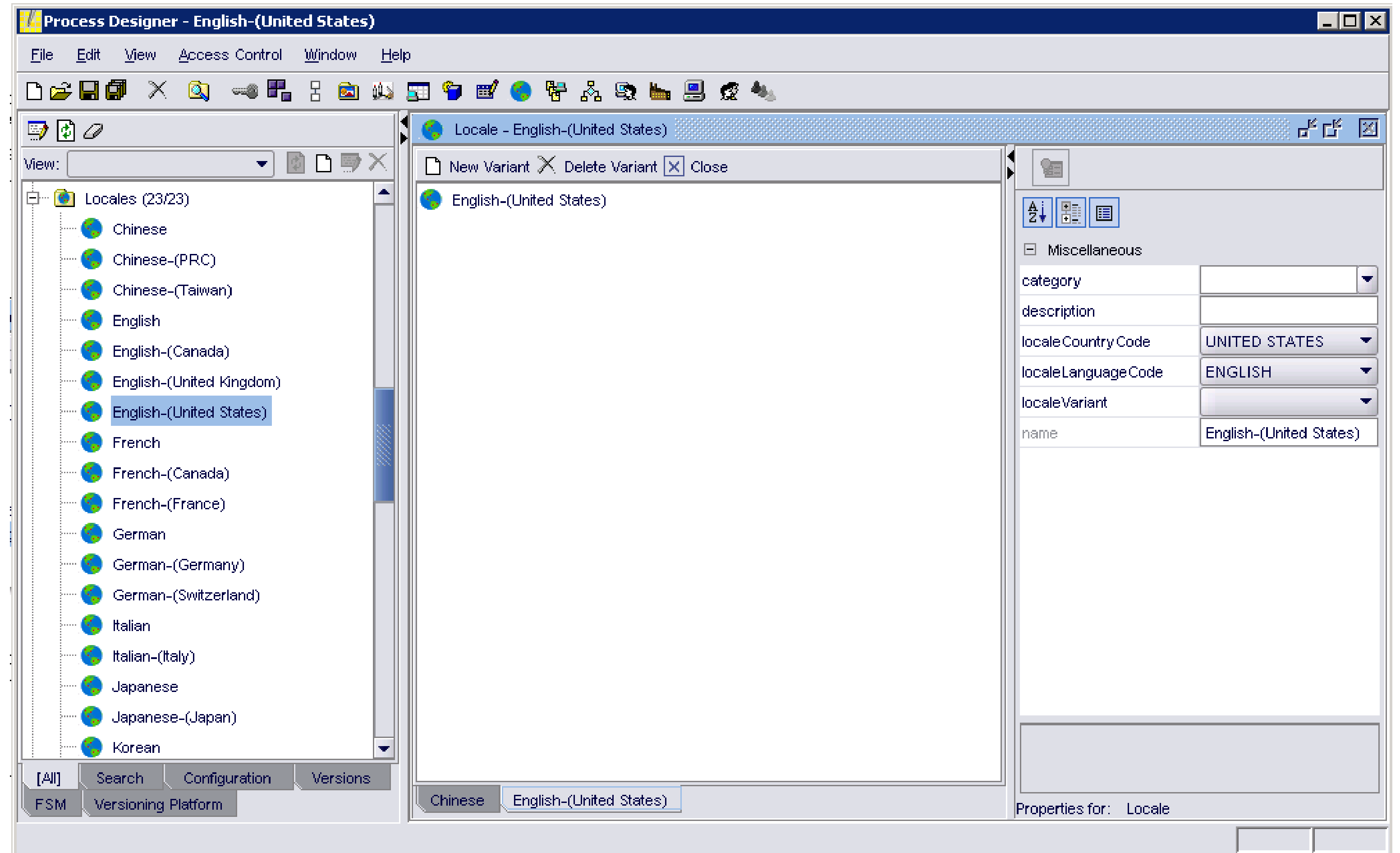
# Rockwell Automation

- **Route****工艺路径**
- ❑ 定义名称
- ❑ 设置工艺路径步骤和工艺缓冲
- ❑ 关联页面（ Form ）
- ❑ 关联生产线（ Production Line ）
- ❑ 关联工作指令（ Work Instruction ）



# FTPC对象介绍

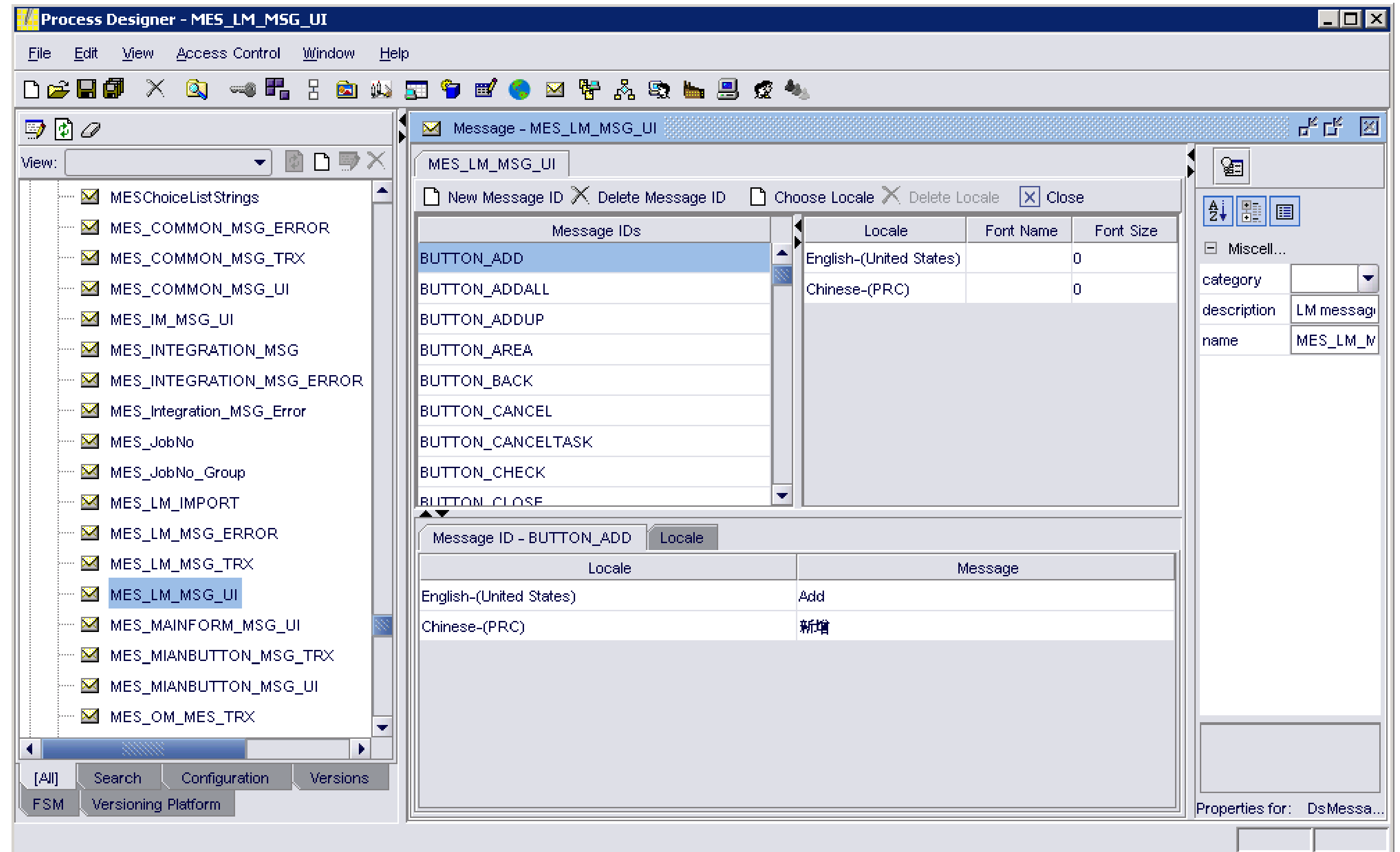
- Locale 区域
  - 定义名称
  - 设置国家代码
  - 设置语言代码





