Channel Composer User Manual

Document version: 1.6.2 - 3/25/13

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1 Support

Contact information: http://www.grassvalley.com/support/contact
U.S Technical Support: +1 800-547-4989 or +1 530 478 4148 or E-mail: Please use our online form
All other countries Technical Support: +800 80 80 20 20 or +33 1 48 25 20 20 or E-mail: callcentre@grassvalley.com
FAQ: http://grassvalley.novosolutions.net/
Training: https://grassvalley.csod.com/LMS/catalog/Main.aspx?tab_page_id=-67&tab_id=6

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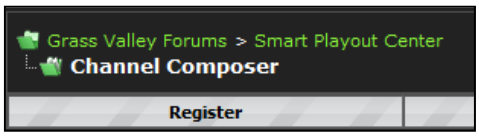
Answers to frequently asked questions can be found on our forum on the Grass Valley website: http://forum.grassvalley.com/forum/ > Smart Playout Center > Channel Composer.

If applicable, register yourself on the forum page:



2 About this document

This manual is written for users with a basic understanding of broadcasting and Channel design. We recommend that users who are new to these concepts take the Channel Composer training.

☞

This document describes Channel Composer version 1.6.2. Information in this manual may at some points differ from your Channel Composer application due to differences in version. Screenshots show the Channel Composer Mac interface.

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A number of Example Projects are included in Channel Composer and can be found under **File** > **Example Projects**. Following topics are explained:

- **Play Video**: demonstration of basic video playback.
- **Tickers**: various examples of Tickers.
- **Clocks and Counters**: various examples of Clocks and Counters.
- **Squeeze back**: an example of a squeeze back of the main video.
- **Keying**: demonstrates the two main ways of keying, by Player and by Object.
- **Soft cuts**: explains Template soft cutting.
- **Scaling**: various methods for upscaling, for example from SD to HD, and downscaling.
- **Quality Assurance**: various techniques that can be used to counter graphics artifacts commonly seen in broadcasting.
- **Optimization**: various techniques for playback optimization.
- **Controllers**: examples of Controllers; Controllers are an alternative to keyframing for animating Objects.
- **Ground Reflection**: demonstrates the Group Object's ability to generate reflections of its members on the ground plane.
- **Sports**: an example of the usage of Channel Composer for a sports info Channel.
- **Music**: an example of a typical music Channel.
- **Simulcast**: an example of a basic HD-SD simulcast project.
- **Tickers**: shows how to set up RTic compatible tickers.

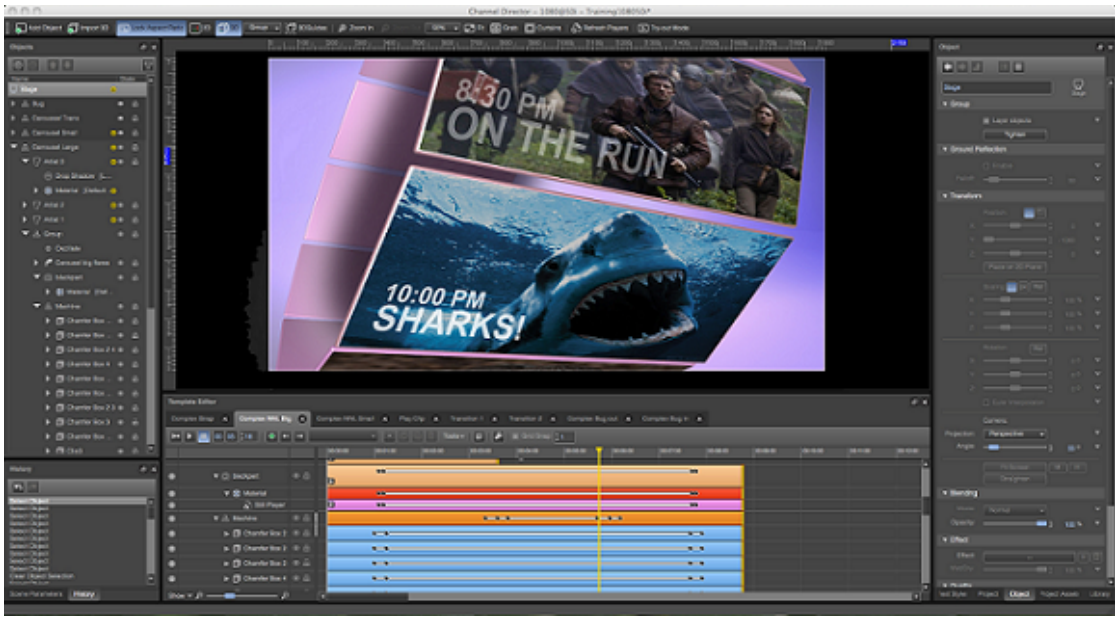
Channel Composer video tutorials are available on the Grass Valley website: http://www.grassvalley.com/apps/doc_show?&set=ips&c=^channel%20composer$|Channel%20Composer&super=broadcast&skin=gvcmsnew&sort=rev > **Videos**.

Following tutorials are available:

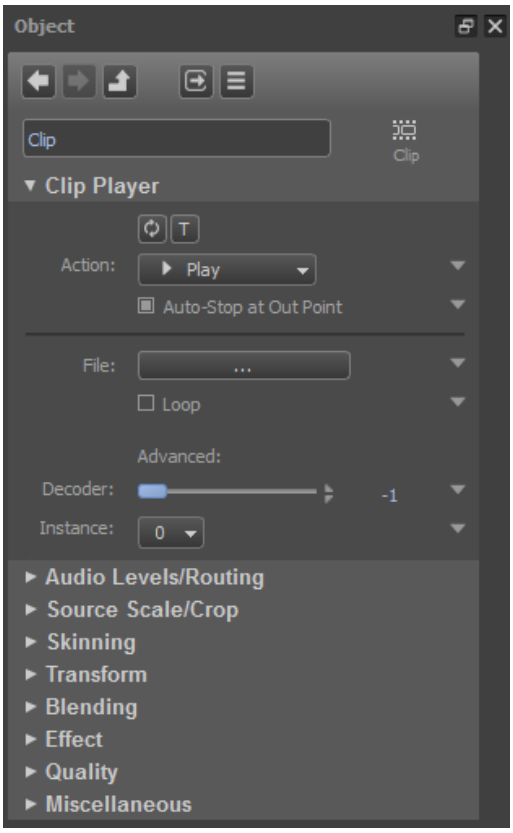
- Creating a Play Clip Template and Format.
- Creating a Logo Bug Template and Format.
- Creating a 3D Picture-in-Picture Template and Format.
- Creating a Ticker Template and Format.
- Creating a Clip title Template and Format.
- Creating a Clip title Wipe Template and Format.
- Creating a 3D picture-in-picture Template and Format.
- Working with Controllers.
- Creating a Dynamic Textbox Template.

3 Channel Composer Concepts

Channel Composer is used to create 2D and 3D-scenes. Look-and-feel, presentation and content metadata is assembled to a complete Channel design, ready for on-air presentation. This chapter describes the basic Channel Composer concepts.

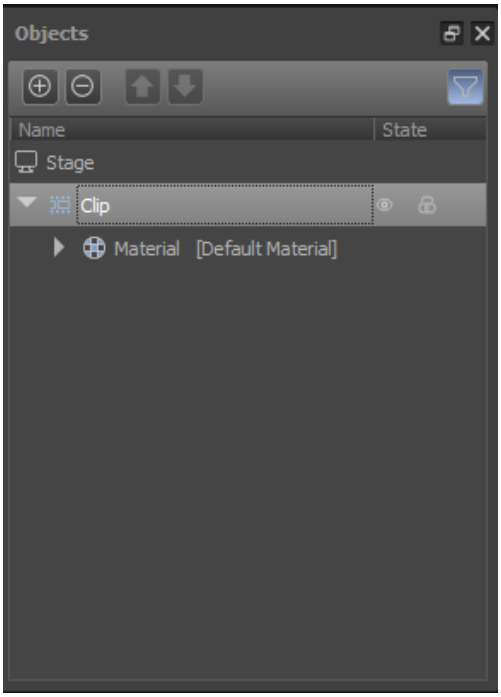


3.1 Objects



Channel Composer works with Objects such as Clip, Box, Still, Animation, Plane and so on. Objects have properties, such as opacity, position and scale that can be modified and animated.

The example shows the **Object** properties window for a Clip Object.



The **Objects** window lists all the Objects added to a Project (or all Objects included in the selected Template when the Filter icon is active as shown in the example on the left.)

Each Object is placed on its own layer. Objects on higher layers overlap Objects on lower layers.

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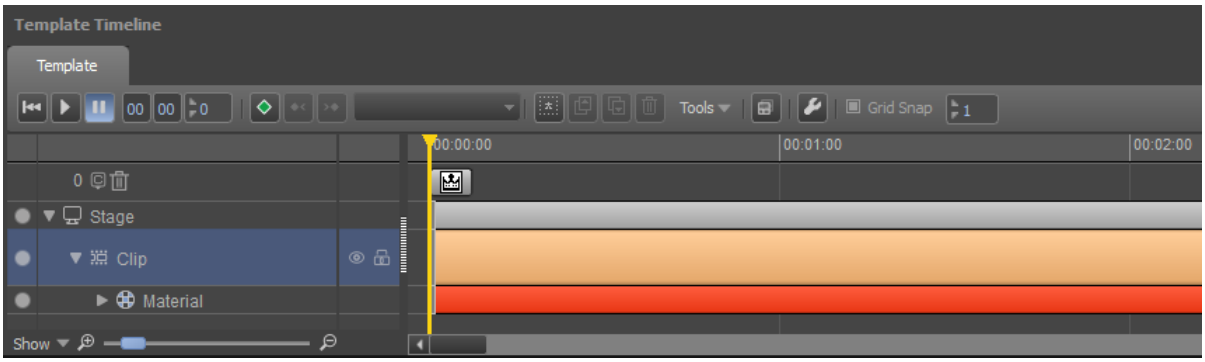
In Channel Composer, one and the same Object can be used in different Templates while its properties can have different values per Template.

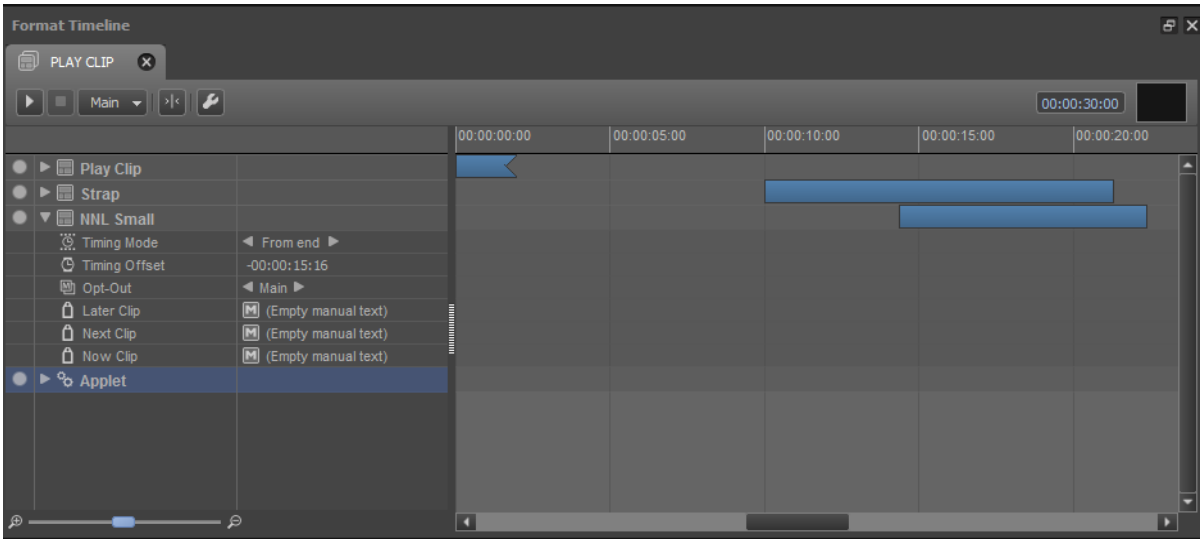
3.2 Templates



Templates are used to transform Objects' properties such as opacity, position and scale in time. The example above shows a Template used to play a Clip. The column on the left lists the Objects included in the Template. Each Object has its own track on the Timeline. The player head (the yellow vertical line) can be moved, paused and rewinded to preview animations on the Stage.

Define a Template for on-screen transitions that you want to able to control and time independently from each other.

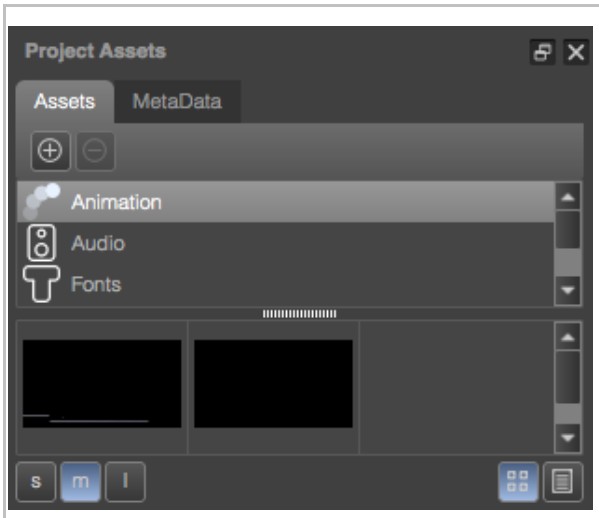
3.3 Formats



A format is a list of secondary Events (Templates and Applets) that together provide a certain on-air look and behavior when executed.

The example above shows the Format *Play Clip*. The column on the left lists the Templates and Applets included in this Format. Templates and Applets are timed on the Format Timeline using offsets relative to the main Asset.

3.4 Assets, Metadata, Scene Parameters and Test Media



An Object, for example a Clip or Still, can refer to fixed content or to dynamic content.

- Example fixed content: a logo.
- Example dynamic content: video clips; the Template plays out a different video clip each time it is activated.

All the fixed files that belong to a Channel design are added to the Channel Composer Project as Assets. These Assets are included in the Channel Pack when the Project is exported to the TX/MAM database. Thus, all the fixed design elements needed for playout - logos, straps, and so on - are available in the Channel Pack.

To refer to dynamic content, Scene Parameters are defined. These parameters are dynamically updated with the assets' filename when Events are scheduled. Dynamic content is fetched from Storage for playout.

Example:

Scene Parameter	Event ID	Scene Parameter Value when scheduled
clip	12345	a0000548.avf
clip	12346	a0000978.avf
clip	12347	a0000564.avf

An Object can also refer to a file's metadata fields. This metadata information can be played out, or is used to schedule Events. For examples, clip title and artist information is derived for playout from the clips' <title> and <artist> metadata fields.

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For testing purposes, test media (images, videos) can be added to the Test Media library. Note that test media will not be included in the Channel Pack when the Project is exported.

3.5 Main Event

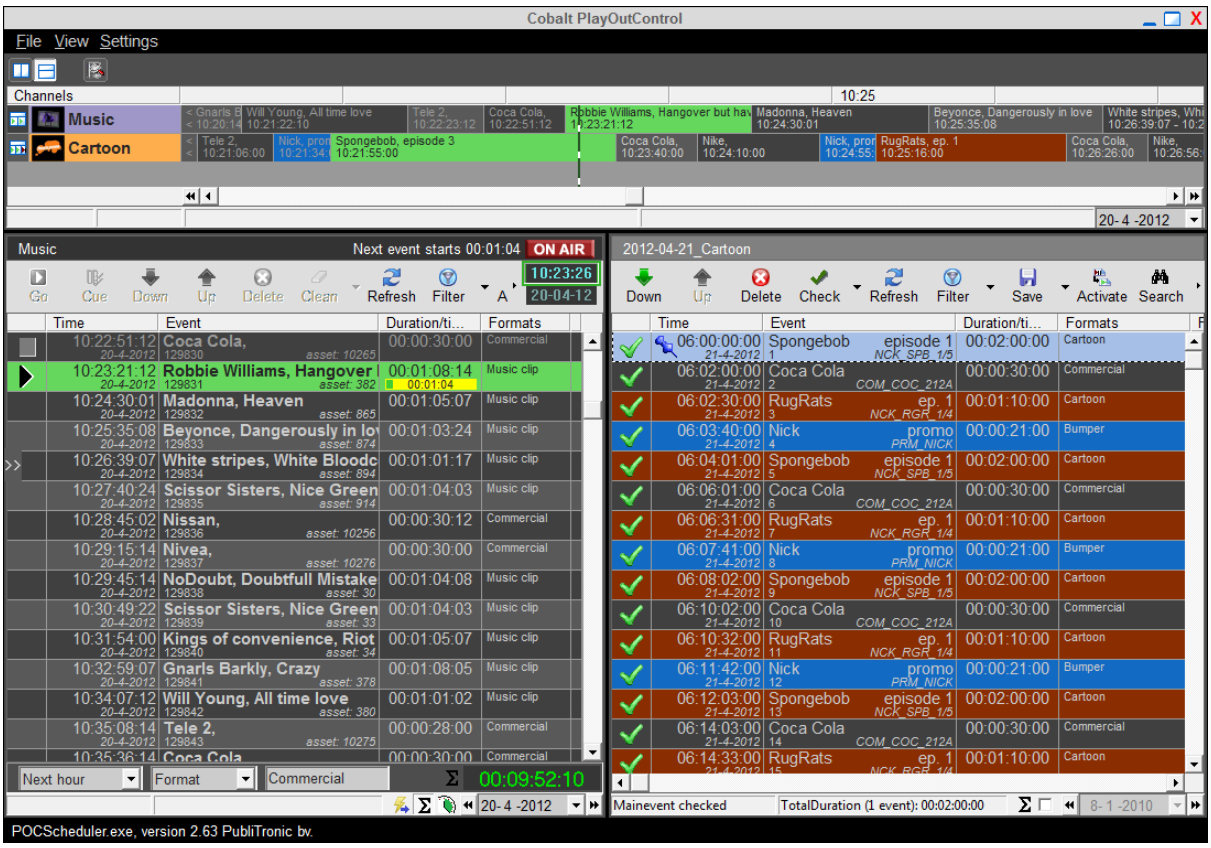
In this paragraph we will briefly explain the concepts ´main Asset´ and 'main Event' that this manual at some points refers to.

A Playlist lists main Events. Each main Event consists of secondary Events (Templates and Applets).

Example: in a music show Format, Events are built of the following secondary Events:

- Playout the clip.
  The clip is the main Asset. The dynamic reference to the music clip file (scene parameter usually linked to the File property of the Clip Player object) is updated with the clip asset's filename when the Events are scheduled. Dynamic content is fetched from Storage for playout.
- Fade in the logo 5 seconds after the start of the main Event.
  The logo is a fixed Asset that is included in the Channel Pack
- Fade out the logo 3 seconds before the end of the main Event.

The secondary Events are timed relative to the main Asset's duration.

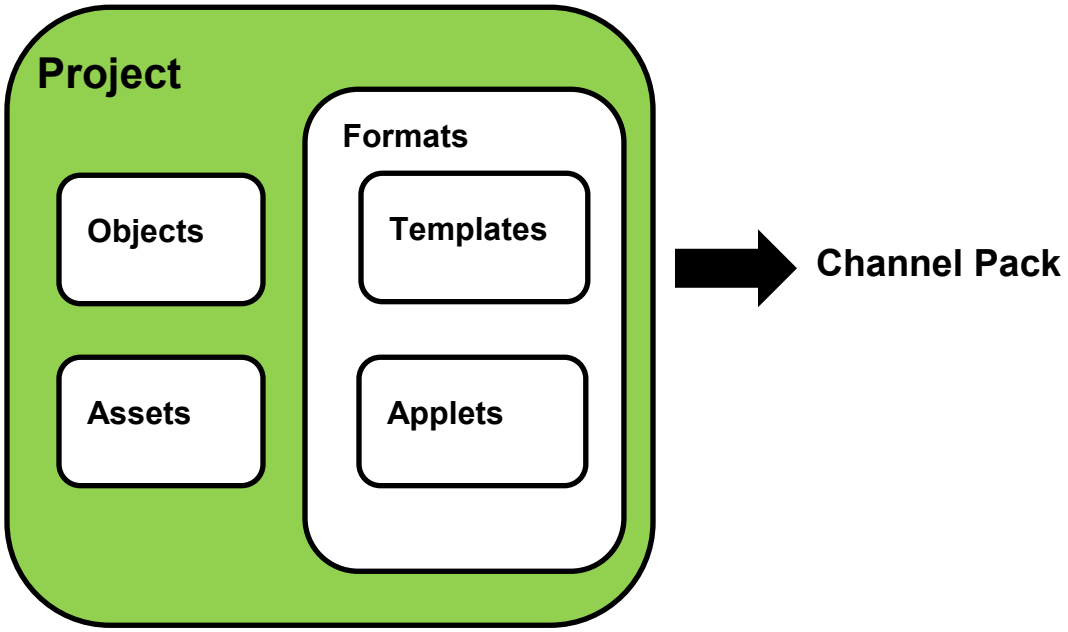


Example playlist in Playout Control, listing main Events.

3.6 Projects and Channel Packs

A Project contains all the elements that together compose a Channel's on-air design: fixed Assets, Objects, Templates, Applets and Formats. Projects are designed in Channel Composer and are then exported to the TX/MAM-database as a Channel Pack. Formats are now available for scheduling.

Before playout, the Channel Pack is transferred from the TX/MAM database to the playout nodes. Dynamic content is fetched from Storage and is also transferred to the playout nodes.

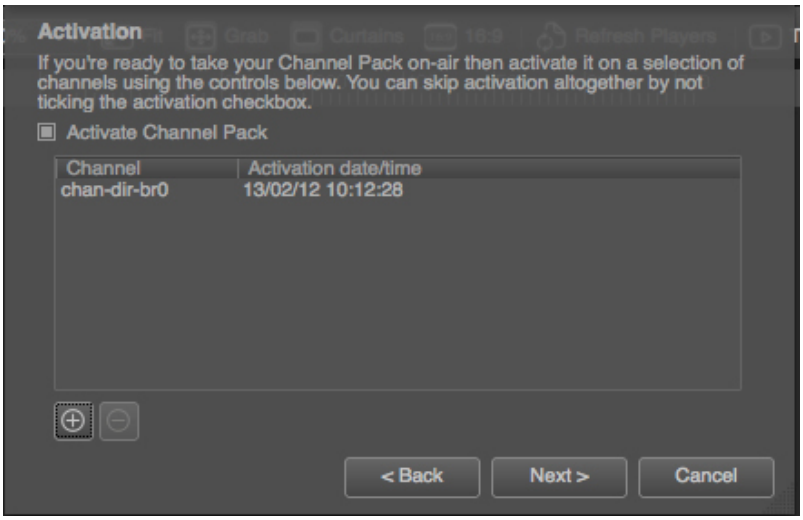


3.7 Channel Pack Activation and Scheduling

When creating a Schedule, the Cobalt scheduling process will apply the Channel Pack that is active at the Events' planned start time. This means that Events are scheduled with the Formats from this Pack. Events in a Playlist play out the Formats they were scheduled with.

