



Cell Illustrator Player: Reference Manual

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1 Introduction

Cell Illustrator Player (CI Player) is a part of the Cell Illustrator™ software package. CI Player enables you to view a Cell Illustrator model and replay a simulation run from a log created with the Cell Illustrator program.

With Cell Illustrator Player, you can:

- deterministically replay a simulation run, even if the original simulation was of stochastic nature,
- display logged entity values and process states in the model view in the canvas,
- visualize entity value changes over time in a chart,
- quickly move forward and backward to a specific part of a simulation log,
- replay a simulation run in a step mode for debugging purposes,
- compare results of several simulation runs.

Technically, CI Player is a viewer of Cell Illustrator log files. A CI log (CIL) is an XML file that consists of two parts: the input model and the time series of values for the logged properties. You cannot edit the model stored in the log with the Cell Illustrator Player. Neither can you run the simulation in the CI Player; you can only replay a simulation run recorded with Cell Illustrator.

CIL is created by the Cell Illustrator during a simulation run if the user requests logging entity values or process states. Each simulation run is stored as a separate file. The list of log files is available for viewing in the Simulation History dialog in the Cell Illustrator. Refer to the CI User Guide and CI Reference Manual for instructions on how to create simulation logs with Cell Illustrator.

The documentation for the Cell Illustrator™ (CI) software includes the manuals listed below:

Cell Illustrator User Manual: Introduction to Cell Illustrator system

Cell Illustrator Reference Manual: Detailed description of Cell Illustrator functionalities

Cell Illustrator Player Reference Manual: Detailed description of Cell Illustrator Player functionalities

Cell Illustrator Online Installation Manual: Installation instructions Cell Illustrator Server product (for IT System Administrators)

This manual is a reference for the functional features of Cell Illustrator Player version 4.0 (CI Player 4.0). It can be used to answer questions about specific commands. For installation instructions and an introduction to modeling biological pathways with Cell Illustrator, please refer to the CI User Manual.

2 Starting CI Player

CI Player can be started in three ways:

- from the Cell Illustrator, by pressing the *Replay* button in *Simulation History* dialog box. This opens the selected CIL files in the CI Player Workspace.
- from the Windows Programs menu, by executing the command Start | Programs | Cell Illustrator | Cell Illustrator Player. This will open an empty CI Player Workspace. To open a log file, use the **File | Open** command.
- from the CI Online web page: <https://cionline.hgc.jp> by pressing the CI Player button.

Only one CI Player application window can be opened at a time.

3 CI Player Workspace

CI Player Workspace, the main window of the application, is similar to the Workspace window in Cell Illustrator. The **Menu Bar** located at the top provides a set of commands for viewing and replaying a simulation. Frequently used commands can be also executed by pushing a button on one of the **CI Player Toolbars** on the sides of Workspace. Menu items and toolbar buttons corresponding to operations that cannot be performed at the moment are disabled (grayed out). In comparison to Cell Illustrator, CI Player does not have menu options for editing a model and the Simulation menu and toolbar buttons are replaced with the Replay commands.

In the CI Player Workspace, multiple log files can be opened simultaneously. A model stored in CIL is displayed in a *canvas window*. During simulation replay, the canvas window is updated with changing entity values and process states.

In Cell Illustrator Player, the user can open several *property dialogs* listed in the table below:

Dialog name	Purpose
Element Lists	Displays lists of model elements and values of their main properties.
Navigator	Shows the position of the canvas window relative to the whole model.
View Settings	Displays View Settings dialog box.
Replay Settings	Displays replay parameters and replay speed.
Chart Settings	Allows the selection of variables to be watched in a chart window.
Finder	Searches for specified elements in the canvas.

3.1 Menu Bar Commands

3.1.1 File | Open

Description:

- Loads a Cell Illustrator log file for replaying and analysis

- A log file has an extension *.cil* and it is created in the folder *[project name].output*, where *[project name]* is the name of the Cell Illustrator model file. For example, logs for the Cell Illustrator *Apoptosis.gon* sample project are kept in the *Apoptosis.output* subfolder in the folder where the *Apoptosis.gon* file is located.
- It may be impossible to load a log with millions of simulation steps as a whole into the RAM memory of your machine. In case of a large log, a warning dialog appears as in the example below:



This dialog offers three choices for handling the log:

- o You can try to load the whole log to RAM. CI Player approximates the memory requirements but it is very difficult to provide accurate estimates. If loading the whole log fails, less memory consuming options should be used.
 - o Create a swap file on your hard disk for the logged data. If many variables were logged, this option significantly reduces RAM requirements at the cost of slightly decreased performance of a replay process.
 - o Load a part of the log into the CI Player. You can specify the range of simulation steps to load. Also, you can sample the log by loading to the memory only each n-th value of the time series. With a swap file for the log on a disk, CI Player still requires some RAM for keeping indexes and this option may fail for logs with many variables and millions of steps. Then, loading a part of the log would be your only choice.
- It is not possible to open the same file twice. If the user attempts to open a file that is already opened, then the canvas window of that file is activated and displayed in the foreground.
 - CTRL+O is the keystroke shortcut for this command.

Constraints:

- You can not execute this command if a replay process is running.

3.1.2 File | Open Recent Files

Description:

- Displays a list of recently opened files. Click on an item in the list to open the corresponding file.
- In case of a large CIL, a warning dialog box appears – see [File | Open](#)
- Up to 5 recently opened files are on the list.
- The list does not contain duplicates.
- It is not possible to open the same file twice. If the user attempts to open a file that is already opened, then the canvas window of that file is activated and displayed in the foreground.

Constraints:

- You can not execute this command if a replay is running.

3.1.3 File | Close File

Description:

- Closes the active log file without exiting the program.
- CTRL+W is the keystroke shortcut for this command.

Constraints:

- At least one canvas window must be opened in the workspace.
- You cannot execute this command if a replay is running.

3.1.4 File | Close All Files

Description:

- Closes all log files without exiting the program.
- CTRL+Shift+W is the keystroke shortcut for this command.

Constraints:

- At least one canvas window must be opened in the workspace.
- You cannot execute this command if a replay is running.

3.1.5 File | Export

- ➔ Entity List
- ➔ Connector List
- ➔ Process List

Description:

- The commands export, respectively, the list of entities, connectors and processes to a file in the CSV format.

Constraints:

- At least one canvas window must be opened in the workspace.
- You cannot execute this command if a replay is running.

3.1.6 File | Export | Simulation Log

Description:

- For the CIL file in the active canvas, the command saves the log in CSV format.
- The log contains a time series of values for variables selected in the [Element Lists](#) dialog box at the time the original simulation was performed in Cell Illustrator.
- Only that part of the log that is loaded into the CI Player currently can be exported. See [File | Open](#) for explanations on how to handle large log files.

3.1.7 File | Print Area

Description:

- With this command, you can print a portion of the canvas or save it to an image file in the PostScript, PNG, or JPEG format.
- The command opens the [Print Area Setup](#) dialog where you specify a canvas area to be printed.

Constraints:

- At least one canvas window must be opened in the workspace.
- You cannot execute this command if a replay is running.

3.1.8 File | Print

Description:

- With this command, you can print the whole model diagram and replay charts or save them in an image file in PostScript, PNG, or JPEG format.
- The command opens the [Print](#) dialog where you select the scope and destination of the print function.

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.9 File | Exit

Description:

- Exits the application.

