Interstage

FUJITSU

Interstage Business Process Manager Analytics V11.1

Process Discovery (BPM-E) Web Flow Viewer User's Guide

Windows

About this Manual

This manual explains the web-based "flow viewer" component of the Business Process Management by Evidence, or BPM-E software.

This audience of this document includes consultants and business process analysts who work for organizations that are using the services of a Business Process Visualization provider.

Intended Audience

This manual is intended for use by the system administrator. It assumes that the reader has a working knowledge of the following:

- Operating system administration

- Database administration

This Manual Contains:

Chapter	Title	Description
1	Introduction	Overview of this manual.
2	Execution environment	How to prepare an environment for the BPM-E flow viewer.
3	Operation in detail	How to operate the BPM-E flow viewer.
4	Definition of terms	Description of definition of terms used in BPM-E flow viewer.

Typographical Conventions

The following conventions are used throughout this manual:

Example	Meaning
command	Text, which you are required to type at a command line, is identified by Courier font.
screen text	Text, which is visible in the user interface, is **bold**.
Reference	Reference material is in *italics*.
Parameter	A command parameter is identified by Courier font.

Reference Materials

The following reference materials for Interstage BPM Analytics are also available:

- *Release Notes*

    Contains an overview of Interstage BPM Analytics, and late-breaking information that could not make it into the manuals.

- *Installation Guide*

    Explains how to install Interstage BPM Analytics.

- *Dashboard / Output Guide*

    Explains how to use the Dashboard to display Analytical data.

- *Administration Guide*

    Contains Administration tools and tips, Message references and Troubleshooting.

- *Analytics Studio Guide*

    Explains how to use the Analytics Studio to configure the parameters to enable Interstage BPM Analytics features.

- *Management Console Guide*

    Explains how to use Management Console and Management Commands to configure the core parameters, how to start/stop the Interstage BPM Analytics service and how to display the Interstage BPM Analytics status.

Abbreviations

The following references for BPM Analytics are also available:

Formal name	Abbreviation
Microsoft(R) Windows Server(TM) 2003, Standard Edition Microsoft(R) Windows Server(TM) 2003, Enterprise Edition Microsoft(R) Windows Server(TM) 2003 R2, Standard Edition Microsoft(R) Windows Server(TM) 2003 R2, Enterprise Edition	Windows Server
Microsoft(R) Windows Server(TM) 2003, Standard x64 Edition Microsoft(R) Windows Server(TM) 2003, Enterprise x64 Edition Microsoft(R) Windows Server(TM) 2003 R2, Standard x64 Edition Microsoft(R) Windows Server(TM) 2003 R2, Enterprise x64 Edition	Windows Server 2003(x64), or Windows Server 2003
Microsoft(R) Windows Server(R) 2008 Standard Microsoft(R) Windows Server(R) 2008,Enterprise Microsoft(R) Windows Server(R) 2008 R2 Standard Microsoft(R) Windows Server(R) 2008 R2 Enterprise	Windows Server
Microsoft(R) Windows(R) XP Professional operating system Microsoft(R) Windows(R) XP Home Edition operating system	Windows XP, or Windows
Microsoft(R) Windows Vista(R) Business Microsoft(R) Windows Vista(R) Enterprise Microsoft(R) Windows Vista(R) Ultimate	Windows Vista, or Windows
Microsoft(R) Windows(R) 7 Home Premium Microsoft(R) Windows(R) 7 Professional Microsoft(R) Windows(R) 7 Ultimate	Windows 7, or Windows
Microsoft(R) Internet Information Server Microsoft(R) Internet Information Services	IIS
Microsoft(R) Internet Explorer 6.0 Microsoft(R) Internet Explorer 7.0 Microsoft(R) Internet Explorer 8.0	Internet Explorer
Microsoft(R) Excel	Excel
Solaris(TM) 10 operating system	Solaris 10, or Solaris
Red Hat Enterprise Linux AS Red Hat Enterprise Linux ES Red Hat Enterprise Linux 5	Linux
Interstage Application Server Enterprise Edition Interstage Application Server Standard-J Edition	Interstage Application Server
Interstage Studio Enterprise Edition Interstage Studio Standard-J Edition	Interstage Studio, or Studio
Interstage Business Process Manager	IBPM
Oracle Database 10g Enterprise Edition R10.1.0/R10.2.0 Oracle Database 10g Standard Edition R10.1.0/R10.2.0 Oracle Database 10g Standard Edition One R10.1.0/R10.2.0	Oracle10g, or Oracle
Oracle Database 11g Enterprise Edition Oracle Database 11g Standard Edition Oracle Database 11g Standard Edition One Oracle Database 11g R2 Enterprise Edition Oracle Database 11g R2 Standard Edition Oracle Database 11g R2 Standard Edition One	Oracle11g, or Oracle

Formal name	Abbreviation
Microsoft SQL Server 2005 Standard Edition Microsoft SQL Server 2005 Enterprise Edition	SQL Server 2005, or SQL Server
Microsoft SQL Server 2008 Standard Edition Microsoft SQL Server 2008 Enterprise Edition	SQL Server 2008, or SQL Server

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Contents

Chapter 1 Introduction

BPM-E flow viewer is a web-based business process flow diagram viewer.

Generate data using the BPM-E Event Extraction process before using the BPM-E flow viewer. Event extraction is performed by a BPM-E service provider and requires one or more sets of comma separated variable (CSV) files which are extracted from your business systems.

Ask your Business Process Visualization provider for details about event extraction.

Chapter 2 Execution environment

This chapter describes how to prepare an environment for the BPM-E flow viewer.

2.1 Components of BPM-E flow viewer

BPM-E flow viewer consists of the following components:

- Server-side functions

    - Server-side functions include a web server and database. These functions run on the same platform as the Event Extraction Tool and are explained in the "Event Extraction Tool Operation Guide".

- Client-side functions

    - Functions provided by a browser are known as Client-side function. These functions are explained in this manual.

    - Client-side functions cannot be used when the Server-side is shut down.

2.2 Tool operating environment

The system requirements of BPM-E flow viewer are:

- OS: Microsoft® Windows XP or Windows Vista

- Recommended hardware

    - CPU

        - Intel® Core2 Duo 2GHz or faster

    - Memory

        - 2GB or more

    - Broadband network

- Required software

    - Web browser

        - Microsoft Windows Internet Explorer 7 or 8

        - Mozilla Firefox 3

    - Adobe® Flash Player 9 or later

2.3 Installation

BPM-E flow viewer is a web-application. It doesn't need to be installed.

2.4 Starting up

Start BPM-E Flow Viewer by opening a browser and specifying the URL that your service provider issued.

2.5 Shutting down

Terminate BPM-E flow viewer by clicking the "x" button in the upper right corner of the browser window.

2.6 Uninstallation

There is no need to uninstall BPM-E flow viewer.

Chapter 3 Operation in detail

This chapter describes how to operate the BPM-E flow viewer.

3.1 Project selection panel

A project selection panel, similar to the one shown in Figure 3.1 Project selection panel, appears when the "Select a Project" button is clicked. The list of projects which are stored in the server is displayed in the upper part of the panel. Select one project from the list and click the "Select" button.

Figure 3.1 Project selection panel
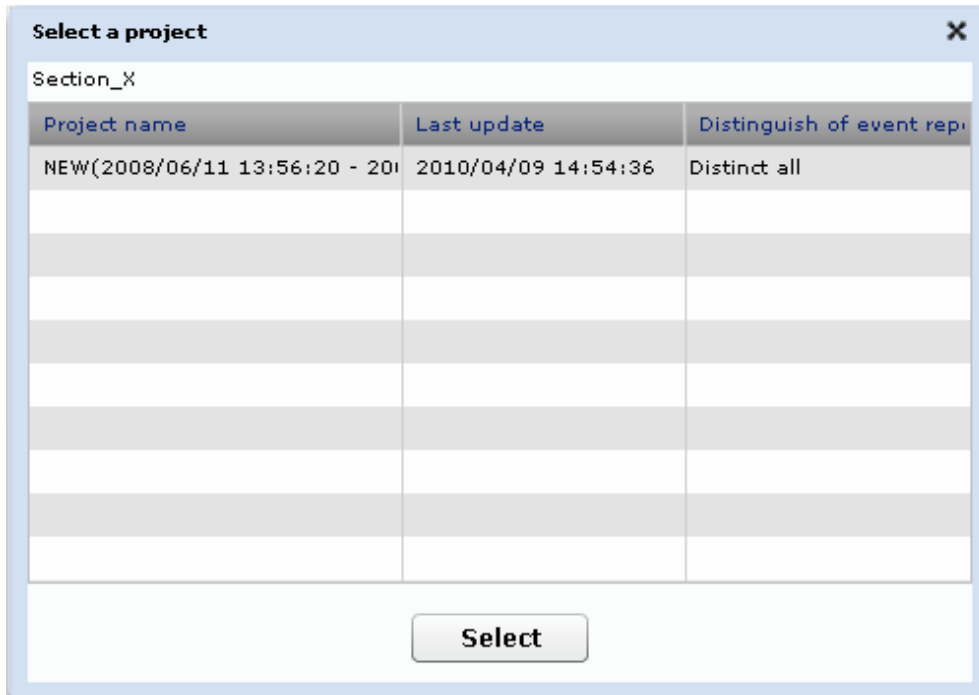
Elements on this screen are described below.

| No.	Name	Purpose
1	Project name	Shows the name of a project. The associated flow data's period is often used as the project name.
2	Last Update	Shows the last updated date and time of the project.
3	Distinguish of event repeat	Shows the method used to distinguish repeating events. In this version "Distinct all" is the only method used.
4	Select button	Completes the selection of the highlighted project.
5	x button	Closes the project selection panel. When this panel is first opened first it cannot be closed without selecting a project.

