

content creation tool **user's guide**

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What is Impression?

The Impression Learning Content Framework (LCF) is a system for creating computer-based training. It consists of two primary pieces, a **Content Creation Tool (CCT)** and a Runtime Engine Development Kit (RTE DevKit). Together, these two items provide the tools needed to create rich interactive e-learning.

How does it work?

The Impression LCF system is designed to create individual units of instruction called **lessons**. A lesson consists of a specially formatted XML file and associated multimedia assets. The lesson XML file includes data describing the visual layout of each screen (or storyboard), the storyboard content (including directions to the student), the multimedia assets used by the lesson, storyboard interaction, control instructions, and sequencing data.

The created lessons are presented to the student using a custom player called a **Runtime Engine (RTE)**. The RTE loads the XML file, then sequences and displays the content to the student. In addition, the RTE loads multimedia assets on demand, tracks, and manages the student's interactions with the lesson, and (if desired) reports the student's progress back to a Learning Management System (LMS).

Although lesson XML files can be created with any tool, even Microsoft Notepad, the Impression CCT was designed specifically for the development of lesson files. During production, the CCT stores lesson data in a centralized data store called a content database. The database also contains configuration information that is used to present a customized authoring environment to content developers that closely matches the intended playback system, helping to enforce standardization and minimize content-creator workload.

The custom players used to present lessons are created using the *Runtime Engine Developer's Kit* (RTE DevKit). This kit includes the **Base Class Framework**—nearly 40 Macromedia Flash ActionScript 2.0 classes that provide functionality for working with the

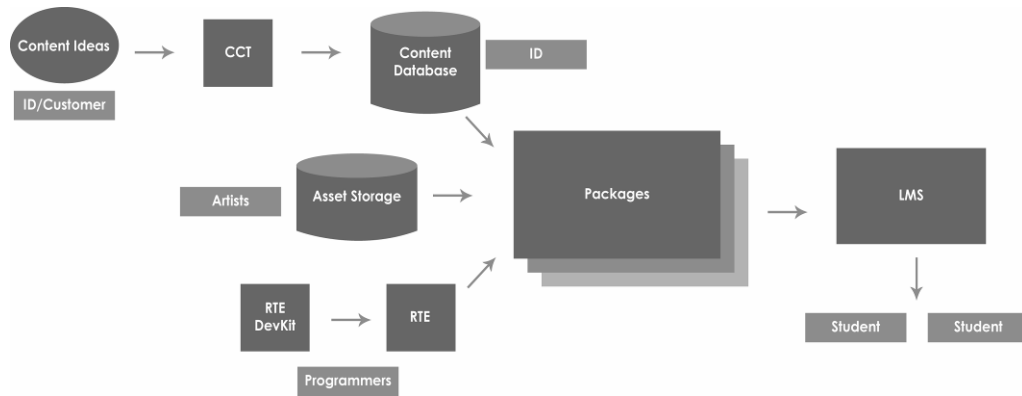
lesson XML files, including data processing, display management, and sequencing and control. Software developers use the Base Class Framework to develop a unique solution completely customized to meet project goals.

Ultimately, the lesson XML file, associated multimedia assets, and custom RTE are packaged together as a single lesson, and are then ready for deployment and use.

Production process

There are typically four main steps in the courseware production process: preproduction, production, packaging, and deployment.

Impression LCF



Preproduction

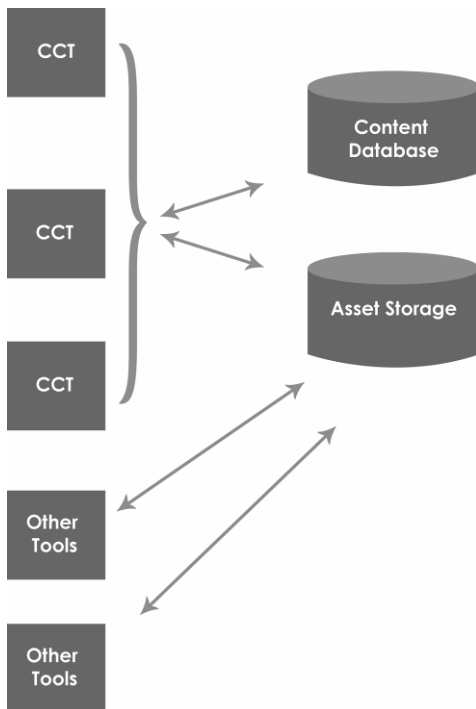
Infrastructure decisions should be made during the preproduction phase of development, including runtime look and feel, deployment and LMS interface options, and production structure. Note that these decisions do not need to be “cast in stone,” but the more of them that are finalized, the smoother the production process will be.

Tip: The *Impression New Project Manager's Workbook* is designed to support the preproduction process.

Production

The production phase occurs when the courseware is actually developed. At this time, the instructional designers, subject matter experts, or other content creators use the Impression CCT to develop the individual units of instruction. In conjunction with lesson creation, media artists create the multimedia assets that will accompany each lesson. These assets are stored in a centralized location and are accessible to CCT users, who select and incorporate the assets into the instructional material. During content development, the project programmers use the RTE DevKit to develop the courseware runtime engine.

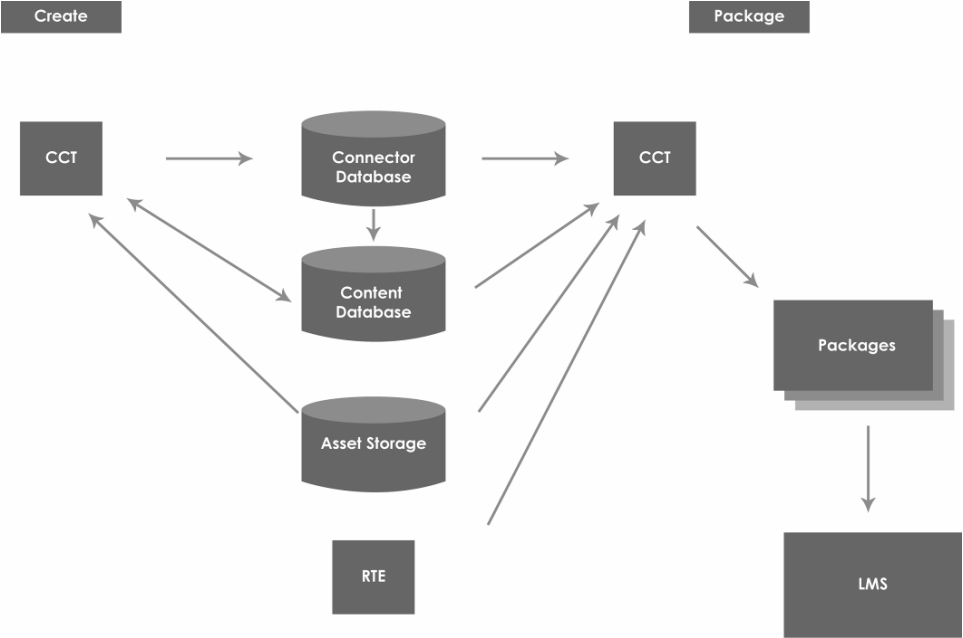
Content Creation Process



Packaging

When a lesson is ready for release, it is **packaged**. The details of the packaging process are usually unique to a project; but generally, packaging is the process of extracting the lesson XML from the content database and copying it, its associated multimedia assets, and the custom RTE to a single location for deployment. At the conclusion of the production process, courseware typically consists of a number of these packages.

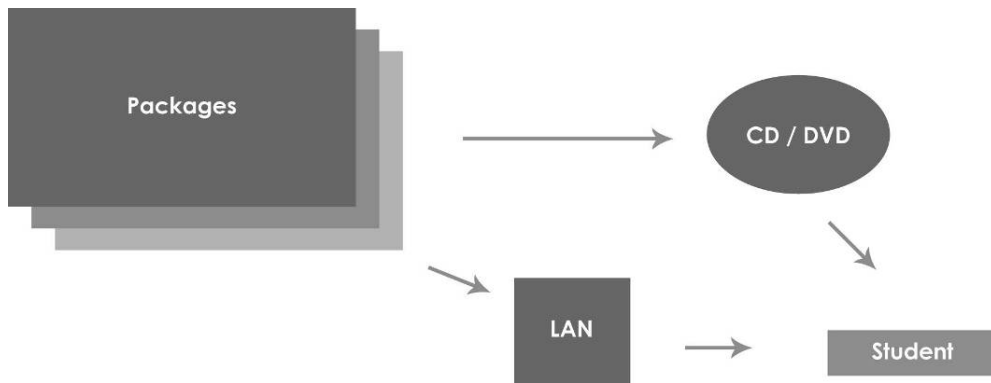
Packaging Process



Deployment

Depending on the project's requirements, content may be deployed as a standalone CD-ROM, within a Local Area Network (LAN), or available as a web-based application accessed through an LMS. Regardless of the final environment, the lessons, once packaged, are ready to be deployed.

Deployment Options



Chapter 2

primary windows/quick tour

Primary windows

Although the Content Creation Tool (CCT) provides a great deal of functionality, the majority of your time as a content creator is spent in a few key areas: the Groups window, Lesson Editor, and Guide Editor. Another key area, the Import/Export Wizard, packages content for distribution. This section identifies those areas, their purpose, and some of their major functions.

Groups window

The Groups window is the first display shown after the program has finished initialization and the splash screen has closed. This window displays a complete list of the content accessible from a database. The Groups window is the place to select a lesson or guide for editing.

The Groups window includes functions for changing databases and database modes, editing lessons and groups, modifying Project Properties, and managing user rights.

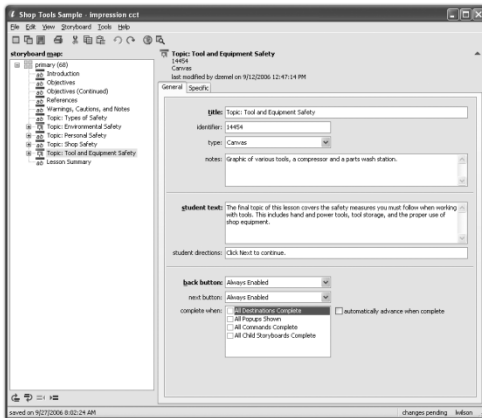
Groups window



Lesson Editor

The Lesson Editor is the single location for editing lessons. It contains tools for editing and arranging **storyboards**, the building blocks of lessons. You can also print reports, access the Import/Export Wizard, create and restore lesson milestones (snapshots of your lesson data), and (if supported) preview your lesson.