3.1.10 Replay | Play

Description:

- If the log in the active canvas is in the “initialized” or “paused” state, the command starts a log replay.
- The replay speed can be set in the [Replay Settings](#) dialog. By default the replay speed is roughly 1pt per 1 sec.
- Other simulation parameters, e.g. *simulation time* and *log time*, are properties of the log file. These parameters can be viewed in the [Replay Settings](#) dialog box.
- Process firing and changes of entity values are shown in the canvas during the replay. Only the values of variables that were in the log are displayed.
- The status of a replay run is displayed at the bottom of the CI main window.
- Only the active canvas is available in the workspace during the replay. All other canvas windows are temporarily closed in order to avoid inconsistent states.
- The replay stops when: (1) the user has executed the [Replay | Stop and Initialize](#) command, or (2) the user has executed the [Replay | Pause](#) command, or (3) the replay time has reached the value specified (in pt units) by the *Log Time* setting in the [Replay Settings](#) dialog.
- Only one replay process at a time can be run.

Constraints:

- At least one canvas is opened in the workspace
- The log in the active canvas is not in the “replay end” state

3.1.11 Replay | Step Forward

Description:

- The command replays one step of the simulation time series for the model in the active canvas.
- Process firing and entity values of the current step are shown in the canvas.

- The replay process status is shown at the bottom of the CI Player main window.

Constraints:

- At least one canvas is opened in the Workspace
- The log in the active canvas is not in the “replay end” state

3.1.12 Replay | Step Backward

Description:

- For the model in the active canvas, the command goes one step back in the replayed time series.
- Process firing and entity values of the current step are shown in the canvas.
- The replay process status is shown at the bottom of the CI Player main window.

Constraints:

- At least one canvas is opened in the workspace
- The log in the active canvas is not in the “replay begin” state

3.1.13 Replay | Pause

Description:

- Pauses a running replay process.
- The replay can be resumed with the [Replay | Play](#) and other play commands.
- Also, the replay can be continued in the step mode with [Replay | Step Forward](#) or [Replay | Step Backward](#)

Constraints:

- The command is disabled if no replay process is running.

3.1.14 Replay | Stop and Initialize

Description:

- If there is a running replay process, it is stopped and the simulation is initialized. The replay time is set to the start time.
- Variables associated with entities are reset to their initial values.

Constraints:

- The command is enabled if a replay of the log in the active canvas has been paused or completed.

3.1.15 Element | Create Chart

Description:

- Creates a new chart for the entities that are selected in the canvas window.
- If a chart that contains selected entities already exists, no new chart is created; The existing chart is opened.

Constraints:

- At least one entity must be selected in the canvas to execute this command.

3.1.16 Element | References

Description:

- Displays the list of references available for this element.
- Choose an item from the pop up menu to open the URL in a Web Browser window.
- References define links from the selected element to external resources specified as URLs. Reference may define a link from the selected element to a database element, such as an entry in a database or a term in a controlled vocabulary
- References can be associated to all elements: entities, processes or connectors.

Constraints:

- Exactly one element is selected in the active canvas.

3.1.17 Element | URL Templates

Description:

- Displays the list of URL templates available for this element.
- Choose a link from the list to open the URL in a Web Browser window.
- The URL templates are associated to all elements: entities, processes or connectors.

Constraints:

- Exactly one element is selected in the active canvas.

3.1.18 View | Show User Units

Description:

- Switches between the standard unit and user unit modes

- If this menu item is unchecked then you are in the standard (absolute) unit mode. In this mode the values of all entities are expressed in the standard (absolute) unit. This view allows for better understanding of the mathematical Petri net model and its processes, since the simulation is done in this absolute units.
- If this menu item is checked then you are in the user unit mode. In this mode the entity value is expressed in the selected unit along with and displayed along with unit name in the lower-right corner. This view allows for better understanding of the physical model, since the entity values are given in user specified units.

Note: The simulation engine supports non-standard units, however it performs the calculation in standard units. The value of each entity expressed in standard units is the absolute value that is used by in the Petri Net model. This has the following consequences:

- Process speed is always defined in standard units
- Entities representing two different physical properties, e.g. mass and volume can be connected by a process or used in one mathematical formula (script). The process or formula will operate on the absolute entity values expressed in standard units of each physical property.
- Non-standard units are converted to standard ones during initialization of the entity value, e.g. during the file open operation.

3.1.19 View | Fit to Window

Description:

- If one or more elements are selected, the command moves the virtual camera to display the selected elements in the canvas window.
- Otherwise, the virtual camera is moved to fit the display of all elements in the active window.
- If necessary, the command will enlarge the canvas by increasing its width and/or height.
- [View | Actual Size](#) reverts the canvas to its original scale and size

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.20 View | Zoom In

Description:

- The command brings a virtual camera closer to the model in the active canvas
- If necessary, the command will enlarge the canvas by increasing its width and/or height.
- [View | Actual Size](#) reverts the canvas to its original scale and size.

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.21 View | Zoom Out**Description:**

- The command brings a virtual camera farther from the model in the active canvas window.
- [View | Actual Size](#) reverts the canvas to its original scale

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.22 View | Fit in Canvas**Description:**

- If one or more elements are selected, the command moves the virtual camera to display the selected elements in the canvas window.
- Otherwise, the virtual camera is moved to fit the display of all elements in the active window.
- If necessary, the command will enlarge the canvas by increasing its width and/or height.
- [View | Actual Size](#) reverts the canvas to its original scale and size

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.23 View | Actual Size**Description:**

- The command moves the virtual camera so that the canvas is displayed with its actual size.
- If necessary, the command will shrink the canvas by decreasing its width and/or height.

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.24 View | View inside

Description:

- Displays the internal structure (model) of the selected hierarchical object in a new canvas window.
- The model of the hierarchical object cannot be edited; the edit options are disabled for this canvas window.
- The canvas window name for the opened object is the name of the object.

Constraints:

- Exactly one hierarchical object must be selected in the active canvas.

3.1.25 View | Show All Charts

Description:

- Opens all [Chart Windows](#) defined for the active canvas

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.26 View | Hide All Charts

Description:

- Closes all [Chart Windows](#) defined for the active canvas

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.27 View | Show Grid

Description:

- Toggles the grid display on and off for all canvas windows.
- The setting is preserved in the user preference settings and applies also when the application is started next time.

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.28 View | Antialiasing

Description:

- Toggles antialiasing on and off for all canvas windows.
- With the antialiasing in the *on* state, model diagrams look better but it takes more time to draw them.
- The setting is preserved in the user preference settings and applies also when the application is started next time.
- During replay, antialiasing is temporarily forced to the off state.

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.29 View | Grid Size

Description:

- Sets the grid size for all canvas windows
- The setting is preserved in the Canvas section of user preference settings and applies also when the application is started next time.

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.30 View | Background Color

Description:

- Sets the background color for the active canvas window

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.31 Dialog | Show All Dialogs

Description:

- Opens all property dialogs for display:
 - o [Element Lists](#)
 - o [Replay Settings](#)
 - o [Finder](#)
 - o [Navigator](#)

- [Chart Settings](#)

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.32 Dialog | Hide All Dialogs

Description:

- Closes all property dialogs

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.33 Dialog | Element Lists

Description:

- Toggles on and off the display of the [Element Lists](#) dialog
- The contents of the dialog correspond to the active canvas window.
- The dialog gets the focus in case it gets opened.

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.34 Dialog | Navigator

Description:

- Toggles on and off the display of the [Navigator](#) dialog
- The contents of the dialog correspond to the active canvas window
- The dialog gets the focus in case it gets opened

Constraints:

- At least one canvas window must be opened in the Workspace.
-

3.1.35 Dialog | View Settings

Description:

- Toggles on and off the display of the [View Settings](#) dialog

- The contents of the dialog correspond to the active canvas window
- The dialog gets the focus in case it gets opened

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.36 Dialog | Replay Settings

Description:

- Toggles on and off the display of the [Replay Settings](#) dialog
- The contents of the dialog correspond to the active canvas window
- The dialog gets the focus in case it gets opened

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.37 Dialog | Chart Settings

Description:

- Toggles on and off the display of the [Chart Settings](#) dialog
- The contents of the dialog correspond to the active canvas window
- The dialog gets the focus in case it gets opened

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.38 Dialog | Finder

Description:

- Toggles on and off the display of the [Finder](#) dialog
- The newly opened dialog displays the results of the last search
- The dialog gets the focus in case it gets opened

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.39 Dialog | Project Manager

Description:

- Toggles on and off the display of the [Project Manager](#) dialog
- The dialog gets the focus in case it gets opened

Constraints:

- At least one canvas window must be opened in the workspace.