3.2 Flow display screen

The Flow display screen is the most basic view of BPM-E flow viewer. It displays an integrated flow diagram which includes multiple flow instances.

The screen layout and the menus of flow display screen are explained below.

An example of the flow display screen is shown in Figure 3.2 Flow display screen. The upper part contains buttons and a menu-bar. The center part is the main flows display area. The bottom part is an information area.

Figure 3.2 Flow display screen
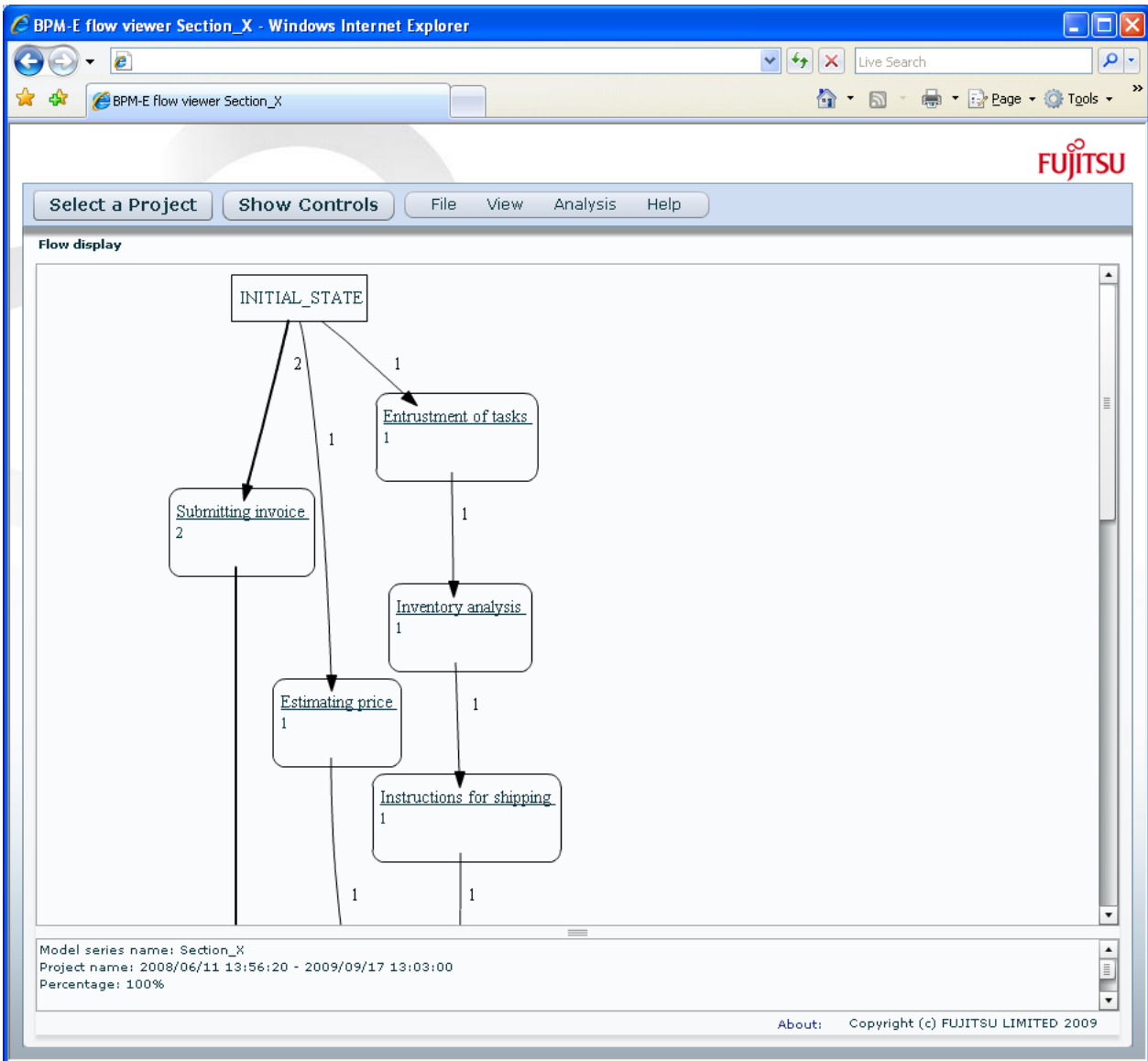
Elements on this screen are described below.

No.	Name	Function
1	(Business flow diagram display area)	The business flow diagram is displayed in the center of the screen. The view box of the business flow diagram can be moved by dragging the business flow diagram display area with mouse's left button, when a part of the business flow diagram is displayed.
2	Model series name	Shows the current target model series name.
3	Project name	Shows the current target project name.
4	Percentage	Shows the current slider percentage.
5	Flow update time	Shows the time when the flow diagram was updated.
6	Select a Project button	Shows the project selection panel. See 3.1 Project selection panel.
7	Show Controls	Shows the control panel. See 3.3 Control panel.
8	File->Save Image menu	Saves the current business flow diagram to a file. Three types of format are available: SVG format, PNG format, and XPDL format.

No.	Name	Function
9	View -> Zoom In menu	The same as clicking the "Zoom In" button in the control panel. See 3.3 Control panel.
10	View -> Zoom Out menu	The same as clicking the "Zoom Out" button in the control panel. See 3.3 Control panel.
11	View -> Display All menu	The same as clicking the "Display All" button in the control panel. See 3.3 Control panel.
12	View -> Show flow endpoints menu	INITIAL_STATE and FINAL_STATE are displayed as flow endpoints if this is checked. If the check is removed, INITIAL_STATE and FINAL_STATE are not displayed. Refer to 3.2.1 Display and non-display switch of INITIAL_STATE and FINAL_STATE for details.
13	View -> Flow Type Display menu	Detailed information of the business process flow and the transition of each flow type of the business process flow displayed in flow display screen by a present flow frequency (one have thought the process instance of the same event flow to be one) is displayed. Refer to 3.5 Flow type display for details.
14	View -> Select Exception Flow menu	Displays the screen to retrieve the exceptional flow. Refer to 3.6 Exceptional flow display for details.
15	View -> Display Count/Time menu	Selects one or more options to be displayed in the business process flow diagram. Available options are "Transition Count", "Average Transition Time", and "Standard Deviation of Transition Time". "Emphasize Long Transition Time" option is also available to show the transitions which have the longest transition time in red. The time unit can be selected from day, hour, minute, and second.
16	View -> Config Setting menu	Configure the flow viewer settings.
17	View -> New Window	Opens a new window containing the same process flow model as was in the original window.
18	View -> Node Name Search Panel	Displays the Node Name Search Panel. See 3.2.2 Searching a specified node name.
19	Analysis->Detect Typical Flow menu	The same as "Typical" button in the control panel. See 3.3 Control panel.
20	Analysis->Parallel Analysis menu	Shows the Parallel Analysis Display. See 3.7 Parallel analysis display.
21	Help menu	Shows the version of BPM-E flow viewer.

- The notation used in the business flow diagram is as follows:

- An event (or activity) is expressed in a rounded box. The character string in the box is the event name.

Note

....

Only the administrator can rename an event. Contact the administrator to have events renamed.

....

- A transition is expressed by an arrow.

- The numerical values displayed at the arrow are the items selected by the
  View -> Display Count/Time menu.

- The numerical values displayed in each node are the number times the event occurred, the average execution time of the event and
  the standard deviation of the event execution time. They correspond to the items selected by View -> Display Count/Time menu.

- The node named INITIAL_STATE, if displayed, is the starting point. It is automatically connected to each real business event. The display and non-display mode can be switched as described in section 3.2.1 Display and non-display switch of INITIAL_STATE and FINAL_STATE.

- Similarly, the node named FINAL_STATE, if displayed, is the finishing point. The end of each real business event is automatically connected to this node. The display and non-display mode can be switched as described in section 3.2.1 Display and non-display switch of INITIAL_STATE and FINAL_STATE.

- The transition arrows are displayed in black and gray.

- Black: Transitions of the flow with the highest frequency.

- Gray: Other transitions.

## 3.2.1　Display and non-display switch of INITIAL_STATE and FINAL_STATE

To easily recognize the beginning and the end of the business flow diagram in the flow display screen, virtual events named INITIAL_STATE and FINAL_STATE are used. These correspond to the Initial node and Final node in a UML activity diagram.

Choose whether the INITIAL_STATE and FINAL_STATE are displayed by toggling the "Show flow endpoints" from the menu.

Figure 3.3 Flow endpoints not displayed shows an example of INITIAL_STATE and FINAL_STATE not displayed.