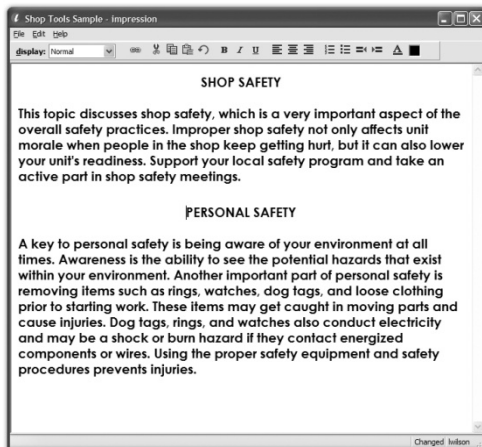
Lesson Editor



Guide Editor

The Guide Editor is the single location for editing guides. Guides are optional lesson companion pieces for instructors to use in conjunction with the runtime.

Guide Editor



Import/Export Wizard

The Import/Export Wizard exports lessons and imports previously exported lessons. Content must be exported from a content database for it to be available for later import or delivery.

Import/Export Wizard



Quick Tour

This Quick Tour provides a basic run-through of the most common parts of the CCT.

This document is divided into two sections, *Administrative Tasks* and *User Tasks*. As a content creator, the majority of your time will be spent completing user tasks. The steps required to create, edit, and publish (or as we call it, package) content-completed lessons. However, in order to show you the CCT capabilities—without harming any existing data or requiring any additional setup steps—you must first perform the administrative tasks.

Do not worry, unless you are responsible for managing your project's content database, the administrative tasks can be safely forgotten. If you are responsible for managing a content database, refer to the *Impression Content Creation Tool Administrator's Guide* and the *Impression New Project Manager's Workbook* for more information.

Administrative tasks

This section details the steps necessary to create and prepare a content database for use.

In this section, you will:

- Create a content database
- Set project-specific options
- Create a course hierarchy

Let's get started

1. Begin by running the Impression CCT. The program will start and, after the splash screen disappears, the Groups window will be displayed. If you have previously opened a content database, it reopens and the groups and lessons for that database will be shown. If you have not previously opened a content database, a message will be displayed.
2. Ensure the CCT is set to work with Microsoft Office Access .MDB files by choosing the *Change Database Mode* command from the File menu of the Groups window. Use the drop-down list in the Choose Database Mode dialog to select *Access MDB files*, and then choose *OK* to close the dialog.
3. Create a new content database by choosing *New Database...* from the File menu. A standard Windows "Save As" dialog will appear. Select a location and a filename (the actual values do not matter), and then click *Save*. The database will be created at the specified location.
4. The CCT automatically opens the newly created database. Because there are no project-specific options set for the new database, a message will appear reminding you to select the options using the Project Properties dialog. *There are nearly 150 project-specific properties that can be set for a content database. To save time, we are going to "cheat" and load an existing set of options.*
5. To set configuration information, choose the *Project Properties* command from the Tools menu of the Groups window. The Project Properties dialog appears.
6. Choose the *Import Properties...* command from the File menu. A standard Windows "Open" dialog will appear. Using the dialog, open the **quicktour Project Properties.xml** file located in the **\SampleData** folder found in the CCT folder. By default, the CCT is installed in **C:\Program Files\Impression\CCT**. A confirmation message will appear, indicating successful import. Choose *OK* to close the message, and then choose *Save Changes* to update the content database with the imported properties. Finally, choose *Close* to exit the Project Properties dialog and return to the Groups window.

7. Choose *Lesson/Group Editor* from the Tools menu of the Groups window. The Edit Groups window will appear. From the Lesson menu, choose *Add New Lesson/Group...* The Add/Edit Group Window will appear.
8. Change the title of the lesson to “**Sample Lesson**” by typing it in the title textbox provided, and ensure that the *group is a lesson (supports storyboards)* checkbox is checked. Choose *OK* to close the Add/Edit Groups window and return to the Edit Groups window.
9. Choose *Save* to commit your changes to the database, then choose *Close* to exit the Edit Groups window and return to the Groups window.

Congratulations! You have created a new sample database, set its Project Properties, and added a simple course hierarchy. Either continue this Quick Tour directly from the Groups window or get a fresh start by closing the application.

User tasks

This section introduces the CCT components that you, as a content developer, will use most often.

In this section, you will:

- Select a lesson for editing
- Create and edit a new storyboard in a lesson
- Preview the storyboard
- Package a lesson for distribution

Let's get started

1. Begin by running the Impression CCT. The program will start and, after the splash screen disappears, the Groups window will be displayed. If you have previously opened a content database, it reopens and the groups and lessons for that database will be shown. If you have not previously opened a content database, a message will be displayed.
2. Select the lesson titled *Sample Lesson* by clicking on its node in the Groups window's content selector. There are three options for opening the lesson: a) double-click on the node, b) choose the *open lesson* button in the bottom-right corner of the Groups window (verify that the *open read-only* checkbox is cleared), or c) select *Edit Lesson* from the File menu. The Groups window will close and the Lesson Editor window will appear.

3. From the Storyboard menu of the Lesson Editor, choose *New*, and then *Storyboard*. A new storyboard will be created and then selected for editing. Ensure the General tab is active by selecting *General Properties* from the View menu. Change the storyboard type to canvas by selecting *Canvas* from the *type:* drop-down list.
4. Change the title and student text by typing it in the boxes provided, and then switch to the Specific tab by clicking on it.
5. Select a background graphic by clicking on the *ellipsis* button (...) inside the right edge of the *Background* element, located at the top of the screen under the General and Specific tabs. A selection dialog called the Media Asset Picker will appear. Choose a graphic from the list on the left, and then choose *Select* to select the graphic and close the dialog. The editor updates to reflect your selection.
6. Add a shape element to the Canvas by selecting the *shape icon* (a collage of circles and rectangles) to the right of the *add:* label on the right-hand side of the Lesson Editor window. The main display will dim, indicating that the editor is ready for you to draw. Draw on the main display by dragging and then releasing the mouse.
7. Change the type of the shape to a circle by clicking on the circle icon next to the *shape:* label in the appearance frame. Next, fine-tune the position of the element. Click on the name of the element in the *list:* box to change its position. Change the values in the layout panel, or click on one of the grab-handlers (the small squares around the edges of the element's bounding rectangle) to change the element's size.
8. Preview this storyboard by choosing *Preview Storyboard* from the Tools menu. When you are finished, close the preview window, and return to the lesson. *Note that you are viewing your content in the specifically assigned runtime engine for this project. Runtime engine appearance varies on a per - project basis; your specific runtime will look different than the one included with this Quick Tour.*
9. Ensure the element is selected by clicking on its name in the *elements* list: box. Change the behavior associated with the element by choosing *pop-up text* from the action drop-down in the behavior frame. Enter some text into the pop-up and then choose *Preview* again to see the updated storyboard. *To view the pop-up text, press and hold your mouse button while inside the circle. To restore the default student text, release the mouse button.*
10. Now that the lesson is complete, package it using the Import/Export Wizard. From the File menu of the Lesson Editor, choose *Import/Export Wizard*. The Import/Export Wizard will appear. Choose *Package Lesson* from the listbox, and then choose *Next*.

11. Based on your preference, either choose a custom location for the package by clearing the *use project default setting* checkbox and specifying a location for the package (by entering a folder name), or using the default value provided. When you are finished, choose *Next*. If you choose to use a custom location, you may be prompted to confirm folder creation or content overwriting.
12. Choose *Package*. The wizard will create and copy files as needed. When complete, choose *Close* to exit the Import/Export Wizard and return to the Lesson Editor.

Congratulations! You have successfully created and modified a lesson, previewed your changes, and packaged the lesson for distribution.

Where do we go from here?

Return to the Groups window by choosing *Close Lesson Editor* from the Lesson Editor File menu.

- Close the CCT using the *Exit* command on the File menu or the Windows close button in the upper-right corner.
- View your packaged lesson by running the MyShell.EXE application located in the packaged lesson folder that you specified in step 11, above.
- Take the packaged lesson (from the folder you specified in step 10) and import it as a SCORM object into your LMS (following the instructions in chapter 11, importing, exporting, and packaging).

About Impression databases

The Impression Content Creation Tool (CCT) stores its lesson content and configuration data in a centralized repository called a **content database**. Content databases should be created on a per-project basis because the customization options apply to all content stored within the database.

Content database formats

Impression uses content databases stored in Microsoft SQL Server or databases created as standalone, Microsoft Office Access-compatible .MDB files. In both cases, the structure of the database itself is identical. Unlike a Microsoft Access-format content database, SQL Server content databases are accessed indirectly through the **SQL connector database**, which also manages user access to the SQL Server content databases.

Using SQL Server content databases

An SQL Server content database is an Impression content database served by a machine running Microsoft SQL Server. As mentioned above, SQL Server content databases are retrieved indirectly through the SQL connector database, which also manages user access to the content databases. In order to use the SQL Server, you will need the connection information. This information includes the machine name, login ID, and password of the SQL Server account authorized to access the SQL connector database.

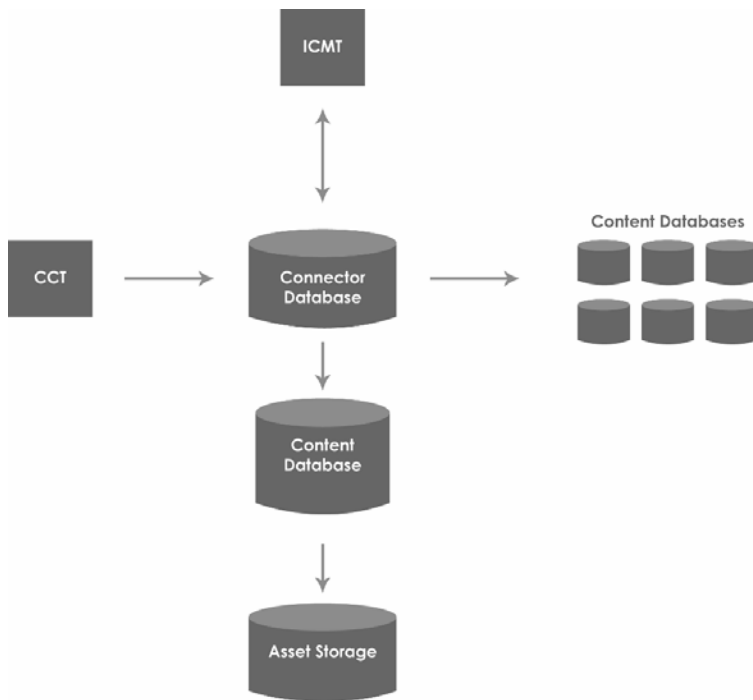
SQL Server access rights

The Impression CCT supports access rights when using SQL Server data storage. Access rights are defined on a per-user basis for each content database.