Example:

Schedule	**Channel Pack**	
Events are scheduled with	the Assets, Templates, Applets and Formats from:	
Event Start time: 13/02/12 12:00:00		Channel Pack ID: 2400 Activation starts: 13/02/12 12:00:00
Event Start time: 13/02/12 12:03:00		
Event Start time: 13/02/12 and so on		
Event Start time: 14/02/12 12:00:00		Channel Pack ID: 2312 Activation starts: 14/02/12 12:00:00
Event Start time: 14/02/12 12:03:00		
Event Start time: 14/02/12 and so on		



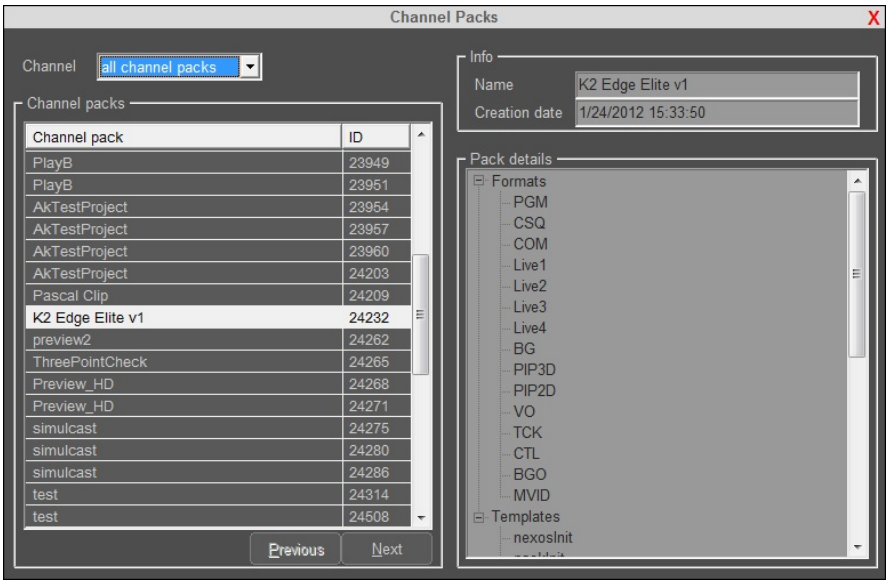
Example Activation date and time set for a Channel Pack.

The Channel Pack's activation period can be specified:

- in Channel Composer when exporting the Project to the TX/MAM database
- via the ‘Manage Exports’ option
- using the Channel Pack Manager.

Channel Composer ‘Export’ and ‘Manage Export’ options are described in Chapter 5. Note that you can also view (not modify) Channel Packs in POC.

When scheduling Events in an active Playlist that uses a different Channel Pack than the currently loaded Pack, leave at least one minute for this Pack to load. In other words, schedule Events at least one minute in advance of start of playout.

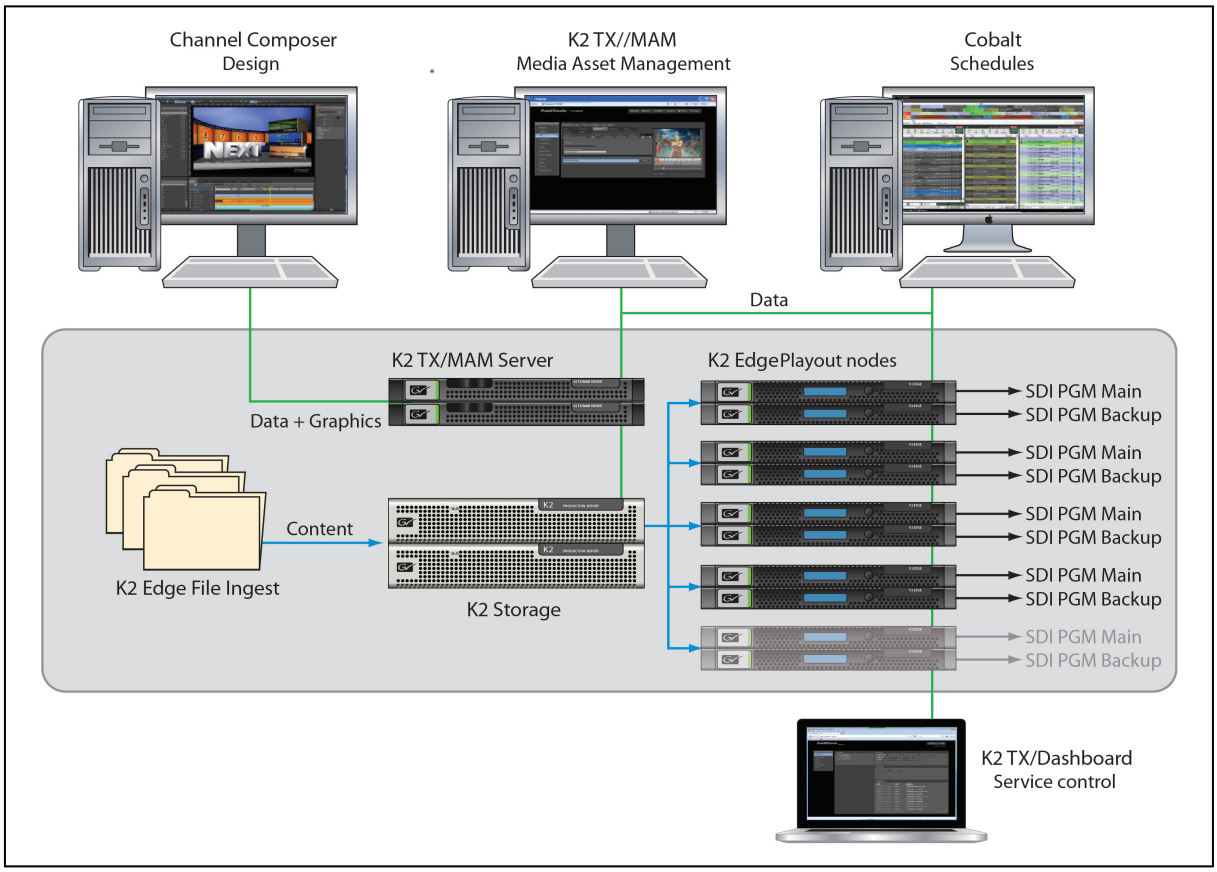


Example Channel Packs overview in POC. The currently active Pack is highlighted. Note that Channel Packs have an asset ID. When a Channel Pack is changed and exported, a new pack with a new asset ID is created.

If a Channel Pack is changed after it has been used in a Schedule, you need to regenerate the Schedule (with the new Pack ID) to apply these changes.

3.8 Workflow

- Channels are designed in Channel Composer.
- The Project is then exported to the Cobalt (TX/MAM) database and includes all the design elements needed for playout.
- Formats are now ready for scheduling.
- Before playout, the Channel Pack is transferred from the TX/MAM database to the playout nodes. Dynamic content is fetched from Storage and also transferred to the playout nodes.



4 Channel Composer: getting started

4.1 System Requirements (Mac)

- A Mac computer with a multi-core Intel processor (64-bit).
- Mac OS X v10.6 (Snow Leopard) or later.
- Memory: 4GB of RAM.
- Video card:
    - 512MB of VRAM or more.
    - OpenGL 2.1 and the following OpenGL extensions:
        - EXT_framebuffer_multisample
        - EXT_framebuffer_blit
        - ARB_texture_rectangle
        - APPLE_flush_buffer_range
    - NOT recommended: Nvidia Quadro cards.
    - Recommended: ATI Radeon HD5670 or better, Nvidia Geforce GT320 or better.
- A USB-dongle with a Channel Composer license.

[See the following link for an overview of the OpenGL support on Mac OS X for your system and video card: http://developer.apple.com/graphicsimaging/opengl/capabilities/]

[See the *readme* included with the installation image for most recent requirements.]

4.2 Installation Mac

- Double-click the Channel Composer image (.dmg file) to mount the disk image.
  The disk image icon appears on the desktop and the next window opens.
- Install the dongle driver (SentinelSystemDriver).
- Drag the Channel Composer icon on the Applications folder, to copy Channel Composer to your Applications folder.

You can now start Channel Composer from the Applications folder.

4.3 Requirements (Windows)

- An Intel/AMD 64-bit multiprocessor PC.
- A 64bit edition of Windows Vista or Windows 7.
- Memory: 4GB of RAM.
- Video card:
    - 512MB of VRAM or more.
    - OpenGL 2.1 and the following OpenGL extensions:
        - EXT_framebuffer_multisample
        - EXT_framebuffer_blit
        - ARB_texture_rectangle
        - ARB_map_buffer_range
    - NOT recommended: Nvidia Quadro cards.
    - Recommended: Nvidia Geforce GTS250 or better.
- A USB dongle with a Channel Composer license.

[See the *readme* included with the installation image for most recent requirements.]

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We strongly recommend installing the Sentinel System Driver (dongle driver) that is distributed as part of the Channel Composer disk image.

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It is not possible to run Channel Composer via Windows Remote Desktop.

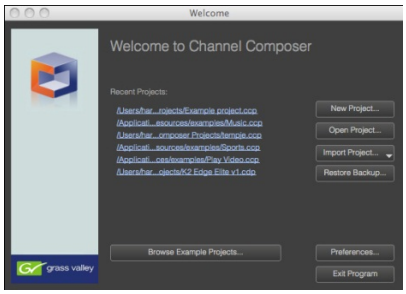
4.4 Installation Windows

- Double-click the installer exe file and follow the instructions.

☞

It is recommended to run Channel Composer as an Administrators group user. The easiest way to achieve this is to mark the application to run as Administrator: in Windows Explorer, access 'Channel Composer.exe' properties, navigate to 'Compatibility' tab and tick 'Run as Administrator' checkbox. Channel Composer does not really require elevated privileges to run, but in doing so a wider range of thread scheduling priorities become available thus allowing for faster response times. Note that Channel Composer does not create or modify any files unless instructed by the user, i.e. to save a project on disk. To that effect it is perfectly safe to run Channel Composer as Administrators group user.

4.5 Starting Channel Composer

	To start Channel Composer, double-click the Channel Composer icon.
	Channel Composer opens. You can now start working with Projects. Chapter 5 explains the options in this window.

4.6 Setting preferences and customizing Channel Composer

The Channel Composer workspace can easily be customized. One way to do this is by adding or removing (**View** > **Windows**) windows, or by scaling and repositioning windows (drag and drop). Windows can also be added together by dragging a window on top of another. Double-click the window's title to dock and undock windows. Other options to customize Channel Composer include:

Channel Composer > **Preferences**	On the toolbar > **Channel Composer** > **Preferences**, you can define preferences, for:
	• Nexos:
	  ◦ Broadcast Format
	  ◦ Multi-Sampling Anti Aliasing: use to improve the design's visual quality on your workstation (remove edge line roughness and jagged edges). Note that higher sample rates impact performance of your workstation.
	  ◦ Players: set the big buffer pool size in MB.
	• **File**:
	  ◦ Specify the default Project folder.
	  ◦ Autosave: disable (default) or enable autosave every x minutes
	• **History:** the number of actions tracked in history.
	• **Guides**: the color of the guides and snap distance.

	• **Grid**: the color of the grid, spacing and snap distance. • **Backup System**: number of backups to keep. • **Networking:** specify the FTP transfer mode.
View > **Windows**	On the toolbar **View** > **Windows**, you can define which windows you want to display or hide. Options are: • Project Navigator • History • Library • Project Assets • Objects • Object Properties • Template Timeline • Text Styles • Scene Parameters • Format Timeline • Template Rules
Main menu > **View**	On the main menu > **View** , you can set a number of options for the Stage: • **Zoom In**: zoom in on the Stage. • **Zoom Out**: zoom out from the Stage. • **Zoom to 100%**: scale the Stage to 100%. • **Fit in Window**: fit the Stage in the available workspace. • **Rulers**: show or hide rulers. • **Grid**: show or hide the grid. • **Guides**: show or hide guides. • **Snap to Guides**: enable or disable 'snap to guides'. • **Snap to Grid**: enable or disable 'snap to grid'. • **Pixel Perfect Information:** show or hide pixel perfect information. • **Windows**: select the windows you want to display. • **Clean View Mode**: activate to hide all windows and display the Stage only, deactivate to show windows and the Stage.

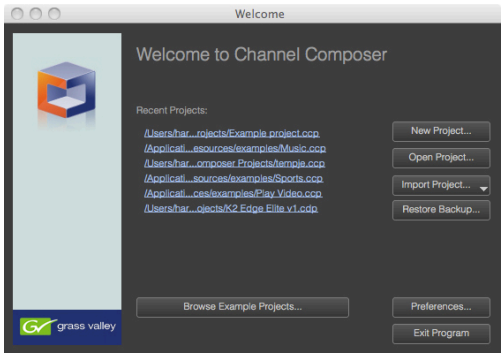
Main toolbar	On the toolbar, you can set a number of options for the Stage: • **Zoom In**: zoom in on the Stage. • **Zoom Out**: zoom out of the Stage. • **Percentage**: zoom the stage to the selected percentage. • **Fit**: fit the Stage in the available workspace. • **Curtains:** Objects may be placed outside of the active Stage area to allow animation on to and off of the Stage. The curtains button covers this outside area for a clear view of what the final Channel output will be.

5 Working with Projects

Channel Composer works with Projects. When exported to disk or the TX/MAM database, the Project is bundled into a Channel Pack [see also paragraph 3.6]. Options are:

- Create a new Project.
- Open an existing Project.
- Import a Project from a Channel Pack on disk or from the TX/MAM database.
- Restore a backup.
- Merge Projects.

5.1 Creating or opening an existing project

<table>
<tr>
<td> 
</td>
<td>Following options are available from the Channel Composer Welcome screen, and from the File option on the main menu:
• Create a new Project.
• Open an existing Project.
• Open an existing Project from a list of recent Projects.
• Import a Project.
• Restore a Backup.</td>
</tr>
<tr>
<td colspan="2">☞
In the Welcome window, Channel Composer preferences can be set. This can be necessary when the Project you want to open uses a different broadcast format than Channel Composer’s current format (Channel Composer opens with the broadcast format last used). After changing the broadcast format, you have to restart Channel Composer.
Instead of changing Channel Composer’s broadcast format, you can load the Project with the currently active format and thus change the Project’s broadcast format. Note that this can result in an incorrect output resolution and playback speed.</td>
</tr>
<tr>
<td>New Project</td>
<td>For a new Project, specify:
• Name
• Location
• Author
• Description</td>
</tr>
</table>

☞ New Projects contain three default Templates: • nexosInit: this Template is automatically started after a nexos restart and places the Color Bar Object on-screen (default). This template can be further customized at will. • packInit: this Template is automatically started when a new Channel Pack is started, before the first Template in this Pack. This Template can be further customized at will, for example to start a Live Player. • Template: an empty Template that contains an Out Point for the Color Bar Object (default). We advise to remove the Color Bars to save resources [see also the Example Project *Optimization*].	
File > **Project Settings**	Project properties can be viewed under **File** > **Project Settings**. Note that Export and Channel Pack Asset Type options can be reset here.
File > **Merge Project**	The **Merge** option can be found under the **File** option.
File > **Preferences**	Preferences can be viewed and modified under **File > Preferences**.

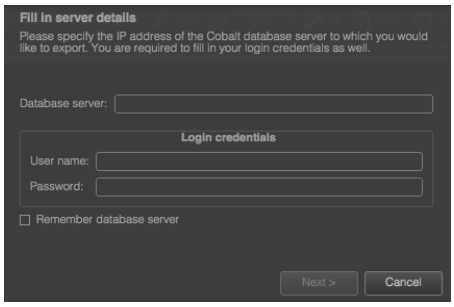
5.2 Importing a Project

Projects can be imported from a Channel Pack on disk or from the TX/MAM database.

5.2.1 Importing a Project from a Channel Pack on disk

- Click **File** > **Import Project** > **from Disk**.
- Browse to the folder the Channel pack is located in and select the applicable Channel Pack (.cpk file).

5.2.2 Importing a Project from the TX/MAM database

File > **Import Project** > **from TX/MAM Database**	▪ Click **File** > **Import Project** > **from TX/MAM Database**.
	▪ Specify the (virtual) IP-address of the TX/MAM server. ▪ Fill in the login credentials for the TX/MAM server. Note that this user must be defined in Cobalt Asset Manager and should have read rights for the Channel Pack Asset Type. ▪ Click **Next** to continue, or **Cancel** to discard.
Select Project	▪ Select the Channel Pack you want to import. ▪ Click **Next** to continue or **Cancel** to discard.
Select destination folder	▪ Select a destination folder for the Project. ▪ Click **Next** to start the import, **Back** to go to the previous screen or **Cancel** to discard.

☞
You can use the Channel Pack Manager to list the Channel Packs that have been exported to a TX/MAM database.

5.3 Merging Projects

Merging Projects is an easy means to reuse parts of a Project (Templates, Formats, and Applets). For example, to reuse a set of ‘ticker’ and ‘play video’ Templates and Formats, place these items in a separate Project, then merge this Project with other Projects to reuse. Merging Projects can also be useful when working with several people on a Project.

The Merge Project functionality has been enhanced with the option to do a replacement merge. Using this type of merge, objects and assets in the merged-in project replace objects and assets of the same name in the original project.

File > **Merge**	▪ Click **File** > **Merge**. ▪ Select the type of merge and Project you want to merge with the current projects.
How should potential object- or asset name conflicts be resolved? Rename conflicting merged-in objects/assets E.g. a merged-in object with name "Logo" becomes "Logo 2" i contains an object with name "Logo". Replace existing objects/assets with merged-in objects/assets E.g. the merged-in object with name "Logo" replaces an objec	▪ Select the appropriate option if performing a replacement merge. ▪ Click **Open** to merge, **Cancel** to discard.

5.4 Restoring a Backup

Each time a Channel Composer Project is saved, a backup is automatically created. This backup contains all project data, except for Project Assets.

To restore a backup:

- Click **File** >**Restore Backup**.
- Select the backup you want to restore and click **Restore**.

5.5 Exporting a Project

When a Project is exported, a Channel Pack is created. Options are:

- Export to disk, for example to create a backup: create a Channel Pack and export to the specified destination folder.
- Export to the TX/MAM database: create a Channel Pack and export to the TX/MAM database when the design is ready, or to share with other people working on different workstations or locations. Once exported to the TX/MAM database, the Channel Pack can be used for scheduling. You can specify the Project's activation period during export, or at a later stage.
- Export to Playout: create a Channel Pack and export to a playout server for 3rd party scheduling or testing purposes.

☞

Before you can export Projects, at least one CPK (Channel Pack) Asset Type and Format Asset Type must be available in Cobalt/TX/MAM.

☞

To be able to work with Exports, you also need read/write rights for the appropriate Channels and CPK (Channel Pack) Asset Types. These user rights are set in Cobalt Asset Manager.

☞

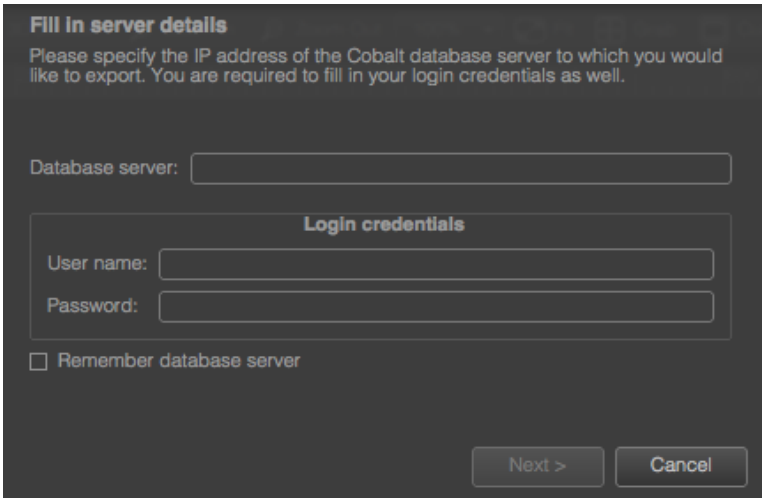
Channel Packs can be validated against a test schedule. For more information see chapter 12.

5.6 Exporting a Project to disk

- Click **File** > **Export Project** > **to Disk**.
- Specify the destination folder and Channel Pack name.

5.6.1 Exporting a Project to the TX/MAM database

File	▪ Click **File** > **Export Project** > **to TX/MAM Database**.

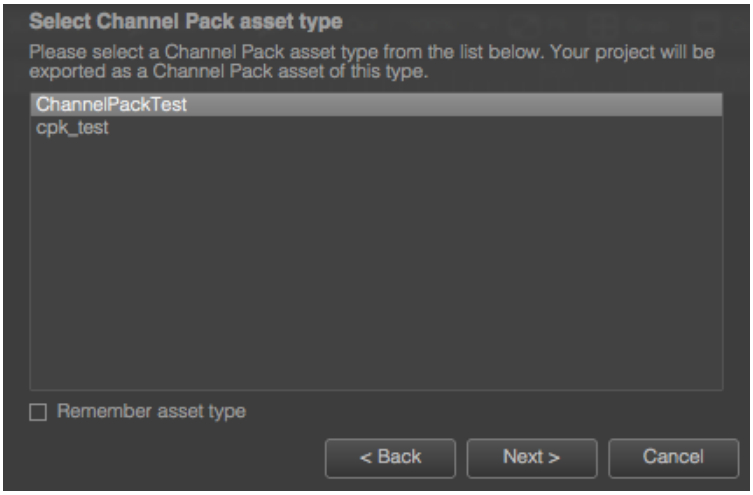


- Specify the IP-address of the TX/MAM database server.
- Specify the user name and password for the TX/MAM database.

If you select the **Remember database server** option, the database server specified will be saved as a property of the Project.