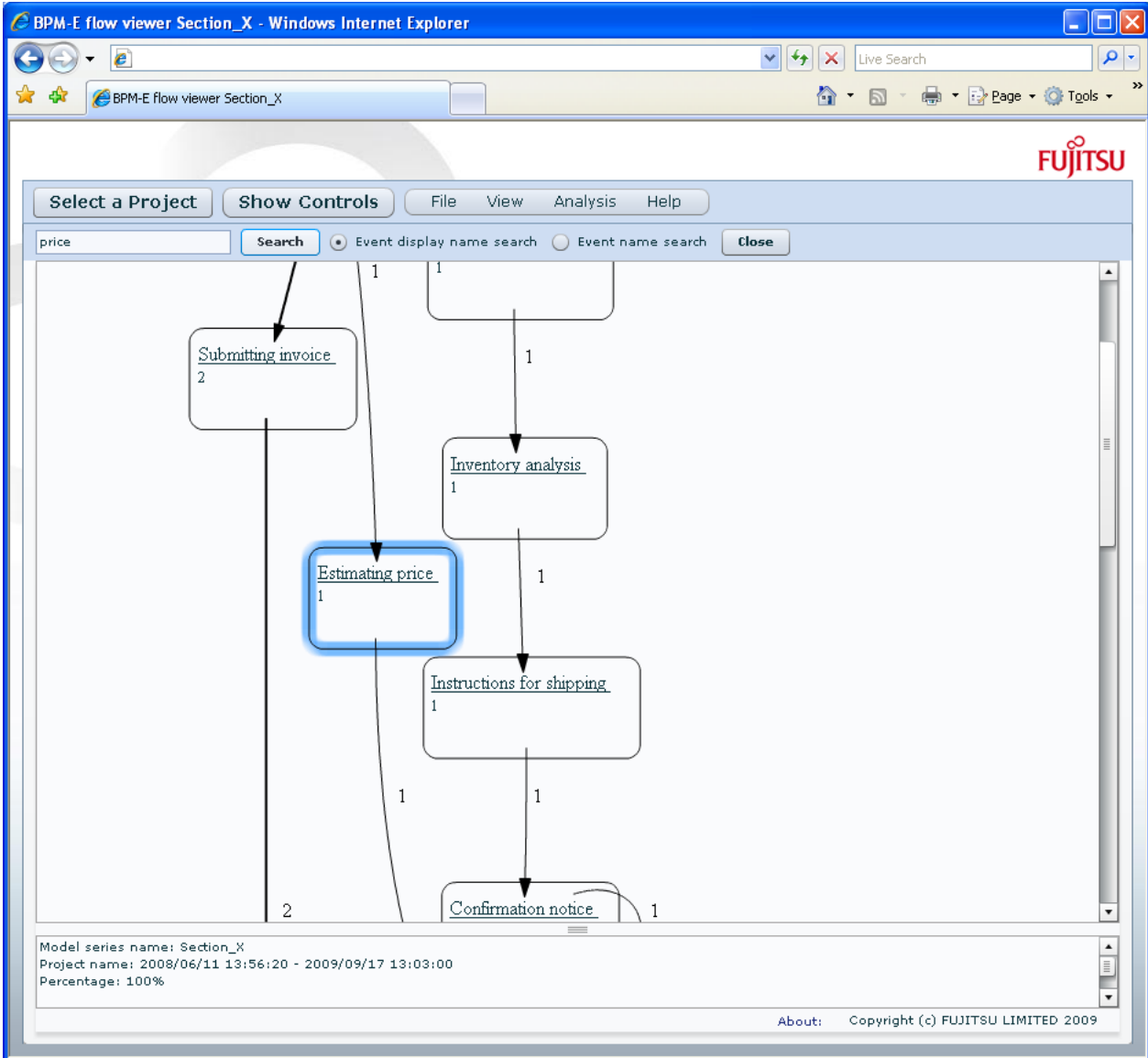INITIAL_STATE and FINAL_STATE are displayed by default.

Figure 3.3 Flow endpoints not displayed
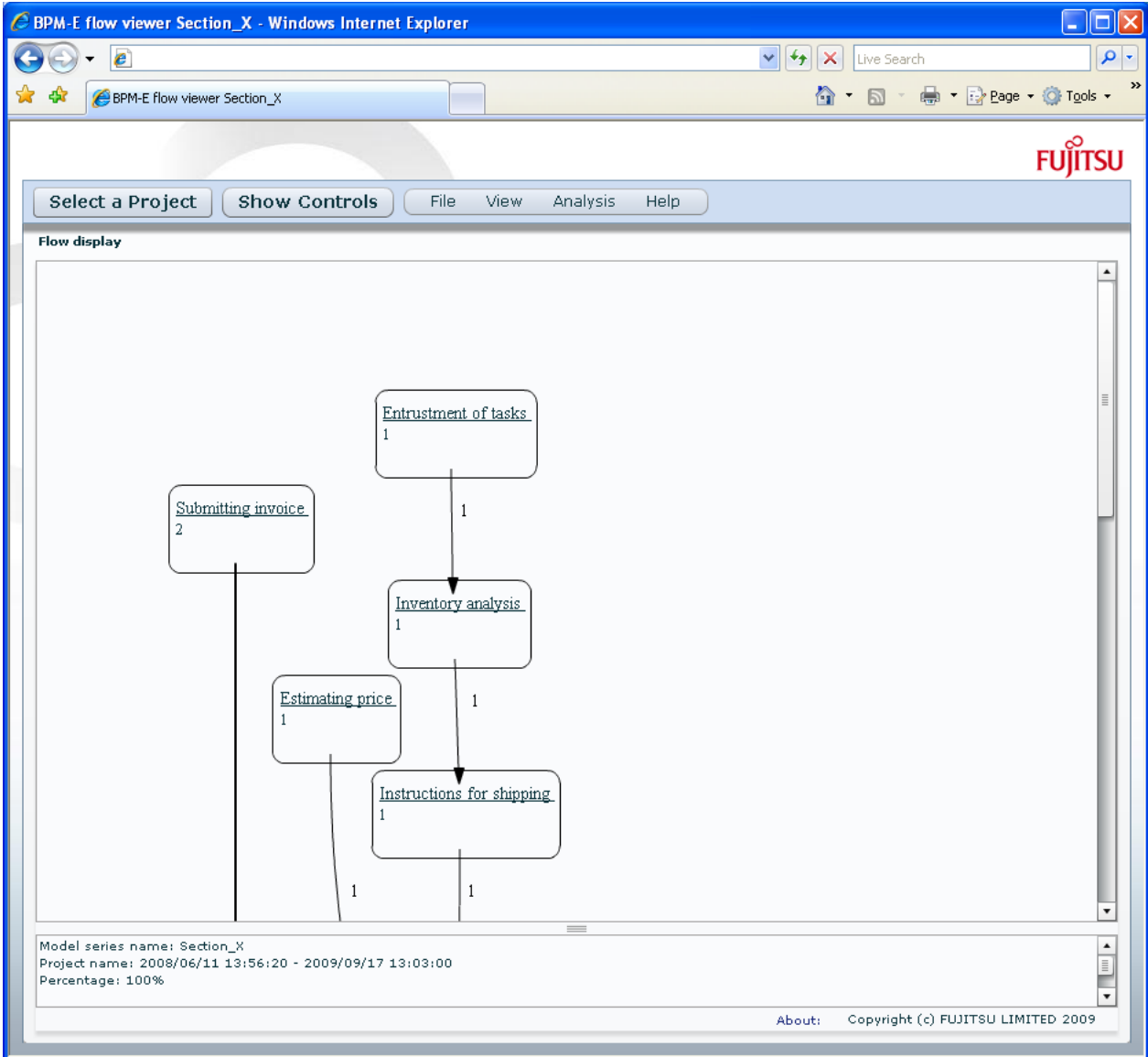
3.2.2 Searching a specified node name

Select "Node Name Search Panel" in the "View" menu to open a searching panel. This panel can be used for searching for a specified node name in the current flow diagram.

Figure 3.4 Searching for a node containing "price" in its name

Elements on this screen are described below.

No.	Name	Function
1	Text box	Input a target keyword for searching.
2	"Search" button	Start the search.
3	"Event display name search"	Select this option to search the "event display names" for the target keyword. Note: Each node has two names. One is its "event name" which is the original name created from the business data. The other is its "event display name" which is a user entered name. In the flow diagram the "event display name" is used as a node name.
4	"Event name search"	Select this option to search the "event names" for the target keyword.
5	"Close" button	Close this panel.

3.3 Control panel

Click the "Show Controls" button to display the Control panel. Use the Control panel to set parameters for the current flow.

Figure 3.5 Control Panel
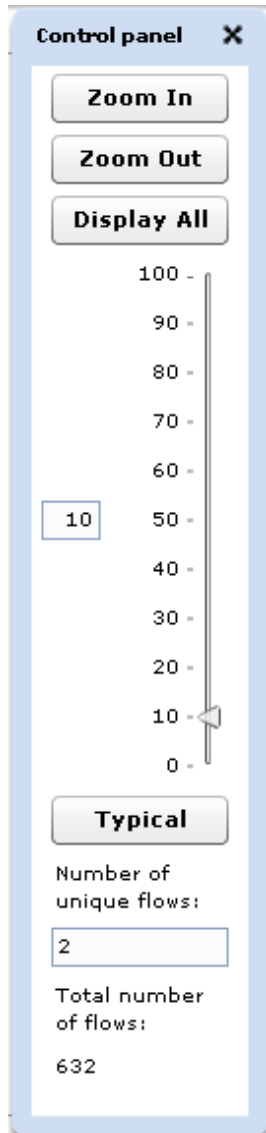
Elements on this screen are described below.

No.	Name	Function
1	"Zoom In" button	Zoom the business flow diagram in. The same as the View->Zoom In from the menu.
2	"Zoom Out" button	Zoom the business flow diagram out. The same as the View->Zoom Out from the menu.
3	"Display All" button	Scales the business flow diagram so it can all be shown in the display area. The same as the View->Display All from the menu.
4	Slider position	Sets the frequency threshold for a flow to be displayed. Only flows that meet or exceed the value set by the slider are shown. Drag and release the slider to update the display. Refer to 3.3.1 Slider for details.
5	Slider percentage	Shows the value associated with the current position of the slider. Specifying a new value is the same as moving the slider.

No.	Name	Function
6	"Typical" button (Detect typical flow button)	Shows the most frequent flow. This is the flow which has the highest percentage of events where the degree of inputs and outputs is no greater than three. Note: This ignores the transitions associated with "initial" and "final" states.
7	Number of unique flows	Shows the number of types of flow represented in the current display. Specifying a value is the same as moving the slider.
8	Total number of flows	Shows the number of flow instances represented in the current display. This value must be at least as large as the number of unique flows because one flow type will usually have more than a single flow instances. This value cannot be updated.
9	x button	Close this panel.