The following access rights are defined:

- *Content Creators/Users* edit content in databases where they have been assigned rights.
- *Administrators* can perform all actions that users can perform, plus they can add, remove, and rearrange lessons and groups, change Project Properties, edit content connection information, add new users, and add and remove access rights (including administrative access) for users.
- *Superusers* can act as administrators for all content databases defined on a server. They can also permanently remove users from the system and create and delete content database connection information.

SQL Server Structure



Opening an SQL Server content database

Opening an SQL server content database is simple. Click on the drop-down menu and select the file from the drop-down list generated by the connector database based on your access rights.

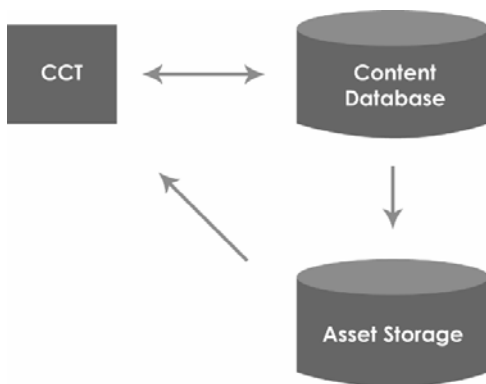
Using Microsoft Access content databases

Microsoft Access-format content databases are the central repository for data stored in .MDB format. Note that Microsoft Access is not required to create and use .MDB databases. There are no user-specific rights; anyone who can enter the system is an administrator with full access to the data.

How to create a Microsoft Access database:

From the *File* menu of the Groups window, select *New Database*. Specify a directory (folder) and filename for the content database, then choose *Save*. A new .MDB content database with the name you chose will be created at the location you specified. Once created, the CCT will automatically open the new database.

Microsoft Access Database Structure



How to open an existing Microsoft Access database:

From the *File* menu of the Groups window, select *Open Database*. When the Open Impression Database dialog displays, select the desired content database and then choose *Open*. The CCT will validate and open the database.

Chapter 4

selecting a lesson/guide for editing

Overview of the Groups window

The Groups window is the first window shown after the program has finished initialization and the splash screen has closed. This window displays a complete list of the content accessible from a database. The Groups window is the location for selecting a lesson or guide for editing.

In addition to providing access to lesson and guide editing, the Groups window includes functions for switching between databases and database modes, editing lessons and groups, modifying Project Properties, and managing user rights.

Content selection

Content (both lessons and, if supported, guides) can be opened either for editing or read-only review.

Editing

Opening a lesson or guide for editing allows the user to add, change, and delete content and store the updated information in the database. Only one user may open a lesson or guide for editing at a time.

Reading

Both lessons and guides can be opened in a read-only mode. While opened for reading, all content can be reviewed, reports printed, and data exported. No changes are permitted. Any number of users may open a given lesson or guide in read-only mode.

Tip: It is important to note that a read-only copy of a lesson or guide is just that—a read-only copy, or snapshot, of a lesson or guide. Changes made while the lesson is open are not reflected in the read-only copy.

Locking

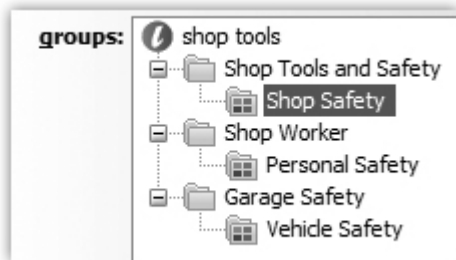
The Content Creation Tool (CCT) issues locks when a user selects a lesson or guide for reading or editing. These locks are deleted when the item is closed. As noted above, there is no limit on the number of read locks that can be issued for a lesson or guide. Only one lesson write lock and one guide write lock can be issued for a given lesson. This ensures that multiple users do not overwrite each other's data. For more information on content locking, refer to Appendix A.

Using the content selector

The content selector is Impression's treeview, or hierarchical list. It displays an organized view of the content contained within the currently selected database. Located in the Groups window, it is where content is selected for editing. Note that only lessons are editable; groups are not, as they contain no content of their own.

To select a lesson, double-click on it, select Edit Lesson from the File menu, or select a lesson, and then select open lesson.

Content selector



Groups window commands

There are a number of commands related to editing, reading, and locking lessons available from the Groups window. The following items are available on the Group window's Tools menu for editing and managing CCT content databases.

Preview Lesson

This menu item is only available if previewing has been enabled for the content database. If available, it allows previewing of the selected lesson. Refer to Chapter 11 for additional information on previewing.

Lesson/Group Editor

This menu item opens the Lesson/Group Editor, a tool for adding, deleting, renaming, and rearranging lessons and groups. Refer to Chapter 3 in the *Impression Content Creation Tool Administrator's Guide* for additional information.

Project Properties

This item opens the Project Properties dialog, which allows administrators to customize the appearance of the CCT for a particular project. Refer to Chapter 4 in the *Impression Content Creation Tool Administrator's Guide* for additional information.

Lock Manager

This item opens the Lock Manager, which provides a detailed display of all locks currently in the content database. Refer to Appendix A for additional information.

Connector Management

The Connector Management menu item opens the Impression Connector Management Tool where database administrators and superusers can add, delete, and manage databases and users. Refer to Chapter 2 of the *Impression Content Creation Tool Administrator's Guide* for additional information.

Storyboard editing

Storyboards are the building blocks of lesson content created in the Impression Content Creation Tool (CCT). A storyboard is an individual screen of instructional material. Storyboards have data elements shared by most types (editable from the General tab) and those that are unique to a particular storyboard type (editable on the Specific tab). Each individual storyboard is placed in order on the storyboard **map**. Typically, the top-to-bottom display of storyboards represents the beginning-to-end flow of the lesson.

This chapter will explain the basics of creating, editing, and managing your storyboards.

Creating storyboards

Creating a storyboard will add a new blank storyboard to your project.

How to create a new storyboard:

From the Storyboard menu of the Lesson Editor, choose *New*, and then select the desired storyboard type.

Editing storyboards

Use both the General and Specific tab to enter storyboard content. To edit generic storyboard data, use the General tab. To edit type-specific storyboard data, use the Specific tab. Additional information on storyboard editing is available from Chapter 6.

Saving storyboards

Choosing the *Save* command from the *File* menu stores the lesson data in the database. The CCT can, based on user preferences, automatically save content changes when you exit a lesson or switch between storyboards. You can change the autosave behavior from the Preferences dialog (available from the Tools menu of the Lesson Editor).

Arranging storyboards

Storyboards within a lesson must be arranged to reflect the particular organization needed for your project. The map located on the left-hand side of the Lesson Editor displays the order of the storyboards within the currently opened lesson. The flow of storyboards within the lesson normally follows the top-down order of the lesson map. This order can be changed at any time using the storyboard movement commands.

Storyboard movement commands:

Command	Description
<i>Move Up</i>	This command swaps the position of the selected storyboard with its previous sibling.
<i>Move Down</i>	This command swaps the position of the selected storyboard with its next sibling.
<i>Indent</i>	This command makes the current storyboard a child of its previous sibling.
<i>Outdent</i>	This command makes the current storyboard the next sibling of its parent.
<i>Move to Next Map</i>	If a secondary map is supported, this command makes the current storyboard the first top-level storyboard in the next map. If storyboards already exist in the next map, the current storyboard becomes their first sibling.
<i>Move to Previous Map</i>	If a secondary map is supported, this command makes the current storyboard the last top-level sibling in the previous map.

How to use the storyboard movement commands:

From the Storyboard menu of the Lesson Editor, choose the desired movement command.

Edit menu commands

The Impression CCT provides text clipboard support to data entry elements such as text boxes. Supported edit commands include *Cut*, *Copy*, *Paste*, *Select All*, *Undo*, and *Redo*.

Undo and redo

The Lesson Editor supports multiple undo and redo actions. Any action performed in the Lesson Editor that changes data can be undone.

If you change your mind about one of your recent edits, simply use the *Undo* command to reverse the edit. Your changes will be undone in the sequential order in which they were created. If you decide that you would rather keep the change, choose the *Redo* command.

The most recent undone change is reapplied. Undo and Redo are available from the Edit menu of the Lesson Editor.

Save commands cannot be undone; however, the edits enacted prior to the *Save* command are undoable. If you resave the data restored by one or more *undo* commands, you may be able to restore the lesson to its original state. Created milestones are not undoable, but previously created milestones can be deleted in the milestones dialog.

Selecting media

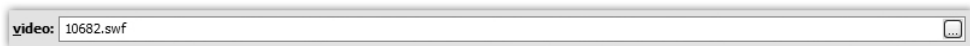
Many storyboard types support external media files that can be added using the Specific tab. Clicking on the ellipsis button to the right side of the file type will bring up the “Media Asset Picker” for that particular media asset. Note that “Media Asset Picker” is a generic term for the media selection tool; the actual title of the selection tool will vary based on the media element being selected. When the Media Asset Picker window appears, it will list all of the available files in the media folder that match the preferred file type for the element being edited. For example, if the current element is a Flash Object, a list of Flash .SWF files will appear in the Picker.

Media file insertion

Use the Media Asset Picker to assign still graphic, sound, and Flash Video files.

As just mentioned, each media asset type has an associated selector. To select a file, click on the ellipsis (...) button. When the Media Asset Picker dialog appears, it will display a list of files of the preferred type. To change the list, select a different item from the *type:* combobox. Select a media file from the list by clicking on it. The file will be displayed in the preview pane. Click *Select* to choose the file and dismiss the dialog or *Cancel* to dismiss the dialog without selecting a file.

Clicking ellipsis button (...) menus, like the one shown here, causes the Media Asset Picker to appear.



Deleting and recovering deleted storyboards

You can delete single and multiple storyboards using the Storyboard menu available in the Lesson Editor. If a storyboard has one or more children listed in the map, you can choose to delete the storyboard and all of its children, or only delete the storyboard itself without deleting the children. If the children are not deleted, they are “promoted,” or outdented to their parent’s level.

How to delete a single storyboard:

Select a storyboard without children in the map, and then choose *Delete Storyboard* from the Storyboard menu. If you checked the *prompt when deleting a single storyboard* box in the Lesson Editor Preferences dialog, a dialog will be displayed asking you to confirm deletion; otherwise, the storyboard will be deleted without confirmation.

How to delete multiple storyboards:

Select a storyboard with children in the map, and then choose *Delete Storyboard* from the Storyboard menu. A dialog will be displayed asking you if you wish to delete only the selected storyboard, or the selected storyboard and all of its children. Choose *delete selected and child storyboards*, then choose *Delete*. The storyboard and all of its children will be deleted.

How to delete a single storyboard with child storyboards:

Select the storyboard, and then choose Delete from the storyboard menu. Choose *delete selected storyboard only* in the dialog displayed; finally, choose *Delete* to perform the action. The storyboard will be deleted, and its children will be promoted to the deleted storyboard's level.

The delete multiple storyboards dialog allows you to choose whether to delete all indented storyboards associated with your selection or the selected storyboard only.