(To reset, click **Project** > **Project Settings** > **Export TX/MAM database server** > **Reset**.)

- Click **Next** to continue, **Cancel** to discard.

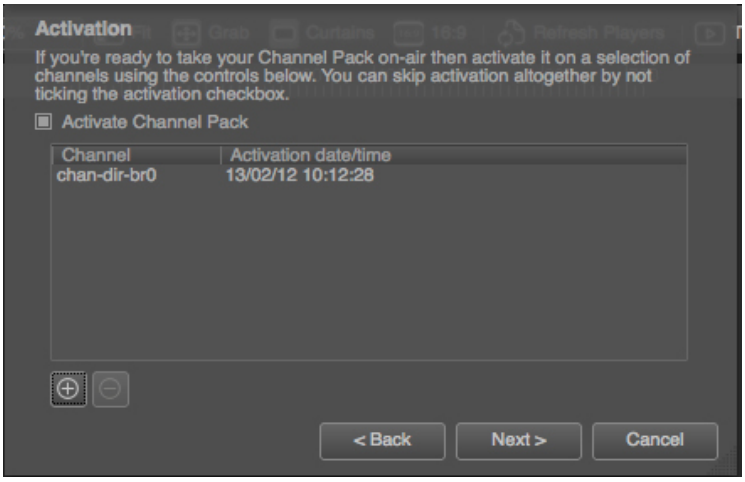


- Select a Channel Pack Asset type from the Asset types listed. The Project will be exported as an Asset of this type.

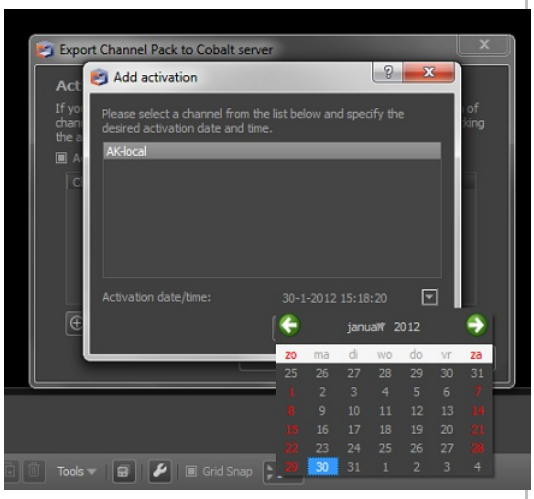
If you select the **Remember Asset type** option, the Asset type specified will be saved as a property of the Project.

(To reset, click **Project** > **Project Settings** > **Export** > **Channel Pack asset type** > **Reset**.)

- Click **Next** to continue, **Back** to go to the previous screen or **Cancel** to discard.

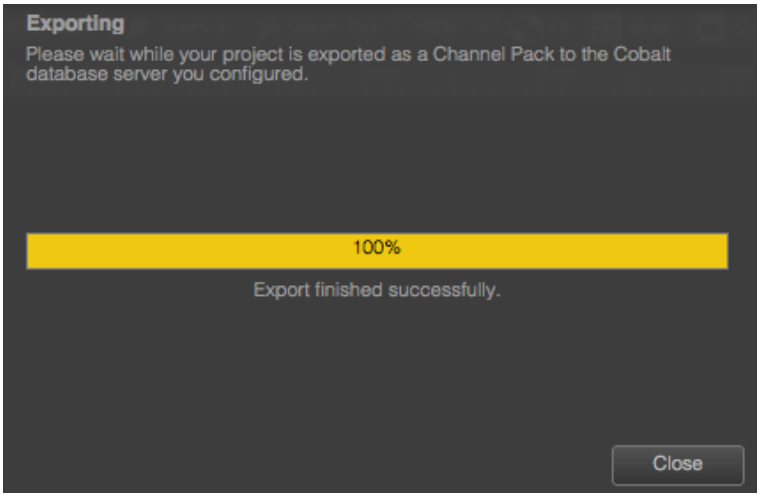


- To export the Project to the playout server without activation, leave the **Activate Channel Pack** option unchecked and click **Next**. You can activate the pack at a later Stage via **File** > **Manage Exports**.



- To activate the Project on one or more Channels, click the **Activate Channel Pack** option.
- Click the icon to add a Channel to the activation list. To specify an activation date and time, click the arrow icon.
- Click **OK** to save, **Cancel** to discard.
- Click the icon to delete a Channel from the activation list.
- Click **Next** to export and activate the Project, **Back** to go to the previous screen or **Cancel** to discard.

Note that only one Channel Pack can be active simultaneously per Channel.



The Project is exported. All elements needed for playout – Assets, Objects, Templates, Applets and Formats – are included in the Channel Pack.

Dynamic content will be fetched from Storage, using the Scene Parameters defined in the Project.

5.6.2 Exporting a Project to Playout

- Click **File** > **Export Project** > **to Playout…**
- Specify the playout server(s) you want to export the Project to:
  - Server IP
  - Channel number
  - Activation time

5.7 Managing Exports

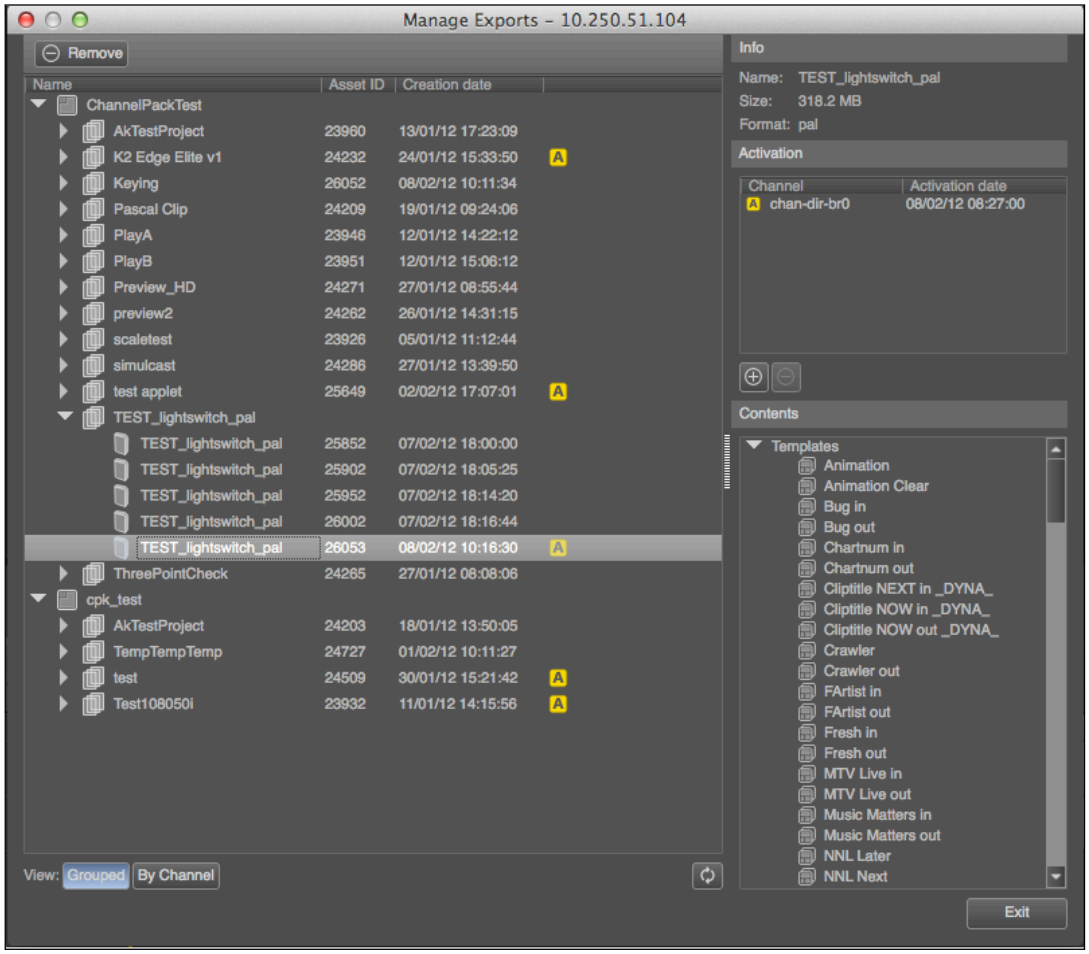
This option lets you manage Channel Packs. Options:

- View Project Packs, per Channel or Project in chronological order (Grouped).
- Remove a Pack from the database.
- Modify the activation properties of a Channel Pack (Channel, activation date/time).
- View Channel Pack contents.

- To open, go to **File** > **Manage Exports**. The **Manage Exports** window opens.
- Specify the IP-address of the TX/MAM database server.
- Specify the user name and password used for the export. This is a Cobalt user.

  Note that this user should have read and/or write rights for the applicable Channel Pack Asset Type and Channel. These user rights are set in Cobalt Asset Manager.

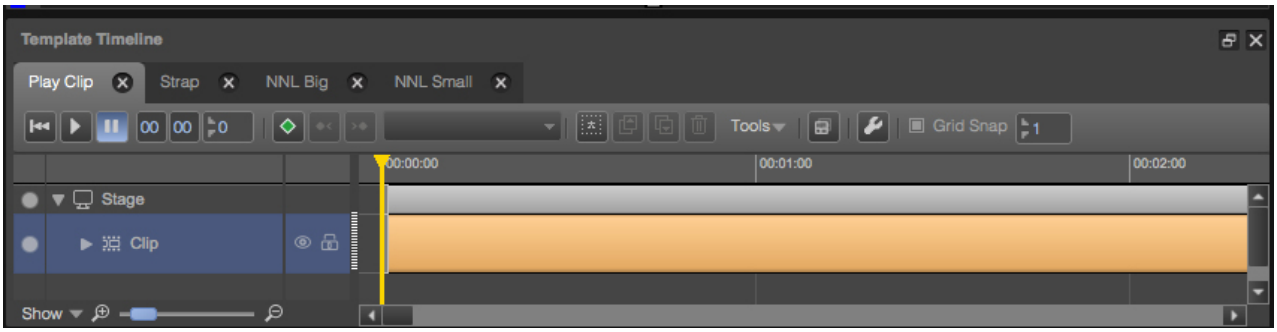
The example below shows Channel Packs per Project (Grouped). The A icon indicates that a Pack is currently active in Cobalt. The Info window shows properties of the selected Pack. The Contents window shows Templates, Formats, Applets and Scene Parameters included in the selected Pack.



View: **Grouped** **Channel**	: View Channel Packs Grouped per Project (in chronological order) or by Channel.
	Indicates that the Channel Pack is currently active in Cobalt.
Remove	To remove a Pack from the database, select the Pack and click the **Remove** icon.
	To list Channels and activation date/time for a Pack, select the Pack in the list. ☞ Note that only one Channel Pack can be active simultaneously per Channel.
	To activate a Channel Pack for a Channel: ▪ Select the Pack. ▪ In the **Activation** panel**,** click the **Add** icon. Specify the Channel and activation date/time. ▪ Click **OK** to confirm, **Cancel** to discard.
	To de-activate a Channel Pack: ▪ Select the Pack, the applicable Channel and activation date/time definition. ▪ In the **Activation** panel**,** click the **Delete** icon.
Contents	The **Contents** window lists the Templates, Formats, Applets and Scene Parameters included in the Channel Pack.

6 Working with Templates

Templates are used to animate Objects' properties in time.



Example Template Timeline.

☞

Move the player head or use the player buttons or time code fields to preview animations on the Stage.

6.1 Opening a Template

	In the **Project** window, double-click the Template you want to edit, or select the appropriate Template tab in the Template Timeline.

6.2 Creating a new Template

	In the **Project** window, click the **Add Template** icon, or in the toolbar click **Project** > **Add Template**.

6.3 Renaming a Template

	In the **Project** window, select the Template > right-click > **Rename**, or on the Template Timeline double-click the Template name on the tab header.

6.4 Deleting a Template

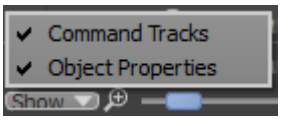
	: In the **Project** window, select the Template > click the **Delete** icon to delete.
	: To delete a template tab from the Template Timeline (the Template itself will still be available in the Project), click the **Delete** icon on the tab header.

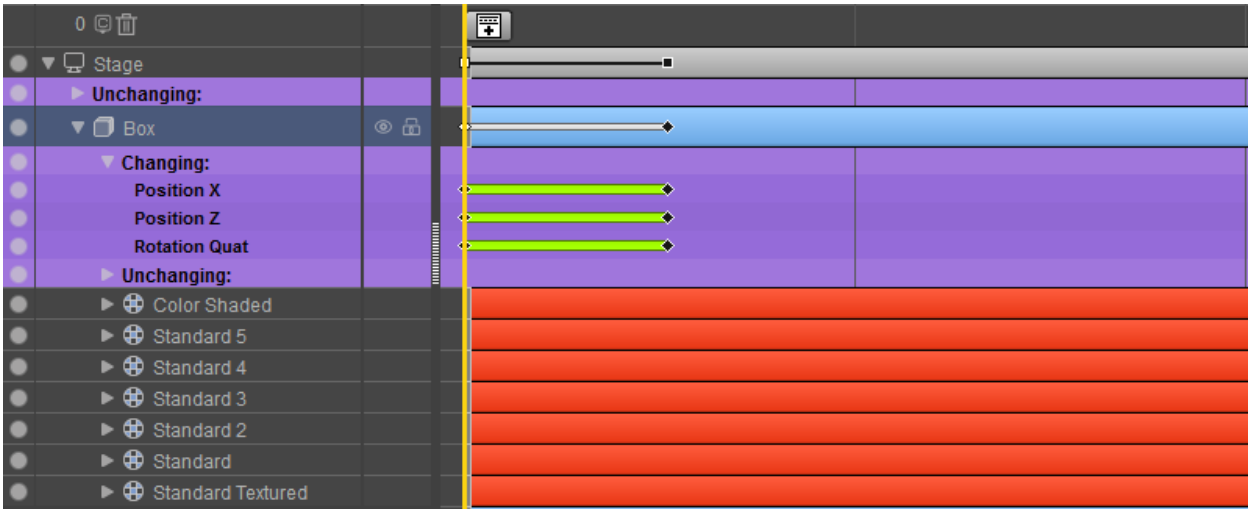
6.5 Copying a Template

	: In the **Project** window, select the Template > right-click > **Duplicate Template**. You can also select the Template on the Template Timeline > click the **Duplicate Template** icon to copy. ☞ Note that Objects in the source Template are not duplicated; in other words, both Templates - the original and the source will use one - and the same Object. If this Object is modified in Template A, it will also be modified in Template B.

6.6 Displaying Object properties on the Timeline

To display not only Objects, but also Object properties on the Timeline, select the Show > Object Properties option in the Timeline's left bottom corner.





☞

Note how the distinction between Changing and Unchanging properties is made.

A green segment between keyframes indicates that the property value changes in between the keyframes. When this segment is grey, property values do not change.

6.7 In Points and Out Points

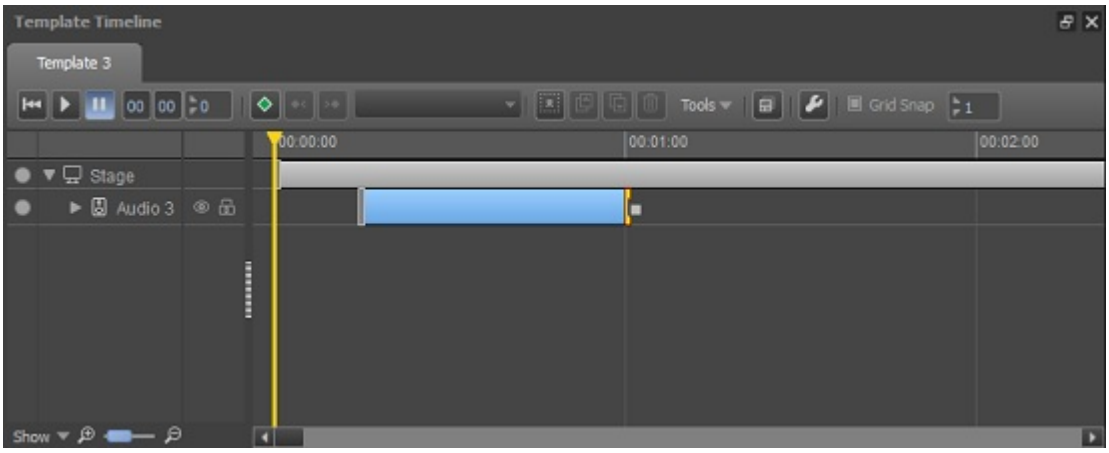
In and Out Points specify when an Object is active, i.e. audible, visible, and so on. As a default, the In Point is set at 00:00:0 and no Out Point is defined.

- To add an In Point, drag the Object's In Point (the Object's activity segment's start on the Timeline) to the appropriate position, or right-click the Timeline on the appropriate position > **Set In Point**.
- To add an Out Point, right-click the Object > **Enable Out Point**, or right-click the Timeline on the appropriate position > **Set Out Point**.
- Then drag the Object's Out Point (the activity segment's end) to the appropriate position, or right-click the Timeline on the appropriate position > **Set Out Point**.

When the **Player** > **Auto-stop at Out Point** option is activated (under Object properties), a Stop Playback action is automatically inserted when an Out Point is added to a Player on the Template Timeline. This will stop the Player. Note that this option only applies for Player Objects.

☞

The Example Project Optimization explains how to work with In and Out Points.



*Example Audio Object with In and Out Point. Because the **Auto-stop at Out Point** is enabled for this Object (Object properties), the Stop Player action is added to the Out Point, as indicated by the Stop Player icon .*

6.8 Keyframing

Keyframes are used to animate Object properties such as position, size and effects over time. A keyframe is a snapshot of the properties of one or more Objects at a specific point in time. Keyframes are used to define start, intermediate and end points of an animation. The frames in between these keyframes are then automatically filled in by Channel Composer.

☞

You can also use Controllers to animate Objects. For an explanation, see **File** > **Example Projects**: Controllers.

6.8.1 Keyframing

00 00 0	To add a keyframe, on the Template Timeline, select the Object(s) you want to animate. On the Timeline, specify the point in time where you want to start the animation. To do this, specify mm:ss:ff or move the player head to the appropriate position on the Timeline. Define the Object's properties at his point in time.
	Now click the **Add keyframe** icon to keyframe the Objects' properties at this point in time.
	On the Timeline, specify the point the time where want to end the animation. Define the Object's properties at that point in time and insert a second keyframe. Channel Composer will automatically fill in the Object's animation between the keyframes. Any number of keyframes can be defined. Move the player head on the Timeline to preview animations.
The icon on the Timeline indicates that a keyframe is added. The icon indicates that a keyframe is added to an Object or sub-property on a lower level.	
	: Click to go to the selected Object's previous keyframe.
	: Click to go to the selected Object's next keyframe.
Tools	: Reverse or timescale selected keyframes.
Constant Speed	: Define the type of interpolation for the selected keyframes. Options are: • **Constant Speed** • **Ease In** • **Ease Out** • **Step**

6.8.2 Updating keyframes

Keyframes can be updated on the property level in the Object's properties window.

	:	This icon indicates that keyframes have been defined for a property group. Click the icon to display and edit settings. Note that properties' values are displayed for the point in time selected in the Template Timeline.
	:	This icon indicates that keyframes have been defined for a property. Click the icon to edit. Click the icon to display and edit settings. Note that properties' values are displayed for the point in time selected in the Template Timeline.

Keyframes can be updated on the **Template Timeline**:

	:	Click the update icon to update the selected keyframe with the properties defined for the Object.

To update all properties' values of a keyframe for all selected Objects, select the Object(s) > right-click > **Object Keyframes** > **Update Keyframe**.

6.8.3 Deleting keyframes

On the Template Timeline, open the Template you want to edit.

	:	To delete keyframes: on the Timeline, select the keyframes you want to delete. Then click the **Delete** icon.
All	:	To delete all keyframes for a selected Object: right-click the Object > **Object Keyframes** > **Delete** > **From All**.
All + Ripple	:	To delete all keyframes for a selected Object including its sub-Objects: right-click the Object > **Object Keyframes** > **Delete** > **All + Ripple**.
From Selected	:	To delete the selected keyframes from the selected Object: right-click the Object > **Object Keyframes** > **Delete** > **From Selected**.

6.8.4 Copying keyframes

	:	To copy keyframes, on the Timeline select the keyframes you want to copy. Then click the **copy** icon.
Copy All	:	To copy all keyframes for a selected Object: right-click the Object > **Object Keyframes** > **Copy All**.
	:	Click the **Paste** icon to paste keyframe(s).

6.8.5 Detaching keyframes

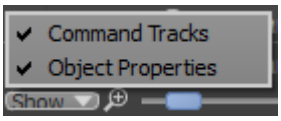
Detach	:	To detach an Object's keyframes from other keyframes in an animation, right-click the Object > **Object Keyframes** > **Detach**. Options are: • From All: detach the Object from all keyframes • From All + Ripple: detach an Object including its underlying Objects from all keyframes • **From Selection**: detach the Object from the selected keyframes only

6.9 Template settings

	:	Click the **Define Template settings** icon to specify Template settings: • hard or soft cuts • priority mode (used for JIP (Join In Progress))

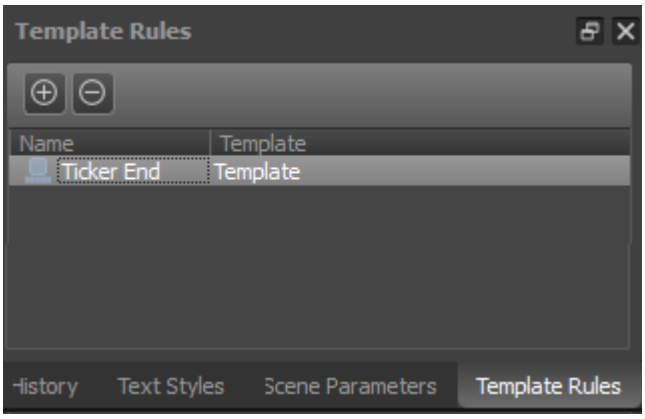
6.10 Commands

- To add a Command to a Template, drag the Command from the **Prefabs** library on the Timeline.