# FTPC对象介绍

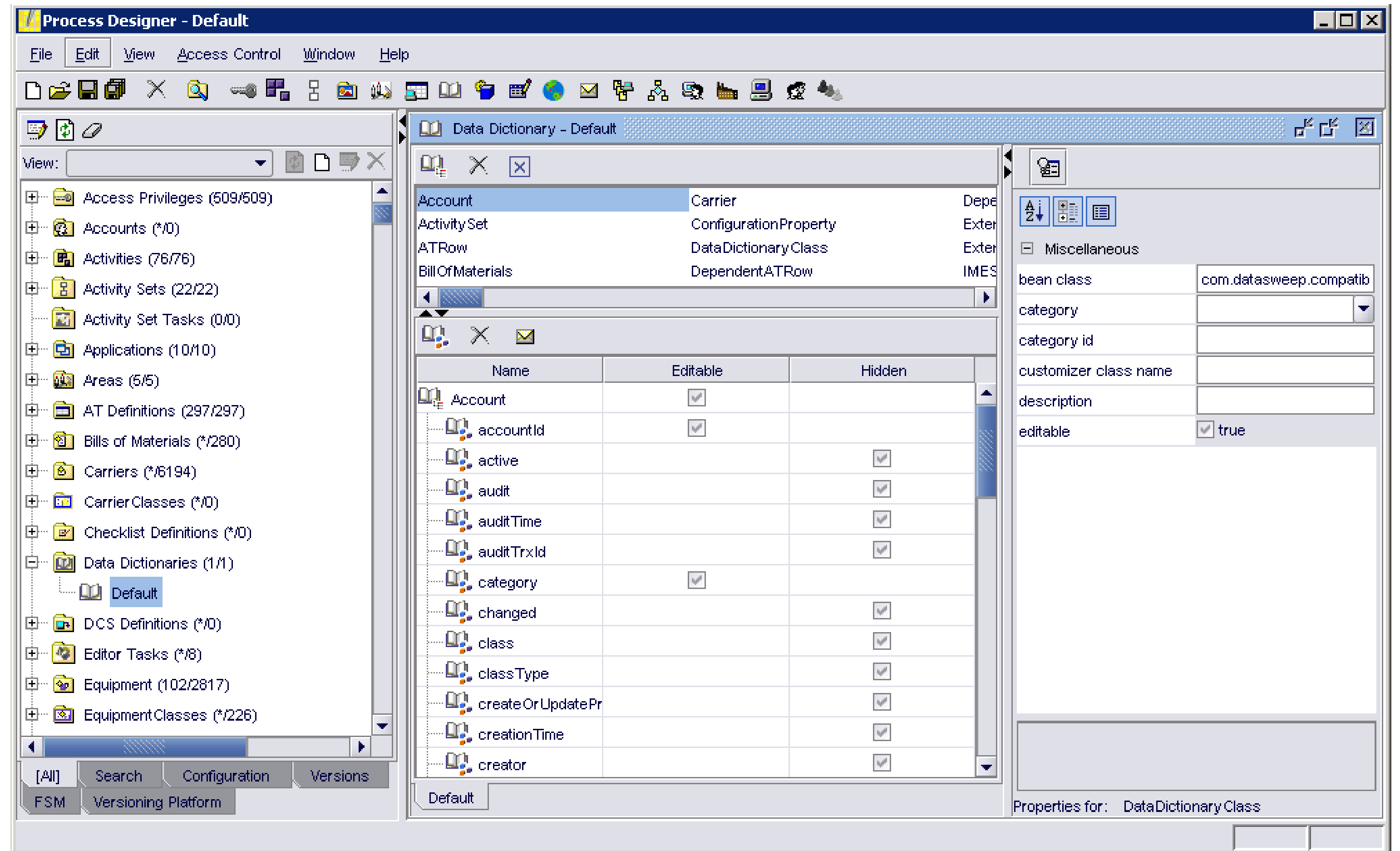
- Message 消息
- 定义名称
- 添加Locale
- 输入对应的文字