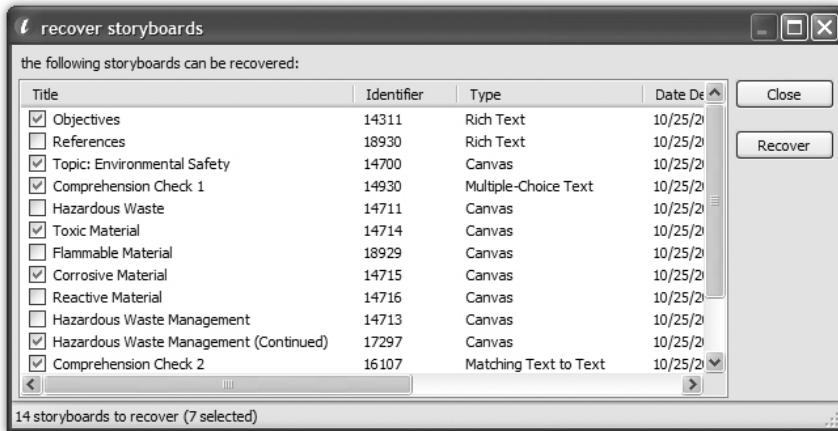
How to recover previously deleted storyboards:

In addition to using the undo command to undelete storyboards, you can recover any storyboard previously deleted, including those deleted during earlier editing sessions.

To recover previously deleted storyboards, choose the *Recover Deleted Storyboards* command from the Storyboard menu. The recover storyboards dialog is displayed. Select the storyboards that you want to recover from the list, and then choose *Recover*. Choose *Close*

when you are finished recovering storyboards to dismiss the dialog and return to the Lesson Editor.

Recover storyboards selector



Deleting recovered storyboards

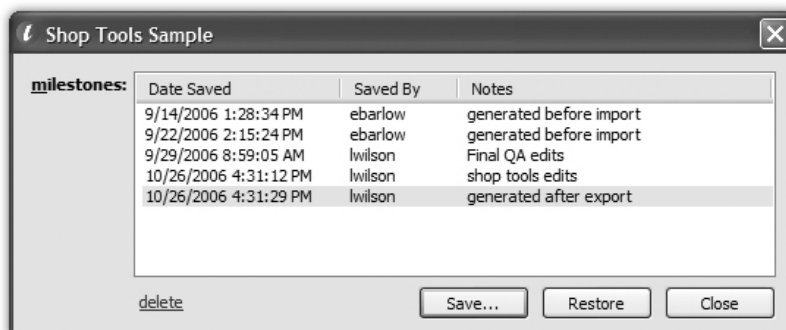
If you decide not to keep the recovered storyboards, either choose the delete command to delete them again, or use the undo command to undo the recovery action.

Milestones

A milestone is a “snapshot” of a lesson and consists of all lesson and guide data (including deleted storyboards) associated with the currently open lesson. Milestones can be created in the Lesson Editor or the Guide Editor during any stage of the content creation process. You can create as many milestones per lesson as desired.

Milestones are intended to provide you with an extra level of data protection in case an extensive change, such as a data import, does not meet your expectations.

The milestone dialog is used for saving (creating) and restoring milestones.



How to create a milestone in the Lesson and Guide Editors:

Select *Lesson Milestones* from the File menu. The Milestones dialog appears and a list of the milestones created throughout the course of the lesson is displayed (if no milestones have been previously created, the box will be empty). Choose *Save*. Enter a short description of the milestone in the *Notes* field, and then choose *OK*. The data will be saved to the database and a confirmation message will be displayed.

Tip: If no milestones have been previously created, the dialog box will be empty.

Restoring a milestone

When a milestone is restored, all previous lesson data is replaced with the data from the restored milestone.

CAUTION: Content replaced when a milestone is restored is not recoverable through the Recover Deleted Storyboards dialog, but it can be restored by enacting the restore command.

How to restore a milestone in the Lesson and Guide Editors:

Select *Lesson Milestones* from the File menu. The Milestones dialog appears and a list of milestones created for the lesson is displayed. Select a milestone and click *Restore*. The data is restored and a confirmation message will be displayed.

Tip: Note that although both lesson and guide data are saved along with a milestone, only the data appropriate to your currently opened editor (lesson or guide) will be restored.

editing basic storyboard data

Introduction to storyboards

Storyboards are the building blocks of the content created in the Impression Content Creation Tool and cover a wide range of functionality. They can be used to display text, graphics, animations, and test students. This chapter will introduce you to Impression's storyboard types and provide detail on most of the data elements on both the General and Specific tabs.

Storyboard types

Note that the available types for any given content database are controlled through the selected project properties.

The Impression Content Creation Tool supports the following storyboard types:

Storyboard Type	Description
<i>Canvas</i>	The Canvas storyboard type is a still graphic-based storyboard that can be assigned overlay elements and interactive actions.
<i>Container</i>	Container storyboards are used as an aggregation and navigation aid when developing courseware with a nonlinear learning pathway.
<i>Flash Object</i>	The Flash Object storyboard type displays an embedded Flash .SWF file that can be built for one- or two-way communication with the runtime engine.
<i>Flash Video</i>	The Flash Video storyboard type plays traditional and stepped .SWF Flash animations.

<i>Matching Text to Graphics</i>	The Matching Text to Graphics storyboard type is a matching question that can be formatted with directions, four text question/graphic answer pairs, and one graphic distractor.
<i>Matching Text to Text</i>	The Matching Text to Text storyboard type is the same as the Matching Text to Graphics type, but uses text for the answers and distractor.
<i>Menu</i>	The Menu storyboard type is used as an organization and navigation tool when developing courseware with nonlinear navigation.
<i>Multiple-Choice Graphics</i>	The Multiple-Choice Graphics storyboard type is a multiple-choice question that can be formatted with one correct graphic answer and up to three graphic distractors.
<i>Multiple-Choice Text</i>	The Multiple-Choice Text storyboard is the same as the Multiple-Choice Graphics type, but uses text for the answer and distractors.
<i>Placeholder</i>	Placeholder storyboards are common screens that do not change from lesson to lesson within a course, such as a copyright or disclaimer screen.
<i>Rich Text</i>	The Rich Text storyboard type displays a screen of formatted text.
<i>Summary</i>	The Summary storyboard type is an unformatted text screen typically used to reinforce and wrap-up lesson content. It is often used to present aggregate information, such as student scoring.
<i>Title</i>	The Title storyboard type is a screen with a fixed visual appearance that is used to introduce students to lesson content.

Editing basic storyboard types

You will use the General and Specific tabs to edit your storyboard content. Switch between the tabs to access all of the storyboard fields.

Editing General tab fields

General tab fields, found within your created storyboard, are generic fields found on almost all storyboard types. These fields can provide identification data, instructions to students, notes on the production process, and control remediation and navigation. Any fields appearing on the General tab are available for use with your project.

Tip: Fields listed as “optional” may or may not be visible based on your content database project settings. Your project’s specification may not include the uses described below; check with your project administrator for further guidance.

The General tab allows editing of the following fields:

Field Name	Description
<i>Title</i>	Title of the storyboard. This is often displayed onscreen.
<i>Identifier</i>	Optional. A human-readable alphanumeric code intended to uniquely identify the storyboard within the lesson or across the entire project.
<i>Objective ID</i>	Optional. An alphanumeric code that identifies the learning objective associated with a storyboard. It is useful for “Matching Learning Objective Storyboards” remediation, or for sending detailed scoring information to a Learning Management System (LMS).
<i>Student Text</i>	Text associated with the storyboard.
<i>Student Directions</i>	Optional. Directions associated with the storyboard, such as “Click Next to continue”.
<i>Alternate Directions</i>	Optional. Student instructions associated with the storyboard that are only displayed under project-defined circumstances. For example, Alternate Directions could be displayed when the student has completed all required actions in the storyboard.
<i>Narration Text</i>	Optional. Information provided to a human narrator or modified data for a text-to-speech system.
<i>Narration File</i>	Optional. The narration file is an audio file associated with the lesson.
<i>Back Button Enabled</i>	Identifies when the Back button should be enabled. Options are <i>always</i> or <i>never</i> .

<i>Next Button Enabled</i>	Identifies when the Next button should be enabled. Options are <i>always</i> , <i>never</i> , or <i>when complete</i> .
<i>Complete When</i>	Identifies the criteria required for the storyboard to be considered complete. The values shown here depend on the storyboard type. Note that if there are no criteria are marked as a completion requirement, then there are no requirements for completion other than viewing the storyboard.
<i>Automatically Advance when Complete</i>	Instructs the runtime engine that it should automatically advance to the next storyboard when the storyboard is complete.
<i>Question Type</i>	Question storyboards only. Identifies the type of question: either a scored test question or an unscored comprehension check. Select the question type using the combobox located on the General tab.

Using the General tab to assign remediation

Remediation can be assigned to each testing storyboard. There are four primary remediation types that can be assigned individually or combined with other types. For example, storyboard range can be combined with custom messages. Here, a student would select an incorrect response, receive the message, and be returned, or “remediated,” to a preset series of storyboards.

Tip: Remediation options, including supporting combination types, are set in the General Storyboard options in Project Properties.

How to enter remediation data:

Use the *remediation type*: combobox to select the desired type of remediation. Enter the appropriate information in the fields that appear below the combobox, or depending on type, on the Specific tab.

The following remediation types are available:

Remediation Type	Description
<i>Custom Messages</i>	Individually written messages for correct or incorrect responses.

<i>Extended Custom Messages</i>	Messages for correct, partially correct, and incorrect student responses, and are only available for matching question types
<i>Per-Response Messages</i>	Individually written responses for both answers and distractors. These are entered in the Specific tab.
<i>Matching Learning Objective Storyboards</i>	Uses the learning objective values specified in the content storyboards and uses those to build a range of related storyboards for review.
<i>Storyboard Range</i>	Specifies a series of storyboards where students will be sent to review the material. Select the starting and ending points of the range using the <i>to:</i> and <i>from:</i> fields on the General tab.

Editing Specific tab fields

In addition to the common fields supported by most storyboards on the General tab, each storyboard type includes a number of type-specific fields. As their name implies, these fields are unique to each storyboard type. If a particular field does not apply to other storyboard types (such as a question or distractor field), it is considered “type-specific.”

In general, editing type-specific fields is rather straightforward; simply enter the appropriate information into each data entry element shown on the Specific tab. Data entry elements include standard Windows items, including single- and multiline text boxes, checkboxes, and radio buttons, as well as asset and storyboard selectors. Refer to Chapter 7 for additional information on editing Canvas storyboards and Chapter 8 for additional information on Flash Video storyboards.

Editing Canvas storyboards

This chapter will provide instruction on how to create and edit Canvas storyboards.