3.1.40 Window | Cascade Canvases

Description:

- The command cascades canvas windows.

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.41 Window | Tile Canvases

Description:

- The command tiles canvas windows.

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.42 Window | Minimize All Canvases

Description:

- The command minimizes all canvas windows

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.43 Window | Maximize All Canvases

Description:

- The command maximizes all canvas windows.

Constraints:

- At least one canvas window must be opened in the Workspace.

3.1.44 Help | Cell Illustrator Help

Description:

- Opens the HTML help system for Cell Illustrator.

3.1.45 Help | User Guide

Description:

- Opens the Cell Illustrator User Guide.

Constraints:

- The User Guide is a PDF document. Adobe Acrobat Reader or another software package capable of reading PDF documents needs to be installed and configured on your machine.

3.1.46 Help | Cell Illustrator Online

Description:

- Opens the home page for Genomic Object Net (GON) project in the default browser.
- GON is the research project at the University of Tokyo that drives the development of Cell Illustrator.

Constraints:

- The Internet connection must be available.

3.1.47 Help | About Cell Illustrator

Description:

- Displays the dialog [About Cell Illustrator](#) with the version and license information

3.2 CI Player Toolbars

3.2.1 File Toolbar

This toolbar is located at the top of the main window. It consists of a set of buttons for file management operations.

I	Button Name	Description
	Open Canvas File	See File Open
	Close Canvas	See File Close File
	Close All Canvases	See File Close All Files

3.2.2 View Toolbar

This toolbar is located at the top of the main window and contains a set of buttons for the most frequent view operations.

Icon	Button Name	Description
	Project Manager	Toggles Project Manager Dialog
	Selection Mode	In this mode, you can select elements on the canvas with the arrow cursor.
	Zoom In	In this mode, click on the active canvas to zoom in.
	Zoom Out	In this mode, click on the active canvas to zoom out.
	Reset Zoom	See View Actual Size
	Fit in Canvas	See View Fit in Canvas
	Toggle the Antialiasing Status	See View Antialiasing
	Toggle the Grid Visible Status	See View Show Grid

3.2.3 Replay Toolbar

This toolbar is located on the left side of the main window. It contains buttons for starting and stopping the replay.

Icon	Name	Description
	Play	See Replay Play
	Step Forward	See Replay Step Forward
	Step Backward	See Replay Step Backward
	Pause Replay	See Replay Pause
	Stop Replay and Initialize	See Replay Stop and Initialize
	Export Simulation Log	See File Export Simulation Log

3.2.4 Dialog Toolbar

This toolbar is located on the right side of the main window and contains buttons that open and close property dialog windows.

Icon	Name	Description
	Toggle Element Lists Visible Status.	See Dialog Element Lists
	Toggle Navigator Visible Status	See Dialog Navigator
	Toggle View Settings Visible Status	See Dialog View Settings
	Toggle Replay Settings Visible Status	See Dialog Replay Settings
	Toggle Chart Settings Visible Status	See Dialog Chart Settings
	Toggle Finder Visible Status	See Dialog Finder
	Show all dialog windows	See Dialog Show All Dialogs
	Hide all dialog windows	See Dialog Hide All Dialogs

3.2.5 Replay Status Bar

In the Replay Status Bar you can control the replay time.



The *Time Slider* and *Time Edit Box* controls display the simulation time point that is currently visualized in the active canvas. The time is specified in Petri net time units (pt). You can quickly move to another time point in the simulation log by dragging the slider with the mouse. Also, you can type in the desired time in the edit box and press the *Enter* key. The canvas would be updated to reflect the model state at the newly specified time point.

Detailed status information about the simulation replay process is shown to the right of the *Time Edit Box*.

4 Drawing Canvas

The canvas window is the place where you view a model saved in the log. During a replay process, the canvas window is updated with entity value and process state changes.

4.1 Display of Element Labels

When CIL is opened with CI Player, the model is displayed in the same way as it looked in Cell Illustrator when the log was created. After a replay is started, most element labels are hidden to make tracing entity value changes easier. The following labels are the only ones that are displayed at the replay time:

- Entity names
- Values of logged entities. Values of non-logged entities are hidden.

The difference between the canvas display at replay start and after the replay start is illustrated in the example below:

The canvas at the replay start (replay step = 0):



The canvas after the replay start (replay step > 0):

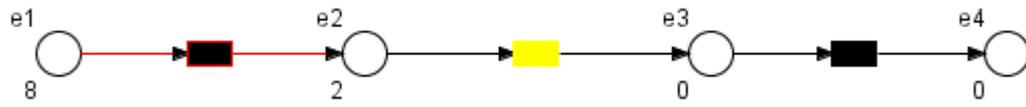


4.2 Display of Process State

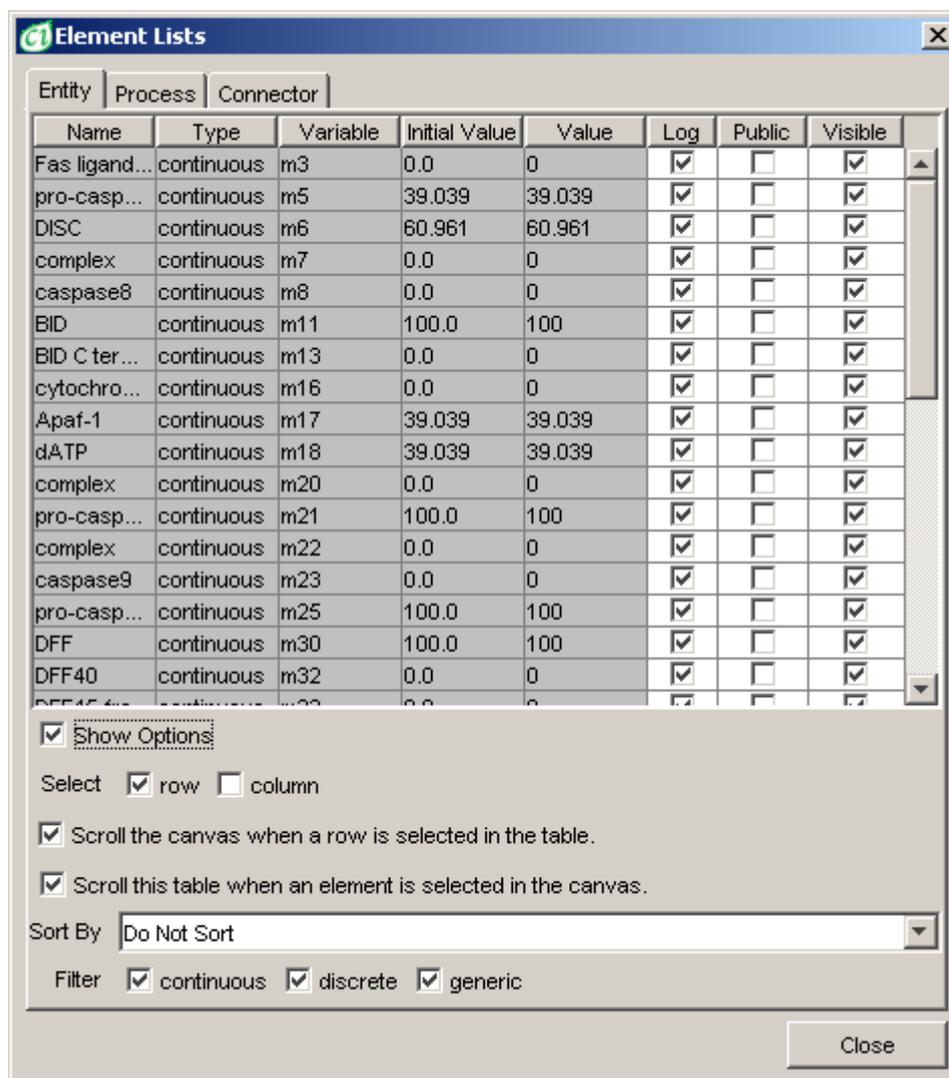
The state of logged processes is visualized during the replay using the following color codes:

- red – firing state
- yellow – waiting state
- black – not firing

The following example shows three processes, each in a different state:



5 Element Lists



For the model in the active canvas, the Element Lists modeless dialog displays lists of entities, processes and connectors together with values of their major properties. The Element List dialog functionality is the same in Cell Illustrator and the CI Player with the following exception: In CI Player, all values in the tables are read-only.

The *Element Lists* dialog box consists of the tabbed tables *Entity*, *Process*, *Connector* and the *Options* controls.

5.1.1 Entity Table

Each row in the table corresponds to an entity in the active canvas. The following properties are listed in the table:

- Name – entity name
- Type – discrete, continuous or generic
- Variable – name of variable associated with the entity
- Initial Value – initial value for replay
- Value – current value calculated during replay
- Log – if the cell is checked the entity is included in a replay log
- Public – tells whether to make this element public, i.e., visible in higher level models. Public entities are “connection points” of hierarchical objects.
- Visible – toggles element visibility on the canvas.

5.1.2 Process Table

Each row in the table corresponds to a process in the active canvas. The following process properties are listed in the table:

- Name – process name
- Type – discrete, continuous or generic
- Speed Script – definition of the speed parameter
- Speed Value – current value of the process speed calculated during replay
- Delay Script – definition of the delay parameter
- Delay Value – current value of the process delay calculated during replay
- Log – if the cell is checked the entity is included in a replay log
- Visible – toggles element visibility

5.1.3 Connector Table

Each row in the table corresponds to a connector in the active canvas. The following connector properties are listed in the table:

- Name – connector name
- Type – process, inhibitory or association
- Speed Script – definition of speed parameter
- Speed Value – current value of the speed parameter calculated during replay
- Threshold Script – definition of threshold parameter

- Threshold Value – current value of threshold parameter delay calculated during replay
- Visible – toggles element visibility

5.1.4 Options

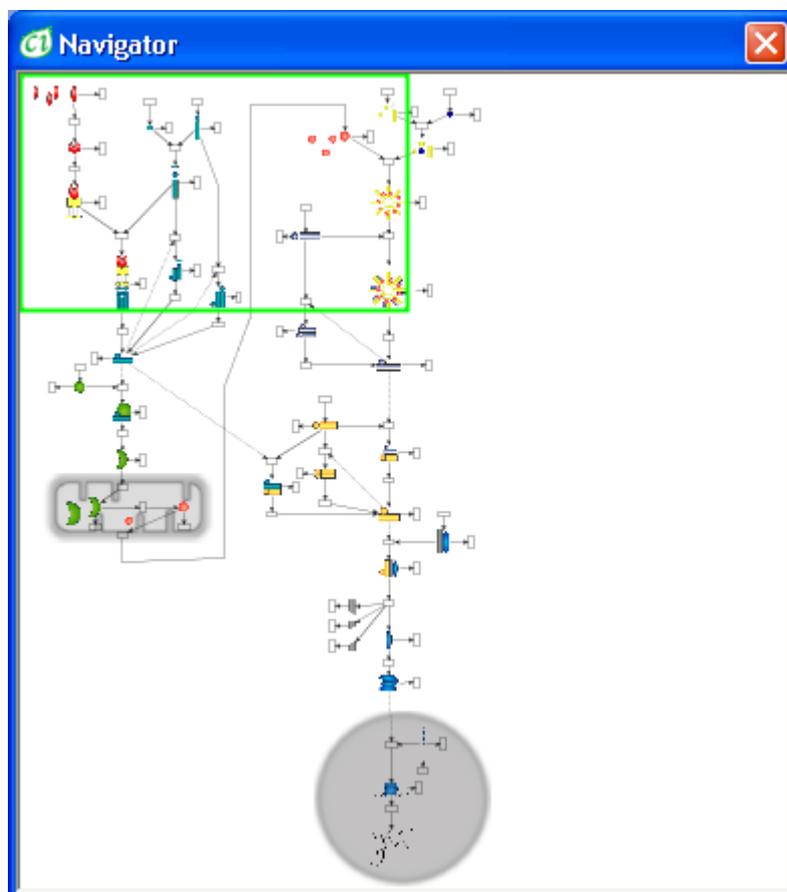
The bottom part of the Element Lists contains several options that control the *Entity, Process or Connector Table* display. The **Show Options** checkbox toggles the visibility of these auxiliary options:

- *Select Row/Column* – highlight rows or columns in the table. You can change the property value for all rows in the table at once.
- *Scroll this table when an element is selected in the canvas* and *Scroll the canvas when a row is selected in this table* – define interactions between selections in the canvas and in the Element List dialog
- *Sort By* list box – specifies sort criteria for the table rows.
- *Filter* checkboxes – specify filtering criteria for the table rows. The table can be filtered by element type. Allowed types are:
 - continuous, discrete or generic for entities and processes
 - process, inhibitory or association for connectors

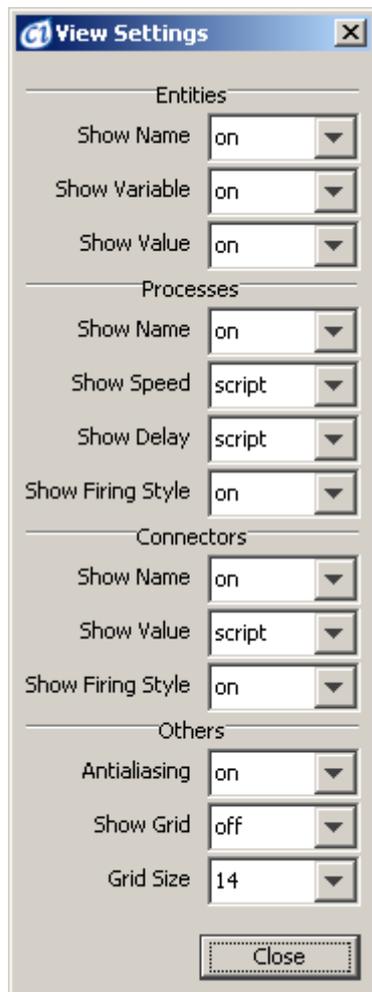
6 Navigator

For a large model, the Navigator dialog provides a convenient way to locate and display in the canvas window a desired part of the model. The Navigator displays a small view of the entire model, with a green rectangle marking the portion of the model currently shown in the active canvas. You can drag this rectangle around in order to navigate the model in the canvas window.

The Navigator dialog behaves in the same way in Cell Illustrator and CI Player.