# FTPC对象介绍

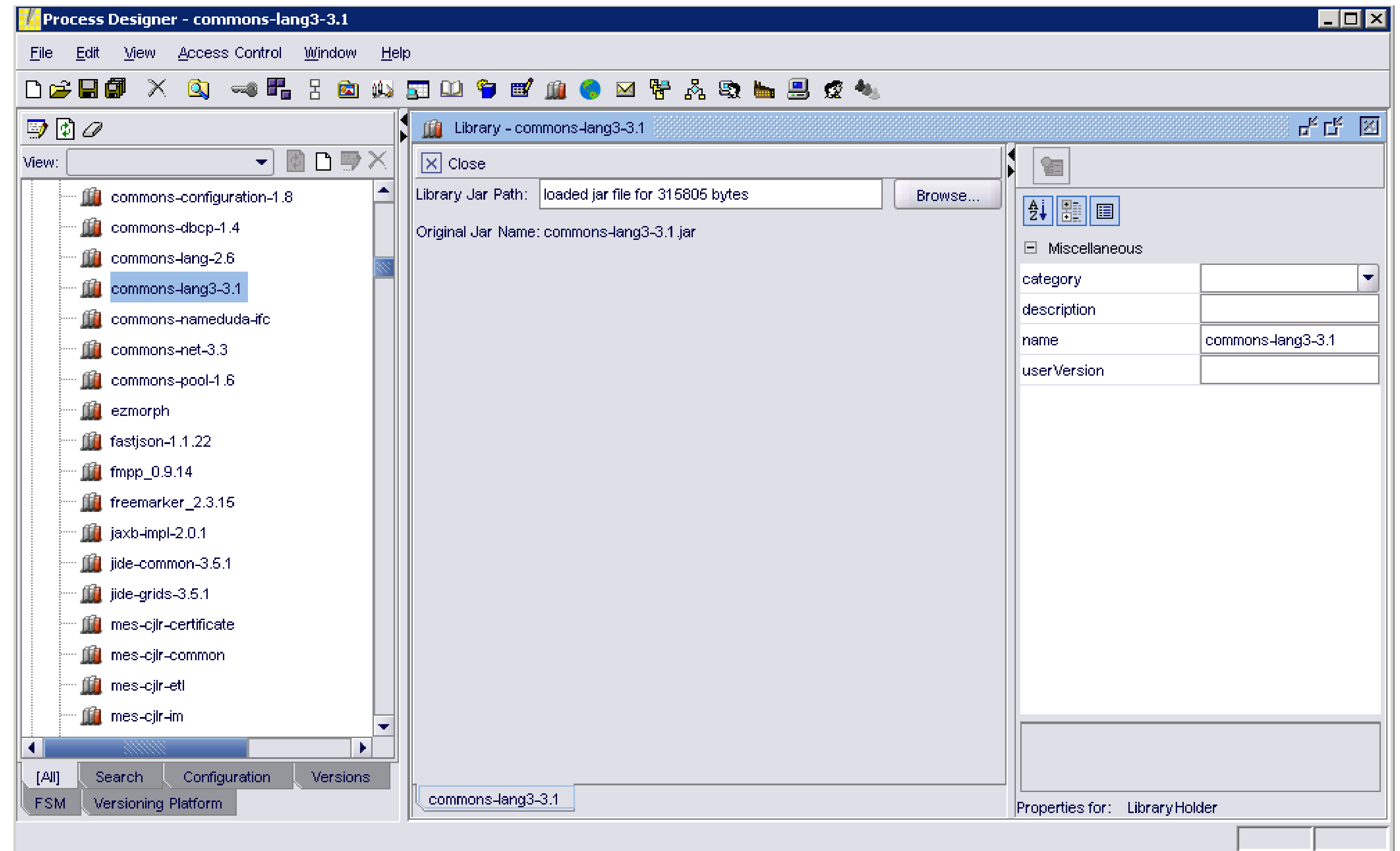
Rockwell  
Automation

- Data Dictionary 数据字典
  - 定义名称
  - 设置属性
  - 增加字段定义



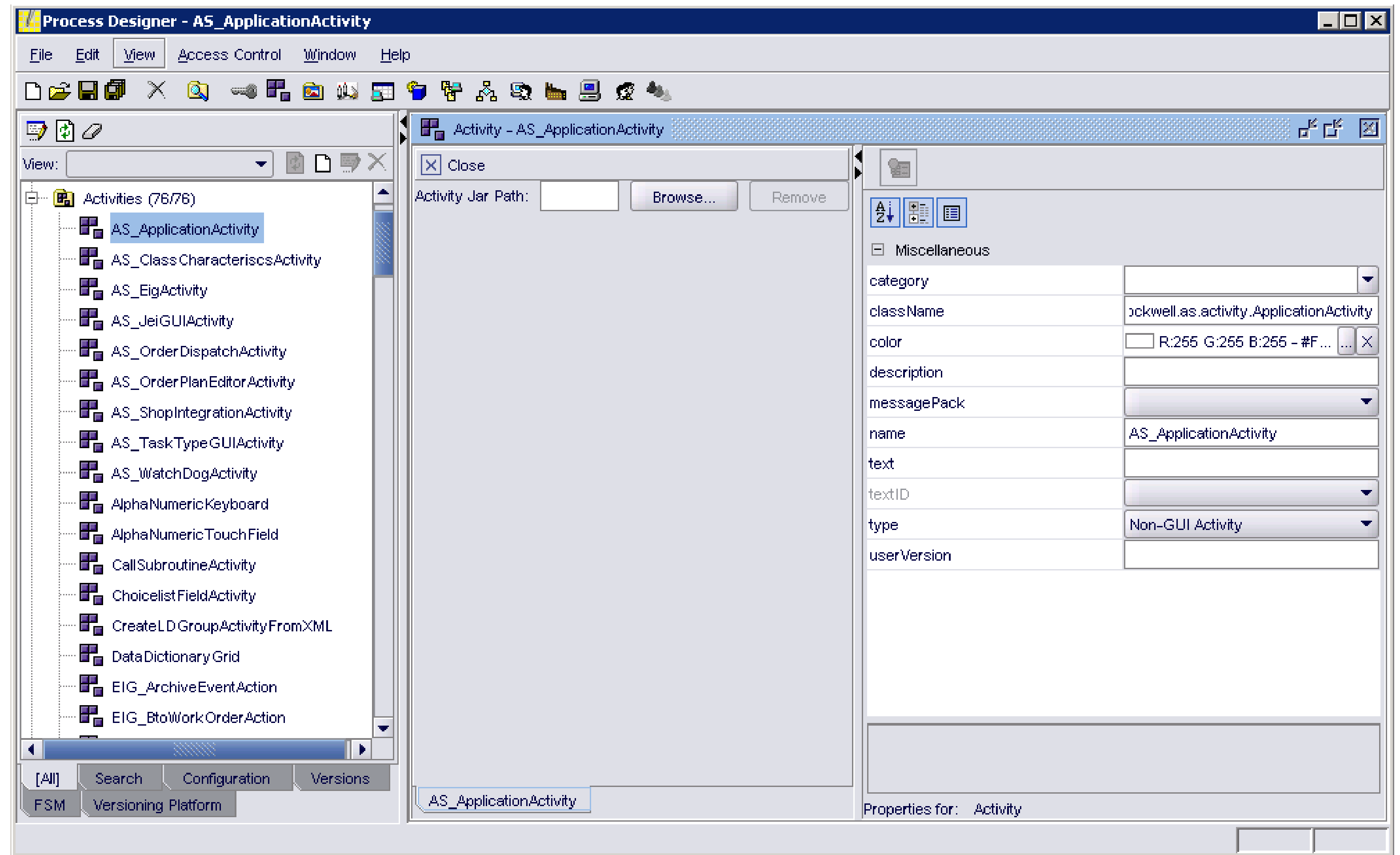
# FTPC对象介绍

- Library 库
  - 定义名称
  - 导入外部jar