	To display or hide command tracks on the Timeline, click the **Show** > **Command Tracks** option. This option can be found in the bottom left corner of the Template Timeline
	The example on the left shows the Timeline with two Commands inserted, on two command tracks: • a Clear all Command on track 0 • a Ticker Command on track 1
	: A command track is automatically inserted when a Command is dragged on the Timeline. To add additional tracks, click the icon.
	: To delete a command track, click the icon.
	: Copy the selected Commands to the clipboard.
	: Paste clipboard items on the Timeline.

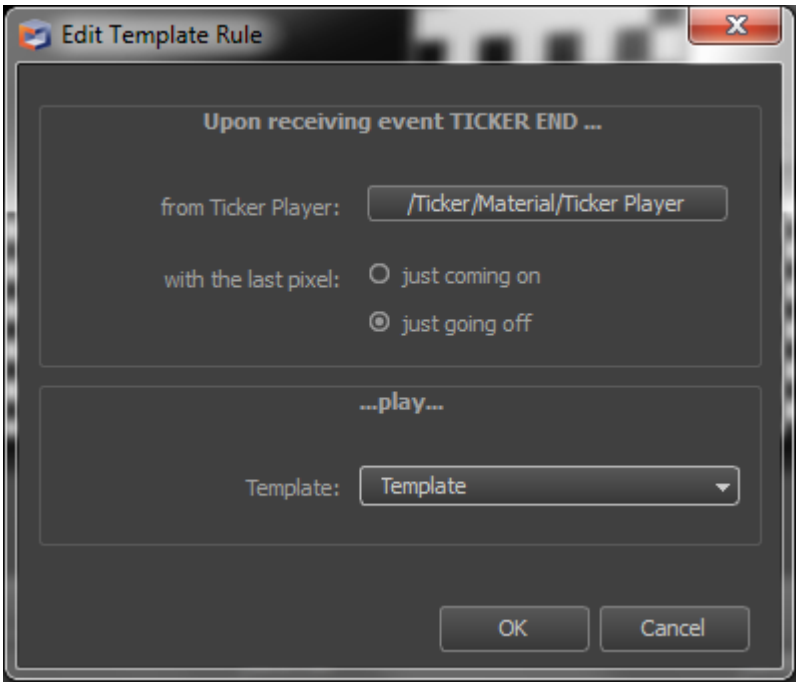
6.11 Template Rules

Template Rules can be used to start a Template based on a predefined Event, for example start a Template at Ticker End (Event). A Ticker End Event is generated by the Ticker Player when the last pixel of the last ticker story has been played out.



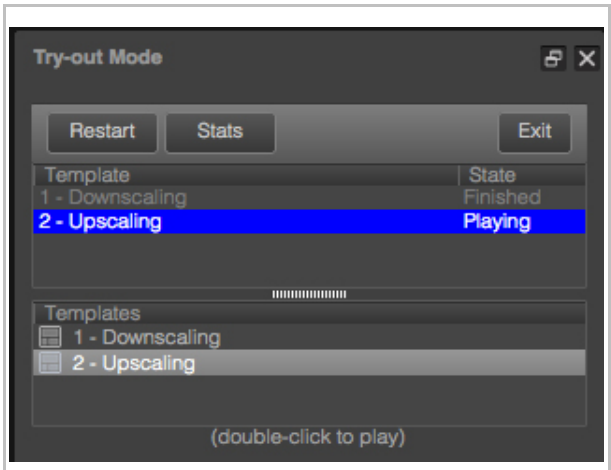
The Template Rules window.

	: Click to add a Rule.
	: Click to delete the selected Rule.
Rule	: Click a Rule to edit.



Example Template Rule.

6.12 Try-out mode

	In try-out mode, the Stage shows a preview of your Templates. Note that the output will be exactly the same as on the K2 Edge, but will not be guaranteed real-time. ☞ Using the Opt-out filter makes it possible to preview each Channel separately.

To preview Templates in try-out mode:

	On the main toolbar, click the **Try out mode** icon to switch to try-out mode. Note that when in Tryout mode, you cannot edit.
	In the **Try-out mode window**, double-click Templates to cue. In the cue, drag Templates to change order.
Restart	Click **Restart** to empty the cue**.**
Stats	Click **Stats** to display statistics. ☞ Use the nexos playback statistics tool to generate playout statistics [see also chapter 12].
Exit	Click **Exit** to exit Tryout mode.
Colors	Orange indicates that Templates are loading. Blue indicates that Templates are playing. Grey indicates that Templates have been played.

6.13 Pixel Perfect

An Object is pixel perfect if it maps its content straight to playout and does not transform the content's pixels during the rendering process. Distortions can occur for many reasons. For example: the Object is rotated, scaled, positioned in front or behind the 2D plane or on sub pixel coordinates, the content is stretched over the surface of a 3D object, texture filtering and/or effects are applied, etcetera. These distortions are often unwanted, especially for 2D-elements such as text and main clips.

To display Objects' pixel perfect information, on the toolbar select the **View** > **Pixel Perfect** option.

An exact match is displayed in green: **Pixel perfect**. Discrepancies are displayed in red:

- **Material distortion**: the material applied transforms pixels.
- **Not on 2D plane**: the plane on which content is displayed is not on the 2D plane (not on the z-coordinate 0).
- **Shape/size mismatch**: the plane on which content is displayed is bigger or smaller than the content's dimensions.
- **Rotated**: the plane on which content is displayed is rotated.
- **Sub-pixel coordinates**: one or more edges of an Object are on sub-pixel coordinates.
- **Texture filtering on**: texture filtering is enabled.
- **Effect on**: the Object has an effect.
- **Height is not an even value**: the interlaced content is displayed on a plane that does not have a height that is an even number (in pixels).

☞

The Example Project *Quality Assurance* explains various Channel Composer techniques that can be used to counter graphics artifacts commonly seen in broadcasting. Examples demonstrate how to deal with the most common causes of distortions for 2D elements: sub pixel positioning and texture filtering of interlaced content.

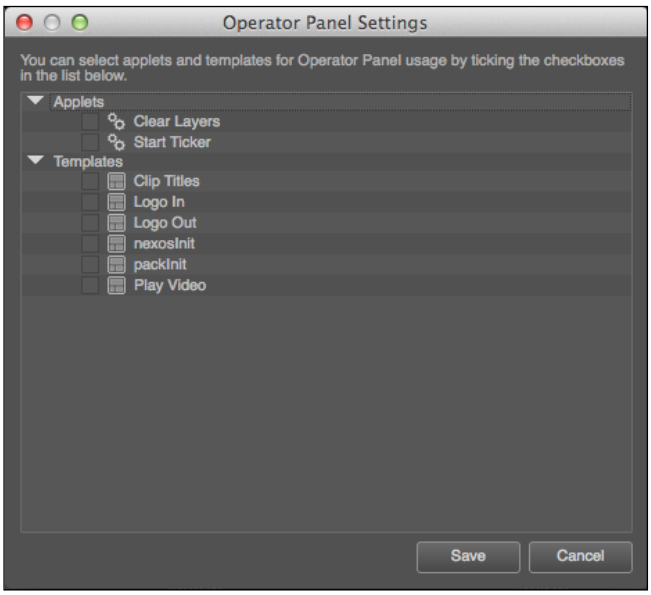
6.14 Creating an Operator Panel

Operator Panels are created in Channel Composer for use in Cobalt Playout Control (POC). Each Project can have one Operator Panel. An Operator Panel consists of buttons representing Templates, Applets and Scene Parameters. When a button is clicked in POC, the Template, Applets and Scene Parameters associated with the button are triggered on the playout server.

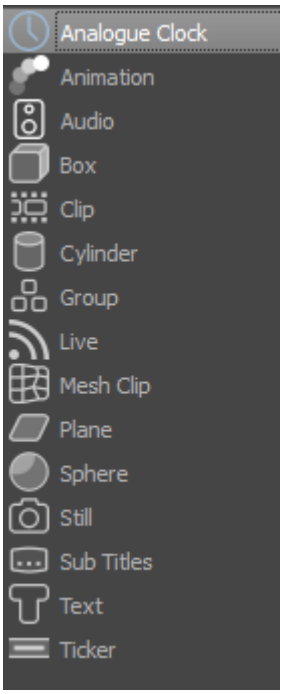
When a Project is exported to the TX/MAM database and the Project Pack is activated, the Operator Panel will be available for the related Channel in Cobalt Playout Control (POC).

To create an Operator Panel:

- Decide which Templates you want to be able to operate via the Panel in POC.
- On the main menu, go to **Project** > **Operator Panel Settings**.
- A dialogue opens listing the Templates, Applets and Scene Parameters in the current Project. Select the check boxes in front of the items that you want to use on your Operator Panel.
- When finished, click **Save**.



Example Operator Panel Settings in Channel Composer.

	Channel Composer works with Objects. Objects are placed on the Stage and are animated in time on the Template Timeline.

☞

A number of Example Projects that explain how to work with Objects is included in Channel Composer. You can find these projects under **File** > **Example Projects**.

6.15 Adding Objects

To add an Object to a Template:

Template Timeline	▪ On the **Template Timeline**, first select the Template you want to add the Object to. Now there are different options for adding Objects:
	▪ On the **toolbar**, click the **Add Object** icon, then select the type of Object you want to add and double-click.
Assets window **Test Media window** **Prefabs window**	▪ You can select an Asset form the **Assets** or **Test Media** or **Prefabs** Library window and drag this Asset on the Stage. An Object which refers to this Asset is automatically created.
Objects window	▪ You can also select an existing Object in the **Objects** window. Then right-click > **Add to Template,** or drag the Object on the Template.

☞

Note that in Channel Composer, one and the same Object can be used in different Templates and its properties can have different values per Template.

6.16 Modifying an Object's properties

There are several ways to edit an Object's properties:

Object window	To open an Object's properties window: click the Object on the **Stage**, in the **Objects** window or on the **Template Timeline**. (If the **Object** window is not visible, enable the window: **toolbar** > **View** > **Windows** > **Object**). Or double-click the Object in the Objects window, on the Template Timeline or Stage.
Stage	Objects can also be transformed on the Stage. Select the Object and drag the handles to modify the Object.

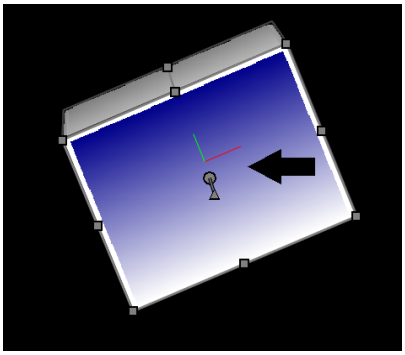
6.17 Transform gizmo

You can transform Objects (position, scale, rotation) either in the Object window, or on the Stage using the transform gizmo. Note that how the handles work depends on if the gizmo is in 2D or 3D mode.

	Scale: move the cursor over the inside of the Object handlers until this cursor appears. Then drag to scale the object.
	Rotate: move the cursor over the Object handlers until this cursor appears. Then drag to rotate the Object around the Z-axis.
	Free rotate or arc ball rotate (3D only): move the cursor over the center of the Object's movement axes to activate this cursor and rotate the Object around its X, Y and Z-axes.
	Move the Object on the Z-axis (3D): move the cursor over the movement axes' arrow head to activate.
	Grab the Object to move on the Stage.

The movement axes can be customized in the main toolbar:

- **View**: the axes are aligned with the current view.
- **Group**: the axes are aligned with the group the Object is in.
- **Object**: the axes are aligned with the Object. When the Object rotates, the axes will rotate as well.



Example 3D Box with the X, Y and Z-movement axes aligned with the Object.

6.18 Layering Objects

The **Objects** window lists all Objects in a Project or Template. Each Object is placed on its own layer. Objects on higher layers overlap Objects on lower layers. To change, drag Objects into the appropriate order, or use the Arrow icons.

6.19 Grouping Objects

Objects can be grouped, so they can be modified and animated as a group. To group objects:

- Select the Object you want to group, either by [CTRL/CMD]+clicking them in the Objects window, or by drawing a selection with the cursor around the relevant Objects on the Stage.
- On the main menu select **Objects** > **Group**, or on the Stage right-click the selection > **Group**.
- You can open the group to edit individual Objects within the group: **Objects** > **Open Group**, or on the Stage right-click the group > **Open Group**. When finished, close the group.
- To ungroup Objects: **Objects** > **Ungroup**, or on the Stage right-click the group > **Ungroup**.

6.20 Locking Objects

Lock Objects to prevent unwanted selection, or to protect the Object from being selected and modified accidently.

	To lock or unlock Objects, in the **Objects** window or on the **Template Timeline**, select the Object. Then click the **Lock** icon.

6.21 2D and 3D-mode

Use this option to toggle the 2D and 3D handles of the transform gizmo:

	Click the 2D-icon to enable the 2D-handles.
	Click the 3D-icon to switch to 3D-handles.
	Show or hide 3D editing guides when editing a Group.

6.22 Prefabs

Objects and all the properties you defined for them can be exported to the Prefabs library for later reuse.

	To export an Object to the Prefabs library: select the Object, then in the **Object** window click the **Export** icon.
	In the **Library** > **Prefabs**, the star icon (as shown in the example on the left) indicates that the prefab is a custom made Object.

6.23 Copying Objects

To copy an Object (duplicate):

- In the Objects window or on the Stage, select the Object > right-click > **Copy**.
- To paste > right-click the Objects window or the Stage > **Paste**.

Note that the Object is also added to the active Template.

6.24 Deleting Objects

Objects can be removed from a Template (and still be available in the Project), or deleted from the Project.

- To remove an Object from a Template, select the Object on the Template Timeline or Stage > right-click > **Remove from Template**. Or **Objects** > **Remove from Template**.
- To delete an Object from a Project, select the Object in the Objects window > **Delete**. Note that the Object will be removed from any Templates it was used in.

7 Object Types

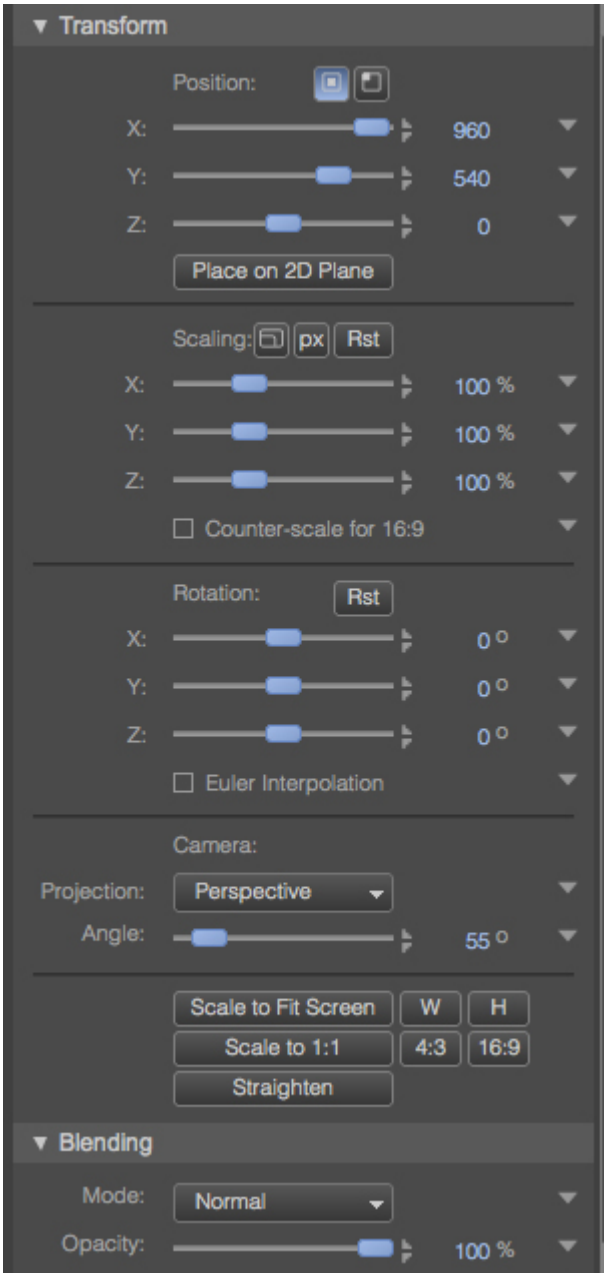
7.1 Introduction

7.1.1 Stage Objects

The Channel Composer Stage objects are:

	: Analogue Clock Object		: Mesh clip Object
	: Animation Object		: Plane Object
	: Audio Object		: Sphere Object
	: Box Object		: Still Object
	: Clip Object		: Text Object
	: Cylinder Object		: Ticker Object
	: Group Object		: Subtitles Object
	: Live Object		

7.1.2 Transform and Blending properties



The Transform and Blending options allow you to:

- position an Object
- scale an Object
- rotate an Object
- specify projection
- blend an Object

The Transform and Blending options are available:

- in the Object window
- or transform Objects on the Stage, using the transform gizmo

This paragraph explains a number of tools for the Transform and Blending options.

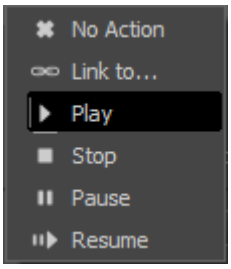
	Use these options to position Objects from center (default), or from the upper left corner.
Place on 2D Plane	Place the front of the object on the 2D plane (i.e. on z-coordinate 0).
	Lock aspect ratio when scaling.
px	Scale in pixels instead of in %.

Rst	Reset the Object (scaling/rotation) to 100%.
Counter scale for 16:9.	Select to scale back the Object in screen horizontal direction to counter the horizontal stretching that occurs when the object is viewed in 16:9 anamorphic widescreen mode.
Rotation	The angles are with respect to the axes of the Group the Object resides in. For example, if the Object is on the Stage, the Stage is the Group. The Object is rotated in the following order: x, y, z.
Euler interpolation	Generate the Object's rotation by combining the individually animated rotation angles.
Camera	You can either use a perspective (depth) and specify its angle (default 55%), or use an orthographic view (no perspective).
Scale to Fit Screen W H Scale to 1:1 4:3 16:9 Straighten	Scaling Tools: • **Scale to fit screen**: scale object to fit screen (no aspect ratio). • **W**: scale object to fit screen width (keeping aspect ratio). • **H**: scale object to fit screen height (keeping aspect ratio). • **Scale 1:1**: scale object to 1:1 aspect ratio, based on height. • **Scale 4:3**: scale object to 4:3 aspect ratio, based on height. • **Scale 16:9**: scale object to 16:9 aspect ratio, based on height. • **Straighten**: remove skewing. An Object is skewed if its axes are not perpendicular to each other. This sometimes happens to Objects within a Group when the Group is scaled and then ungrouped.
Blending	Following blending modes can be selected: • Normal • Lighten • Multiply • Darken • Maximum • Mask

7.1.3 Players

Objects such as ‘Clip’, ‘Audio’ and ’Still’ use a Player to play out content. Players can be used to control playout. Different actions can be defined. The default is: Play. Players can be modified in the **Object** and **Objects** window. Example Players:

- Still Player
- Ani Player
- Plasma Player
- Clip Player
- Audio Player
- Gradient Player
- Live Player
- Text Player
- Ticker Player
- Subtitle Player

	• **No Action**: The Player's current action is continued. • **Play**: Start the Player. • **Stop**: Stop the Player. • **Link to**: Link this Player to another Player. The Object will now play out the content from the Player you linked to. This option can be used to save resources (only one stream will be used). For clips, animations and tickers additional options are: • **Pause**: Pause the Player. • **Resume**: Resume the Player after a Pause.
Auto-stop at Out Point	If this option is selected, a Stop Playback action is automatically inserted when an Out Point is added to a Player on the Template Timeline. This will stop the Player.
	For some Objects, a test feed (procedurally generated video) can be used during editing.

☞

As a default, Player actions are defined from 00:00:00. To define an action at another point in time, work with keyframes or move the Object’s In Point.

Example Pause player icon on the Timeline.

To stop a Player, three options are available:

- Set an Out Point and leave the Player's **Auto-Stop at Out Point** option activated (default).
- Create a separate Template with a Player Stop Action.
- Keyframe a Player Stop Action.

7.1.4 The Main Player

For each Channel, one main Player can be defined.

The main Player role has following properties:

- The main Player has priority over other Players when resources are assigned.
- If the main Player contains an embedded Closed Caption subtitle stream, this stream will be played out. If other Clips contain subtitle streams, these streams will not be played out. In other words, only the main Player's subtitle stream will be played out.
- The main Player is the source for the ATC (HD) or VITC (SD) timecode signal in the SDI-output. Only one signal can be sent out, i.e. from the main Player.
- If the main Player is a Live Player and this Player transfers VBI-data from the SDI-input, this VBI-data will be transferred to SDI-out instead of any VBI-data generated by the K2 Edge server. This means that VBI-data from the input such as subtitles and teletext is passed to the output 'as is'.
- The main Player role can be assigned at any point in time, but is only active if between an In and out Point.

The main Player command is automatically added for the first Clip or Live Object that is added to a Template.

For Join In Progress (JIP)-mode, a main Player role can be assigned for both normal and high priority mode. Still, only one main Player will be active, depending on the JIP-mode (normal or high priority).

7.2 Live

Use the Live Object to play out a live feed from a K2 Edge input port.

☞

The table below describes the mapping between the system's ports and the SDI ports as defined in Channel Composer.

Up to AVS1.5 (NexusPci board):

AVS ports	IO1i	IO1o	IO1o'	IO2	IO3	IO4	IO5	IO6	IO7	IO8
CC SDIs	SDI 0	SDI 8	SDI 8	SDI 1	SDI 2	SDI 3	SDI 4	SDI 5	SDI 6	SDI 7

From AVS 2.0 and K2 Edge (TRX board):

AVS-K2 Edge ports	IO1	IO2	IO3	IO4	IO5	IO6	IO7	IO8
CC SDIs	SDI 0	SDI 1	SDI 2	SDI 3	SDI 4	SDI 5	SDI 6	SDI 7

☞

Keep in mind to stop the Live Object when switching to a non-live Event, to save resources. This can be done by adding the Live Object with an out point at 00:00:00:00 to, for example, the Play Clip Template. The **Auto-Stop at Out Point** option for the Live Player should be enabled.

7.3 RTic-compatible Tickers

This paragraph explains how to create RTic-compatible Tickers.

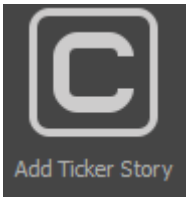
Example Templates for RTic-compatible Tickers can be found under **File** > **Example Projects** > **RTic Ticker**.