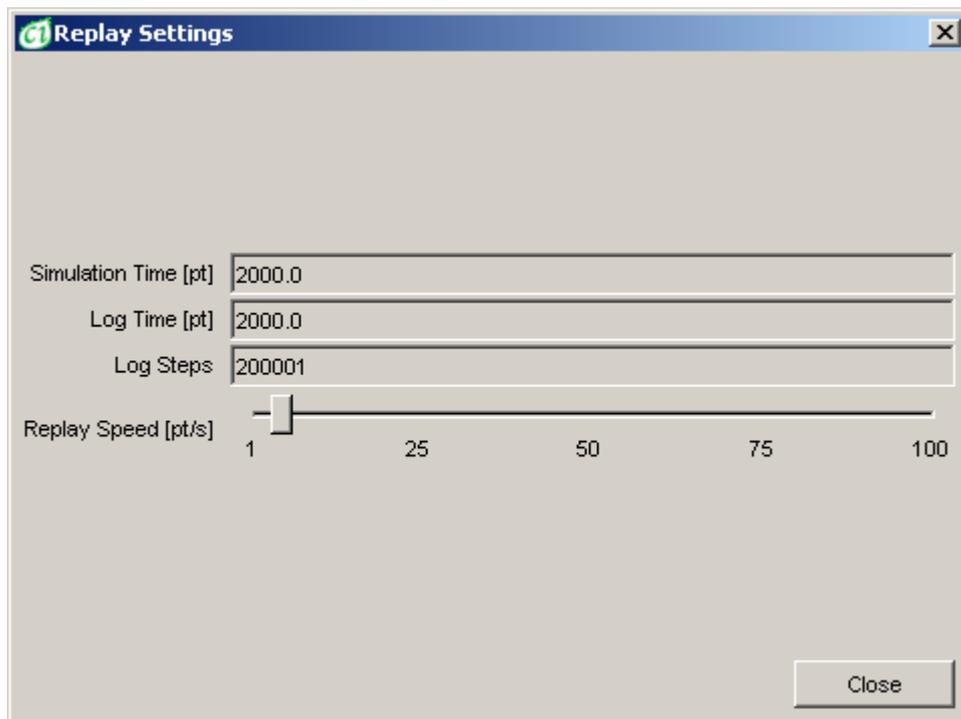


7 View Settings



This dialog allows you to set global model visualization settings for the Cell Illustrator Player. The view settings are stored as user preferences and apply also the next time you start the application. A change in the settings results in an immediate update of all canvas windows.

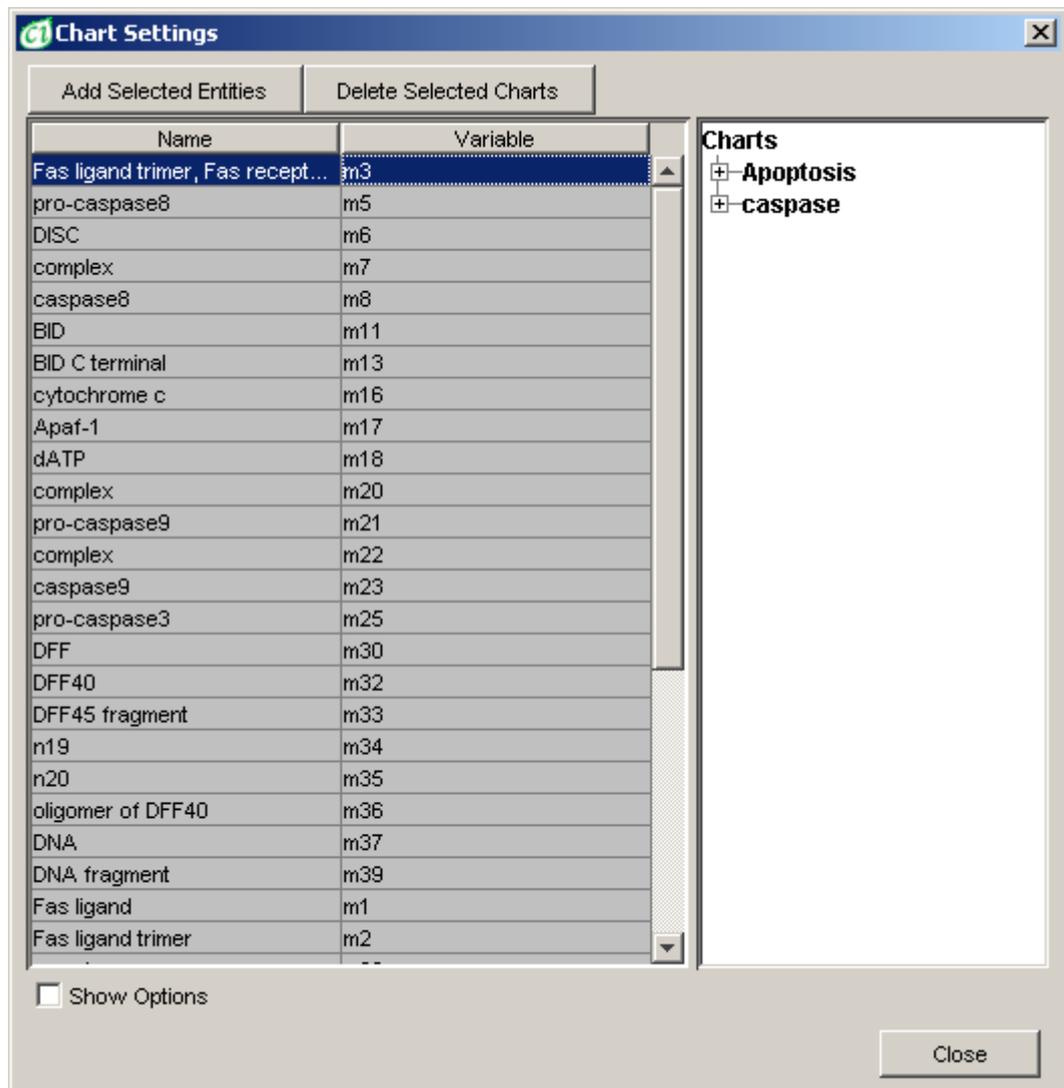
8 Replay Settings



In the Replay Settings dialog, you can set the replay speed and view the simulation parameters of the log file in the active canvas:

- *Simulation Time* is a parameter of the original simulation in Cell Illustrator. It specifies the duration of the original simulation run in Petri net time units (pt).
- *Log Time* specifies the duration of the simulation record in the log. If the simulation in Cell Illustrator finished normally then the Log Time is equal to the Simulation Time. On the other hand, if the simulation was interrupted, then the Log Time is shorter than the Simulation Time.
- *Log Steps* displays the number of steps that have been logged during simulation and that can be executed in the replay.
- *Replay Speed* allows you to specify the replay speed. In reality, the maximum replay speed is limited by the hardware on which the software runs. The *Replay Speed* control is disabled when a replay process is running. The *Replay Speed* setting is application-wide and it is not preserved in the log file.

9 Chart Settings



The Chart Settings dialog allows the creating and customizing of charts for the visualization of the simulation results. The charts display the concentration or amount versus time graphs – see [Chart Window](#).

In the Chart Settings dialog you can:

- create a new chart,
- edit/customize an existing chart, and
- remove an existing chart.

The *Entity List* at the left side of the dialog displays all entities in the active canvas that have been logged during simulation. Entities that were not logged during

simulation do not appear in the list. The list supports multiple selections – several entities can be selected at once.

The *Chart Tree* displays all defined charts and their properties on two levels. The main level of the tree is the list of charts labeled by the chart names. The leaves of the tree are entities that are included in the parent chart. One chart can include up to eight entities. Also, one entity can be included in one or more charts.

You can change the name of a chart by clicking on its label. The entity names cannot be edited in the *Charts Tree*. The *Charts Tree* supports multiple selections including all possible combinations of chart and entity nodes - several charts and entities can be selected at once.