3.3.1 Slider

The business flow diagram that corresponds with the flow frequency set by the slider is displayed. Drag and release the slider to update the business flow diagram. The slider position and slider percentage input field are synchronized.

The numerical value of the percentage selected by the slider is the ratio of the number of process instances displayed to the total number of process instances.

Flow types are sorted in descending order of the number of process instances that they represent. Each flow type is assigned a number which is the percentage of the total number of flow instances that are associated with flow types that have fewer instances.

Flows with assigned percentages that are not greater than the slider value are selected and displayed.

For example, suppose there are only two flow types: flow 1 and flow 2, and suppose flow 1 had 100 instances and flow 2 had 50 instances.

First sort on descending order of number of instances …

Flow type	Instances
Flow 1	100
Flow 2	50

Now add the number of instances with higher counts and calculate the percentage.

Flow type	Instances	Total instances of types with higher counts	… as a percentage
Flow 1	100	0	0%
Flow 2	50	100	67%

In this case flow 1 corresponds to 0% and flow 2 corresponds to 67%. When "75%" is selected by the slider, for example, flow 1 and flow 2 are both displayed in the view.

Figure 3.6 Flow frequency
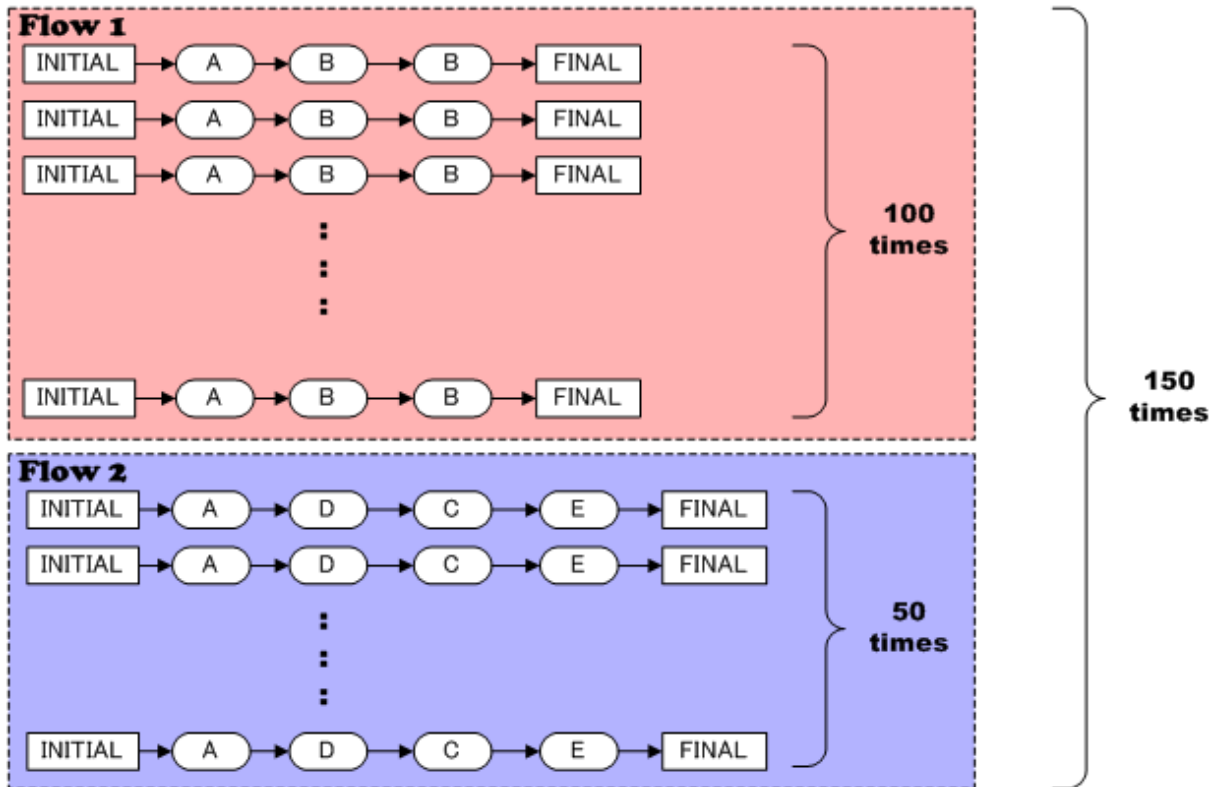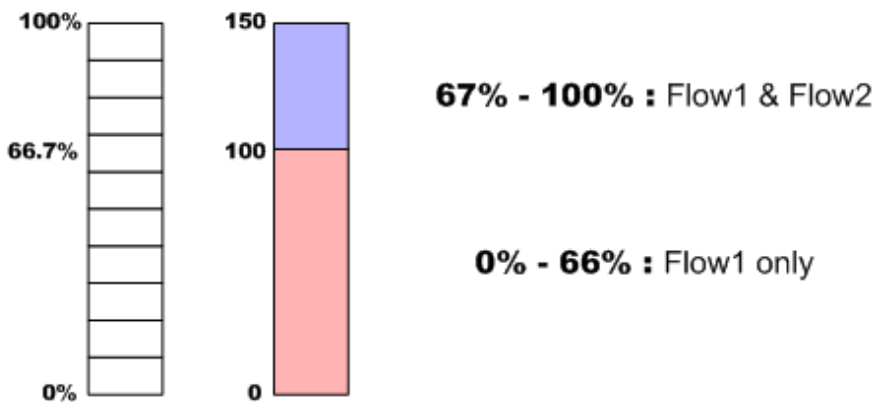
3.4 Flow instance display

Right click on a node or a transition arrow and select "Display flow instance" to show the "flow instance display". This display shows a list of all flow types involved in the node or transition that was clicked. For example, clicking the node "Event-X" where "Event-X" was involved in flows from three types, would result in three flow types being shown in the list.

Select a flow type in the upper list results to see its flow instances shown in the lower list. Select a flow instance in the lower list and click the "Display details" button to see details of that instance.

Figure 3.7 Flow instance display
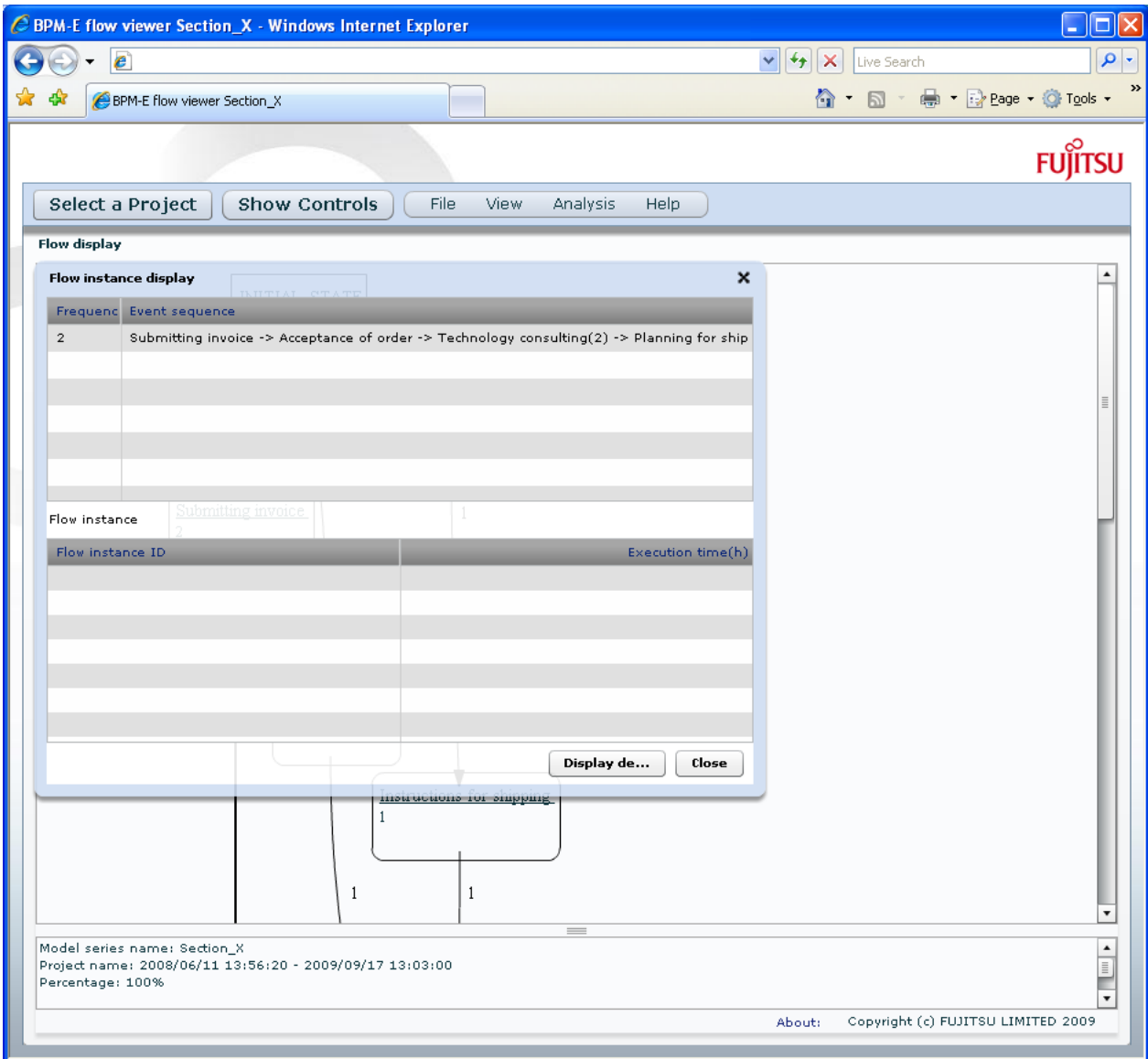
Elements on this screen are described below.