# FTPC对象介绍

- Activity 活动
- 定义名称
- 设置java类名
- 设置类型：用户界面和非用户界面



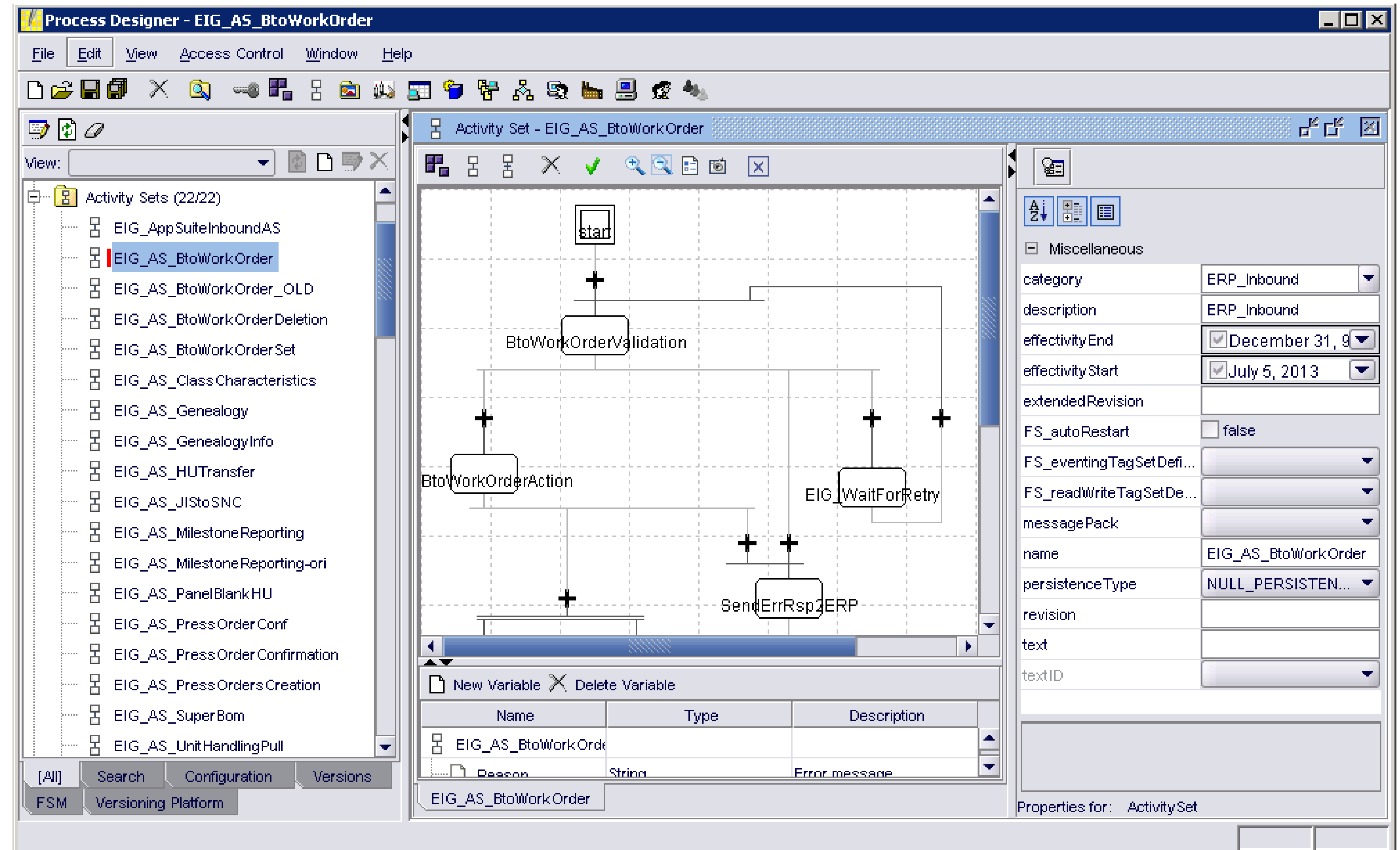


# FTPC对象介绍

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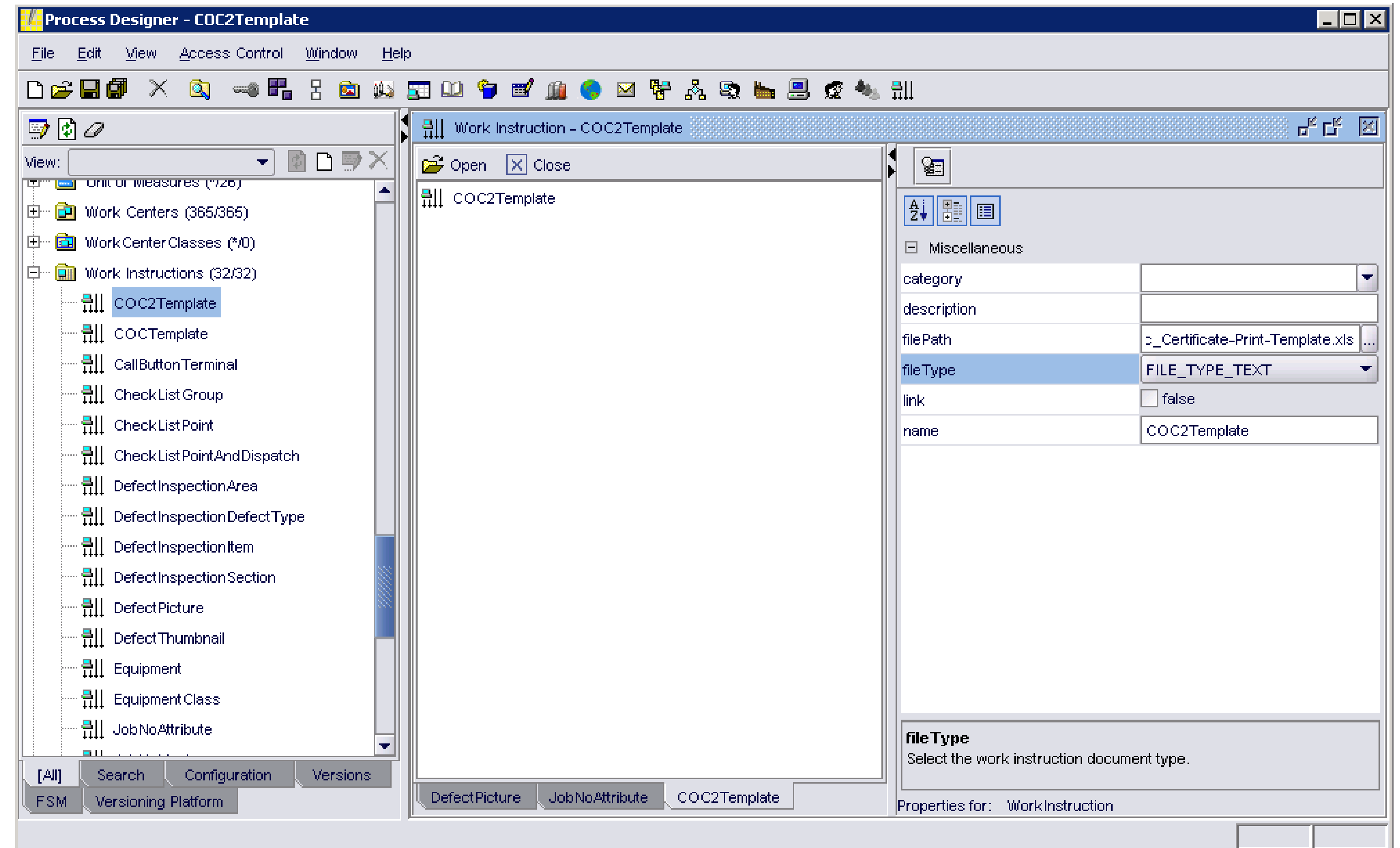
- Activity Set 活动集合