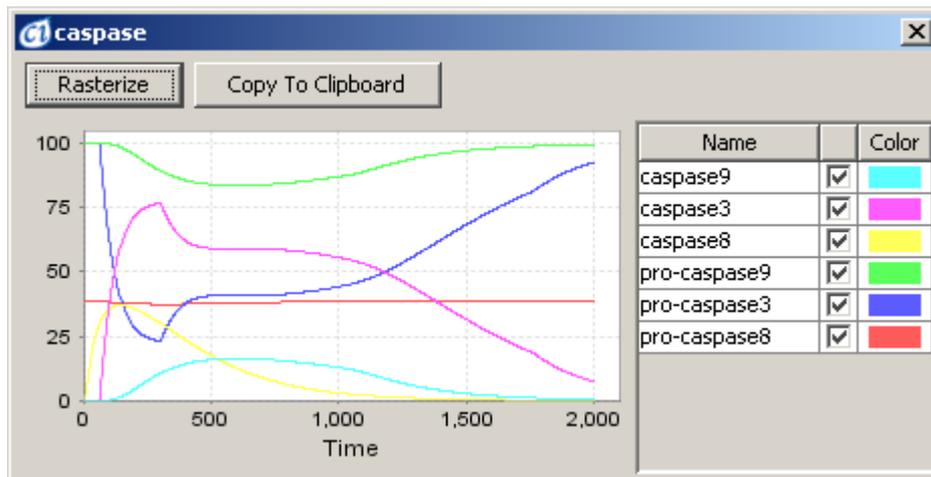
The *Add Selected Entities* button adds the entities selected in the *Entities List* to the chart selected in the *Charts tree* control. The entities appear as child-nodes of the chart node.

If no chart is selected, a new chart is created and the selected entities are added to it. The name of the new chart is the name of the first selected entity. If more than one chart is selected, the entities are added only to the first one.

Remove Selected Entities **deletes** selected items (charts and entities) in the *Chart Tree*. The set of replay charts defined for the model is modified accordingly.

10 Chart Window

The Chart Window functionality is the same in Cell Illustrator and the CI Player with the following exception: In Cell Illustrator, charts are created on the fly, as simulation progresses. On the other hand, in CI Player, a chart for the whole simulation time period can be created immediately after a log file is loaded into the application. During a replay process, a vertical line in the chart shows the time point that is visualized in the canvas at the moment.



Each Chart Dialog contains the list of the plots defined in the Chart Setting Dialog. Chart Dialog enables you to:

- display plots with time series of entity values,
- choose which of the plots are displayed or hidden,
- set properties of the Chart Dialog and the Plots (colors, fonts etc.),
- saving Chart Dialog as PNG files,
- zooming in, zooming out and auto ranging axes.

The Chart Dialog consist of the chart panel with the time series plots and the entity list panel.

10.1.1 Chart Panel

The chart panel presents how entity values change over time in the course of simulation and the time dependence of one or more entity variables in a chart.

You can see the value of the data point once you move the mouse cursor over it. You can zoom into a chart area by dragging the mouse over this area from upper left to the bottom right corner. To reset the original size drag the mouse in the opposite direction from the bottom right to the upper left corner.

Right-click on the chart control opens the popup menu:

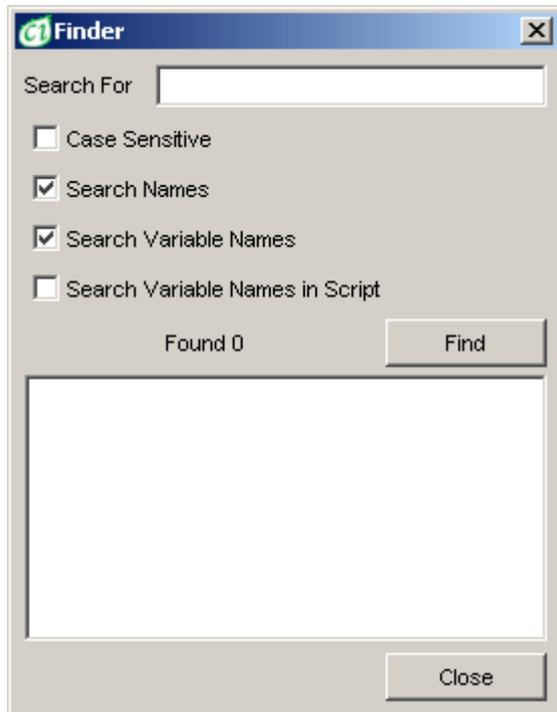
- *Properties* - set chart visualization properties.
- *Save As* – save the chart in PNG file.
- *Zoom In/ Zoom Out* – specify the range for x and y axis. Only the data points that fit that range will be displayed
- *Auto Range* – Automatically adjusts the range of X and Y axis.

10.1.2 Entity List Panel

The entity panel contains the list of entities displayed in the chart. It consist of 3 columns: Entity Name, Plot Visibility, Plot Color. In this panel you can:

- show or hide the plot associated with a given entity by clicking on the Visibility cell of a given entity.
- customize colors of data series in the chart by clicking on the Color cell of a given entity.

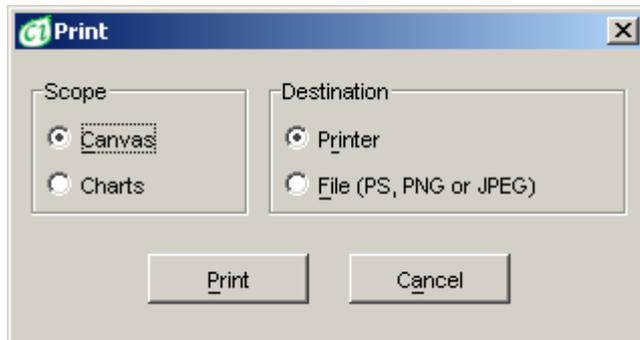
11 Finder



The Finder is a modeless dialog that allows searches for specified elements in the active canvas. The Finder dialog behaves in the same way in Cell Illustrator and CI Player:

- Search is performed in 3 steps: enter a search string into the *Search For* edit box, select search options using the checkboxes, and press the *Find* button.
- Regular expressions can be used to find groups of similar elements.
- Elements found in the search process are displayed in the *Search Results* list box at the bottom of the dialog. Also, the number of found objects is displayed above the list box.
- Clicking an item in the *Search Results* list box selects exclusively the corresponding element in the workspace. After clicking on a list item, one element is always selected in the workspace, regardless of how many elements are selected in the list. To select an object, the canvas that has been searched must be active. If the active canvas is changed after the search, the Search Results list is cleared.
- The program finds whole string matches only.
- The following object types can be found: entity, connector, process and hierarchical objects. One cannot use Finder to search for a group, even if it contains objects matched by the search.
- The *Close* button dismisses the dialog window.

12 Print Model



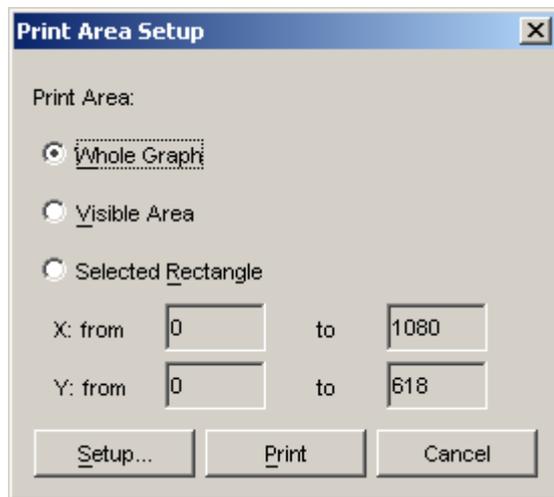
In the Print Model window, you can select the type of data to print and the destination for the print output. Either the model diagram or replay charts can be printed. The output can be sent to the printer or an image file on a disk in PostScript, PNG or JPEG format.