To create RTic-compatible Tickers:

- Create a Template to place the Ticker on-screen. For an example see the *Ticker In* Template in the example Project *RTic Ticker*. This Template can have any name.
- For each Ticker, create the following Templates:
  - set_ticker_story<ticker_number>: set ticker stories for <ticker_number>.
  - clear_ticker_stories<ticker_number>: clear ticker stories for <ticker_number>.

Note that Template names for RTic-compatible Tickers must exactly match the syntax described above.

7.3.1 The set_ticker_story<ticker_number> Template

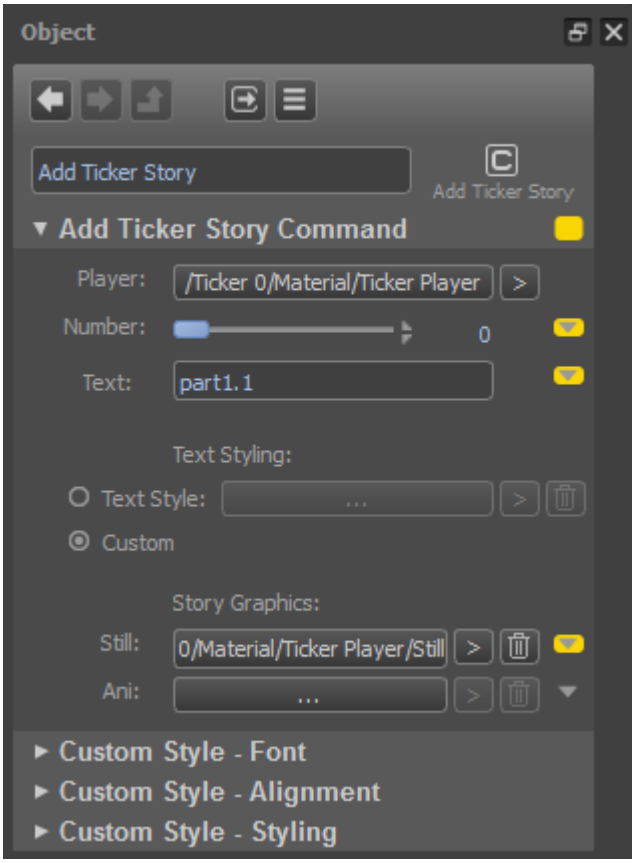


This Template sets ticker stories for the Ticker with <ticker_number> and contains the Add Ticker Story Command.

Tickers and ticker stories are numbered starting from 0.

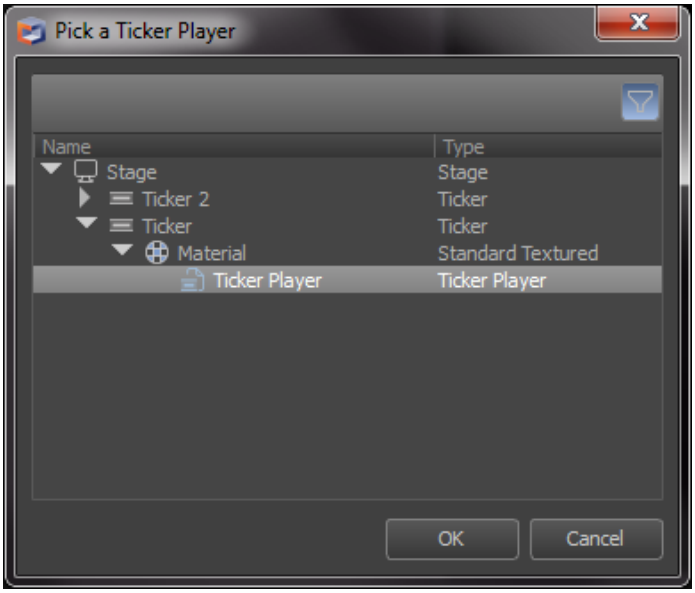
For more information on Commands, see paragraph 6.10.

- Add the Add Ticker Story command to the set_ticker-story<ticker_number> Template and edit the Command (double-click on the Timeline to edit).



Example Add Ticker Story Command.

- **Player**: select the Ticker > <ticker_number> you want to update.



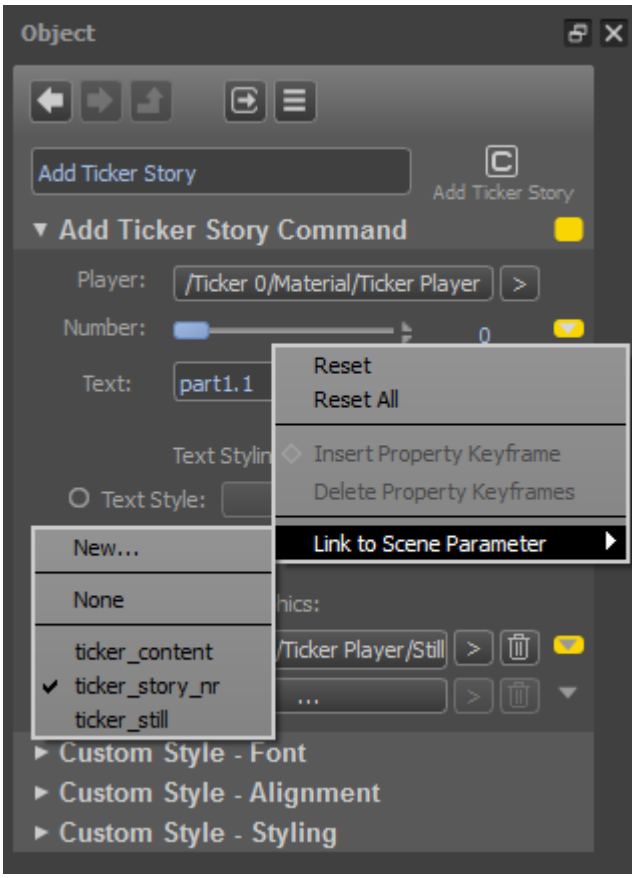
Example.

- **Number**: select the story number you want to update, or link a scene parameter.
- **Text**: fill in a story, or link a scene parameter.
- **Story Graphics**: if you want to include stills or animations in your stories, select a Still or ANI-Player. You can either select a TGA-graphic or ANI-animation to include in your stories, or link a scene parameter.

Scene parameter names for RTic-compatible Tickers must exactly match the following syntax:

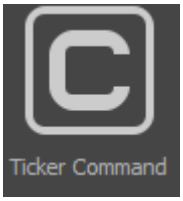
- ticker_content
- ticker_story_nr
- ticker_still
- ticker_ani

- **Text Styling**: you can either select a predefined Text Style or define a Custom Style (Font, Alignment, Styling) for your stories. Add font files to your Project Assets.



Example Scene Parameters used for a Ticker.

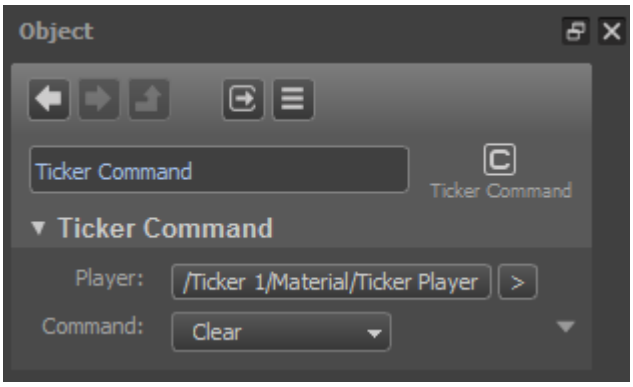
7.3.2 The clear_ticker_stories<ticker_number> Template



This Template clears ticker stories for the Ticker with <ticker_number> and contains the Ticker Command.

☞

Tickers and ticker stories are numbered starting from 0.



Example Ticker Command.

- **Player**: select the Ticker > <ticker_number> you want to clear.
- Select the **Clear** Command.

☞

The Story Pause and Unpause Commands are not available for RTic Tickers.

7.4 Subtitles

Channel Composer supports the following subtitle output formats:

- In-Vision subtitling
- DVB subtitling
- Teletext subtitling
- Closed Captioning subtitling

7.4.1 Introduction

Channel Composer supports the following subtitle output formats:

- **In-Vision subtitling**
  The open In-Vision format produces subtitles as graphical images that are made permanently visible on screen. They cannot be switched off. Due to the graphical nature of this format, a large set of unicode characters are supported. Using the grid (described below), placement of subtitles on screen can be controlled. Using the Object Properties tab in Channel Composer, the font style can be controlled.

- **DVB subtitling**
  The closed DVB-subtitling format produces graphical images that are encoded and inserted into an MPEG-transport stream and identified with given PID. These subtitles can be displayed (optionally) on set top boxes or TV-sets that support the DVB-format. This format too supports a wide array of unicode characters due to its graphical nature. The grid and font style options available for the In-Vision format apply here as well.

- **Teletext subtitling**
  Closed Teletext subtitling is a character based protocol originally developed for the PAL broadcast format. Subtitles are added to the broadcast signal. Subtitles can be shown (optionally) on screen on TV-sets that support the Teletext protocol. The grid and font style editing features do not apply.

- **Closed Captioning subtitling**
  Closed Caption subtitles are similar in nature to Teletext subtitles. It is a character based protocol originally developed for the NTSC broadcast format. Subtitles are added to the broadcast signal. Subtitles can be shown (optionally) on suitable TV-sets. The character set is relatively limited. The grid and font style editing features do not apply.

7.4.2 Properties

Properties of the Subtitle Object are described in more detail below:

Action:

Actions for the subtitle Player can be set here. The default is ‘Play’.

Auto-Stop at Out Point:

Automatically stops the Player when an Out Point is reached.

File:

The following subtitle file formats are supported:

- EBU STL files. Other STL file formats are not supported.
- SRT files with UTF-8 encoding. Other encoding formats are not supported.

Mode:

Select one of the options below:

- In-Vision subtitling (open)
- DVB subtitling (closed)
- Teletext subtitling (closed)
- Closed Captioning (closed)

Language:

The language selected here is used to optimize subtitle output, depending on the output format selected. When the language needed is not found in the menu, select the nearest match.

☞

The EBU STL file format covers five different language groups (character sets), but at the moment only the Latin (for western languages) and Cyrillic (for Russian languages) groups are supported.

The SRT file format with UTF-8 encoding covers the full Unicode character set, but at the moment only the left-to-right going languages are supported.

The table below shows which output formats are supported for the different input file formats and language group combinations:

File format	Language group	In-Vision	DVB	Teletext	Closed Captioning
EBU STL	Latin	yes	yes	yes	yes
EBU STL	Cyrillic	yes	yes	yes	no
SRT	Left-to-right	yes	yes	no	no

In Point:

The In Point defines the time (as defined in the input file) of the first subtitle that must be shown when playback of the subtitle file is started. This option makes it possible to skip a number of initial subtitles entries, or restart subtitling in the middle of a clip, for example after a commercial break.

Grid:

For output formats In-Vision and DVB, a grid - built of a number of slots - must be defined. The number of grid slots, the slot dimensions and the position of the grid on screen can be fully customized. For example it is possible to cover the full screen with the grid, or to define a grid of just a couple of slots (for example 6) and place it near the bottom of the screen.

The grid has two important characteristics:

1. It takes two adjacent slots to place a single line of subtitle text. In other words, the maximum font height is the height of two slots added together.
2. A subtitle line can start at any slot, except the last (bottom) slot in the grid.

For example, a grid comprised of 6 slots will allow for a maximum of 3 subtitle lines to be shown. When placing a single line of subtitle text on a six-slot grid, that line can start at any of the slots except for the last one (since it takes two slots to render a single line).

The vertical position field as defined in the STL input file format will be used to place a subtitle on a given pair of adjacent slots. If the range of vertical positions described in the STL file exceeds the number of available slots, the range will be scaled down to the number of slots available in the grid.

Styling:

For output modes In-Vision and DVB a Text Style must be defined. Remember that the font height cannot be more than the height of two slots. If the subtitles appear clipped on screen, try to reduce the font height, or increase the grid slot height (and if needed reduce the number of slots).

Select Text Styles for Normal, Bold and Italic text. Note that Text Styles are defined in Channel Composer, in the Text Styles window.

7.4.3 Mode Specific

Fade Dur:

For In-Vision mode, use the Fade Duration menu to define the number of fields or frames (depending on broadcast mode) used to fade-in the subtitle text on screen.

Teletext Page:

For Teletext subtitling format, the subtitles will be made available on the Teletext page defined here.

DVB PID:
For the DVB subtitling format, the subtitles will be made available in the transport stream under given PID value.

7.4.4 Workflow subtitles

1. Link the subtitle essence to the appropriate Asset Type.
2. Ingest subtitle files.
3. Create Formats in Channel Composer for subtitle playout.

7.4.5 Subtitles in TX/MAM

- Link the subtitles essences to the appropriate Asset Type. Create a Subtitle Asset Type, then **Link as essence to type**.
- Subtitles are ingested via the Subtitle Inbox. Subtitle files and programs are linked based on the file name.

Example:

Filename (essence)	**Asset (external reference)**
abc123.mpg	*abc123*
*abc123*_eng.stl	English subtitle belonging to the Asset with ext. reference *abc123*

⚠ When you want to add subtitle files to an Asset that was created *before* the subtitle essence link was added to the Asset Type, you have to re-create the Asset. Otherwise the link with the subtitle essence will not be recognized.

7.4.6 Subtitle workflow in Channel Composer

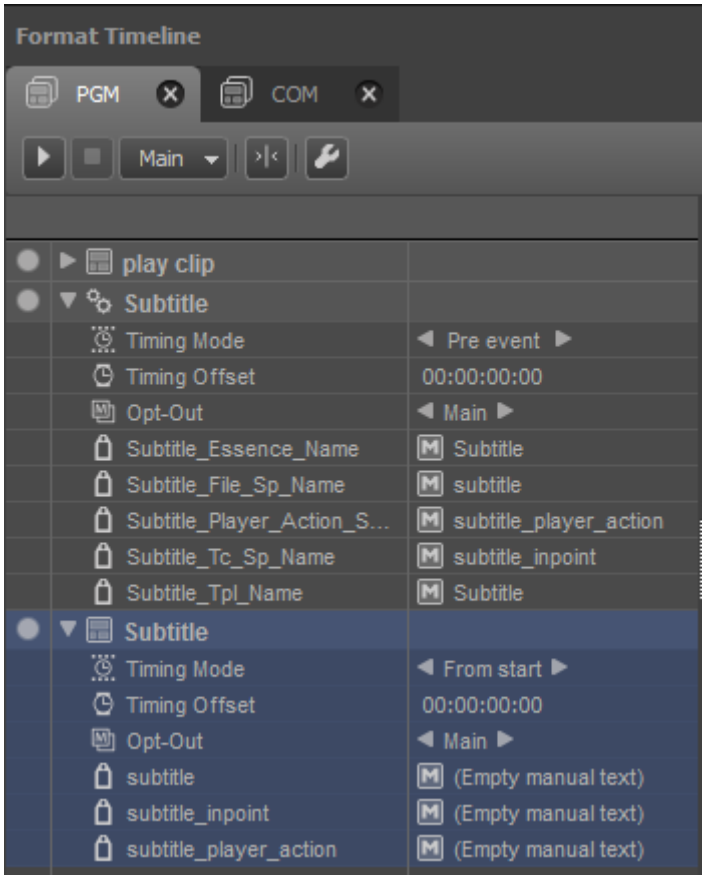
For subtitle playout, create a Format that contains:

- a Play Clip template
- a Subtitle applet that updates the parameters used for subtitle playout (pre-event)
- a Subtitle template to place the subtitle grid online and play out subtitles using the parameters set by the applet

To stop subtitle playout for Events without subtitles, create a template to stop the subtitle player and add this template to the relevant Formats.

The subtitle applet and templates are described in more detail below.

Example Format Program with subtitles:



7.4.7 The Subtitle Applet

The get-sub-essences applet [included in the Commissioning Quick Start Channel Pack] is executed pre-event and updates the scene parameters listed in the table below. Scene parameters are used to:

- check if a subtitle essence is available, if not, the subtitle player is stopped
- start the subtitle player if a subtitle essence is available
- synchronize subtitle playout with the time in code in from the video

Parameter	Value	Explanation
1. essence name	manual text: Subtitle	Specifies the subtitle Essence name as defined in TX/MAM, in this example 'Subtitle'.
2. scenepar file name	manual text: subtitle	The applet updates this scene parameter with the subtitle file name.
3. scenepar player action	manual text: subtitle_player_action	The applet updates this scene parameter with the subtitle player action: 2: start (subtitle file present) 3: stop (no subtitle file present)
4. scenepar subtitle inpoint	manual text: subtitle_inpoint	The applet updates this scene parameter with the video's tc-in.
5. template name	manual text: Subtitle	Specifies the name of the subtitle template, in this example 'Subtitle'.

Note that the parameters and values can be renamed, but the order in which parameters are added to the applet should match the table above.

Note that naming of the parameter values in the applet and the scene parameters in the template must match.

7.4.8 The Subtitle Template

After the applet has updated the scene parameters (pre-event), the subtitle template:

- starts the subtitle player if a subtitle file is available, if not, the subtitle player is stopped [scene parameter subtitle player action]
- synchronizes playout of the subtitle file [scene parameter subtitle] with the timecode in from the video [scene parameter subtitle inpoint]

The subtitle template is also used to place the subtitle grid on-screen.

In Channel Composer, add following scene parameters to this template:

Scene parameter	**Value**
subtitle	manual text: Empty
subtitle_inpoint	manual text: Empty
subtitle_player_action	manual text: Empty

☞
Note that naming of these scene parameters can be changed but that parameter values in the applet and the scene parameters in the template must match.

7.4.9 The Subtitle Out Template

The Subtitle Out template is used to stop the subtitle player when switching to an Event without subtitles, for example a Commercial. Add this Template to Formats that do not play out subtitles. The Template sets the subtitle player action scene parameter to value 3 (stop player).

☞

Note that in an alternative workflow the subtitle applet and template can be added to all Events in a Playlist, for example Programs and Commercials. In that case, no Subtitle Out template is needed to stop the subtitle player. The applet and template will stop the subtitle player if no subtitle file is present.

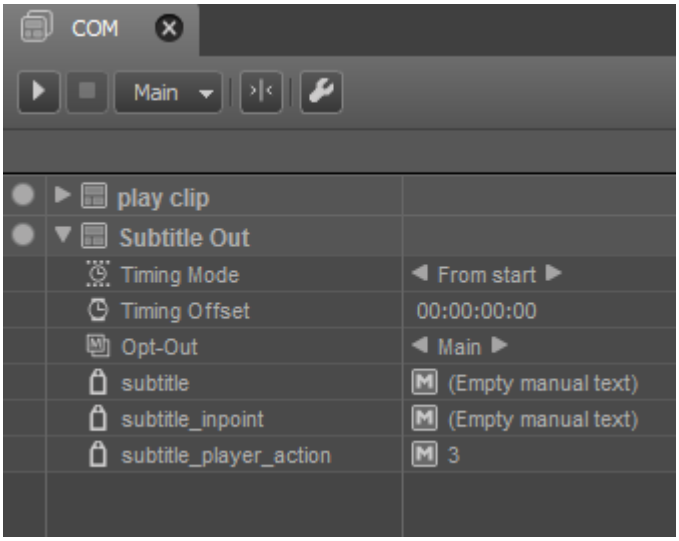
In Channel Composer, add following scene parameters to this template:

Scene parameter	Value
subtitle	manual text: Empty
subtitle_inpoint	manual text: Empty
subtitle_player_action	manual text: 3

☞

Note that naming of these scene parameters can be changed but that parameter values in the applet and the scene parameters in the template must match.

Example Format Commercial:



7.4.10 Flags

POC will display following flags for subtitle Events:

: Subtitles OK

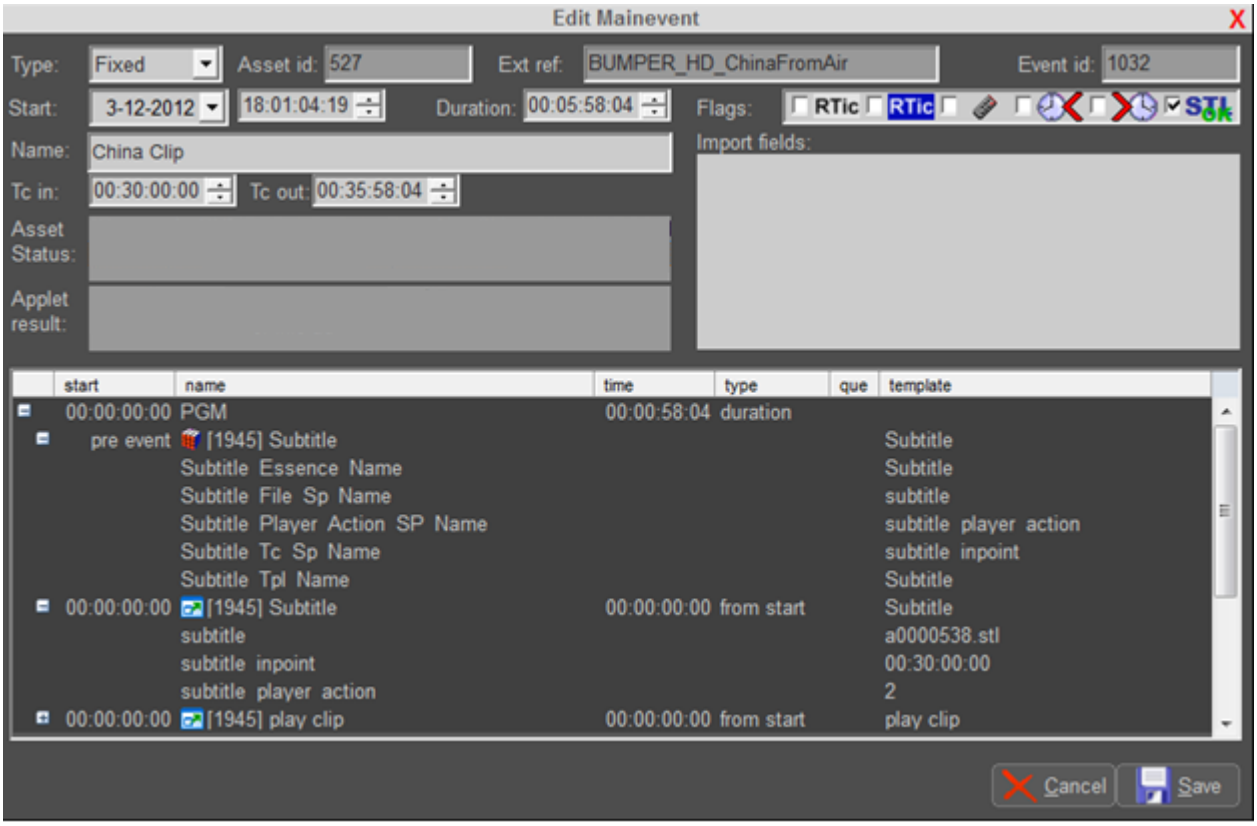
: Subtitles Error

Flag configuration:

Exp: 6 Mask: 64
Exp: 7 Mask: 128 Subtitles OK
Exp: 8 Mask: 256 Subtitles Error

7.4.11 Example

Example Event in POC with updated subtitle scene parameters. Note how the subtitle inpoint matches the main Event's tc in:



7.4.12 Applet command line arguments

The applet's command line arguments are:

1. Optout
2. Queue
3. Main Event Id
4. Subtitle Essence Name
5. Subtitle File Sp Name
6. Subtitle Player Action Sp Name
7. Subtitle In Point Sp Name
8. Subtitle Tpl Name

7.5 Controllers

A Controller automatically animates properties of an Object. Controllers can be an alternative to keyframing. Controllers are ideal for animations that are endlessly repeating, or animations that depend on real-time data.