- 定义名称
- 设置活动步骤及关联
- 设置全局参数



# FTPC对象介绍

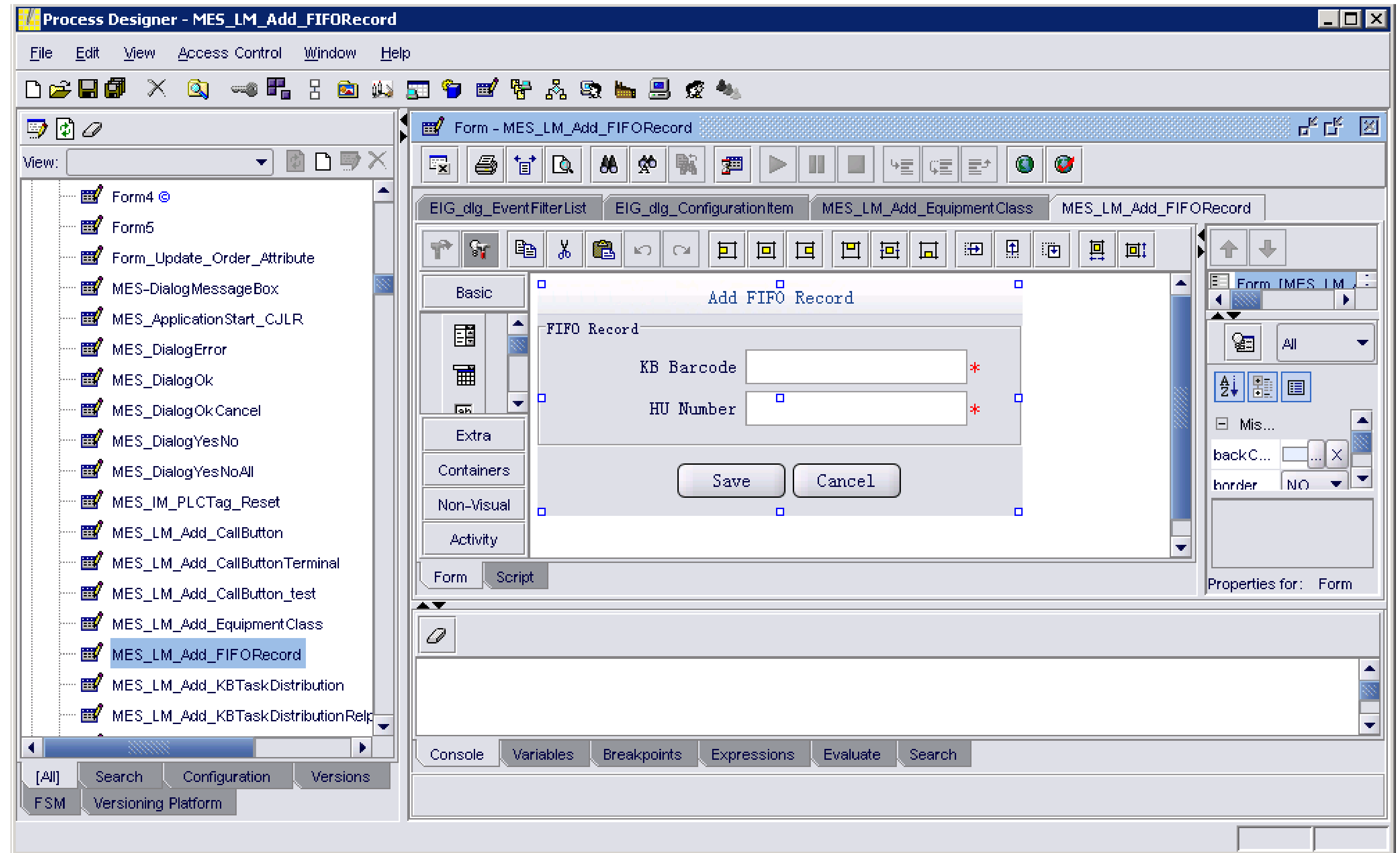
- Work Instruction 工作指令
  - 定义名称
  - 指定外部文件地址



# FTPC对象介绍

## Form 页面

- ❑ 定义名称
- ❑ 定义界面布局
- ❑ 添加用户界面控件
- ❑ 编写业务处理代码
- ❑ 编写事件响应代码
  - ❑ 控件事件
  - ❑ 计时器
  - ❑ 日历
  - ❑ JMS消息
  - ❑ Web Service
  - ❑ Socket
  - ❑ Serial Port
  - ❑ ...