No.	Name	Function
1	Frequency	Shows the number of instances that belong to the flow type.
2	Event sequence	Shows the event sequence (time of occurrence).
3	Flow instance ID	Shows the key values of the flow instance.
4	Execution time	Shows the execution time of the flow instance.
5	"Display details" button	Shows a pop-up with details of the selected flow instance.
6	"Close" button	Close this panel.

Figure 3.8 Flow instance details display
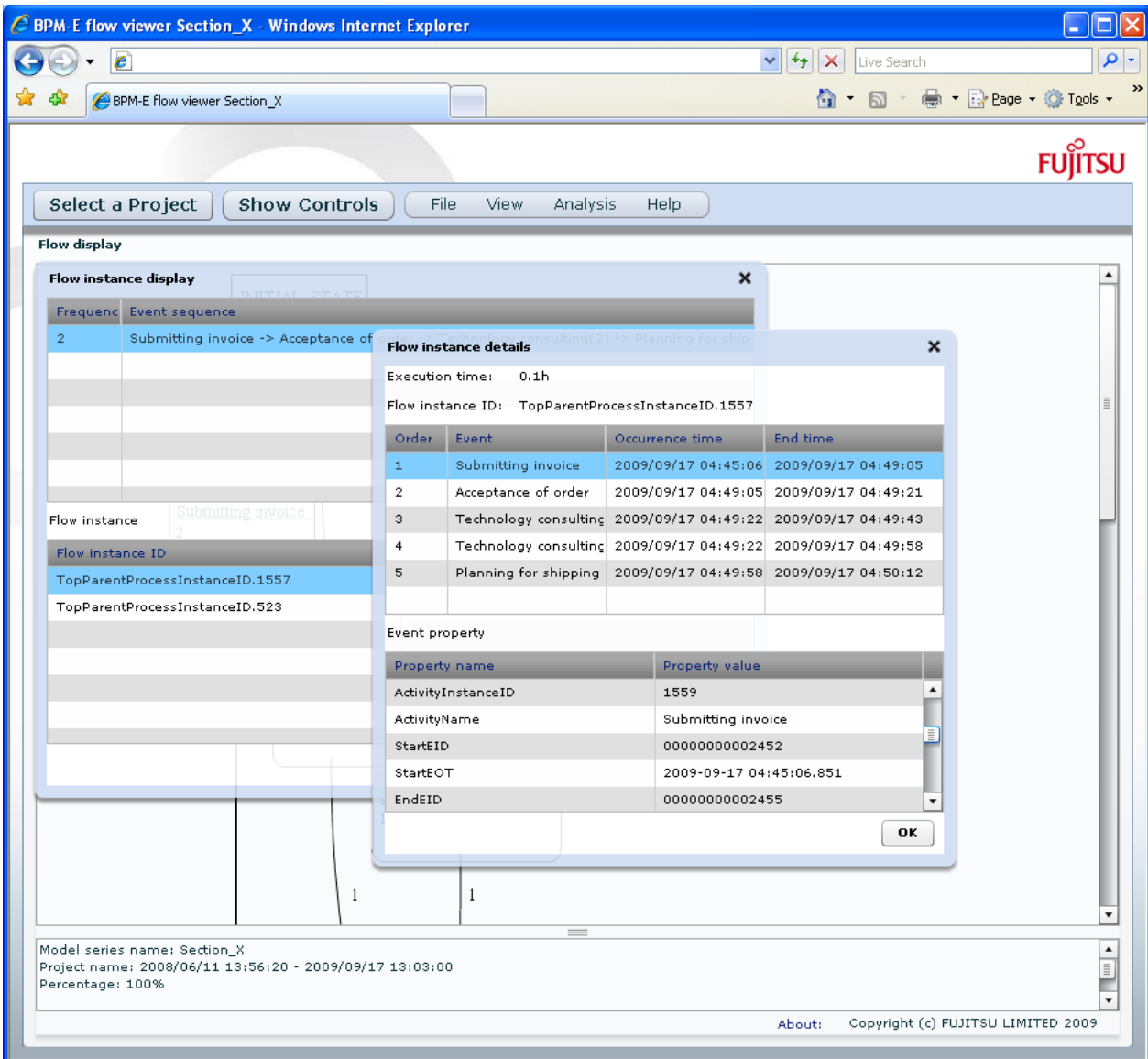
Elements on this screen are described below.

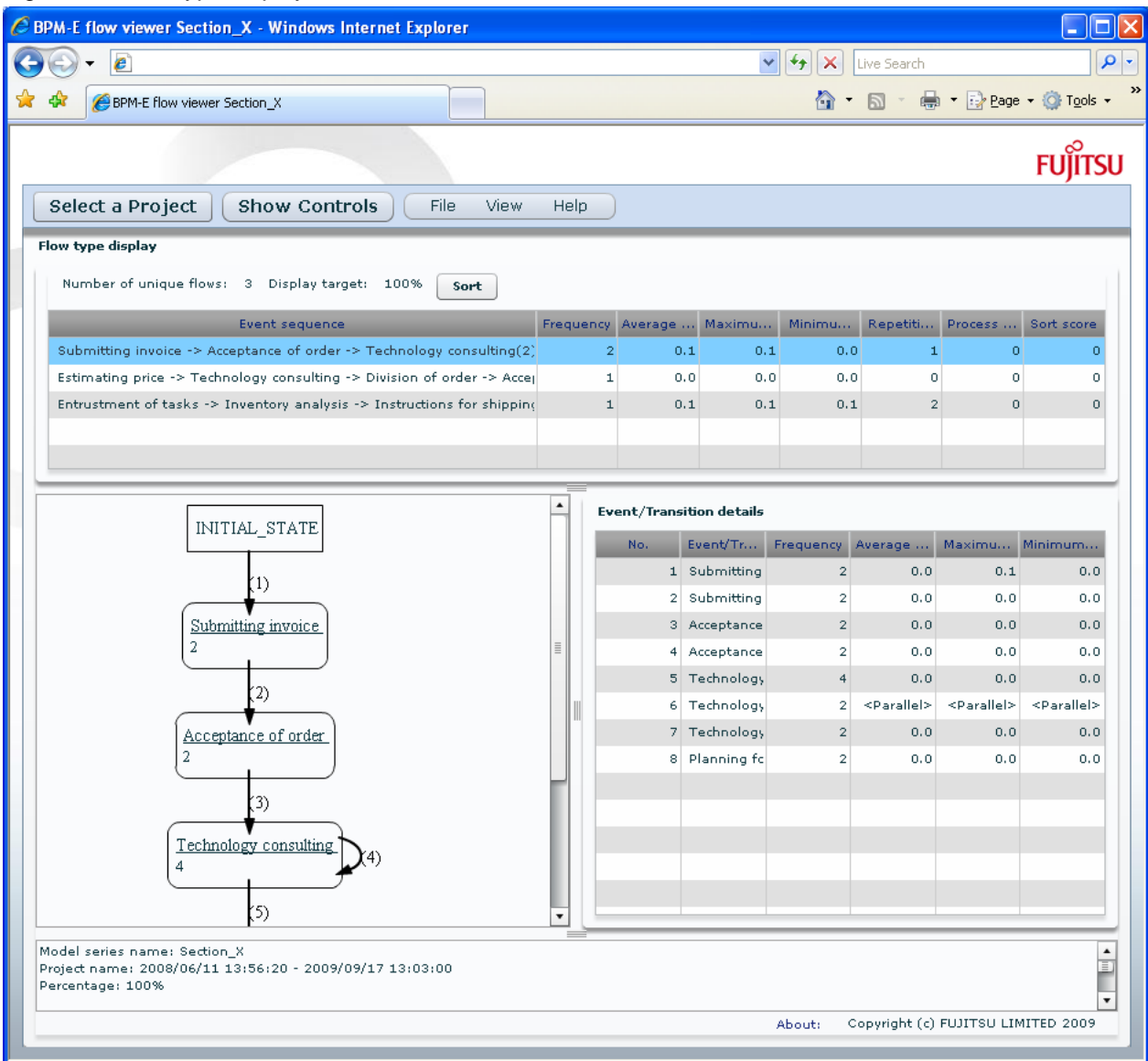| No.	Name	Function
1	Execution time	Shows the execution time of the flow instance.
2	Flow instance ID	Shows the key values of the flow instance.
3	Order	Shows the sequence number of the event.
4	Event	Shows the name of the event.
5	Occurrence time	Shows the time when the event began.
6	End time	Shows the time when the event finished.
7	Property name	Shows the name of the property. Properties are information about the original data associated with the corresponding event.
8	Property value	Shows the value of the property.
9	"OK" button	Close this panel.

3.5 Flow type display

Detailed information about each flow type is displayed in the upper part in flow type display mode.This is called a flow type list. Only flow types with a percentage not greater than the slider value are displayed. Set the slider frequency to 100% to show all flow types in the flow type list.

A flow type may have multiple flow instances in which the event sequence is the same. The number of the flow instances of each flow type with the same event sequence is displayed in the "Frequency" column.

A flow diagram of the selected flow type is shown in the lower left of the display. When multiple flow types are selected their diagrams are all displayed.

Information about each transition of the selected flow types is displayed in lower right part of the display.