The Canvas storyboard is a graphic storyboard that features a single still graphic called the *background*. Content creators can draw any number of items called **elements** on top of the background. Each element can have one of several actions associated with it, including storyboard jumps, pop-up text and graphics, sounds, and hyperlinks.

Selecting a background graphic

To select a background graphic, select the ellipsis button just to the right of the background: textbox and use the Media Asset Picker that appears to choose a graphic file. For additional information on using the Media Asset Picker, refer to the “Media File Insertion” procedure outlined in Chapter 5.

Adding elements

Elements can be added to the Canvas storyboard type. The three types of elements—shapes, text, and graphics—can be assigned a title. Each element has an associated style and can be assigned a single associated behavior. Additionally, the elements can be overlapped and have their z-order (the front-to-back “depth” of the element) changed. There are no restrictions as to the number or type of elements that can be added to a storyboard.

How to add an element:

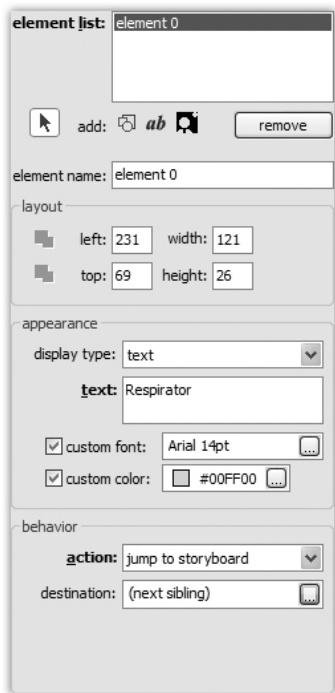
If the element editor is not visible on the right-hand side of the Canvas type-specific editor, display it by clicking on the element editor >> link to the right of the background: graphic selector.

Add an element to the Canvas by selecting one of the three icons to the right of the *add:* label on the right-hand side of the Lesson Editor window. Once you have selected your shape, text, or graphic element, the main display will dim, indicating that the editor is ready for you

to draw. Draw on the main display by holding down the left mouse button, dragging, and releasing the left mouse button.

Once the mouse button is released, the Canvas will return to normal brightness and your element will be drawn within the bounds specified.

Canvas element panels



Element appearance and behavior

There are three types of elements: shapes, text, and graphics. Each element's visual style can be changed using the tools found in the appearance panel. These tools change based on the display type of the element. A graphic element can have a graphic associated with it. Text can be assigned a custom font and color. Shape supports the three variants of square, circle, and line, all with defined color and width.

Element display types can be switched at any time. Simply select the element from the element list and select the display type available from the appearance panel.

Changing element types and styles

Element types can be changed by selecting the *Display type* drop-down menu in the appearance category. Element changes are undoable actions.

Element style options, like size and color, can be changed using the *layout* and *appearance* panels.

Using the layout panel, change the position of the elements on the Canvas. The depth icons position the elements on the canvas; their placement is reflected in the element list. Also, use the layout panel to define values for left, top, width, and height. Fill in the desired layout options.

Use the appearance panel to choose the element display type, color, and width.

If formatting a new element, establish the type and use the options above. For an existing element, simply select the element in the element list and use the layout and appearance menus to change the existing values.

Element action types

Elements can be assigned a number of interactive actions. Use the *action:* drop-down menu located on the *behavior* panel to assign an action to your elements.

The following element actions are available:

Action	Description
<i>Jump to Storyboard</i>	Display a specific storyboard.
<i>Pop-up Text</i>	Display additional text.
<i>Pop-up Graphic</i>	Display an additional graphic.
<i>Play Sound</i>	Play a sound.
<i>Hyperlink</i>	Sends learners to locations outside of the lesson content, such as websites.
<i>Command</i>	Project-defined action type.

Element placement

Moving and resizing elements

Moving and resizing can be done by clicking on and dragging the outline of the element. The element, or shape, must be selected so that the outline is showing. Dimensions of these shapes can be changed by clicking and holding on the handle of the shape's outline while dragging the handle.

To move the shape, click on the name of the shape (attached to the element itself), hold, and drag. Change the type of shape by clicking on the square, circle, or line icon in the appearance panel. Holding down the shift key while resizing an outline or clicking on the outline handle causes the outline of the shape to expand or shrink at the same pace, resulting in either a perfect square or an equally round circle. If a line is selected and the shift key is held down, the line will snap to the nearest ninety degrees, resulting in a straight horizontal or vertical line.

Changing element depth (z-order)

Change depth by using the element depth icons, found in the Layout panel. The *Bring to Front* and *Send to Back* icons will rearrange the order of the elements in the element list and onscreen display. Bring to Front places the element in front of the others. Send to Back places the element at the bottom of the element list.

Z-order icons



Flash Video storyboards

Flash Video storyboards allow content creators to build storyboards that feature **traditional** and **stepped** Flash animations. Traditional Flash Videos are Flash animations that play straight through from the beginning to end like a movie. Stepped Flash Videos are Flash files that, unlike traditional Flash animations, are broken into shorter increments called **steps**. Each individual step can have its own student text.

Tip: If stepped animations are supported by your project, a stepped animation check box option will be available from the right-hand side of the ellipsis button. If there is no box, stepped animations are not supported.

Regardless of type, use the *video:* selector to choose the desired .SWF file, available from the Specific tab.

Using the playback controls

A simple video controller is located to the right of the video selector. There are buttons for play, pause, and stop. These buttons allow you to preview the animations. Both traditional and stepped animation types use these controls, though their functionality is slightly different.

The play button for traditional animations plays the animation straight through. The stop button for the traditional animation resets the animation to the beginning of the file.

The play button for stepped animations plays the currently selected step only. To select another step, highlight it in the steps list box and select it. The stop button for the stepped animation resets the animation to the beginning of the current step. It does not return it to the beginning of the file as it does for the traditional animation. Select the desired step from the *step list* box.

Traditional Flash Video options

For traditional flash videos, the following options are available:

Option	Description
<i>Autoplay</i>	Specifies whether or not the animation automatically should begin to play when it is displayed, without user interaction.
<i>Loop</i>	Specifies whether or not the animation will loop continuously.

Stepped Flash Video options

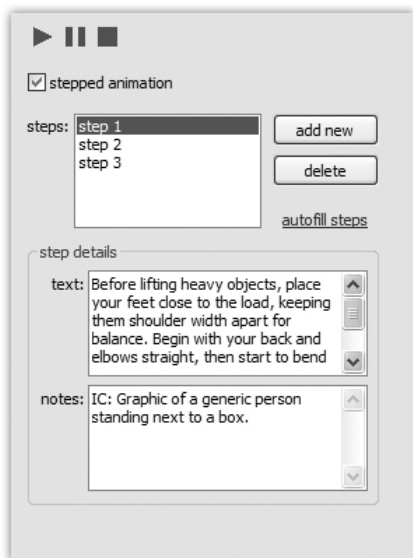
To specify that an animation is stepped, select the stepped animation box. You can add and delete steps, assign student text, and store production notes using the Step Details panel.

Editing stepped animations

How to add and remove steps

To add a step to a stepped Flash Video, select the *Add New* button to the right of the *steps:* list box. Enter the student text and production notes in the appropriate Step Details fields. To remove a step, highlight the step you wish to delete in the *steps:* list box, and then choose *Delete*.

Stepped Flash Video details panel



Automatically calculating steps (autofill)

You can choose to have the Flash Video editor automatically create steps for each frame of your stepped animation.

To do this, select the *autofill steps* link to the right of the *steps:* list box. The autofill steps dialog appears with the frame count. Click *Yes* to have the Content Creation Tool autofill the animation steps.

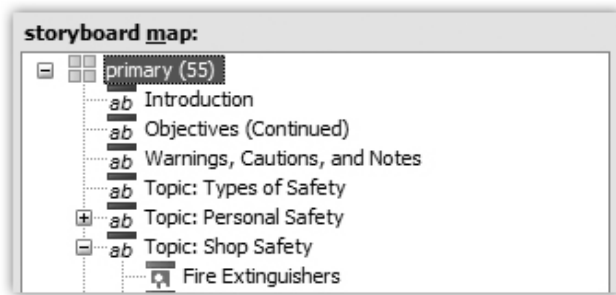
Chapter 9

storyboard map types

Storyboard maps

A storyboard map is an ordering of storyboards within a lesson. Typically, the top-to-bottom display of storyboards represents the beginning-to-end flow of the lesson. Storyboards, once added to a lesson, can be freely reordered by using the movement commands on the Storyboard menu. To change how the storyboard is identified in the map, use the Lesson Editor View menu. The *Storyboard By Title* command displays the storyboards by their titles; *Storyboard By Identifier* displays the storyboards by their identifiers.

Storyboard map

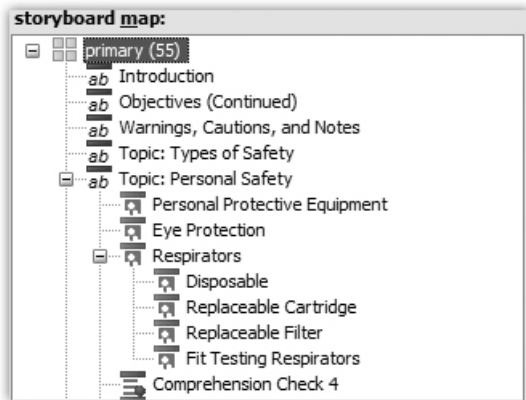


Tip: Storyboards can also be reordered using the move buttons located just below the storyboard map list or by dragging and dropping the storyboard to the new location.

Hierarchical maps

The storyboard map can be used to arrange storyboards into a hierarchical parent-child or section-subsection layout. Your project may use the hierarchical structure to support section-based “exploration” of your content, or it may ignore the hierarchical information, leaving you free to use the hierarchy as an organizational or outlining tool.

Hierarchical storyboard map



Secondary maps

Some projects may support a secondary map. This map offers an additional ordering of storyboards containing content that typically should be available within the lesson but not presented as part of the main “flow.”

Tip: The Content Creation Tool only allows one storyboard to be in one map at a time.

Uses for secondary maps include test bank data, remediation storyboards that contain aggregated information, or storyboards that contain additional information not required to complete the lesson.