# FTPC对象介绍

- Event Sheet **事件表单**

- ☐ 定义名称

- ☐ 添加事件

- ☐ 计时器

- ☐ 日历

- ☐ JMS消息

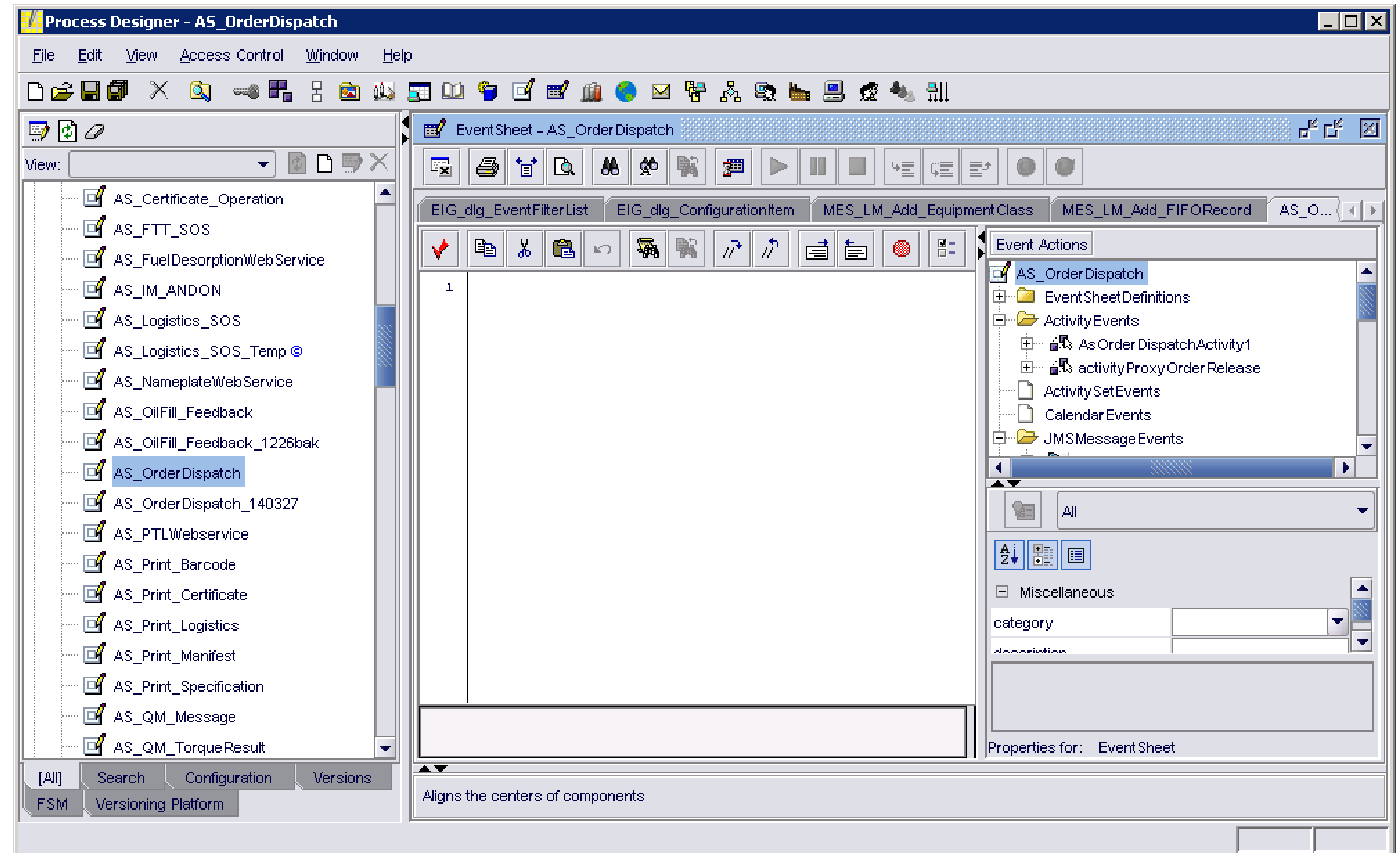
- ☐ Web Service

- ☐ Socket

- ☐ Serial Port

- ☐ ...