Figure 3.9 Flow type display

Elements on this screen are described below.

No.	Name	Function
1	(Flow type list)	Display the list of flow types in the upper part. The list is arranged in descending order of "Frequency" by default. Click a list header to rearrange the list in ascending order or descending order of clicked values.

No.	Name	Function
2	Sort button	"Flow sorting" panel is opened for advanced sorting. Refer to 3.5.2 Advanced sorting for details.
3	Event sequence	Shows the sequence of the events of the flow type.
4	Frequency	Shows the total number of instances of each flow type.
5	Average time	Shows the average execution time of each flow. The initial unit of time is hour (h).
6	Maximum time	Shows the maximum execution time of each flow. The initial unit of time is hour (h).
7	Minimum time	Shows the minimum execution time of each flow type. The initial unit of time is hour (h).
8	Repetition frequency	Shows the number of repetition of the events of each flow type. Refer to 4.1 Repetition frequency for details.
9	Process return frequency	Shows the process return frequency of each flow type. Refer to 4.2 Process return frequency for details.
10	Sort score	The sort score is indicated in this field if Advanced sorting was used. Refer to 3.5.2 Advanced sorting for details.
11	(Business process flow diagram display)	Display the business process flow diagrams of all selected flow types in the lower left area. Multiple flow types can be selected.
12	(Transition details)	Show "Transition details" of each transition of each selected flow type in the lower right. Each row shows the type of the transition, the number of instances of the transition, average value, the maximum value, and the minimum value of the execution time of the transition in "Transition", "Frequency", "Average time", "Maximum time", and "Minimum time" columns respectively. Click a list header to rearrange the list in ascending order or descending order of clicked values.
13	No.	Shows the line number of the Event/ Transition.
14	Transition	Shows the type of the transition.
15	Frequency	Shows the total number of the transitions in the flow type.
16	Average time	Shows the average execution time of each flow type.
17	Maximum time	Shows the maximum execution time of each flow type.
18	Minimum time	Shows the minimum execution time of each flow type.
19	Select a Project button	Show the project selection panel. See 3.1 Project selection panel for detail.
20	Show Controls	Show the control panel. See 3.3 Control panel for detail.
21	File->Save Image menu	Output the current business flow diagram to a file in SVG format, PNG format or XPDL format.
22	View -> Zoom In menu	The same as clicking the "Zoom In" button in the control panel. See 3.3 Control panel for detail.
23	View -> Zoom Out menu	The same as clicking the "Zoom Out" button in the control panel. See 3.3 Control panel for detail.
24	View -> Display All menu	The same as clicking the "Display All" button in the control panel. See 3.3 Control panel for detail.
25	View -> Show flow endpoints menu	INITIAL_STATE and FINAL_STATE are displayed as flow endpoints if this is checked. If the check is removed, INITIAL_STATE and FINAL_STATE are not displayed. Refer to 3.2.1 Display and non-display switch of INITIAL_STATE and FINAL_STATE for details.

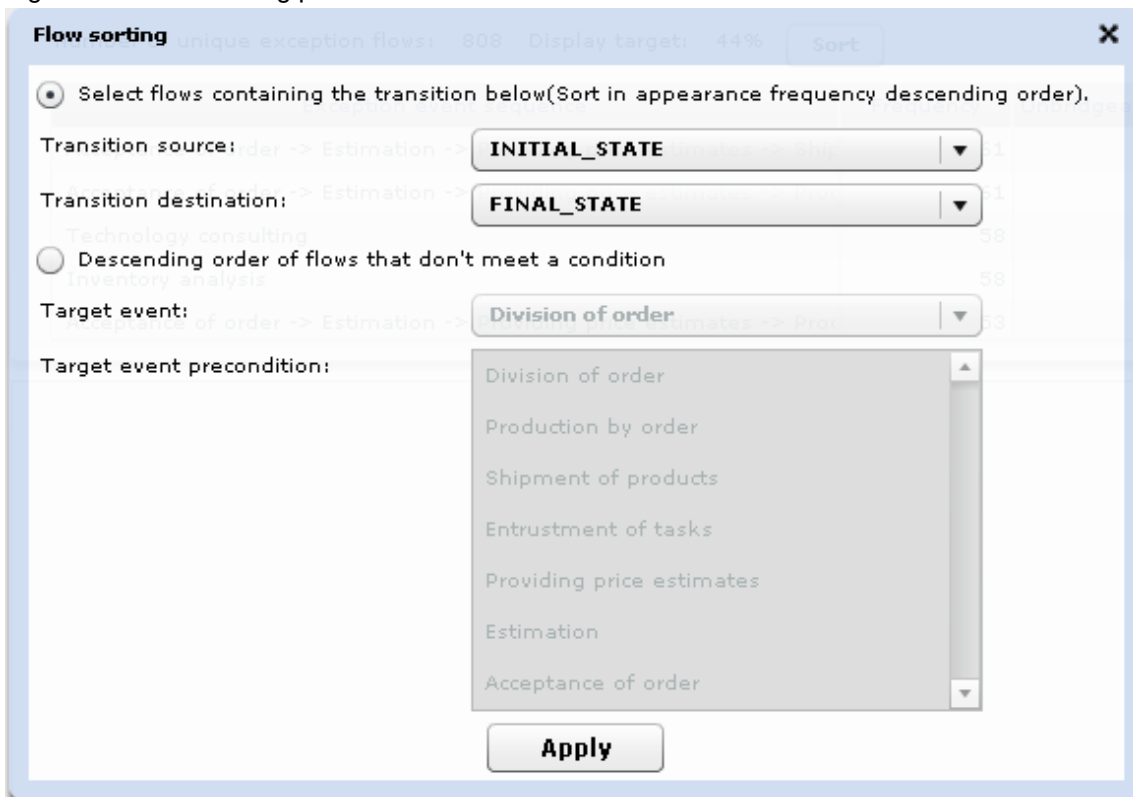| No.	Name	Function
26	View -> Flow View Display menu	The screen to view the integrated flow diagram is displayed. Refer to 3.2 Flow display screen for details.
27	View -> Select Exception Flow menu	The screen to retrieve the exceptional flow is displayed. Refer to 3.6 Exceptional flow display for details.
28	View -> Display Count/Time menu	Select display options for the business process flow diagram from "Transition Count", "Average Transition Time", and "Standard Deviation of Transition Time". Use the "Emphasize Long Transition Time" option to show the transitions which have the longest transition time in red. Select the "time unit" from day, hour, minute, second.
29	View -> Sequential Number menu	Check this setting to display the flow in a format where the sequential number (in parentheses) is attached to each transition. In this case, neither the frequency nor the time is displayed.
		Uncheck this setting to enable the non-display/ display to be controlled from the "Count" and "Time" menu as well as from the "Flow display" screen (The "Transition Count" and the "Average Transition Time" are displayed in the state of an initial display).
		The "Sequential Number" is unchecked automatically when two or more lines are selected in the "Flow type list".
30	View -> Config Setting menu	Configure settings for the flow viewer.
31	Help menu	Show the version of BPM-E flow viewer.

3.5.1 Basic sorting

Click a header of the flow type list to sort the list by the value in that column. Ascending order and descending order are switched with each click. The list can be sorted using these values.

- Event sequence

    - The sequence of the event

- Frequency

    - The total number of process instances for each flow type

- Average time

    - The average execution time of each flow type

- Maximum time

    - The maximum execution time of each flow type

- Minimum time

    - The minimum execution time of each flow type

- Repetition frequency

    - See 4.1 Repetition frequency.

- Process return frequency

    - See 4.2 Process return frequency.

- Sort score

    - The result of advanced sorting is stored in this field. See 3.5.2 Advanced sorting.

3.5.2　Advanced sorting

Click the "Sort" button to display the flow sorting panel as shown below. Check either the "Select flows containing the transition below", or "Descending order of flows that don't meet a condition" radio button.

Figure 3.10 Flow sorting panel

Elements on this screen are described below.

No.	Name	Function
1	Select flows containing the transition below (Sort in appearance frequency descending order) radio button	When this radio button is selected, the number of the transition which you specified is counted for each flow type. Then the flow type list is sorted by the number. To specify the transition, select the transition source and transition destination.
2	Transition source, Transition destination list box	Transition source and transition destination list box are used as a pair to specify the transition.
3	Descending order of flows that don't meet a condition	When this radio button is selected, you have to specify following two types of event as sorting condition. - Target event - Target event precondition 　 - One or more events which should occur before the target event. Each flow type is determined whether the type satisfies the condition or not. If the type satisfies the condition, the score of the type becomes 0. If the type doesn't satisfy the condition, the score becomes 1. Note that if the flow type doesn't contain the target event, the score of the type becomes 0.
4	Target event list box	Select a target event.

No.	Name	Function
5	Target event precondition	Specify one or more events that should occur before the targeted event. Multiple events mean that all the events should occur before executing the target event.
6	Apply button	The sorting gets executed and the result is reflected to "Sort score" field of the flow type list.
7	x button	Close this panel.