Controllers are also described in an Example Project.

Available Controllers are:

- Anchor
- FromTo
- Link
- Oscillate
- Stack

All Objects' properties can be animated.

Per frame, the Object property values for rendering are determined as follows:

Value0 = a value from keyframes or the default Template value.

Value(N, for the Nth Controller for the property, with N > 0 and Wet-dry in [0…1] =

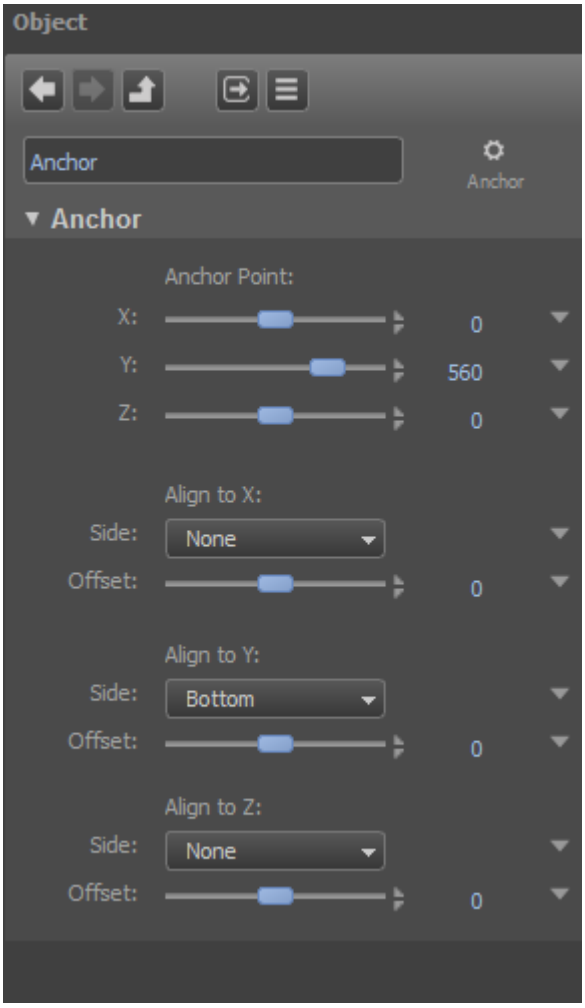
(1 – Wet-dry) * Value(N - 1) + Wet-dry * Controller-value.

Example: property Opacity has a constant value 50 and a Controller Link with Wet-dry 25% and Oscillate with Wet-dry 75%. The value for the Opacity property will be:

(0.75 * 50 + 0.25 * Link-value) * 0.25 + Oscillate-value * 0.75

7.5.1 Anchor

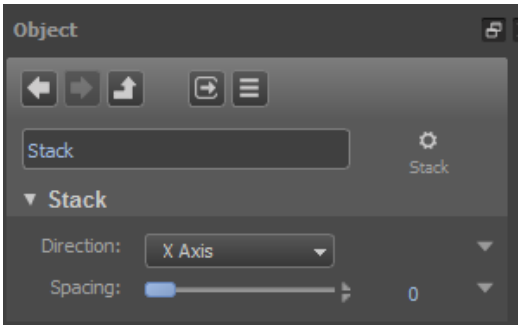
Use an Anchor to keep (one or more sides of) an Object in a specific position: align the Object's Left, Right, Bottom, Top, Back or Front to an Anchor Point X, Y or Z.



Example Anchor.

7.5.2 Stack

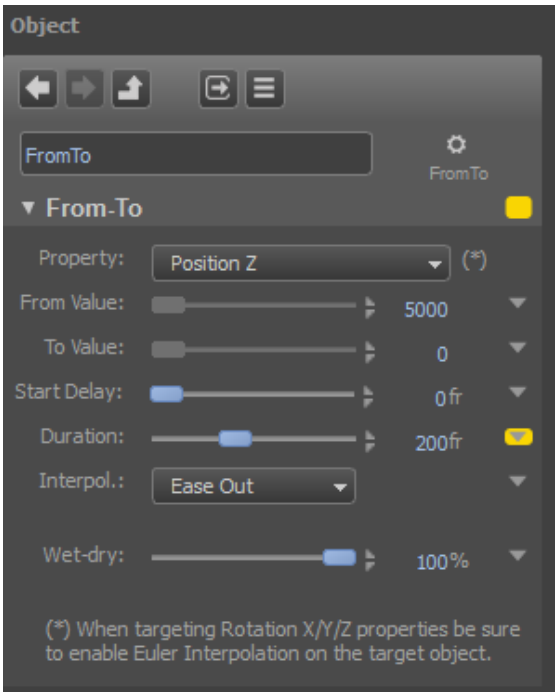
The Stack Controller is used to tightly stack grouped Objects on the X, Y or Z-axis and avoid overlap, for example to align a number of Text Groups. Note that this Controller can only be used for Groups.



Example Stack Controller for a Group.

7.5.3 FromTo

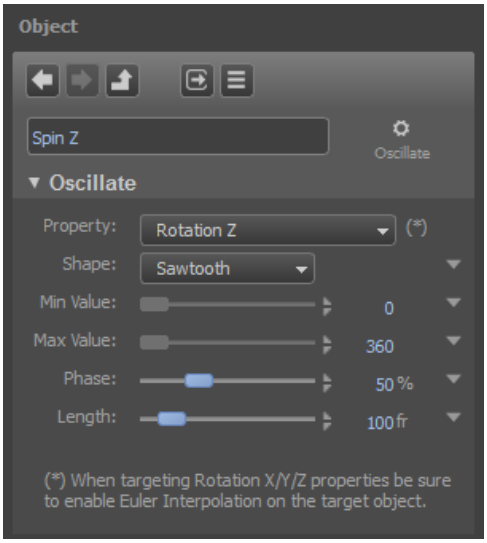
Use a FromTo Controller to animate a property from one to another value, for example move from Position Z 5000 to Position Z 0 using a FromTo controller with a Duration taken from the Scene Parameter *Move Duration*. This Controller is similar to a keyframed animation with two keyframes. However, the 'From' and 'To'-values can be linked to a Scene Parameter. This cannot be done with keyframes.



Example FromTo Controller.

7.5.4 Oscillate

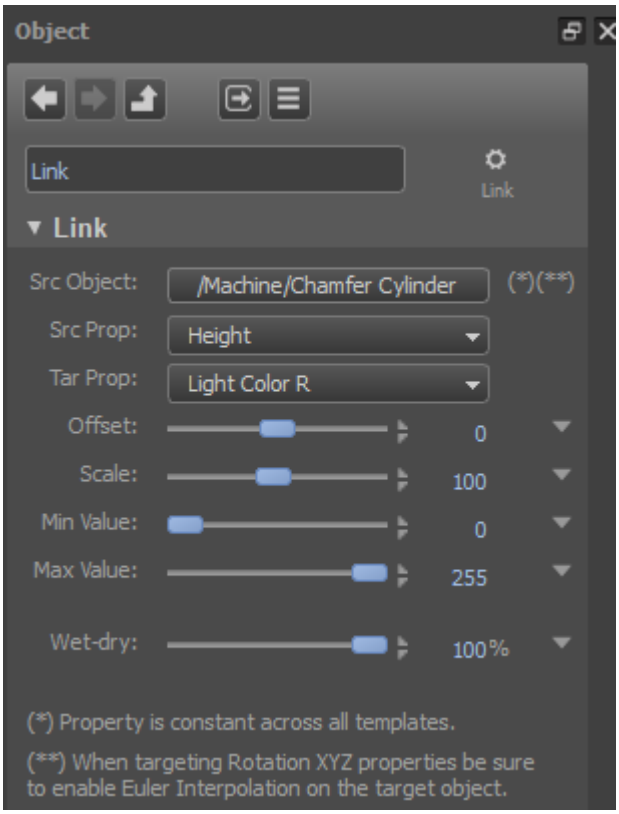
Use an Oscillate Controller to oscillate (Sinus, Sawtooth, Square or Triangle) an Object's properties (note that only one property can be oscillated).



Example Oscillate Controller (Spin Z prefab).

7.5.5 Link

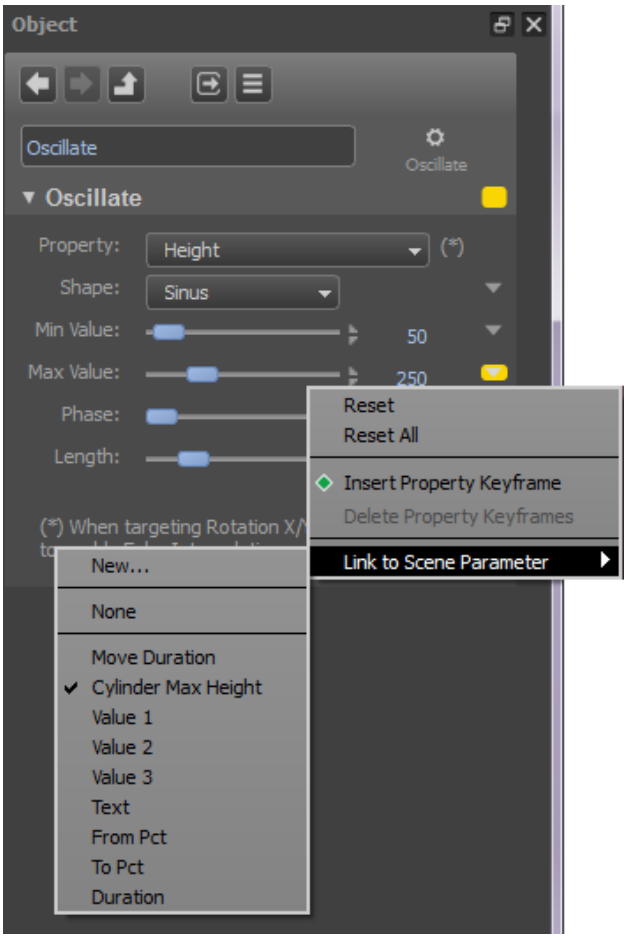
The Link Controller is used to link a property of a source Object to a property of a target Object. In the example below, the target's color amount is linked to the height of a Cylinder using a Link Controller. The target property is calculated as Offset + Scale x Source.



Example Link Controller.

7.5.6 Controllers How to

- To add a Controller to an Object, right-click the Object in the **Objects** window or on the Stage > **Add Controller** > select the Controller you want to add > **OK**.
- Controllers are edited in the **Object** window.
- To work with real-time data to control properties, use Scene Parameters.



Example Controller using a Scene Parameter to dynamically set the Max Value for the oscillation of a Height property.

☞

When animating individual Rotation properties, Euler Interpolation should be enabled for the target Object.

☞

To rotate around separate axes (for example, only the y-axis), we advise to use Controllers. Also, you need to enable Euler interpolation.

☞

The example Project *Controllers* shows a number of examples of Controllers.

7.6 GPIO Command

The Channel Composer GPIO Command can be used to manipulate an output pin of one of the configured GPIO devices.

To add a command to a Template, drag the command from the Library > Command on the Timeline.

	The example on the left shows the Timeline with a GPIO command inserted on a command track.
	A command track is automatically inserted when a command is dragged on the Timeline. To add additional tracks, click this icon.
	: To delete a command track, click this icon.
	: Copy selected keyframes or commands to the clipboard.
	: Paste clipboard items on the Timeline.

Double-click the GPIO Command on the Template Timeline to edit its properties in the Object window:

Device	Supported device names are: ▪ **DB9M** – Represents the internal GPIO device, available through the DB9 socket on the back of the machine. ▪ **410E** – Represents the optional Sealevel 410E device that allows GPIO control over Ethernet. ▪ **VBI** – Represents the *virtual* GPIO device that does GPIO-over-VBI on the video output(s) of the associated nexos channel. Alternatively, *real* device names VBI0, VBI1, VBI2, etc. can be used to explicitly address the GPIO devices dedicated to channels 0, 1, 2, etc. ☞ Note that GPIO devices must be defined in the nexos-gpio-params.txt file in order to use them here. In case of VBI devices, only the real devices VBI0, VBI1, etcetera should be defined.
Output pin	The number of the GPIO output pin to be manipulated. The first pin is 1.
Value	Supported values are: ▪ **0** – Disables the pin, a logical 'off' or 'low'. ▪ **1** – Enables the pin, a logical 'on' or 'high'.

Example GPIO Command properties.

8 Working with Assets, Metadata and Scene Parameters

☞

See also paragraph 3.4 for an explanation of Assets, Metadata and Scene Parameters.

8.1 Adding Assets

To add Assets to a Project, go to the **Projects Assets** window > **Assets**.

⊕	: Click to add an Asset.
⊖	: Click to delete the selected Asset.

☞

Assets are included in the Channel Pack. For testing purposes, you can add test media to the Test Media library. These files will not be included in the Channel Pack.

8.2 Metadata

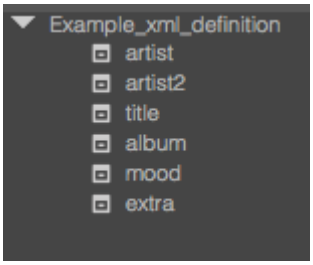
Metadata can be used for on-air presentation or to trigger Events. To work with metadata, import the relevant metadata definitions from Cobalt Asset Manager or TX/MAM first.

- In Asset Manager/TX/MAM, copy the Asset Type's metadata definition to a .xml file and save this file on your workstation:
  - In Cobalt, open the Asset Manager.
  - On the main menu, click Settings > Manage Assets.
    The Manage Asset Type Window opens.
  - Select the relevant Asset type in the list and click **Properties**.
  - The Edit Asset Type Window opens.
  - You can now copy the xml-definition to a simple text editor or xml-editor on your workstation. Save the file with the extension .xml on your workstation.

```
<XML>
<WINDOW width="600" height="145">
    <LABEL name="label1" x="25" y="27" height="20" width="80" search="true">artist1:</LABEL>
    <TEXTFIELD name="artist" x="60" y="29" height="20" width="160" search="true" max="150"></TEXTFIELD>
    <LABEL name="label2" x="25" y="47" height="20" width="80" search="true">artist2:</LABEL>
    <TEXTFIELD name="artist2" x="60" y="49" height="20" width="160" search="true" max="150"></TEXTFIELD>
    <LABEL name="label3" x="25" y="67" height="20" width="80" search="true">title:</LABEL>
    <TEXTFIELD name="title" x="60" y="69" height="20" width="160" search="true" max="150"></TEXTFIELD>
    <LABEL name="label4" x="25" y="87" height="20" width="80" search="true">album:</LABEL>
    <TEXTFIELD name="album" x="60" y="89" height="20" width="160" search="true" max="150"></TEXTFIELD>
    <LABEL name="label5" x="25" y="117" height="20" width="80" search="true">mood:</LABEL>
    <COMBOBOX name="mood" x="60" y="119" height="20" width="100" search="true">none#13Party#13Calm#13Happy#13Sad</COMBOBOX>
    <LABEL name="label6" x="295" y="27" height="20" width="30" search="true">extra:</LABEL>
    <TEXTAREA name="extra" x="330" y="20" height="88" width="260" search="true" max="260"></TEXTAREA>
</WINDOW>
</XML>
```

Example XML-definition.

- In Channel Composer go to the **Project Assets** > **Metadata** window.
- Click the  icon to import the .xml file.
- The metadata definition (.xml file name) and metadata fields will be listed in the **Metadata** window.
- Metadata fields can now be linked to Scene Parameters [see the next paragraph for more information on this topic].



Example XML-definition in Channel Composer.

8.3 Scene Parameters

To work with Scene Parameters:

- Create Scene Parameters.
- Link parameters to Object properties in the Object window.
- Link parameters to content (specify a parameter type) on the Format Timeline.

8.3.1 Creating Scene Parameters

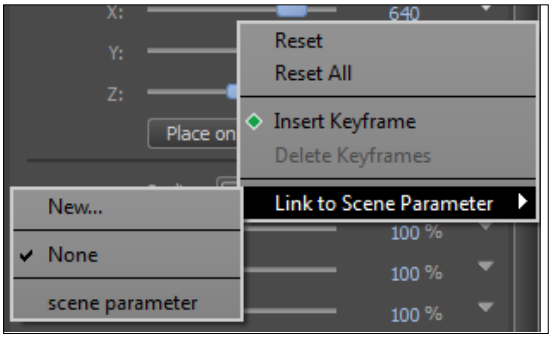
To define a Scene Parameter, go to the **Scene Parameters** window.

	: Click to add a Scene Parameter, then specify a name (characters and/or numbers).
	: Click to delete the selected Scene Parameter.
New	: You can create Scene Parameters directly in the Object window [see the next paragraph].

8.3.2 Linking Scene Parameters to properties

To link a Scene Parameter to an Object property:

- Open the Object's properties window.
- Click the arrow  behind the property you want to define a Scene Parameter for.
- Click **Link to Scene Parameter**. You can now select an existing Scene Parameter, or create a new parameter.



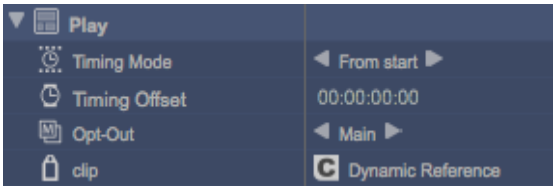
8.3.3 Linking Scene Parameters to content

Scene Parameters are linked to content in the Format Timeline. A Scene Parameter can be linked to:

- A dynamic reference: the main Asset in an Event.
- An external reference: an Asset’s external reference.
- A fixed Asset reference: a reference to an Asset in the TX/MAM database (Cobalt Asset ID).
- Manual Text: manual text.
- Import Field: custom Event data.
- An Asset from the Channel Composer Assets pool.
- A metadata field.

To link, in the Format Timeline:

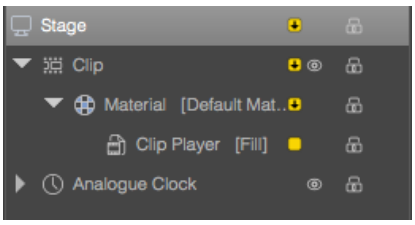
- Open the Format (double click in the **Project** window) and expand the appropriate Object's properties.
- Right-click the Scene Parameter's value field.
- Select Change Parameter Type.
- Select the appropriate parameter type.

	Example *Play* Template on the Format Timeline, with parameter *clip* linked to a dynamic reference.

To link a Scene Parameter to a metadata field or Asset from the Channel Composer pool:

- Open the Format and expand the appropriate Object's properties.
- Right-click the Scene Parameter's value field.
- Drag and drop the metadata field or Asset from the **Project Assets** window on the Scene Parameter's value field.

Click **Clear Parameter** to clear a Scene Parameter value.

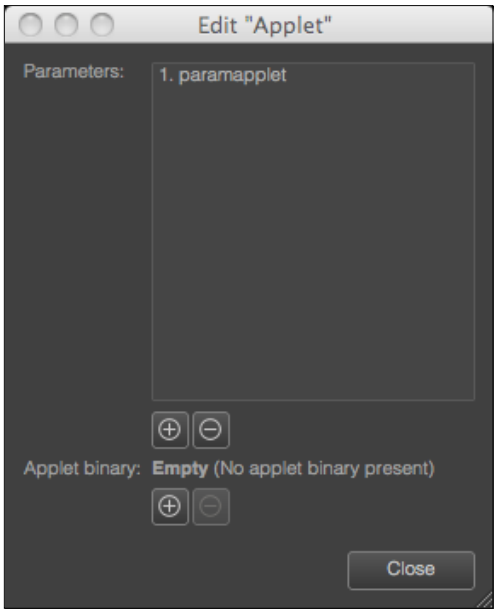
	The yellow icons in the example on the left indicate that a Scene Parameter has been defined for an Object or property.

8.3.4 Adding a test clip for a Format

[redacted]	To specify a test clip for the Format's main Event, click upon the Test clip button in the upper right corner of the Format Timeline, then select a file from the Test Media folder.

9 Working with Applets

9.1 Creating a new Applet



In the **Project** window click the **add applet** icon.

Parameters

- To define parameters for an applet, click the icon and specify a name.
- To delete a parameter, select and then click the icon.

Applet binary

- To add an applet binary, click the icon, then select the binary file.
- To delete a binary, select and then click the icon.

Note that applets (and the parameters included in them) can be added to Formats, while the binary file is added at a later Stage.

9.2 Renaming an Applet

Rename	: In the **Project** window, select the applet > right-click > **Rename**.