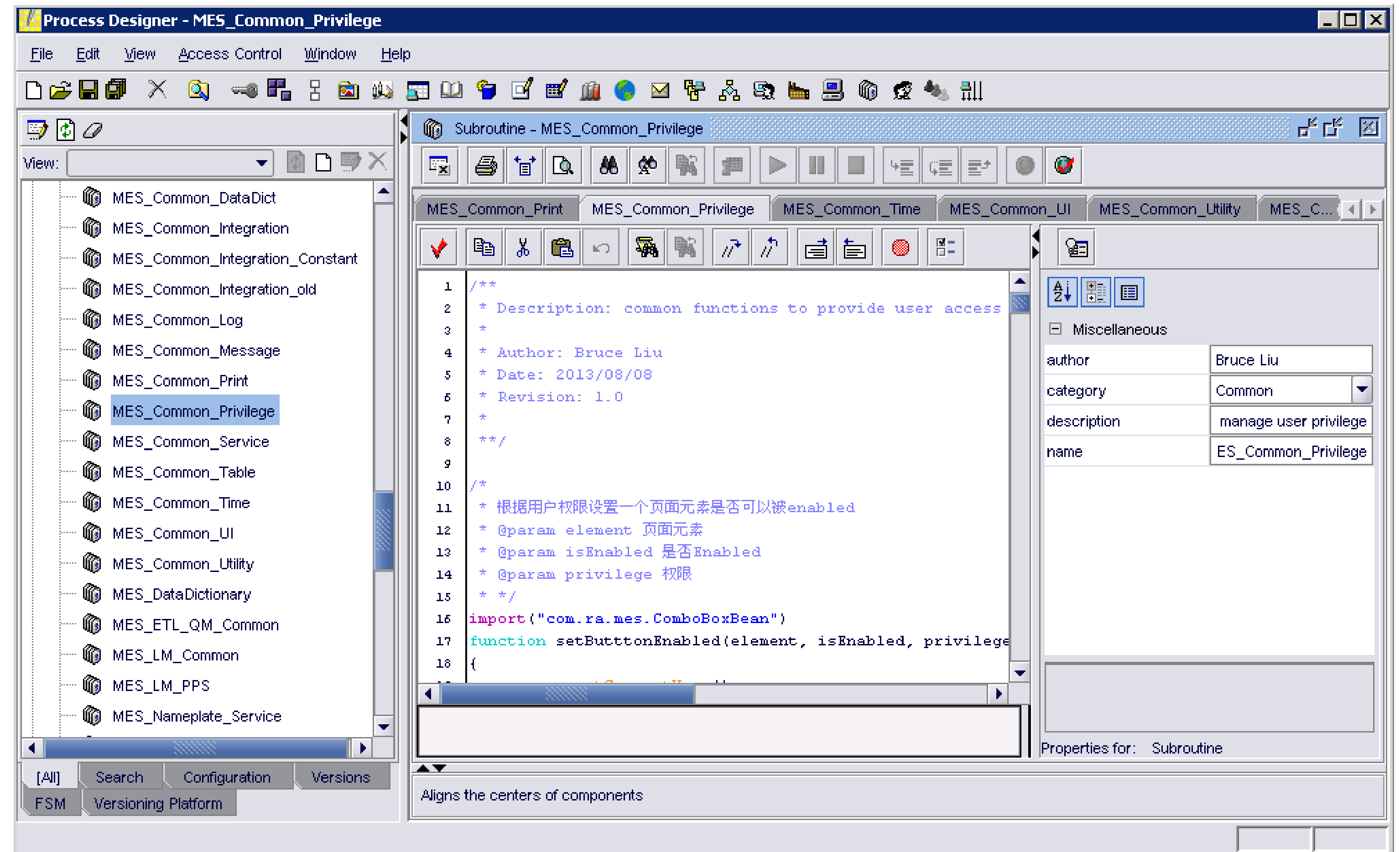
- ☐ 添加事件响应脚本



# FTPC对象介绍

- Subroutine 子程序

- 定义名称
- 添加脚本



FTP对象介绍

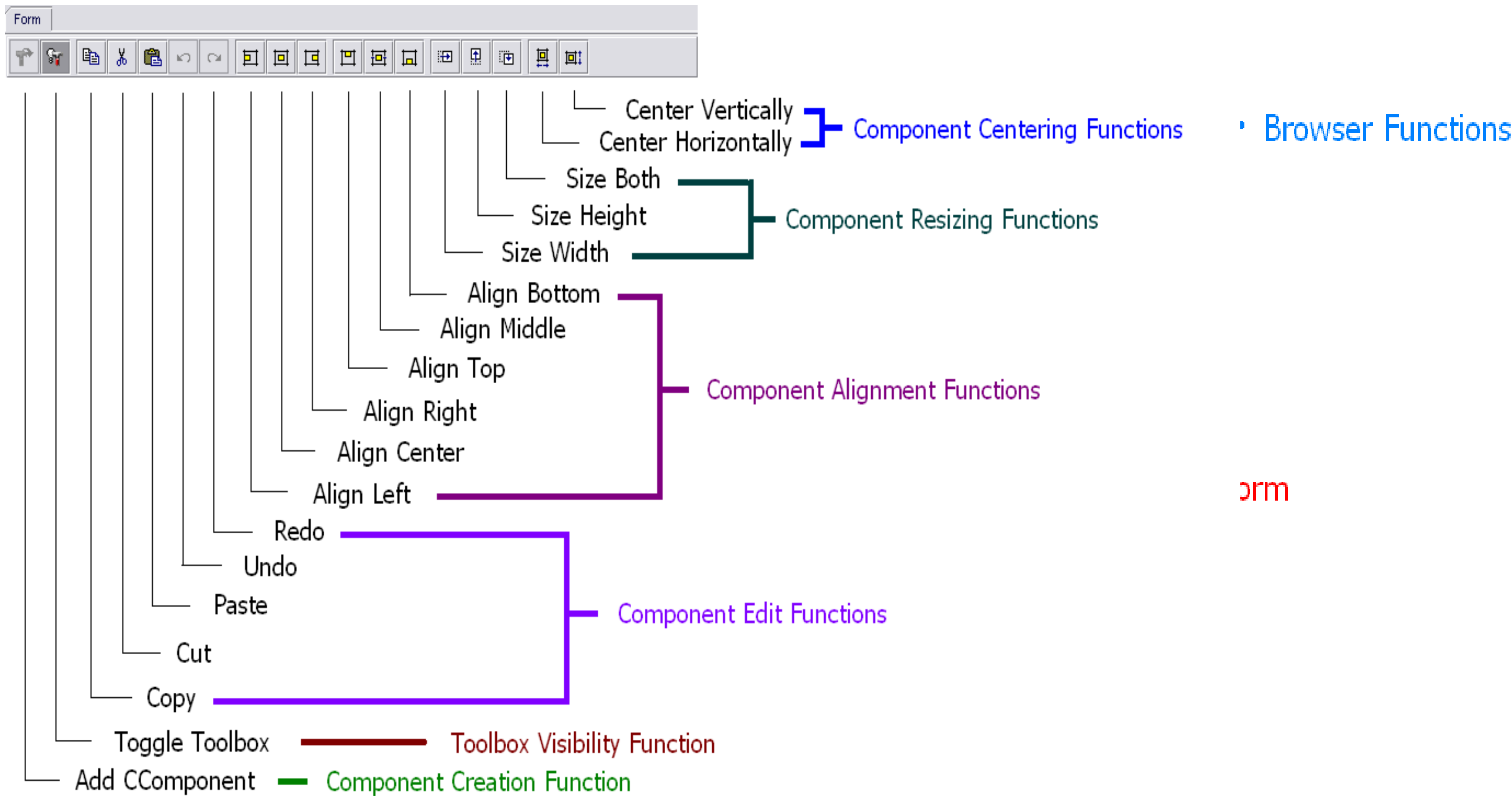
FTP控件介绍

QA

# FTPC控件介绍



- Form 页面
- 按钮说明


















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









# FTPC控件介绍













- 控件列表（1）

Form Control	Icon	Description
<a href="#">ActivityControl</a>		Allows you to add a visual activity to a form.
<a href="#">ActivityProxy</a>		Allows you to add a non-visual activity to a form.
<a href="#">ActivitySetContainer</a>		Allows you to manage the execution of an <a href="#">activity set</a> at runtime.
<a href="#">ActivitySetViewer</a>		Allows you to view activity sets in a panel of a form. You will see the diagram of an activity set in the viewer.
<a href="#">Button</a>		Displays a flat button object.
<a href="#">Card</a>		Contains components that are visible at specific times. When a card's components are displayed is determined by the deck control.
<a href="#">Chart</a>		Displays a chart object.
<a href="#">CheckBox</a>		Displays a checkbox.
<a href="#">ComboBox</a>		Displays a pull-down menu of list items.
<a href="#">ConnectableViewer</a>		Displays the connectable objects viewer.
<a href="#">DateTime Picker</a>		Displays an object that allows you to select the date or time.
<a href="#">Deck</a>		Provides a panel with a <code>cardLayout</code> and hosts card controls (similar to the way a tab control hosts a tab page control). The deck control exposes methods that control which card is visible at a given time.
<a href="#">Edit</a>		Displays a text field.
<a href="#">Editor</a>		Allows you to modify Process Designer buildtime objects on a form in runtime, using the same object interface that you see in Process Designer. You cannot set forms, event sheets, subroutines, or label designs to an editor control.
<a href="#">Embedded Form</a>		Embeds a form in the parent form.

• 控件列表（2）














Form Control	Icon	Description
<a href="#">GanttChart</a>		Displays a Gantt chart that allows you to edit and display task scheduling information.
<a href="#">Grid</a>		Displays a grid that will allow you to display or enter data as a series of rows and columns.
<a href="#">GroupBox</a>		Performs two functions: <ul style="list-style-type: none"><li>• In the Forms Interface, allows you to organize form controls into groups with the same label.</li><li>• Allows you to group Radio buttons, forcing operators to select only one item in the group.</li></ul>
<a href="#">HTMLControl</a>		Displays an HTML page.
<a href="#">JMS Message Control</a>		Allows you to send or receive JMS messages.
<a href="#">Label</a>		Displays a text or image label.
<a href="#">ListBox</a>		Places a box that displays a list of items.
<a href="#">Live Data</a>		Allows access to FactoryTalk® Live Data through a Plant Operations application.
<a href="#">Live Data Browser</a>		Allows you to select a FactoryTalk Live Data server and items during runtime.
<a href="#">MaskEdit</a>		Displays a masked text field.
<a href="#">Message Group</a>		Allows the application developer to write script for an event that fires based on: <ul style="list-style-type: none"><li>• data received in an application message for a group definition of type 'MESSAGE'.</li><li>• entry added, entry removed, entry set, contents set and contents cleared for a group definition of type 'HASHTABLE'. Hashtables are shared data structures between members of the group.</li><li>• entry added, entry removed, entry set, contents set and contents cleared for a group definition of type 'QUEUE'. Queues are shared data structures between members of the group.</li></ul>