Tip: You will want to check your project's guidelines for standards and capabilities to determine how and when to use hierarchical or secondary maps within your lesson

Chapter 10

reporting and previewing

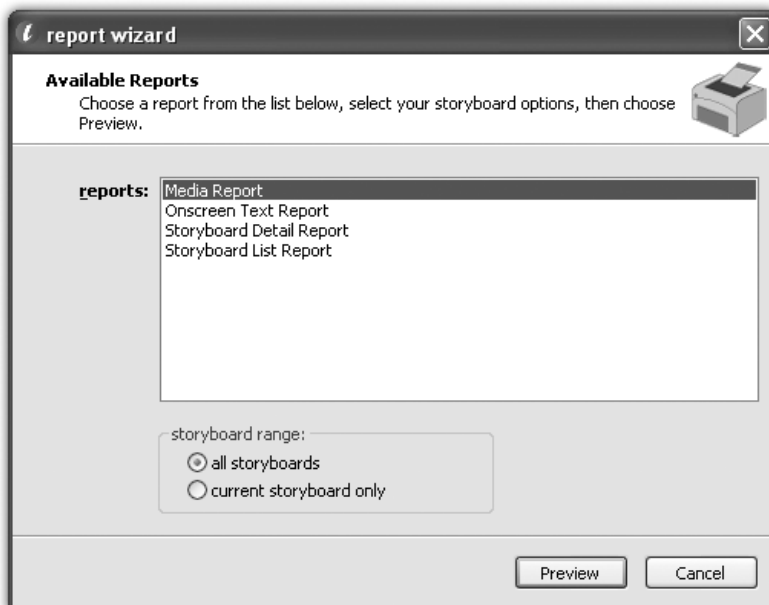
Reporting

The Content Creation Tool includes several reports that allow you to create hardcopy information on storyboard and lesson data. If supported by your project, the previewer displays lesson content exactly the way it will appear as a final product in a single step!

Using the report wizard

The Report Wizard is available from the Groups window or the Lesson Editor, from the File menu.

Report Wizard



How to display a report in the Groups window:

From the Groups window, select a lesson and then select the *Report Wizard* option from the File menu. Preview a report by double clicking on it, or highlighting it and then clicking *Preview*. The report appears as a new window. When finished with the report, use the standard Windows close option to exit the report.

How to display a report in the Lesson Editor:

To view a “lesson-wide” report, select the *Report Wizard* item from the File menu. Select the *all storyboards* button, and then a report by double clicking it or by highlighting it and then clicking *Preview*.

To view a report for a single storyboard in the Lesson Editor, select the storyboard in the storyboard map, and select *Report Wizard* from the File menu or select the Report Wizard icon from the toolbar. Select the *current storyboard only* option, and then preview the report by double clicking it or by highlighting it and then clicking *Preview*.

The report appears in a new window.

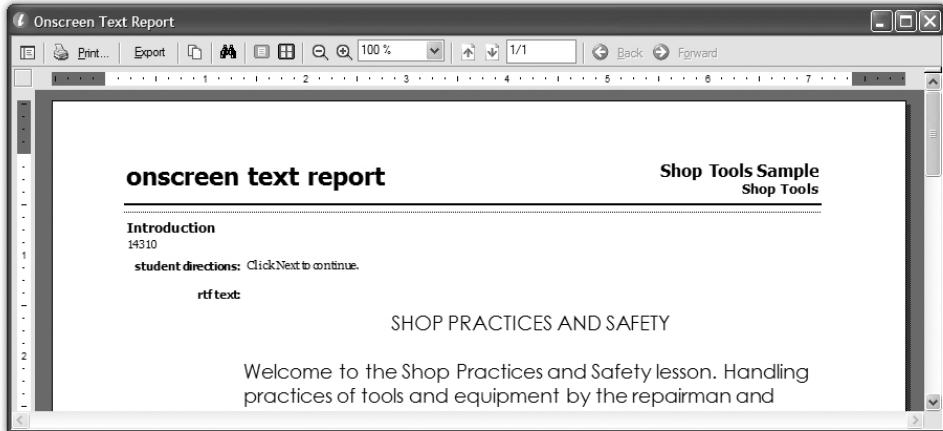
Report types

There are several report types included with the CCT. They can display storyboard titles and provide information about text, media assets, and student text.

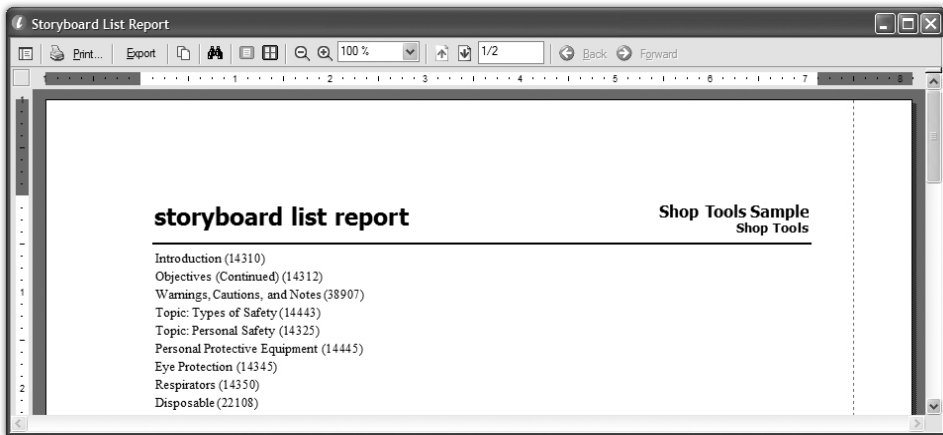
The CCT includes the following reports:

Report Name	Description
<i>Media Report</i>	The Media Report provides a printout of the media assets associated with each storyboard.
<i>Onscreen Text Report</i>	The Onscreen Text Report is a subset of the Storyboard Detail Report and contains all fields for each storyboard that are typically shown to the student.
<i>Storyboard Detail Report</i>	The Storyboard Detail Report provides complete information on each storyboard.
<i>Storyboard List Report</i>	The Storyboard List Report provides a printout of the storyboard titles from a lesson in the order that they appear on the storyboard map.

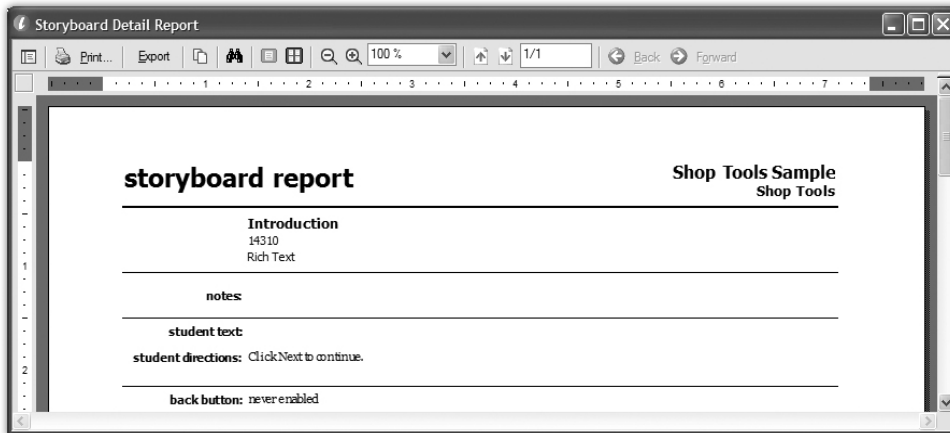
Onscreen Text Report



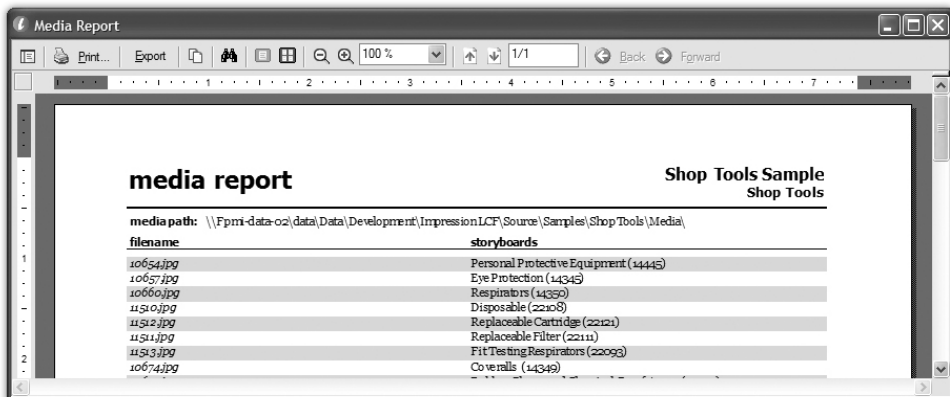
Storyboard List Report



Storyboard Detail Report



Media Report



Previewing

The Impression CCT supports **previewing**, a review of created content within the actual runtime engine that is used to deploy the content.

When enabled, you can preview a lesson by choosing *Preview Lesson* from the Tools menu of the Groups window or the Lesson Editor; or you can preview the current storyboard by choosing *Preview Storyboard* from the Tools menu of the Lesson Editor.

Previewing a Canvas storyboard with a Runtime Hosting Utility-based Previewer.

runtime hosting utility

Topic: Environmental Safety

WARNING
DO NOT DUMP
CHEMICALS, SOLVENTS
OR OILS
DOWN DRAINS

CAUTION

NO FOOD OR DRINK	BIOHAZARD	RADIOACTIVE MATERIALS	TOXIC CHEMICALS
	BIOSAFETY LEVEL 2		
EYE PROTECTION REQUIRED		FLAMMABLE MATERIALS	CORROSIVE MATERIALS

ADMITTANCE TO AUTHORIZED PERSONNEL ONLY

CONTACT	NAME	LOCATION	PHONE	HOME PHONE

student text

This topic discusses environmental safety. Improperly handled hazardous materials can harm personnel and the planet. Never release hazardous liquids, gasses, or solids into the air, water, or land to prevent contamination of our natural resources. Examples of these materials include fuel, oil, freon, and batteries.

Click Next to continue.

Navigation icons: Home, Back, Forward, Logo (ab)

Importing, exporting, and packaging options

The Content Creation Tool offers a robust set of options for transferring data into or out of a content database.

Importing

The importing process inserts previously exported Impression data into an existing lesson. Data from other programs, such as Microsoft Word, cannot be imported into Impression.

Exporting

The exporting process saves XML data on a lesson or storyboard basis. You can use the exported XML to transfer data to other users.

Packaging

The packaging process exports the lesson and guide data, verifies and copies media assets, and (optionally) creates a manifest for the selected lesson.

Manual saves: dump XML and save to file

Manual saves can be invoked from the File menu of the Lesson and Guide Editors. These actions will save all of the data currently in memory. The lesson or guide is saved to a specified location in its raw form. Unlike the export and packaging commands, manual saves do not optimize the XML or HTML data—note that, for example, deleted storyboards and unused fields are included in the save.

Manual save types

Lesson Editor Saves

The *Dump XML* command is the manual save option for the Lesson Editor. Remember that all of the data, including deleted storyboards will be saved out.

To dump XML from the Lesson Editor, choose either the *Dump Lesson XML...* or *Dump Storyboard XML...* commands from the File menu. A standard Windows “Save As” dialog will appear. Enter the desired filename and location, then choose Save. The lesson's (or storyboard's) XML data is saved and the dialog is closed.