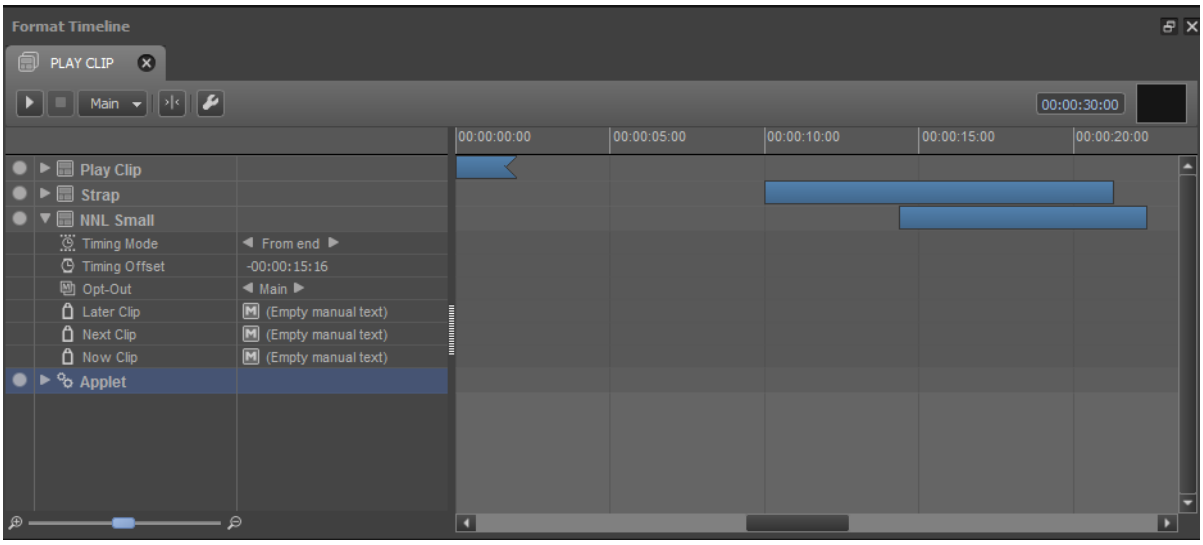
9.3 Deleting an Applet

	: In the **Project** window, select the applet > click the **delete** icon to delete.

Chapter 11 describes how to add applets to a Format, and how to time applets.

10 Working with Formats

Formats time sub events (Templates and Applets) relative to the main Event.



Example Format Timeline with Template NNL Small expanded.

10.1 Opening the Format Timeline

	▪ To open the Format Timeline, in the **Project** window double-click the Format you want to edit.

10.2 Creating a new Format

	▪ In the **Project** window click the **Add Format** icon, or in the toolbar click **Project** > **New Format**.

10.3 Renaming a Format

	▪ Formats can be renamed in the **Project** window. Select the Format > right-click > **Rename**.

10.4 Deleting a Format

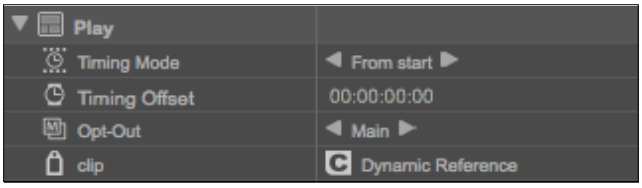
	▪ In the **Project** window, select the Format > click the **delete** icon to delete.

10.5 Adding Templates to a Format

	▪ To add Templates to a Format, open the relevant Format on the Format Timeline. ▪ Then drag Templates from the **Projects** window upon the Format Timeline.

10.6 Timing Templates

- In the Format Timeline expand the Template's properties first, if applicable; click the icon behind the Template.
- Select **Timing Mode**; click the arrow icons. Following options can be set:
- **From start**: absolute timing offset in hh:mm:ss:ff from start
- **From end**: absolute timing offset in hh:mm:ss:ff from end
- **Relative:** timing offset in percentage from start
- Not active: not active
- Specify **Timing Offset**: enter values manually or move the Template on the Timeline to specify the timing offset.



Example timing setting for Template Play.

10.7 Opt-out

- To define an optional output Channel for a Template or Applet, click the icon > **Opt-Out** > select main (0) or another Channel number. The default is *main*.

☞

For an example of how to use this option, see paragraph 11.10, *Simulcast*.

10.8 Adding applets to a Format

	To add an applet to a Format, open the relevant Format on the Format Timeline. Then drag the applet from the **Projects** window upon the Format Timeline.

10.9 Timing applets

- On the Format Timeline expand the applet's properties first, if applicable; click the  icon behind the applet.
- Select **Timing Mode**; click the arrow icons. Following options can be set:
- **From start**: absolute timing offset in hh:mm:ss:ff from start
- **From end**: absolute timing offset in hh:mm:ss:ff from end
- **Relative:** timing offset in percentage from start
- Not active: not active

- **Pre Event**: the applet is executed before the Event is checked by *playout distri* (the applet is used to write Event information back to the database).
- **Subtitle**: almost the same as pre Event; the applet is executed before the Event is checked by *playout distri*, the first parameter is executed by *sequencer* at Event start, the start time in the parameter is replaced by the start time of the Event.
- **Post Asset**: the applet is executed after the Asset has been checked by *playout distri* (note for applet developers: this applet can use shared memory*).
- **Pre Asset**: the applet is executed before the Asset has been checked by *playout distri* (note for applet developers: this applet can use shared memory*).

(*Note for applet developers: for extra information concerning the Asset, shared memory can be used, also to supply *playout distri* with information.)

- Specify **Timing Offset**: enter values manually or move the applet on the Timeline to specify the timing offset.

Example timing setting for an applet.

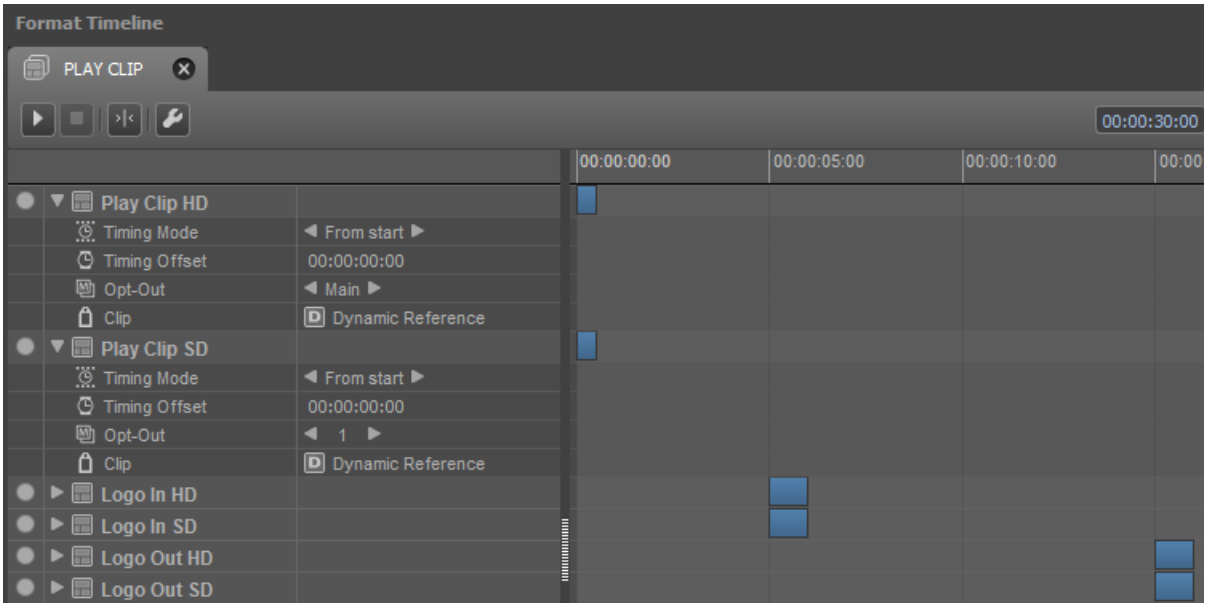
10.10 Simulcast

For simulcast broadcasts, two instances of each Template are created: one is played out on the HD-channel, the other one is played out on the SD-channel. The playout Channel is defined in the Format, using the Template's **Opt-Out** option setting.

The example below shows a *Play Clip* Format. The *Clip* and *Logo* Templates have been created for SD and HD. The HD-Templates are played out on Channel main, HD in this example. The SD-Templates are played out on Channel 1, SD in this example. The playout Channel is specified in the Format, with the **Opt-Out** option. Note that you do not create separate Formats for HD and SD, but only add both the HD and SD Templates per Format.

☞

For an example of a Simulcast project, see **File** > **Example Projects**: Simulcast.



Example Format that plays out two instances of a Template; to Channel Main (HD) and Channel 1 (SD), as defined with the Opt-Out option.

In Cobalt, you only have to schedule one Channel. Formats will be played out on the 2 Channels defined in the Templates (in the example above main and 1). HD and SD-settings are defined on the K2 Edge, via the IP Manager.

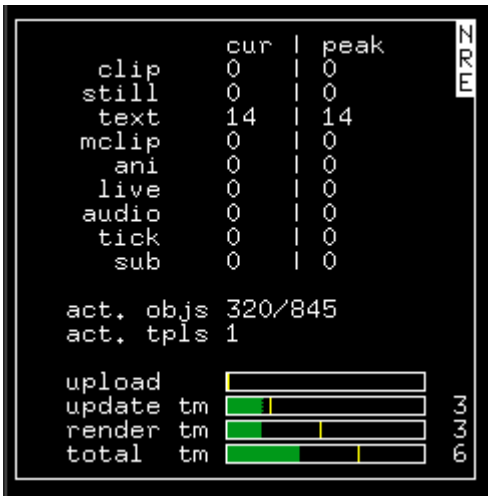
11 Channel Pack Validation

☞

Testing on a representative K2Edge system, against a representative schedule, with representative content, is the only way to determine if a channel pack is ready for on-air usage. Only go on air with a validated channel pack!

Channel Packs should be validated against a test schedule. The playback statistics tool can be helpful with this. While the test schedule is played out on a test server - using hardware, content and a schedule closely similar to the ones used for actual playout - the statistics tool is displayed as an on-screen overlay and shows real-time playback information:

- the current and peak amount of active players per type
- the amount of active templates and objects
- the amount of upload bandwidth from system RAM to the graphics card RAM, which is “expensive”
- the durations of the update and render phases in milliseconds and the sum of both durations (total)



Example nexos playback statistics tool overlay.

☞

Please note that these statistics can also be viewed using the statistics option in Channel Composer Try-out Mode. However, Channel Composer cannot measure the durations of the update and render phases. This can only be done on a test playout server. Monitoring playback statistics during playout of a test schedule gives a good sense of the actual system load templates generate when run.

11.1 Basic testing and further analysis

This paragraph describes how you can test your Channel Packs. You can run the test schedule and statistics tool, without continuously monitoring (basic testing). If unacceptable peak values have occurred, further analysis is required.

11.2 Basic testing

- Create and start the test schedule on the test server. Make sure the test schedule uses the Channel Pack you want to validate [see also paragraph 3.7].
- Start the playback statistics tool [see paragraph 12.4].
- Run the test schedule. You do not have to monitor statistics continuously. Check peak values at the end of the test: if the statistics tool's outline is red [see also paragraph 12.5.4], unacceptable peak values have occurred and further testing is required.

☞

If peak values are instantly red from the start, run the command again to reset.

11.3 Further analysis

- Start the test schedule on the test server.
- Start the playback statistics tool as described in paragraph 12.4.
- Monitor the statistics tool to identify overloads. Paragraph 12.5.4 describes how to interpret measures.

11.4 Starting playback statistics

- Login on the test playout server, for example via PuTTy.
- Within the /system/objects/code folder, type:

```
./nexcommand <channel number> 0 complex '{cmd=nre;subcmd=control;stats-
sw=true;perfstats-sw=true;}'
```

Replace `<channel number>` with the number of the Channel you are running the test schedule on.

☞

Re-enter this command to reset peak values if applicable.

11.5 Interpreting playback statistics

11.5.1 Current and peak player amounts (cur | peak)

Use these numbers to determine if started players - especially players that create a lot of load such as ‘clip’, ‘ani’ and ‘live‘ - are stopped later on. Values should stabilize and then decrease at some point in time.

Example: if a template running a fixed length animation is started, the current ani-value will first increase by one. If the template is well designed (i.e. the player is stopped on the timeline at some point) the value should decrease by one sometime later.
Note that the number next to ‘clip’ will probably always be one, since usually a full screen clip is always running.

- **When to act:** if the player amounts keep increasing over a longer period of time, or if amounts are high for important player types:
    - clip > 2
    - big ani > 2
    - live > 2
    - text > 20
    - fullscreen clip + fullscreen ani + fullscreen live > 3
    - fullscreen still > 2
- **How to act:** check your templates for the existence of Out Points. Ideally, every player should have an Out Point, except for probably the main Clip and Live players that run continuously.

11.5.2 Update time (update tm)

Shows the duration in milliseconds of the update phase. Within the update phase, the states of all active objects are updated.

☞

All durations listed below are based on NTSC. For PAL, add 25% to values.

- **When to act:** when this value exceeds ~5ms.
- **How to act:**
    - If this value peaks above 5ms but then immediately falls back to an acceptable value:
      This probably means that nexos is overloaded due to too many simultaneously occurring object In Points.

      Spread In Points of objects across multiple frames, where possible.

    - If this value stays above 5ms:
      This probably means that too many objects and/or templates are active at the same time.

      Reduce the amount of running objects and/or templates. Use Out Points to deactivate objects.

11.5.3 Render time (render tm)

Shows the duration in milliseconds of the render phase. During this phase, all active (visible) objects are rendered on screen.

When to act: when this value exceeds ~9ms.

How to act:

- If this value peaks above 9ms but then immediately falls back to an acceptable value:
  This probably means that too much content is being uploaded from system RAM to GPU RAM at the same time.

  Spread In Points of visible objects (Clips, Stills, Lives, Text etc.) across multiple frames, where possible.

- If the value stays above 9ms:
  Multiple potential reasons, in order of decreasing likelihood:

  1. Too many running Clip/Ani/Live objects.
     Reduce the amount of running players.

  2. Dimensions of Clip/Ani/Live/Still/Text content are too big.
     Reduce dimensions (e.g. crop dimensions, do not use HD content when only SD content is needed, do not use full screen images for a small logo in the corner, disable Progressive Image on large Still and Text objects).

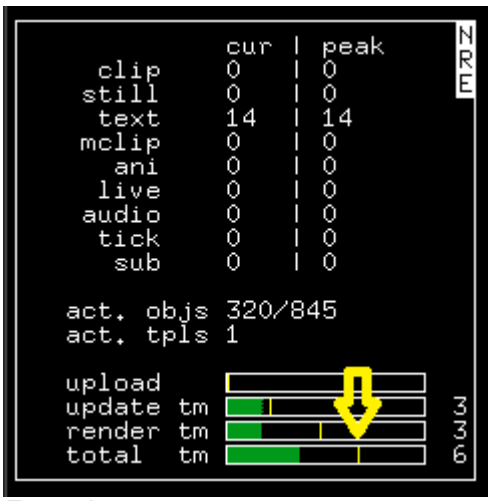
- If the pixel-sum of all static graphics running simultaneously is greater than the pixel-sum of 2 HD Stills, the nexos texture cache is probably full. By default, the texture cache can handle 2 HD Stills. All extra content needs to be uploaded to the GPU, which increases rendering time. This can be solved by increasing the size of the texture cache. Please contact Grass Valley for Support.

  1. Too many graphical effects.
     Reduce the number of effects. Please be aware of the Quality Scaler effect which can be quite "expensive" in terms of rendering. Generally only one Quality Scaler should be active at any time.

  2. Too many graphical layers.
     Layering is too complex. Reduce the amount of groups containing layered groups (in other words nested groups). For example by disabling Layer Objects on Groups. This flattens a group to a single layer.

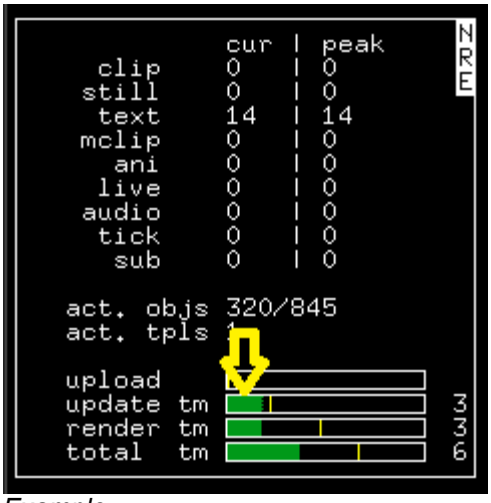
11.5.4 Interpreting the measure bars

The vertical yellow line shows peak values that have been measured:



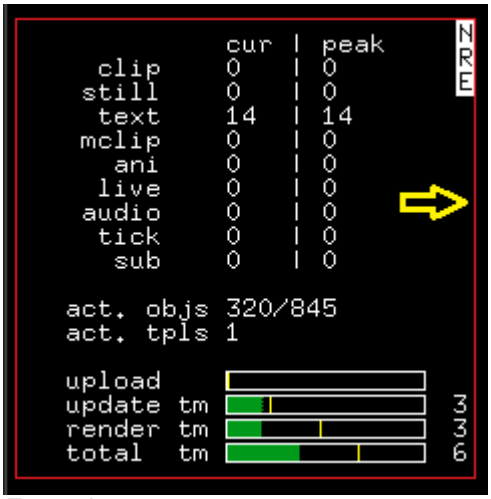
Example.

The green or red horizontal bar shows current values. Red indicates that high values are measured, green indicates that values are within safe margins:



Example.

If the overlay's outline turns red, this indicates that very high values for the total of update and render times have occurred at some point during the test:

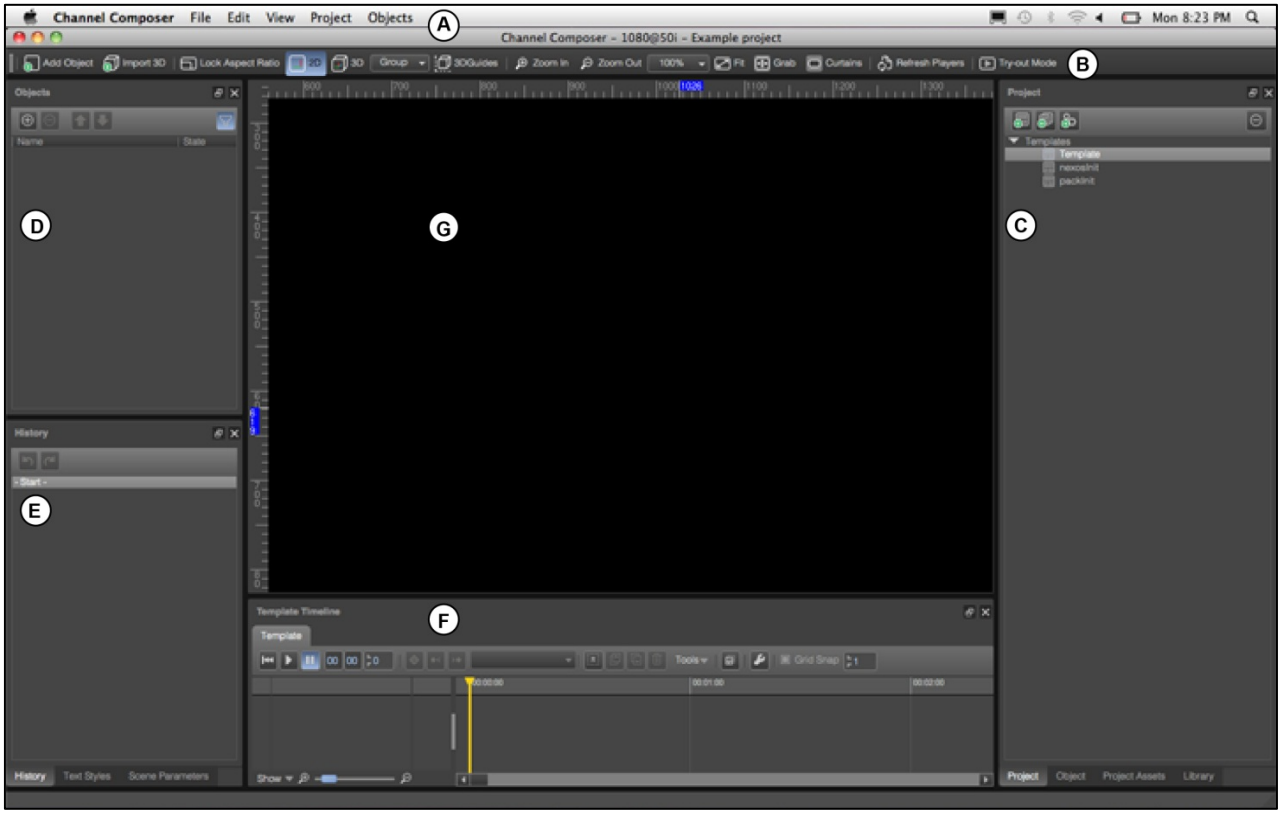


Example.

12 Quick Reference

12.1 The Channel Composer workspace

The Channel Composer workspace consists of the Stage and a number of windows that can be arranged and customized [see chapter 0 for more information]. The example below shows a default empty Channel Composer workspace (Mac) in Template editing mode. In Format Editing a number of windows are not visible.



A	The main menu.
B	The main toolbar.
C	The Projects window lists the Formats, Templates and Applets that have been defined for a Channel. Three windows are docked on this window: the Object window (view and edit an Object's properties), the Library (the prefabs and test media libraries) and the Project Assets window (view and edit the Project's Assets and metadata).
D	The Objects window lists the Objects available in the Project and shows their layering.
E	Actions can be viewed and redone or undone in the History window. Two windows are docked on this window: the Scene Parameters window (view and edit Scene Parameters) and the Text Styles window (view and edit text styles).
F	Objects are animated in time on the Template Timeline. Each Template is displayed on its own tab. Formats are edited in the Format Timeline (not activated in the example above). Each Format is displayed on its own tab. Note that in Format editing mode, some windows are hidden.
G	The Stage represents the Channel´s output.

12.2 The main menu

12.2.1 Channel Composer

About Channel Composer	: Displays the Channel Composer version.

Preferences	: Set Channel Composer preferences:
	• **Nexos**:
	  ○ Broadcast Format
	  ○ Multi-Sampling Anti Aliasing: use to improve the design's visual quality on your workstation (remove edge line roughness and jagged edges). Note that higher sample rates impact performance of your workstation.
	  ○ Players: set the big buffer pool size in MB.
	• **File**:
	  ○ Specify the default Project folder.
	  ○ Autosave: disable (default) or enable autosave every *x* minutes.
	• **History**: the number of actions tracked.
	• **Guides**: the color of the guides and snap distance.
	• **Grid**: the color of the grid, spacing and snap distance.
	• **Backup System**: number of backups to keep.
	• **Networking:** specify the FTP transfer mode.
	Note that changes require a restart of Channel Composer to take effect.