3.6 Exceptional flow display

Use the exceptional flow display mode to search the exceptional flow type list ordered by a specified condition and see the exceptional flow highlighted in the flow diagram. Use this feature to analyze each flow type which exhibits some exceptional behavior, for example, one that has many repetitions.
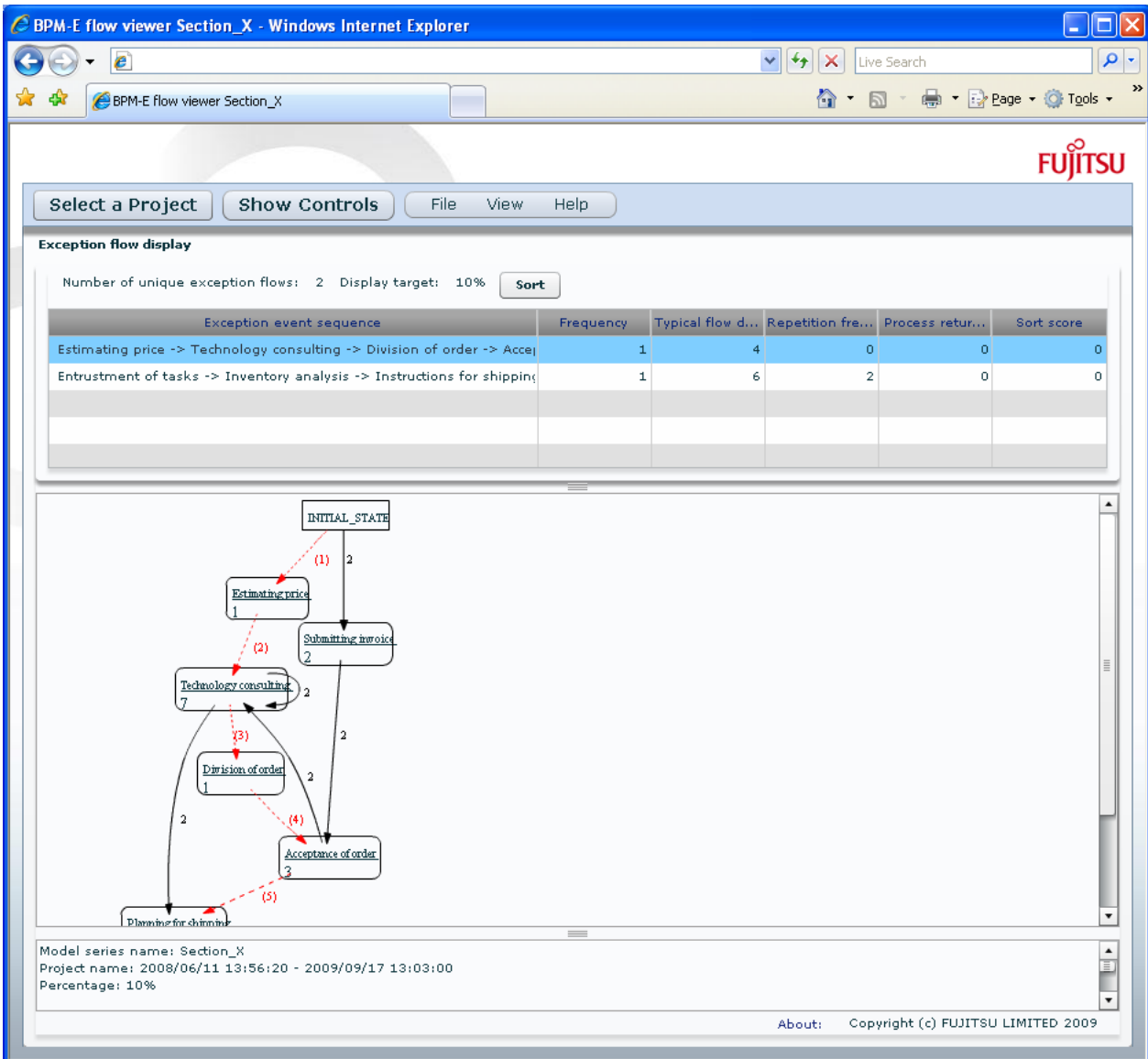
Use the View->Select Exception Flow menu to display the exceptional flow screen (Figure 3.11 Exceptional flow screen). This screen shows a list of exceptional flows in its upper part. Select a flow from the list to have its flow overlaid on the flow view with red dashed lines. The numbers in parentheses shows the execution order. The events which are included in the selected flow are displayed even if the overlaid flow does not contain the events. The flow shown with red dashed lines is displayed in the center of the screen.

The exceptional flow list is sorted in descending order of "Frequency" value by default. There are two ways to reorder the list: basic sorting and advanced sorting.

In basic sorting, headers of the list are used for sorting. Click a header to reorder the list based on the value of the clicked column. For details, refer to 3.6.1 Basic sorting.

Click the "Sort" button for advanced sorting. This displays the "Flow sorting" panel and complex sorting conditions can be constructed. For details, refer to 3.6.2 Advanced sorting.

Figure 3.11 Exceptional flow screen

Elements on this screen are described below.

No.	Name	Function
1	Number of unique exception flows	The number of unique exception flows. This number is equal to the number of lines in the exceptional flow list.
2	Display target	Shows the current slider setting.
3	Sort button	Display the "Flow sorting" panel for advanced sorting. Refer to 3.6.2 Advanced sorting for details.
4	(Exceptional flow list)	The list of exceptional flow types is displayed in the upper part. These "exceptional" flow types are not shown in the diagram in the flow view display at the specified percentage. The list is arranged in descending order of "Frequency" by default. Click each header of the list to rearrange the list in ascending order or descending order of the clicked column's values.
5	Exception event sequence	Event classes are displayed in order of the time series, joined by "->". The numerical value in parentheses to the right of event class shows the number of occurrence of the same kind of event.

No.	Name	Function
6	Frequency	Number of flow instances.
7	Typical flow deviation degree	The distance between the most frequent flow type and each flow type is displayed. Refer to 4.3 Typical flow deviation degree for details.
8	Repetition frequency	The number of repetitions of the events of each flow type is displayed. Refer to 4.1 Repetition frequency for details.
9	Process return frequency	The process return frequency of each flow type is displayed. Refer to 4.2 Process return frequency for details.
10	Sort score	Shows the sort score if Advanced sorting was used. Refer to 3.6.2 Advanced sorting for details.
11	(Exceptional flow diagram display)	The flow diagram of selected exceptional flow type is displayed. In this diagram, the selected exceptional flow is indicated by red-dashed lines and the normal flow diagram at the specified percentage is indicated by black lines.
12	Select a Project button	Shows a project selection panel. See 3.1 Project selection panel.
13	Show Controls button	Shows a control panel. See 3.3 Control panel.
14	File->Save Image menu	Output the current business flow diagram to a file in SVG format or PNG format.
15	View -> Zoom In menu	The same as clicking the "Zoom In" button in the control panel. See 3.3 Control panel.
16	View -> Zoom Out menu	The same as clicking the "Zoom Out" button in the control panel. See 3.3 Control panel.
17	View -> Display All menu	The same as clicking the "Display All" button in the control panel. See 3.3 Control panel.
18	View -> Show flow endpoints menu	INITIAL_STATE and FINAL_STATE are displayed as flow endpoints if this is checked. If the check is removed, INITIAL_STATE and FINAL_STATE are not displayed. Refer to 3.2.1 Display and non-display switch of INITIAL_STATE and FINAL_STATE for details.
19	View -> Flow View Display menu	Display the screen to view the integrated flow diagram Refer to 3.2 Flow display screen for details.
20	View -> Flow Type Display menu	Display detailed information of the business process flows that are selected based on the current settings. Refer to 3.5 Flow type display for details.
21	View -> Display Count/Time menu	In this mode, only "Transition Count" item is selectable.
22	View -> Config Setting menu	Configure settings of the flow viewer.
23	Help menu	Shows the version of BPM-E flow viewer.

3.6.1 Basic sorting

Click a header of the exceptional flow list to sort the list by the values in the clicked column. Ascending order and descending order are switched with each click. The list can be sorted using these values.
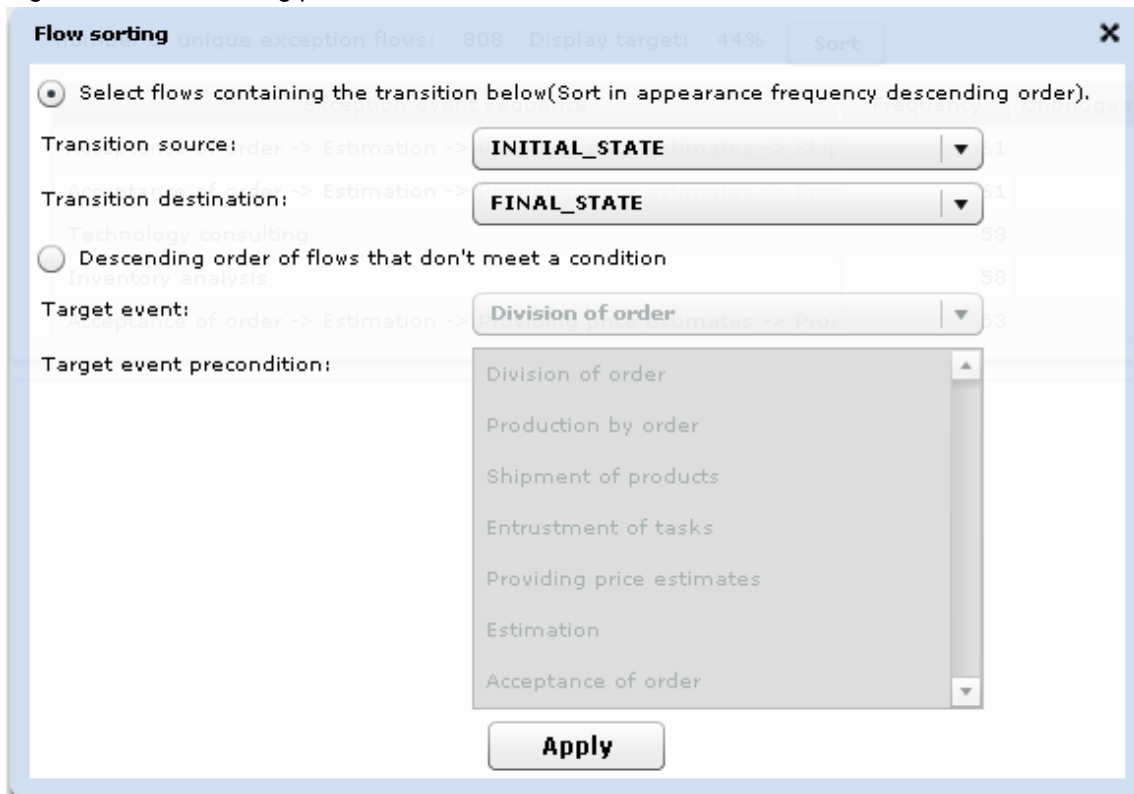
- Exception event sequence

    - The sequence of the event

- Frequency

    - The total number of the process instances of each exceptional flow type

- Typical flow deviation degree

    - Distance between the target flow and the frequent flow

- Repetition frequency

    - See 4.1 Repetition frequency.