• 控件列表（3）

Form Control	Icon	Description
<a href="#">ObjectBinder</a>		Paints object properties to GUI controls. A non-visual ObjectBinder is used to select object type and specify bound object properties using the property editor for the ObjectBinder.
<a href="#">ObjectBinderEnhanced</a>		Similar to the ObjectBinder above, except the ObjectBinderEnhanced control can also be used with validation using the <a href="#">Data Dictionary</a> . In addition, the ObjectBinderEnhanced control is bi-directional, so the object binder captures when a user has changed the data displayed in the bound control.
<a href="#">Panel</a>		Places a container to parent other controls visually. Similar to the groupbox, but it does not manage the radio buttons. The container is invisible unless it has unique background color or border style attributes set.
<a href="#">PictureBox</a>		Displays an image.
<a href="#">Plant Scheduler</a>		Places a planning whiteboard on the form.
<a href="#">ProgressBar</a>		Displays a progress bar.
<a href="#">PropertyPane</a>		Allows you to modify the properties of any buildtime, runtime, or Java object on a form in runtime, using the same Properties Frame interface that you see in the Process Designer object interface. Unlike the Process Designer object interface, you can also configure the property pane to use a data dictionary as well.
<a href="#">RadioButton</a>		Displays a radio button.
<a href="#">ReportViewer</a>		Allows you to render a report within a form.
<a href="#">Resource Route Editor</a>		Provides a display of the resource route in the form. You must write the supporting scripts to display the resource route object.
<a href="#">RoundButton</a>		Displays a rounded button object.
<a href="#">RouteEditor</a>		Provides a display of the route in the form. You must write the supporting scripts to display the route object.

# FTPC控件介绍

- 控件列表（4）

Form Control	Icon	Description
<a href="#">Scale</a>		Displays values from a weighing device (e.g., a scale) as a bar and digital readout. The displayed value can either come from a manually-entered source or from a real-time data source connected to the control.
<a href="#">Serial Port</a>		Used to exchange data between properly connected and configured computers. You must write the supporting scripts to display and perform this operation.
<a href="#">SmartEdit</a>		Displays a label and text field combination. The property editor used by the text field can be defined by the application, a data dictionary, or the smart edit control configuration.
<a href="#">Socket</a>		Used to exchange data between transaction servers or client and server computers. You must write the supporting scripts to display and perform this operation.
<a href="#">SplitPane</a>		Places two Panel controls with a movable divider between them. The divider can be moved to display more or less of each Panel.
<a href="#">ScrollPane</a>		Provides a scrollable view of whatever form control is contained within it.
<a href="#">TabControl</a>		Contains tabbed pages (TabPage objects) that can contain other controls.
<a href="#">TabPage</a>		Contains other controls.
<a href="#">Timer</a>		Used to perform repetitive actions automatically. You must write the supporting scripts to display and perform this operation.
<a href="#">TaskPane</a>		Allows you to group tasks.
<a href="#">TreeView</a>		Used to display an expanding hierarchical structure.
<a href="#">Wafermap</a>		Enables the operator to view wafermap images.
<a href="#">WorkScheduleControl</a>		Used to schedule and trigger the events defined in a work schedule.

- 移动控件快捷键

Key stroke	Action
[Ctrl] + Right Arrow	Moves the control to the right by one pixel
Right Arrow only	Moves the control to the right by five pixels *
[Ctrl] + Left Arrow	Moves the control to the left by one pixel
Left Arrow only	Moves the control to the left by five pixels *
[Ctrl] + Up Arrow	Moves the control up by one pixel
Up Arrow only	Moves the control up by five pixels *
[Ctrl] + Down Arrow	Moves the control down by one pixel
Down Arrow only	Moves the control down by five pixels *
* The first time the key stroke is used, the control's position changes to the nearest increment of five. Subsequent moves are five pixels. For example, if the y position of the control is 31 pixels, Up Arrow changes the y position to 30 pixels. If you use the key stroke a second time, the y position changes to 25 pixels.	

- 调整控件尺寸快捷键

Key Stroke	Action
[Ctrl] + [Shift] + Right Arrow	Increases the width of the control by one pixel
[Shift] + Right Arrow	Increases the width of the control by five pixels *
[Ctrl] + [Shift] + Left Arrow	Decreases the width of the control by one pixel
[Shift] + Left Arrow	Decreases the width of the control by five pixels *
[Ctrl] + [Shift] + Up Arrow	Decreases the height of the control by one pixel
[Shift] + Up Arrow	Decreases the height of the control by five pixels *
[Ctrl] + [Shift] + Down Arrow	Increases the height of the control by one pixel
[Shift] + Down Arrow	Increases the height of the control by five pixels *
* The first time the key stroke is used, the control's width or height changes to the nearest increment of five. Subsequent moves are five pixels. For example, if the height of the control is 31 pixels, [Shift] + Up Arrow changes the height to 30 pixels. If you use the key stroke a second time, the height changes to 25 pixels.	


• 界面控件组（1）

Form Control Groups

Basic includes:

- ComboBox
- DateTimePicker
- Edit field
- Flat Button
- RoundButton
- CheckBox
- Label
- RadioButton
- ListBox
- PictureBox


Basic



Extra includes:

- Chart
- MaskEdit
- Plant Scheduler
- ProgressBar
- ResourceRouteEditor
- RouteEditor
- Grid
- HTML Control
- TreeView
- WaferMap
- Scales
- ReportViewer
- TaskPane
- PropertyPane
- Editor
- SmartEdit
- LiveDataBrowser
- GanttChart
- ConnectableViewer

Extra



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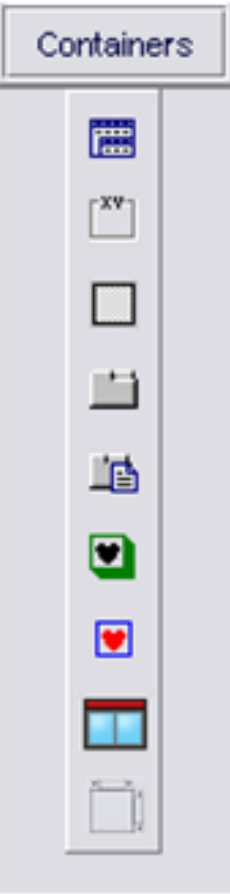
- 界面控件组（2）

Form Control Groups

Containers includes:

- Embedded Form
- GroupBox
- Panel
- TabControl
- TabPage
- Deck
- Card
- SplitPane
- ScrollPane


Containers



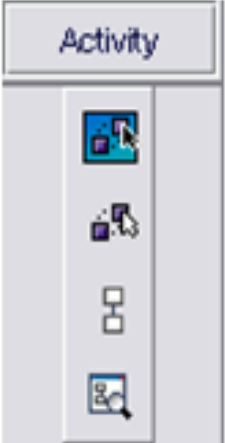
Non-Visual includes:

- Message Group
- JMS Message
- ObjectBinder
- ObjectBinderEnhanced
- Serial Port
- Socket
- Timer
- Live Data
- WorkScheduleControl

Non-Visual



- 界面控件面板（3）

Form Control Groups	
Activity includes: <ul style="list-style-type: none"><li>• ActivityControl</li><li>• ActivityProxy</li><li>• ActivitySetContainer</li><li>• ActivitySetViewer</li></ul>	

# FTPC控件介绍

**Rockwell  
Automation**

- Demo

FTP对象介绍

FTP控件介绍

QA





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## 谢谢



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