Services	: Set service preferences: • No Services Apply • Services Preferences
Hide Channel Composer	: Hide Channel Composer.
Hide Others	: Hide other applications.
Show all	: Show all applications on your desktop.
Quit Channel Composer	: Quit Channel Composer.

12.2.2 File

New Project	:	Create a new Project.
Open Project	:	Open an existing Project.
Recent Projects	:	Lists recent Projects, select to open.
Save Project	:	Save the Project under its current name.
Save Project As	:	Save the Project with a different name, or at a different location.
Export Project	:	Export the Project as a Channel Pack to disk, or to a TX/MAM Database, Playout.
Import Project	:	Import a Channel Pack from disk or the TX/MAM Database.
Manage Exports	:	See chapter 5.7 for more information.
Merge Project	:	Merge or replacement merge the current Project with the selected Project.
Example Projects	:	List and open an example Project.
Restore Backup	:	Restore a Project backup.
Exit	:	Exit Channel Composer.

12.2.3 Edit

Undo	:	Undo the previous action.
Redo	:	Redo the previous action.
Copy	:	Copy the selected Object(s).
Paste	:	Paste the copied Object(s).
Delete	:	Delete the selected Object(s).
Select All	:	Select all Objects on the Stage or within the opened Group. Hidden Objects are selected as well.
Select None	:	Deselect all Objects.

12.2.4 View

Zoom In	:	Scale the Stage.
Zoom Out	:	Scale the Stage.
Zoom to 100%	:	Scale the Stage to 100%.
Fit in Window	:	Fit the Stage in the workspace available.
Rulers	:	Show or hide rulers.
Grid	:	Show or hide the grid.
Guides	:	Show or hide guides.
Snap to Grid	:	Snap Objects to the grid.
Snap to Guides	:	Snap Objects to the guides.
Pixel Perfect Information	:	Show pixel perfect Information.
Windows	:	Show or hide windows: - Project Navigator - History - Library - Project Assets - Objects - Object Properties - Template Timeline - Text Styles - Scene Parameters - Format Timeline - Template Rules
Clean View Mode	:	Select to show the Stage only, deselect to show the Stage plus active windows.

12.2.5 Project

New Template	Add a Template to the Project.
New Format	Add a Format to the Project.
Project Settings	**Format** Displays: • Frame Size • Aspect Ratio • FPS • Interlaced • Name • Location To edit, go to Channel Composer > Preferences. **Info** Edit: • Author • Description **Export** Specify or reset export settings: • TX/MAM Database server: IP address • Channel Pack Asset type

12.2.6 Objects

Align	: Align the selected Object. Options are: - Left - Right - Top - Bottom - Front - Back - Vertical Center - Horizontal Center - Rotation
Group	: Group selected Objects.
Ungroup	: Ungroup selected group of Objects.
Open Group	: Temporarily open a group of Objects to edit Objects, then close group.
Close Group	: Close an open group (regroup Objects).
Arrange	: Move the selected Object: - Move to Front - Move Up - Move Down - Move to Back
Tools	: Lists the tools that have been applied for the selected Object.
Add Controller	: Add a controller: - Anchor - FromTo - Link - Oscillate - Stack for Groups

Refresh Players	:	Click to refresh all Players.

12.3 Main toolbar

	:	Add an Object to the canvas:
	:	Add an Analogue Clock Object to the Stage.
	:	Add an Animation Object to the Stage.
	:	Add an Audio Object to the Stage.
	:	Add a Box Object to the Stage.
	:	Add a Clip Object to the Stage.
	:	Add a Cylinder Object to the Stage.
	:	Add a Group Object to the Stage.
	:	Add a Mesh clip Object to the Stage.
	:	Add a Plane Object to the Stage.
	:	Add a Sphere Object to the Stage.
	:	Add a Still Object to the Stage.
	:	Add a Text Object to the Stage.
	:	Add a Ticker Object to the Stage.
	:	Import a 3D-Object.
	:	Lock aspect ratio.

	:	Switch to 2D-mode.
	:	Switch to 3D-mode.
Group **View** **Object**	:	Customize the movement axes: • **View**: axes are aligned with the current view. • **Group**: axes are aligned with the group the Object is in. • **Object**: axes are aligned with the Object. When the Object rotates, the axes will rotate as well.
	:	Show or hide 3D editing guides when editing a Group.
	:	Click to zoom in, or select a zoom percentage.
	:	Click to zoom out, or select a zoom percentage.
	:	Fit the Stage on the workspace available.
	:	Grab the canvas.
	:	Add curtains to the Stage.
16:9	:	Toggle 16:9 view mode.
	:	Refresh Players.
	:	Switch to try-out mode.

12.4 View mode icons

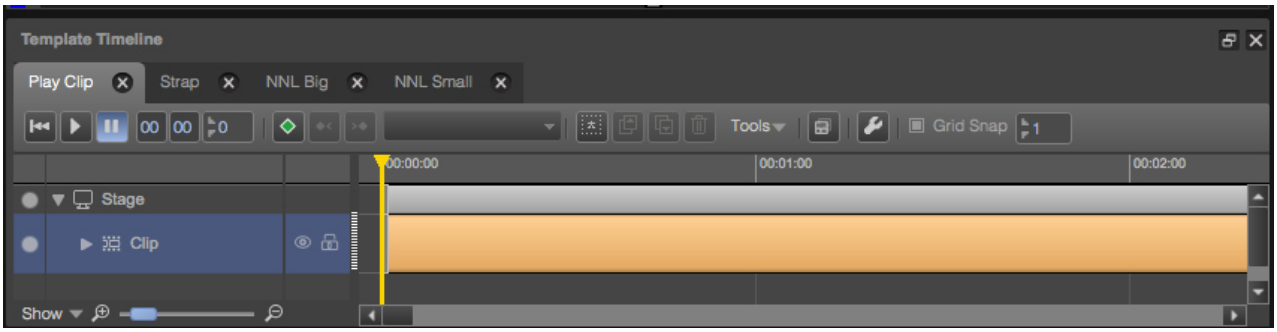
	:	Show small icons.
	:	Show medium icons.
	:	Show large icons.
	:	Icon view mode.
	:	List view mode.

12.5 The Stage

	The Stage represents the Channel's output. The Stage allows editing and previewing of the Objects (clip, logo, ticker, etcetera) that together compose a Channel's output. The Stage can be customized as described in chapter 0.

12.6 The Template Timeline

Double-click a Template in the **Project** window to open the Template Timeline. Each Template is displayed on its own tab.



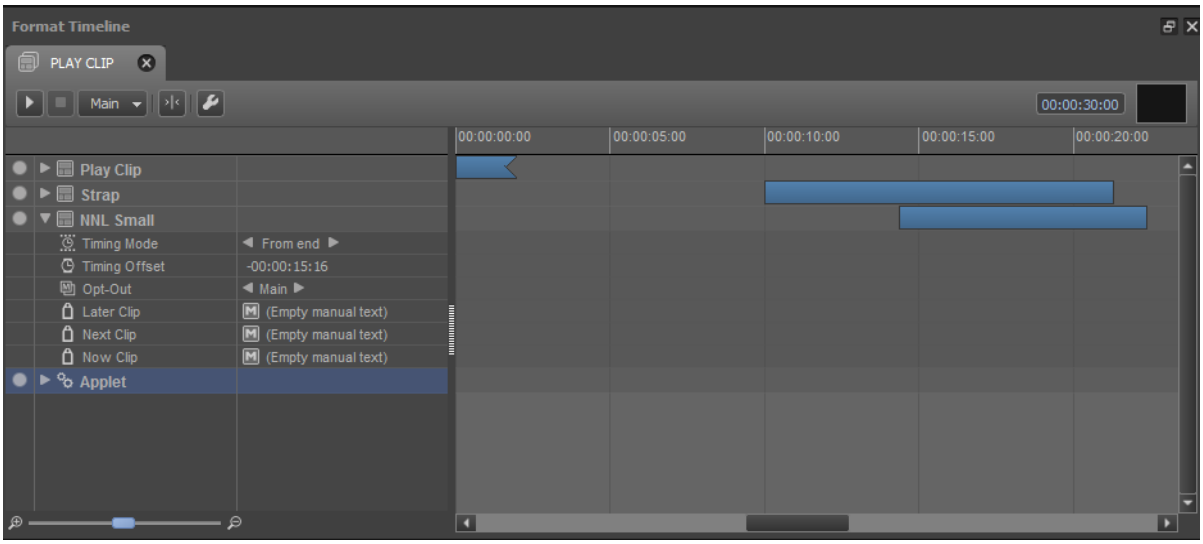
	: Rewind (the player head on the Timeline).
	: Play (the player head on the Timeline).
	: Pause (the player head on the Timeline).
00 00 0	: Shows the position of the player head on the Timeline in mm:ss:ff, or enter values to place the player head on the Timeline.
	: Click to add a keyframe. The icon on the Timeline indicates the keyframe is added to an Object or property. The icon indicates that the keyframe is added to an Object or sub-property on a lower level.
	: Click to update the selected keyframe.
	: Go to the previous keyframe.
	: Go to the next keyframe.

Constant Speed	:	Define interpolation for the selected keyframes. Options are: • **Constant Speed** • **Ease In** • **Ease Out** • **Ease In & Out** • **Step**
	:	Select all items on the Timeline.
	:	Copy the selected keyframes or commands to the clipboard.
	:	Paste clipboard items on the Timeline.
	:	Delete the selected keyframes or commands.
Tools	:	Reverse the selected keyframes / timescale the selected keyframes' duration (in frames).
	:	Copy a Template to a new Template. ☞ Note that Objects in the source Template are not duplicated; in other words, both templates, the original and the source will use one and the same Object. If this Object is modified in Template A, it will also be modified in Template B.
	:	Define settings for hard (default) or soft cuts. When soft cuts are used, the property values of this Template are slowly blended in.
Grid Snap 1	:	Enable or disable grid snap and set snap distance.
Show	:	This option can be found in the bottom left corner of the Template Timeline. Click the arrow to define what information is displayed on the Template Timeline: • **Command Tracks**: Display or hide command tracks. • **Object Properties**: Display or hide Object properties.

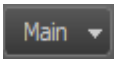
	:	When the pickup button is deactivated [as shown in the example on the left], the Object, sub object or property will not be modified by the Template. As a default, this option is activated:  .
	:	Click the hide and lock icons to hide/unhide and lock/unlock Objects on the Stage.
	:	This option can be found in the bottom left corner of the Template Timeline. Use the slider to zoom the Timeline in or out.

12.7 The Format Timeline

Double-click a Format in the **Project** window to open the Format Timeline.

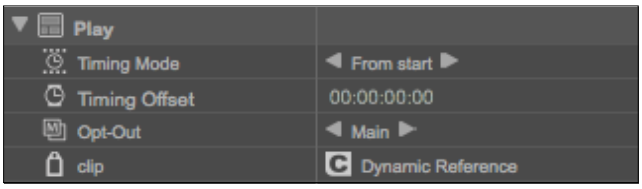


Example Format Timeline.

	: Click to start preview of the Format.
	: Click to stop preview of the Format.
	: Select an output Channel. The output Channel for Templates is set with the **Opt-Out** option.
	: Click to scroll to start (t=0)
	: Format Settings for color. Use to specify the color of Events with this Format in POC.
	: Unselect exclude a Template from the Format. Note that in the Channel Pack the Template will also be excluded from the Format.
	: This option can be found in the bottom left corner of the Format Timeline. Use the slider to zoom in or out on the Timeline.
	To specify a test clip for a Format's main Event, drag a clip (Asset or test file) upon the window in the upper right corner of the Format Timeline.

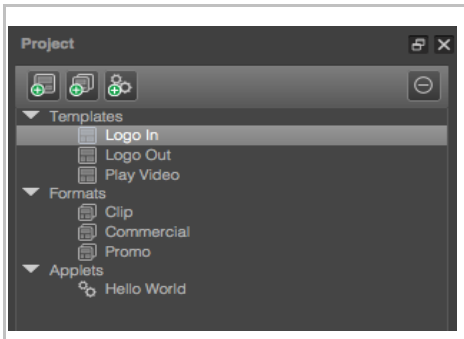
[Timing options, opt-out and Scene Parameters are described in chapter 11. To open these properties,

click the arrow icon in front of the Template.]

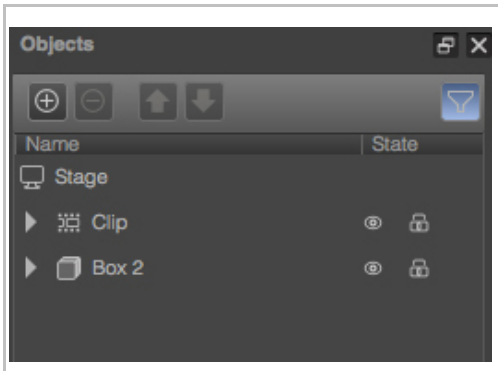


Example properties for Template clip, in the Format Timeline.

12.8 Project window

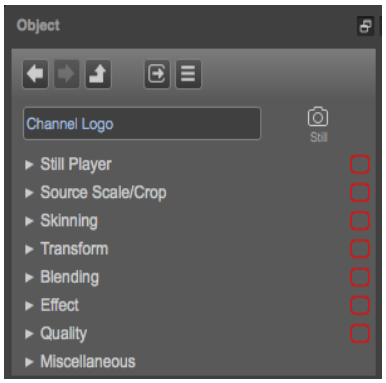
	The Project window lists the Templates, Formats and applets included in a Project. Double-click a Template or Format to open the Template or Format Timeline. Right-click items to rename.
	: Add a Template to the Project.
	: Add a Format to the Project.
	: Add an applet to the Project.
	: Delete the selected item.

12.9 Objects window

	The **Objects** window lists the Objects that have been added to a Project, or to a Template when the Filter option is activated. Each Object can be used in different Templates, and can have different properties per Template. In Channel Composer, each Object is placed on its own layer. Objects on higher layers overlap Objects on lower layers. The icon can be used to display only the Objects included in the Template that is selected on the Template Timeline.

	: Add an Object.
	: Delete the selected Object.
	: Move the selected Object one layer up.
	: Move the selected Object one layer up.
	: Show only the Objects included in the Template selected in the Template Timeline.
	: The Object is visible on the Stage (click icon to hide).
	: The Object is hidden on the Stage (click icon to display).
	: The Object is unlocked (click icon to lock).
	: The Object is locked (click icon to unlock).
	: A Scene Parameter has been defined for an Object property.
	: A Scene Parameter has been defined for a sub object.

12.10 Object window

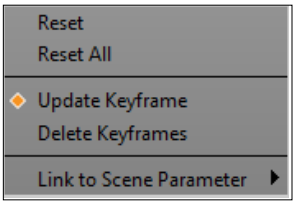


The Object window shows properties for the selected Object (select an Object either in the Objects window, on the Stage or in the Template Timeline).

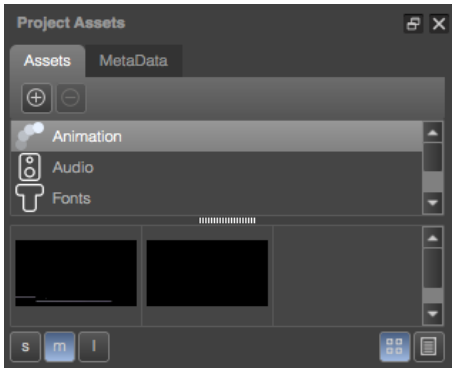
Click the arrows to expand properties.

Icons, buttons and menus

	:	Open the properties window for the Object you previously selected.
	:	Open the properties window for the Object you selected next.
	:	Move one level up.
	:	Export the selected Object to the prefabs library.
	:	Close all property groups.
	:	Click icon to open the property group, or to edit a property.
	:	This icon indicates that keyframes have been defined for the Object. Click the icon to display and edit settings. Properties are displayed for the point in time selected on the Template Timeline.
	:	This icon indicates that keyframes have been defined for a property. Click the icon to display and edit settings. Properties are displayed for the point in time selected on the Template Timeline.
	:	This icon indicates that a Scene Parameter has been defined for a property in the property group. Click the icon to display.
	:	This icon indicates that a Scene Parameter has been defined for this property. Click the icon to edit.

	:	This icon indicates that Scene Parameters and keyframes have been defined for the Object. Click the icon to display.
	:	This icon indicates that Scene Parameters and keyframes have been defined for a property. Click the icon to edit.
	:	Reset property, or edit keyframes and Scene Parameters. To open this window click the , or the > icon displayed behind the property. Options: • **Reset**: reset settings for the selected property to the default values. • **Reset All**: reset settings for all properties to the default values. • **Update Keyframe**: update the selected keyframe with the new values defined. • **Delete Keyframe**: delete the selected keyframe. • **Link to Scene Parameter**: link this property to a Scene Parameter.

12.11 Project Assets window

	The Project Assets window lists Assets and Metadata definitions for a Project.

Assets

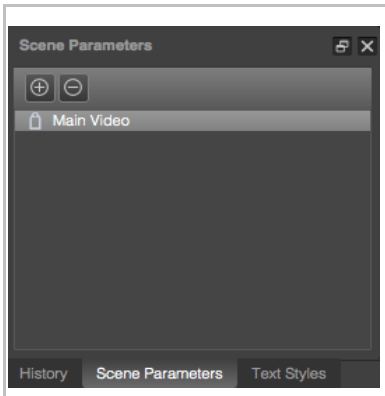
	: Add an Asset.
	: Delete the selected Asset.

	: Show small icons.
	: Show medium icons.
	: Show large icons.
	: Icon view mode.
	: List view mode.

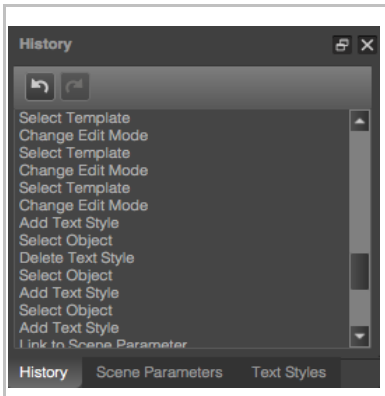
Metadata

	: Import a .xml definition.
	: Click to delete the selected definition or field.

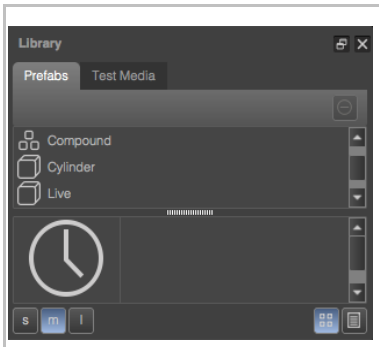
12.12 Scene Parameters window

	This window lists the parameters that have been defined for the Project.
	: Add a Scene Parameter.
	: Delete the selected Scene Parameter.
Rename	: Right-click the Scene Parameter > **Rename**.

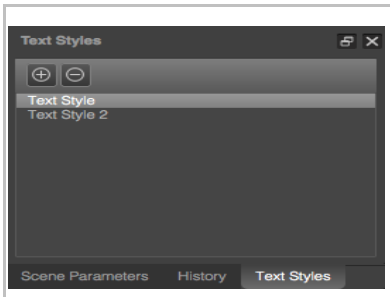
12.13 History window

	The History window lists actions performed, and allows undoing or redoing of these actions. The History window can be customized as described in paragraph 0 .
	: Undo the selected action.
	: Redo the selected action.

12.14 Library window

	The library window lists and lets you manage prefabs and test media. Note that test media are not included in the Channel pack.
	: Show small icons.
	: Show medium icons.
	: Show large icons.
	: Icon view mode.
	: List view mode.

12.15 Text styles window

	This window lists and lets you manage the Text styles that have been defined for the Project.
	: Add a Text style.
	: Delete the selected Text style.

13 Hotkeys

☞

Note that for Windows, ‘CMD’ should be read as ‘CTRL’.

13.1 Global

These hotkeys are accessible from everywhere.

CMD-O	: open Project.
CMD-P	: Toggle Pixel Perfect Information.
CMD-S	: save Project.
CMD-SHIFT-S	: save Project as.
CMD-Z	: undo.
CMD-Y	: redo.
CMD-C	: copy.
CMD-V	: paste.
CMD-A	: select all.
CMD-D	: select none.
CMD-+	: zoom in.
CMD--	: zoom out.
CMD-ALT-F	: zoom to 100%.
CMD-ALT-N	: fit Stage in window.
CMD-ALT-R	: toggle ruler’s visibility.
CMD-ALT-G	: toggle grid visibility.
CMD-ALT-U	: toggle guides visibility.
CMD-SHIFT-G	: toggle snap to grid.
CMD-SHIFT-U	: toggle snap to guides.
CMD-1	: toggle Project Navigator visibility.

CMD-2	: toggle History visibility.
CMD-3	: toggle Library visibility.
CMD-4	: toggle Project Assets visibility.
CMD-5	: toggle Objects visibility.
CMD-6	: toggle Object Properties visibility.
CMD-7	: toggle Template Timeline visibility.
CMD-8	: toggle Text Styles visibility.
CMD-9	: toggle Scene Parameters visibility.
CMD-0	: toggle Format Timeline visibility.
CMD-SHIFT-T	: new Template.
CMD-SHIFT-F	: new Format.
G	: group Objects.
U	: ungroup Object.
ALT-A	: add Object to Stage.
SHIFT-SPACE	: toggle Clean View Mode.
SHIFT-2	: toggle allow only 2D transformations.
SHIFT-3	: toggle allow 2D and 3D transformations.
SHIFT-A	: toggle lock Object aspect ratio.
SHIFT-M	: toggle 16:9 (anamorphic widescreen) mode
SHIFT-Z	: toggle 3D editing guides visibility.
O	: open group.
C	: close group.
SHIFT-C	: toggle curtains.
CMD-T	: toggle Template Try-out Mode.

13.2 Stage

Mouse wheel	: zoom in/out.
left/right/up/down/pgdn/pgup	: nudge (=move by one pix) left/right/up/down/fwd/bck
SHIFT + left/right/up/down/pgdn/pgup	: big nudge left/right/up/down/fwd/bck
Middle mouse (hold)	: grab Stage.
R	: reset rotation of selection.
SHIFT + Object movement	: constrain movement to X or Y axis.
Del	: remove selected Objects from Template.
Del	: delete selected Objects.

13.3 Template Timeline

A	: select all Timeline items.
D	: delete Timeline selection.
[/]	: go to previous/next keyframe.
left/right	: decrease/increase player head time by one frame.
+/-	: zoom in/out.
R	: rewind.
Space	: toggle play/pause.
K	: insert/update keyframe for selection.