- Process return frequency

    - See 4.2 Process return frequency.

- Sort score

    - The result of advanced sorting is stored in this field. See 3.6.2 Advanced sorting.

3.6.2 Advanced sorting

Click the "Sort" button to display the flow sorting panel. Check either the "Select flows containing the transition below", or "Descending order of flows that don't meet a condition" radio button.

Figure 3.12 Flow sorting panel

Elements on this screen are described below.

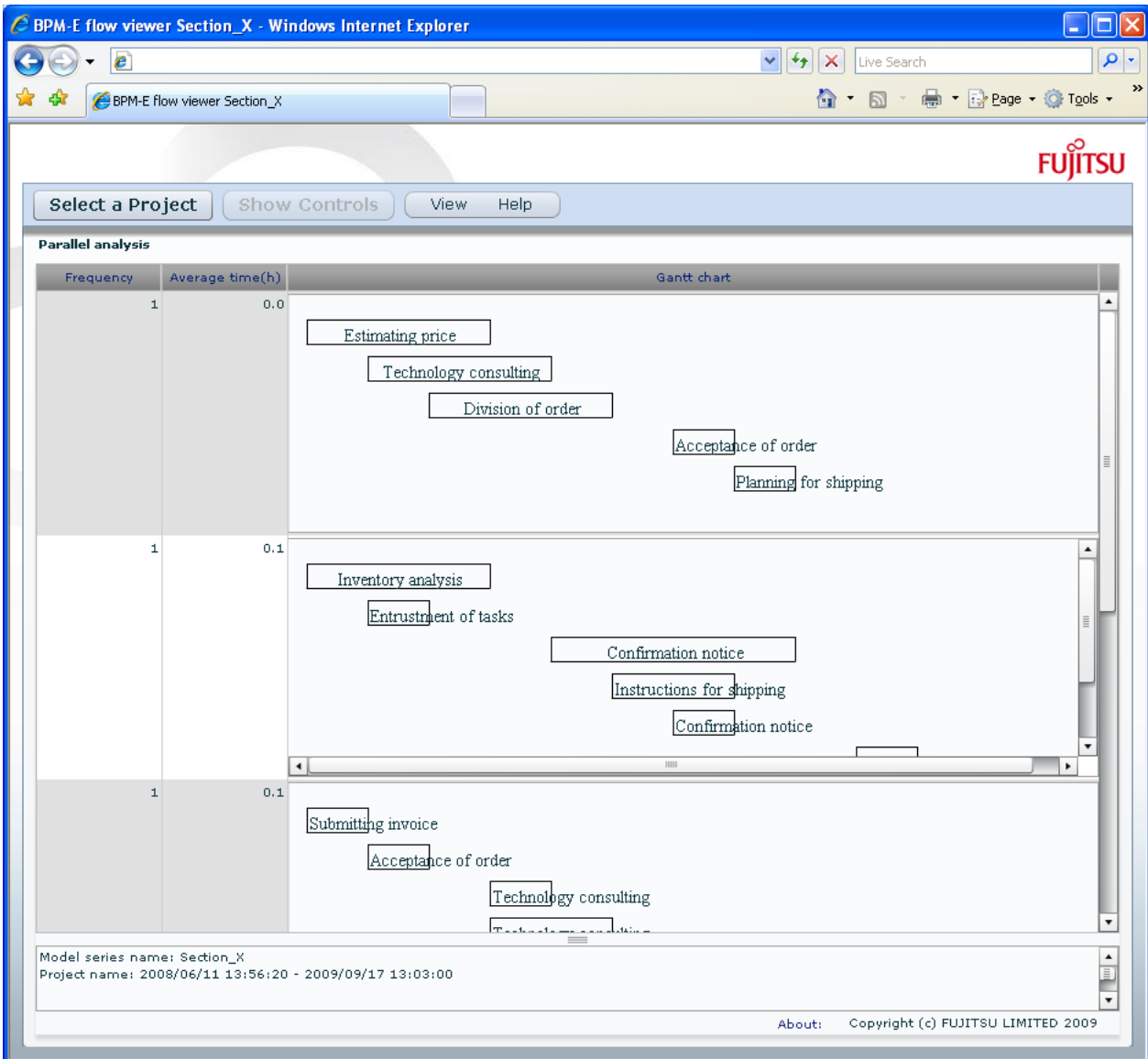| No.	Name	Function
1	Select flows containing the transition below (Sort in appearance frequency descending order) radio button	When this radio button is selected, the number of the transition which you specified is counted for each exceptional flow type. Then the flow type list is sorted by the number. To specify the transition, select the transition source and transition destination.
2	Transition source, Transition destination list box	Specify the transition source and destination.
3	Descending order of flows that don't meet a condition	When this radio button is selected, you have to specify following two types of event as sorting condition.

No.	Name	Function
		- Target event
		- Target event precondition
		- One or more events which should occur before the target event.
		Each exceptional flow type is determined whether the type satisfies the condition or not. If the type satisfies the condition, the score of the type becomes 0. If the type doesn't satisfy the condition, the score becomes 1.
		Note that if the flow type doesn't contain the target event, the score of the type becomes 0.
4	Target event list box	Select a target event.
5	Target event precondition	Specify one or more events that should occur before the targeted event. Multiple events mean that all the events should occur before executing the target event.
6	Apply button	Perform the sort and reflect the result in the "Sort score" field of the exceptional flow type list.
7	x button	Close this panel without sorting flows.

3.7 Parallel analysis display

In parallel analysis mode, all kind of parallel execution types (hereinafter referred to as the "parallel type") are shown in the list. Note that it is different from the flow type list. A parallel type is a group of several flow instances that have same sequence of the event beginning time and the event completion time. By Gantt chart, you can recognize what events are executed in parallel. If the particular parallel pattern causes some problems, you can find it by this view.

Figure 3.13 Parallel analysis display

Elements on this screen are described below.

No.	Name	Function
1	Frequency	The number of instances of the parallel type.
2	Average time	The average execution time of the parallel type.
3	Gantt chart	The Gantt chart of the parallel type. In this chart, the length of each bar doesn't reflect the actual execution time of each event. The chart should be used to recognize the parallel execution pattern.
4	Select a Project button	Shows the project selection panel. See 3.1 Project selection panel.
5	View -> Flow View Display menu	Display the screen to view the integrated flow diagram Refer to 3.2 Flow display screen for details.
6	View -> Flow Type Display menu	Display detailed information of the business process flows that are selected based on the current settings. Refer to 3.5 Flow type display for details.
7	View -> Select Exception Flow menu	Display the screen to retrieve the exceptional flow. Refer to 3.6 Exceptional flow display for details.

| No.	Name	Function
8	View -> Time Unit menu	Select the time unit from day, hour, minute, second.
9	Help menu	Show the version of BPM-E flow viewer.

Chapter 4 Definition of terms

This chapter describes definition of terms used in BPM-E flow viewer.

4.1 Repetition frequency

Repetition frequency is the total number of times that an event is repeated in a process flow.

Consider this example where the execution of events is A->B->B->C->D->D->D. The numbers in parentheses show the execution order of events. Event B is execute twice (one additional time) and event D is executed three time (two additional times). There is one extra B in the flow B->B, and there are the two extra Ds in the flow D->D->D··· so the repetition frequency value is three.

Figure 4.1 Repetition frequency
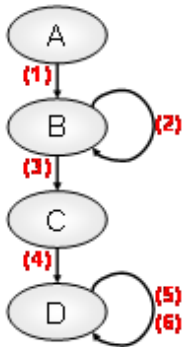
4.2 Process return frequency

Process return frequency is the total number of times that an event backtracks to an event is the same flow that has already been executed.

Consider this example where the execution of events is A->B->C->D->B->C->D->E->D->E. The numbers in parentheses show the execution order of events. Transitions (4) and (8) are backtracks ··· so the process return frequency value is two. Note that transitions (5), (6), and (9) occurred because of the backtracking and are not counted as process returns.

Figure 4.2 Figure 15 - Process return frequency
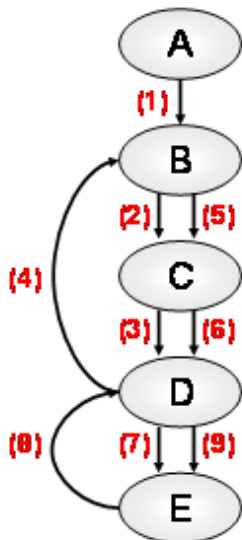
4.3 Typical flow deviation degree

Typical flow deviation degree is the distance between the reference flow (the most frequent flow) and a target flow. The distance between the flows is the minimum number of insertion/ deletion/ substitution operations required to transform the target flow into the reference flow.

An example of typical flow deviation degree is shown below.

Figure 4.3 Typical flow deviation degree