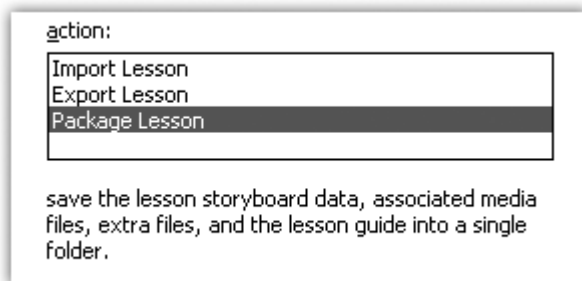
Guide Editor Saves

The Guide Editor's *Save as File...* and *Load from File...* commands are a simple import and export. Use these two options to replace or save the current guide HTML. Both commands are found in the Guide Editor's File menu and use the standard Windows “Open” or “Save As” dialogs.

Import/Export Wizard

The Import/Export Wizard imports, exports, and packages lesson data. The Import/Export Wizard is available from the File menu of the Groups window or the Lesson Editor XML.

Import/Export Wizard Actions



Exporting

Exporting is the process of saving out an entire lesson or selected storyboards of a lesson as an XML file.

How to export a lesson:

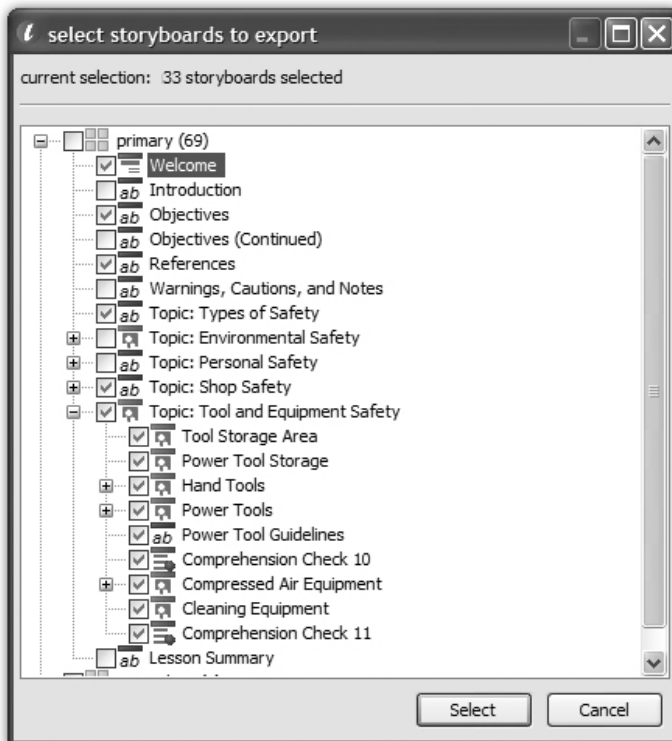
- Open the Import/Export Wizard, and then choose *Export* from the *action:* list box. Click *Next* to continue.
- Choose a filename for the exported file by either typing a valid filename directly into the *export filename:* text box or by using the ellipsis button and the following “Save As” dialog. Choose the *export all storyboards* option to output all of the storyboards associated with the lesson. Click *Next* to continue.

- Select *Export*. The lesson data will be exported to the specified filename.

How to export selected storyboards:

- Open the Import/Export Wizard, and then choose *Export* from the *action:* list box. Click *Next* to continue.
- Choose a filename for the exported file by either typing a valid filename directly into the *export filename:* text box or by using the ellipsis button and the following “Save As” dialog. Choose the *export selected storyboards* option to output only the storyboards you select. Choose the *Select...* button, mark selected storyboards for export on the ensuing dialog, and then click *Select*. When you are done, click *Next* to continue.
- Select *Export*. A lesson containing only the selected storyboards will be exported to the specified filename.

Storyboard Selector



Packaging

The packaging process exports the data for the lesson and guide, verifies and copies any media assets used by the lesson, copies any other files associated with a lesson (such as runtime files), creates a manifest, and places all of that data into a specified location.

How to package a lesson:

- Access the Import/Export Wizard. Select the *Package* option from the *Action:* list, then choose *Next*. Choose a location for the package. Use the default location by checking the use *project default setting* box or use the ellipsis button to select a custom package and fill in the necessary information to change the location of the root folder. Select *Next*.
- Click *Package*. When the packaging process is complete, a status-complete confirmation appears.

Tip: Packaging properties are set and modified in Project Properties available from the Groups window. If your options have not been set, consult your Project Manager for guidance.

Importing

The importing process brings previously exported Impression data into a lesson. This data can be imported from another lesson within the same or a different content database. Use import to create a variation of a previously created lesson without reentering its data, to synchronize lessons developed in different databases or locations, or to merge portions of existing lessons into a new one.

How to import lesson data:

- Open the Import/Export Wizard, and then select *Import Lesson* from the *action:* list. Choose the file to import either by typing directly into the *import filename:* textbox or by using the ellipsis button to display a standard Windows “Open” dialog. Create a milestone by clicking *create lesson milestone* before import checkbox. Select *Next*.
- Choose either *insert imported data* or *overwrite existing data*.

Insert Imported Data

The *Insert Imported Data* option imports the previously exported data as new storyboards. This does not affect previously created storyboards. The storyboards are imported into a lesson in a Container marked “Imported” and labeled with the date. If a storyboard is selected when the data is imported, the container becomes a child to the storyboard at the root level. Otherwise, the container is inserted at the root level. You can use the storyboard

movement commands, explained in Chapter 5, to arrange the imported storyboards within the lesson.

Overwrite Existing Data

The *Overwrite Existing Data* option replaces all existing storyboards with the imported ones. This should be done with caution as all preexisting data will be lost and this selection should be viewed as “starting over.”

If you only want to import a subset of the lesson, use the *Select...* button to bring up the storyboard selection dialog. Choose the storyboards you wish to import by checking them, and then choose *Select* to return to the Import/Export Wizard. Click *Next*.

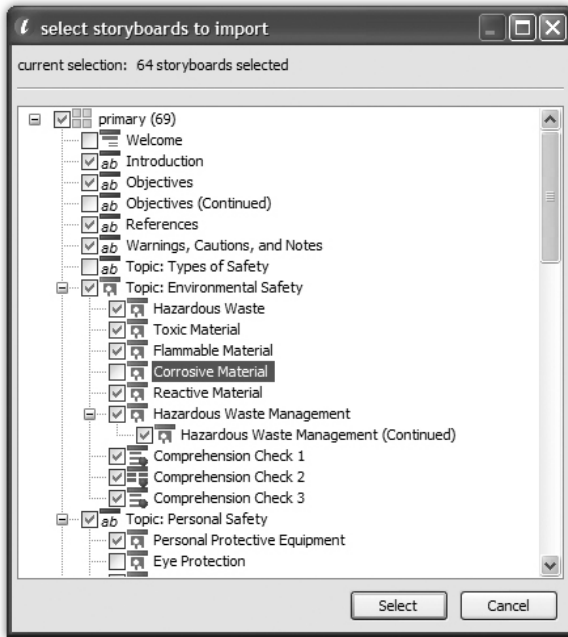
If your project does not support storyboard identifiers, skip this step. Choose *keep existing identifiers* to keep the identifiers already assigned to the storyboards with the data that will be imported or create new identifiers to have the CCT generate new identifiers. Click *Next*.

Review your selections. If you are satisfied, choose *Import*. The lesson will be imported. Select *Close* to exit the Import/Export Wizard.

Import Options



Storyboard selector for importing storyboards



Chapter 12

editing the lesson guide

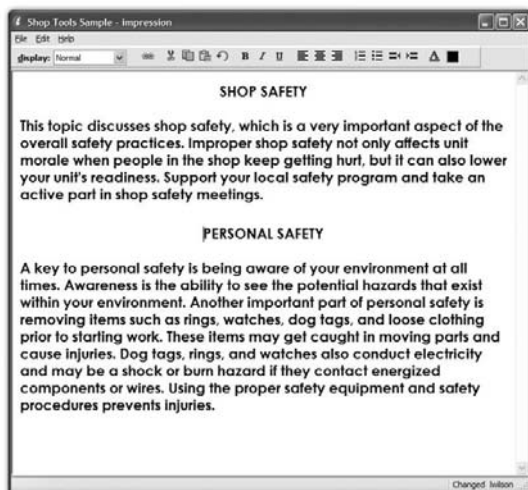
Lesson guide

A **Lesson Guide** is an HTML document intended to serve as the instructor's companion to an individual lesson. Guides can be synchronized with a runtime engine. During an instructor-led class, the guide advances, progressing alongside the students' lesson. The lesson guide is not typically used by the students.

Guide editor

The Lesson Guide Editor is a simple HTML editor. Since lesson guides are straight HTML, you can use the editor included in the Content Creation Tool or another HTML editor, such as Macromedia Dreamweaver or Microsoft FrontPage, to modify the code. If you do this, use the *Load from File...* and *Save to File...* commands to quickly transfer the guide data to and from the content database.

Lesson Guide Editor



Adding storyboard links

Storyboard links in the Guide Editor work similarly to Canvas hotspots. Clicking the storyboard links (hyperlinks) created in the Guide Editor using the add command will synchronize the CCT with the runtime, allowing the storyboards and lesson guides to move together. This allows the instructor to keep in sync with the students.

To create a storyboard link, select the storyboard link creator icon. When the storyboard picker appears, choose the desired storyboard, press *Select*, and the link is created.

Storyboard link creator



Chapter 13

customizing your experience

Preferences

The preference options for the Lesson Editor allow you to personalize the Content Creation Tool's behavior.

Lesson editor preferences

You can change Lesson editor behaviors using the Preferences dialog, available from the Tools menu. Make the desired changes and then select *OK*.

Lesson editor preferences dialog



The following items can be customized using the Preferences dialog:

Item	Description
<i>Spellcheck settings</i>	Check the boxes next to the classes of words to ignore.
<i>Custom dictionary</i>	Define a custom dictionary for Impression to use during your content creation using the <i>Browse...</i> button and its following dialog.
<i>Prompt when deleting a single storyboard</i>	Check this box to have the CCT prompt you to confirm the deletion of a storyboard with no children. Note that the CCT will always prompt when you select a storyboard with children.
<i>Separate the Delete menu item on the Storyboards menu</i>	Check this box to isolate the Delete menu item from other menu items. You will find this helpful if you are accidentally deleting storyboards.
<i>Autosave</i>	Choose when (or if) the CCT will automatically save the lesson to the content database. The options include <i>never</i> , <i>when closing or exiting</i> , and <i>when changing storyboards</i> .

Resetting default preferences

Use the *reset preferences* button to reset the CCT to its default values.