In case *Printer* is selected, clicking on the *Print* button opens the *Print* dialog box. In this dialog, you can set the details of the Print job, e.g., the target printer from a list of available printers, the page size, orientation and the margin size.

In case the *File* option is selected, clicking on the *Print* button opens the *File Save* dialog box. There you can select the desired file format (PostScript, PNG or JPEG) and the file name. Printing to a PostScript file is done using the service provided by your default printer. The quality of the output PostScript file depends on your printer setup. PostScript files created on computers connected to different printers might differ.

Print Model behaves in the same way in Cell Illustrator and CI Player.

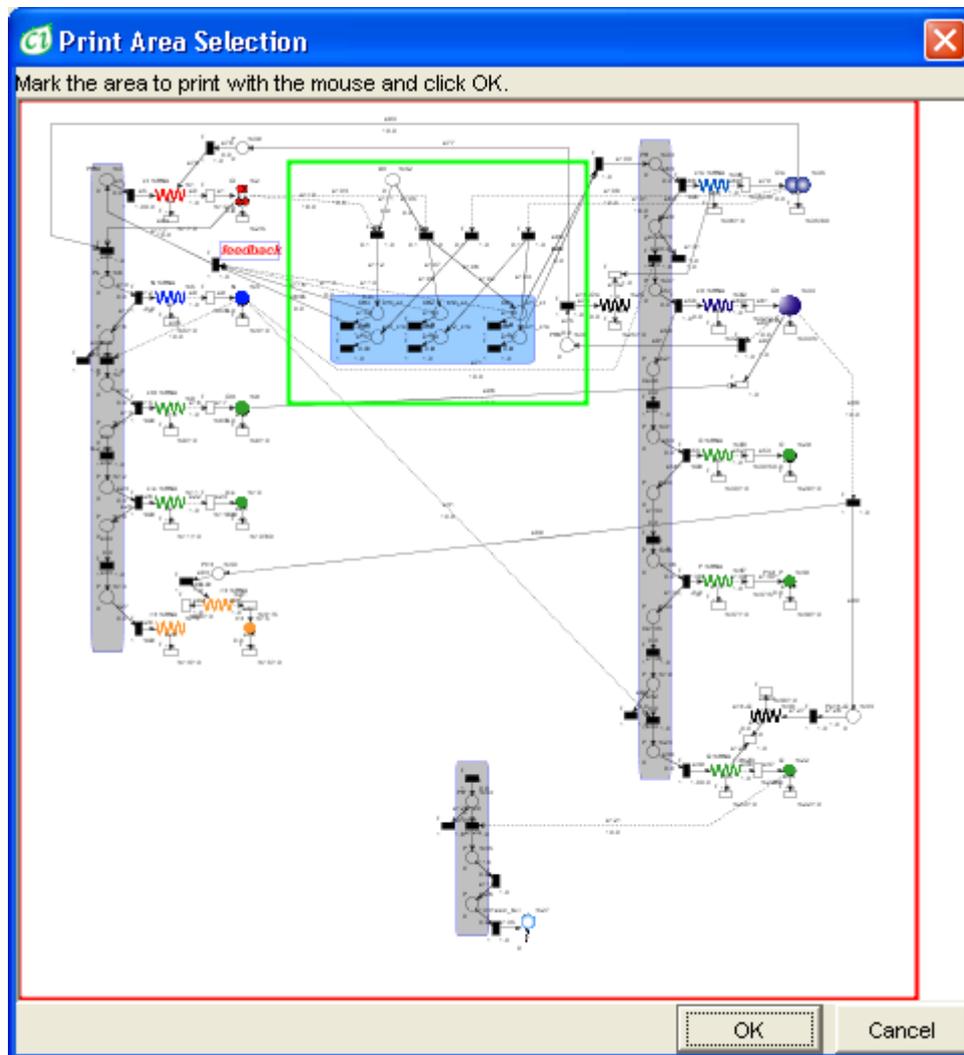
13 Print Area Setup



With the Print Area Setup dialog, you can specify which part of the model should be printed. Three options are available: *Whole Graph*, *Visible Area* and ***Selected Rectangle***. If the *Selected Rectangle* radio button is on, *From* and *To* edit boxes determine the portion of the model to be printed. The print area can also be selected graphically. The *Setup...* button opens the [Print Area Selection](#) window. After you made your selection press the *Print* button. This opens the [Print Model](#) dialog with additional options.

Print Area Setup behaves in the same way in Cell Illustrator and CI Player.

14 Print Area Selection



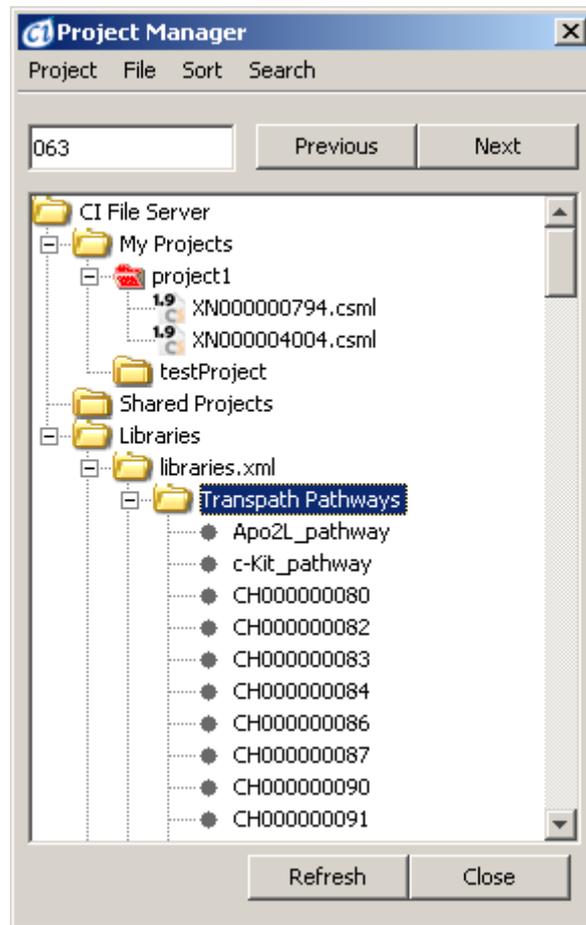
In the Print Area Selection window, you can select the area to be printed. Print Area Selection behaves in the same way in Cell Illustrator and CI Player. Click on the model display and drag the mouse to mark the area for printing with a green rectangle.

The *OK* button confirms the selection and closes the window. The *Cancel* button dismisses changes to the print area and closes the window.

15 Project Manager Dialog

CI Project Manager is a user interface to pathway models stored on *CI Online Server*. To access the remote *CI Online Server*, the user must be logged in. If you are not logged in, *CI Player* will display login dialog. If you do not have a Cell Illustrator account, you can register on main page of Cell Illustrator Online website.

CI Project Manager allows user to create, store, organize and share CSML models (e.g. pathways) and other data on a remote server. Additionally you can access public and proprietary pathway libraries using the Libraries section. Project Manager Dialog consists of menu containing *Project*, *File*, *Sort* and *Search* groups, simple search panel, and graphical file browser.



To find a pathway in project tree:

- Enter the search string, one or more characters, into the edit box
- Press the *Next/Previous* button to select the next/previous item that matches the search string.
- Browse through the search results or narrow the search by applying additional criteria.

To insert a biological element, proceed as follows:

- Select the desired element(s) in the project tree
- Click on the chosen tree item, drag it to the active canvas and drop it there by releasing the mouse button. You may also release the mouse over an empty space in the CI workspace; this will create a new canvas and drop the selected model there.
- Alternatively, choose the *Open* or *Insert into Active Canvas* from the File or context menu.

