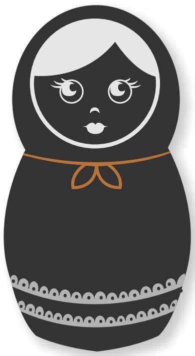
How Creative Markup Language (CML) Works

CML is an XML-based language that allows authors, editors and developers to build exhibits in a multi-user, multitouch environment. In Open Exhibits you can create applications, or exhibits, using CML.

How Tag Nesting Works

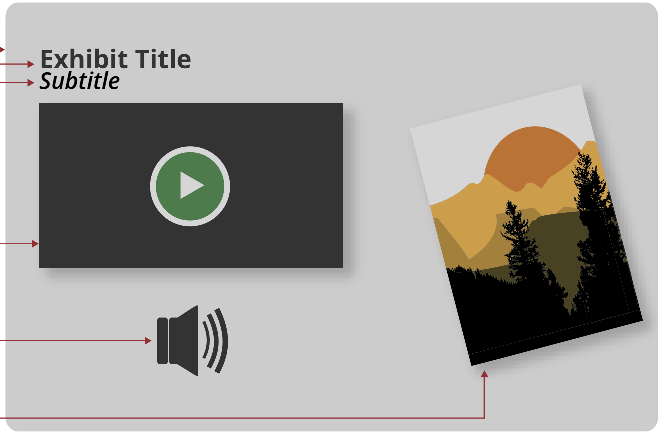
CML tags are the building blocks of Open Exhibits. Tags can represent media (text, images, videos, sounds). They can also control what users see and what they can interact with.

You create exhibits with CML by nesting CML tags inside one another and editing them. Child tags are nested inside parent tags to form a hierarchy.



The outermost tag is the parent or root of the entire exhibit. In Open Exhibits, the CML tag is the root.

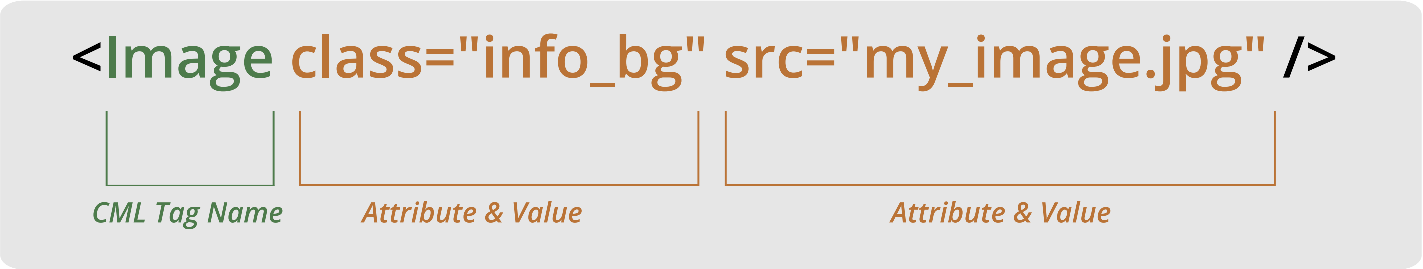
```
<cml>
    <BackgroundKit>
        <Image />
    </BackgroundKit>
    <Text />
    <Text />
    <TouchContainer>
        <Video />
    </TouchContainer>
    <MP3 />
    <TouchContainer>
        <Image />
    </TouchContainer>
</cml>
```



On the left is a simplified CML file. It shows how media elements (text, video, images) are created with element tags. Media elements become touch-enabled when they are nested inside Touch Containers.

On the right is the Open Exhibits Player, which renders an exhibit from a CML file.

CML Tag Structure



`<Image class="info_bg" src="my_image.jpg" />`

CML Tag Name

Attribute & Value

Attribute & Value

Tags are contained in angle brackets. A left bracket (<) opens a tag and a backslash followed by a right bracket (/>) closes it. Some tags, like the one above, terminate on a single line while others span multiple lines. Tags are customized by adding and editing attributes.

Attributes determine what content is displayed and how it is styled. They are made up of name/value pairs. If the tag spans multiple lines, they are always included in the opening tag. The tag above includes two attributes: “class” links to styles defined in a Cascading Style Sheet; “src” specifies the file name of the image that is displayed.

Types of CML Tags

Kit

A high-level tag that creates and manages global objects or functions (e.g., BackgroundKit, LibraryKit).

Component

A mid-level tag that groups buttons and other elements into a stand-alone unit (e.g., ImageViewer, VideoViewer).

TouchContainer

A low-level tag that gives touch interactivity to its children.

Container

A low-level tag that groups elements together. Unlike Components, these groups do not contain buttons and are not touch-ready.

Element

A low-level tag that displays media (text, images, video, sound).

Object

A low-level tag that defines or controls display or functionality of media elements but does not appear on the screen
(e.g., Layout, Gesture).

Common Tag Attributes

Root CML Attributes

css (text)

Specifies a CSS file path

relativePaths (true/false)

Indicates whether file paths are relative to the main CML document

simulator (true/false)

Turns on the built-in simulator so you can test your application with a mouse on a non-touch enabled device

tuio (true/false)

Specifies whether the touch input data is TUIO

For the complete list of tag attributes visit:

www.creativeml.org

Content & Control

class (text)

Specifies one or more CSS class names for a tag

id (text)

Specifies a unique id for a tag

layout (text)

Determines which layout is applied to the children of a container (e.g., Random, Grid, Fan, List)

name (text)

Specifies a unique name for a tag (alternative to id)

ref (text)

Defines a reference to another tag or element

src (text)

Specifies the path to an external file (e.g., my_image.jpg for the ImageElement)

text (text)

Text to be displayed by the element

Display

alpha (number)

Specifies the opacity or transparency of the media element, value between 0-1

height (number)

Specifies the height of media element, in pixels

width (number)

Specifies the width of the media element, in pixels

rotation (number)

Specifies the rotation of the media element, in degrees, from its original orientation

scale (number)

Specifies the size of the media element, value between 0-1

visible (true/false)

Specifies whether the media element is visible or hidden

x (number)

Specifies the position of the media element on the x-axis relative to the parent tag

y (number)

Specifies the position of the media element on the y-axis relative to the parent tag

How To Create CML

You create exhibits by editing CML files in a text editor. CML uses the .cml file extension.

To view and edit a CML file:

Windows

1. Right-click on the .cml file, and select “Open” from the menu that appears.

2. In the additional menu that follows, select the “Select a program from a list of installed programs” option.

3. In the program list that appears, select “Note pad” or another text editing program.

Mac OS X

1. Right/control-click on a .cml file and hover over the “Open With” option in the menu that appears.

2. In the secondary menu of programs, select “TextEdit” or another text editing program.