Appendix **A**

lesson locking

Lesson locks are issued by the Content Creation Tool when a user edits or reads a lesson or guide and are normally deleted when the user exits the lesson or guide.

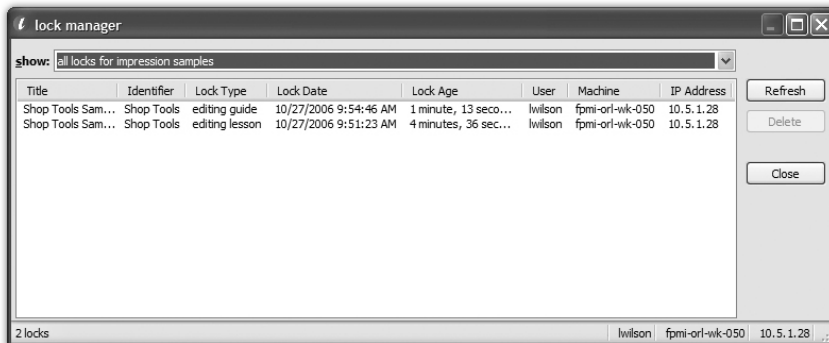
There are four different types of locks: **lesson write**, **lesson read**, **guide write**, and **guide read**. Only one lesson write lock and one guide write lock can be issued for a given lesson. This ensures that multiple users do not overwrite each other's data. There is no limit on the number of read locks that can be issued for a lesson or guide. Although the Groups menu provides basic lock information for a content database, group, or lesson, the Lock Manager can be used to examine detailed lock information.

Tip: There will only be locks in the Lock Manager if there are lessons currently opened (either for editing or reading).

The Lock Manager

The Lock Manager is the central location for viewing database locks and lock details, regardless of status. Locks can also be released here. It is available from the Tools Menu in the Groups window.

Lock Manager with "all locks" option displayed



How to use the Lock Manager:

From Tools, select *Lock Manager*. Select the desired lock type and click *Refresh*, *Delete*, or *Close*, depending on which option is needed. You can also select the blue lock manager link and then follow the same procedure.

Invalid locks and lock recovery

An individual can remove his/her own personal locks. Those with administrative rights can remove all locks using the Lock Manager. You can access the Lock Manager in the Tools menu in the Groups window.

Under normal operation, the Impression CCT automatically issues and removes lesson locks when users enter and leave the lesson and guide editors. Abnormal program termination, loss of database connectivity, and deliberate removal of locks can result in lock problems, including potential data loss.

Automatic lock repair

When the Impression CCT first opens a content database, it will automatically attempt to repair the current user's invalid locks. Specifically, if there is no other instance of the CCT open, then read and write lesson/guide locks containing the current user's name, the current machine name, and the machine's current IP address are automatically removed from the database.

Removing invalid locks

The Lock Manager can be used to remove locks left in the content database by a sudden loss of connectivity. Users with administrator-level access rights can remove any lock listed in the database. Users without administrator-level privileges can only remove locks owned by them.

Tip: The Lock Manager applies certain rules to the lock data to determine if a given lock is valid. These rules are very simplistic (for example, a lock record without a lesson ID is an invalid lock) and do not and cannot cover locks left from connectivity loss. Manual intervention is required to determine if a given lock is valid or not.

Lock Manager filters

The Lock Manager can filter the items shown in its grid.

The Lock Manager supports the following filters:

Filter Name	Description
<i>My locks</i>	Locks currently open by the logged-in user. Under normal circumstances, there should not be any locks of this type listed in the Lock Manager.
<i>All locks</i>	All locks currently in the database.
<i>Invalid locks</i>	All locks that the Content Creation Tool has determined to be invalid.
<i>Current lesson</i>	All locks for the lesson or group currently selected in the Groups window. If a group is selected, locks shown here will be for the group and all children of that group.

Lock error messages and error handling

If a lock is removed while the user is editing a lesson or guide, the CCT will attempt to reacquire the lock. The CCT will display one of the following messages depending on the success or failure of this operation.

Lesson lock messages

For lessons, the following messages can be issued:

- The write lock originally issued to you for this lesson has been removed from the database. Since no changes have been recorded, a new write lock has been issued and your changes will be saved.
- The write lock originally issued to you for this lesson has been removed from the database. Although no new changes were made to the database, a new lock could not be acquired and your changes will not be saved. You may wish to use the 'Dump Lesson XML' command to save your existing data. Contact your administrator for further guidance.

- The write lock originally issued to you for this lesson has been removed from the database. Changes have been made to the lesson since the last time you accessed the database. The most recent changes were made by [user] on [date]. Your changes will not be saved. You may wish to use the 'Dump Lesson XML' command to save your existing data. Contact this user and your administrator for further guidance.
- The write lock issued to you for this lesson has been removed from the database. A new lesson write lock has been issued to [user]. Your changes will not be saved. You may wish to use the 'Dump Lesson XML' command to save your existing data. Contact this user and your administrator for further guidance.

Guide lock messages

For guides, the following messages can be issued:

- The write lock issued to you for this guide has been removed from the database. A new guide write lock has been issued to [user]. Your changes will not be saved. You may wish to use the 'Save as File' command to save your existing data. Contact this user and your administrator for further guidance.
- The write lock originally issued to you for this guide has been removed from the database. Changes have been made to the guide since the last time you accessed the database. The most recent changes were made by [user] on [date]. Your changes will not be saved. You may wish to use the 'Save as File' command to save your existing data. Contact this user and your administrator for further guidance.

If a write lock is lost, and the CCT detects that the last changes before losing the lock were made by the current user, the following message is issued:

- The write lock originally issued to you for this guide has been removed from the database. The guide was last saved by you on [date], and no one else is currently editing this guide. Do you want to try and reacquire a write lock?

If the user chooses *yes*, the CCT attempts to reacquire the lock, and one of the following messages is displayed:

- Write lock reacquired successfully.
—Or—
- A new lock could not be acquired and your changes will not be saved. You may wish to use the 'Save as File' command to save your existing data. Contact your administrator for further guidance.

If the user chooses *no*, the following message is displayed:

- Without a write lock, your changes will not be saved. Contact your administrator for further guidance.

Appendix B

database validation

Impression database validation

When the Impression CCT opens a database connection, regardless of mode, a number of checks are performed to ensure that the database is valid, and in the case of SQL Server databases, that the user accessing the database has sufficient rights to access the database. If the CCT detects a problem, the opening process is cancelled, and a message is displayed on the Groups window.

Tip: Should an unexpected error occur at any time during the validation process, validation stops and the following message is displayed: *Impression encountered an unexpected error while attempting to validate [database name].*

Microsoft Access .MDB database checks

For a Microsoft Access .MDB file, the following checks are performed:

File existence

If the specified file does not exist, or no file is specified, one of the following messages is displayed:

- You must select a valid Impression database before using the program.
- Or—
- [database name] was not found. Select a valid Impression database before using the program.

File is read-only

If the file exists, but is marked read-only, the following message is displayed:

- Impression was unable to obtain a shared read/write lock on [database name]. Check to ensure that the file is not marked read-only and that it is not stored in a directory with read-only permissions

Valid data connection

If a data connection to the file cannot be opened, the following message is displayed:

- Impression was unable to open a database connection to [database name]. This file may not be a valid Access-format database, or it may be corrupt. You may wish to validate the integrity of the file by opening it in Microsoft Access.

Writeable data structure

The CCT ensures that data fields can be edited by writing temporary data to the database, then removing that data. If an error occurs, the following message is displayed:

- Impression was unable to update one or more of the database tables. Check to ensure that no other processes have the database open exclusively and try again.

SQL connector database checks

When opening an SQL data source, the Impression connector database is validated first. Once the Connector passes validation, the specific content database is validated. Connector database validation does not include checking for writable data tables. If the account associated with the connector database does not have write permissions, the CCT itself will function normally, but users with administrator or superuser rights will not be able to use the ICMT to add or remove users or content databases from the Connector.

For the connector database, the following checks are performed:

Valid data connection string

If the data connection string (built from the Change SQL Connector dialog settings) is invalid, the following message is displayed:

- There is no data source or catalog defined for the connector. Please enter connection information and try again. Check with your administrator for details.

Valid data connection

Using the validated connection string, the CCT attempts to open a connection. If an error occurs, the following message is displayed:

- Impression was unable to open a database connection to the common connector. Check with your administrator to ensure that the machine and catalog are available and online, and that the account associated with the catalog has sufficient access rights.

Valid data structure

The CCT validates the data structure by running a series of SQL queries on the Impression-Specific tables in the database. If an error occurs, the following message is displayed:

- Impression was unable to locate all of the required database tables and fields. Contact your administrator for further information.

Connector record validation

The CCT checks to see if a record for the current user exists in the Connector database. If a record does not exist, one of the following messages is displayed:

If there are no user records in the database:

- The SQL connector database has no user records. If you are the administrator, use the Impression Connector Management Tool to initialize the database. If you are not the administrator, have the administrator perform this function.

If there are user records, but none for the current user:

- You do not have access rights to any database listed in the SQL connector. Contact your administrator for more information.

SQL Server content database checks

For the SQL Server-based content database, the following checks are performed:

Valid data connection

Using a connection string built from data in the Connector database, the CCT attempts to open a connection. If an error occurs, the following message is displayed:

- Impression was unable to open a database connection to [database name]. Check with your administrator to ensure that the machine and catalog are available and online, and that the account associated with the catalog has sufficient access rights.

Valid data structure

The CCT validates the data structure by running a series of SQL queries on the Impression-Specific tables in the database. If an error occurs, the following message is displayed:

- Impression was unable to locate all of the required database tables and fields. Contact your administrator for further information.

Writeable data structure

The CCT ensures that data fields can be edited by writing temporary data to the database, then removing that data. If an error occurs, the following message is displayed:

- Impression was unable to update one or more of the database tables. Check to ensure that no other processes have the database open exclusively and try again.

Layered security

Layered security is the best way to protect your projects and databases. Security should be handled on a system-wide and user-wide level. Limiting user access to SQL Server machines and Connector user login information increases security. It only takes one ill-intentioned person with access to the SQL Server to corrupt the database. Limiting system-wide database use to LAN connections is another effective way to reduce the risk of breaches. Internet servers increase security risks and are not recommended for use with Impression.

SQL Server security procedures

As part of your SQL Server security procedures, implement maintenance and backup plans based on the criteria set by your organization. Implementing a maintenance and backup plan safeguards against data loss and optimizes database performance. Maintenance plans serve two purposes: data backup and providing statistical updates on data. Data replication allows for disaster recovery.

Microsoft Access security procedures

Access databases should be backed up frequently. Methods like backing up files with tapes and CDs can safeguard against data loss. Storing backups at a separate location provides added security against “natural disasters.”

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