15.1 File Browser – Project Manager Tree

File browser contains 3 sections: My Projects, Shared Projects and Libraries.

15.1.1 My Projects

My Projects folder contains user's projects. User has full privileges to projects stored in this folder. To create new project user has to right-click *My Projects* and select *New Project* from the context menu.

Projects are displayed as yellow folder icons (as “testProject” in figure above). If you share project with other users – its icon is red (as for “project1” in figure above).

15.1.2 Shared Projects

Shared Projects folder contains projects that other users share with you. Depending on your privileges, you can read and/or write to these projects. You cannot delete shared project.

Note: The project owner can delete any of his projects. In such case, you will lose all information that you have created in shared project.

15.1.3 Libraries

Libraries folder contains files that can be imported into your models. You cannot in any way modify contents of this folder.

Note: Access to some libraries (such as Transpath) requires a special license-CI Online module.

15.2 Top menus

Top menus contain actions that can be performed by Project Manager. Options are active only in proper context. Additionally, all actually available options can be found in context menu that opens after right-click on item *Project Manager Tree*.

15.2.1 Project menu

Project menu contains options applicable to projects. It is active only for My Projects folder.

15.2.1.1 Upload

This allows you to upload local model to the server.

15.2.1.2 Upload from canvas

This allows you to upload model from active canvas to the server.

15.2.1.3 Remove

This command allows you to remove project from server.

15.2.1.4 Share this project

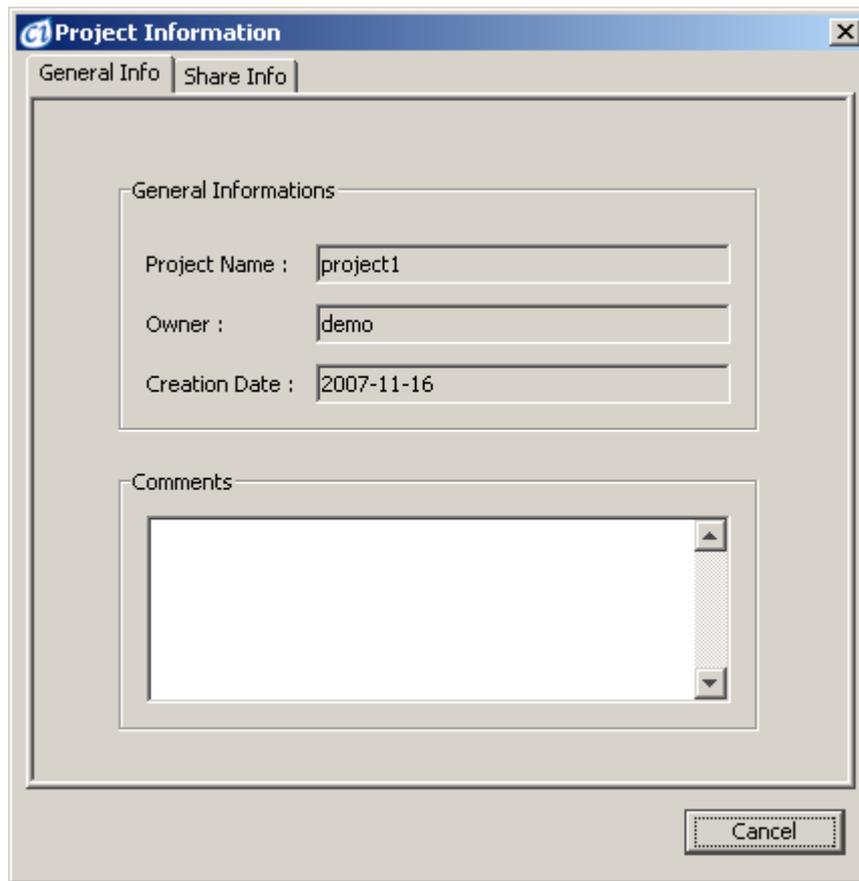
This command allows you to share project with other users. Selecting this option opens dialog, when you can add or remove users that you share project with. When there is at least one user in share list, project icon turns red.

15.2.1.5 Rename

This command allows you to rename project.

15.2.1.6 Information

This command shows Project Information dialog:



15.2.2 File menu

This menu is active only when file is selected in file browser. Some actions may be inactive in Libraries and Shared projects folders.

15.2.2.1 Open

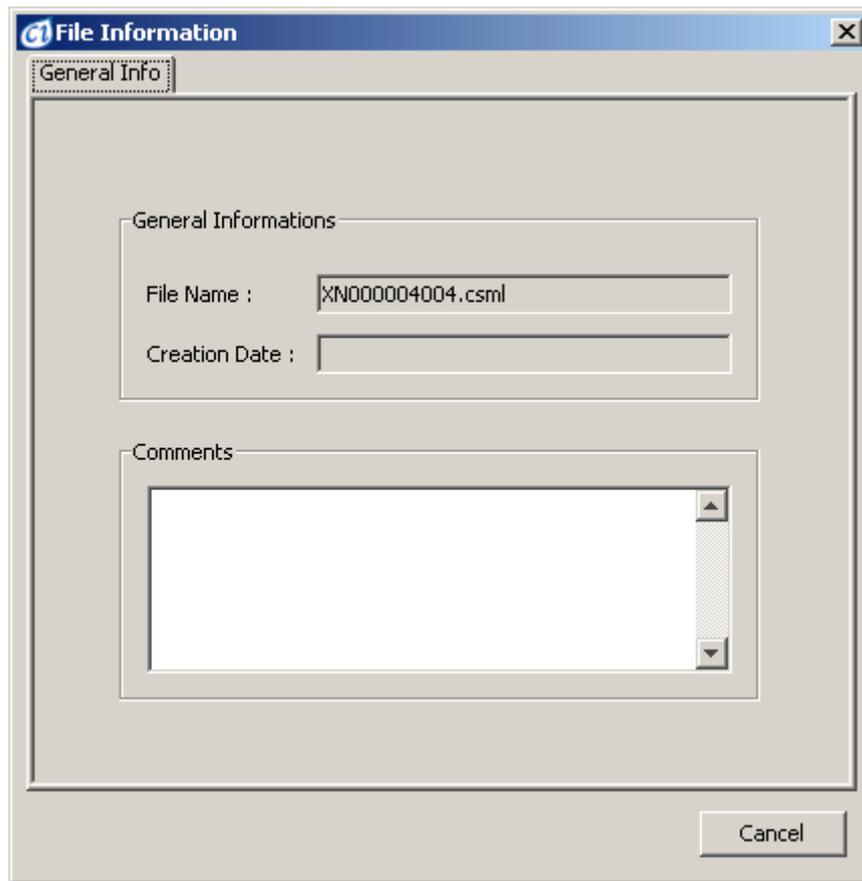
Opens file into new canvas.

15.2.2.2 Save as

This option allows user to save file from Project Manager to local disk.

15.2.2.3 Information

Displays File Information dialog:



15.2.2.4 Insert into active canvas

This option imports selected file into active canvas

15.2.2.5 Remove

This option allows user to remove file from Project Manager. User can remove files only from “My Project” folder.

15.2.2.6 Rename

This option allows user to rename file. User can rename files from “My Projects” folder only.

15.2.3 Sort

In this menu you can set files order: by name or by creation date

15.3 Simple Search Panel

Simple Search panel allows the user to find files containing given string. To find an item in the *Project Manager* tree: specify the filename to be search for (or part of it), press the *Previous* or *Next* to select the next/previous search results.

16 About Cell Illustrator Player

About Cell Illustrator Player is a modal dialog that contains three tabs: The *Version* tab contains the version number and the copyright information. The *License* tab displays the End User License Agreement text from the license file. The *Serial Number* tab displays the license serial number and the customer data contained in the license file.