



TrackBuilder Javascript Engine – Update Manual

The following is an overview of new features, attributes and settings that are introduced in TrackBuilder for the new Javascript player engine. This manual is intended for existing users of TrackBuilder – knowledge of settings and attributes prior to the update is an advantage.

The existing features of the Adobe Flash SWF engine remain intact but will no longer be updated (Player_yymmdd.swf). Datasets can still be maintained and updated for the Flash engine; the new settings make it possible to author and publish both engine versions in parallel during transition.

New parallel settings mostly relate to the use of Event media since there is a difference between how dynamic graphics works in Flash and Javascript / CSS / HTML, embedding A/V, and compatible file formats.

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Engine Update ZIP contents

The new Player engine is installed in a separate directory PlayerJS. It contains:

- Button graphics in svg file format, separate folder /buttons/_Default
- Web fonts, separate folder /fonts
- 3 engine files tbEngine_yymmdd similar to the 4 files of the Adobe SWF engine
 - o .html
 - o .css
 - o .js

Accessing Debug Toolbar / Display Event no

Some browsers reserve F12 for other functions. To open the debug toolbar in Javascript press ddd (the d key 3 times). In events with user numeric / text input, mouse click somewhere outside an input field first. Event no is displayed by clicking on the Copyright statement bottom right.



New Media Settings & Attributes

HTML / CSS has some notable differences in how a screen is rendered. Adobe Flash is a lot like PDF where the formatting and placement of items is locked to their relative position on the screen, and can be scaled / zoomed without changing the position. Much like a PDF file.

HTML renders screens differently which can be seen by zooming the browser window on any given web page. Text will move, the position of graphic might change depending on whether the page is set up to be “responsive”. This makes formatting and placement of graphics somewhat unpredictable on different devices, screen sizes and browser versions.

The initial versions of the Javascript engine has a limited set of media settings which might feel like a return to early versions of the Adobe Flash player. As we gain experience with the possibilities and limitations of HTML, these settings and attributes will be extended.

The TrackMedia Excel list has been updated to contain some of the new html Media settings.

The following media settings have been added to TrackBuilder:

- Application logo
 - o Placed top left on screen
 - o Cannot be assigned a URL like the Flash engine
 - o Recommended file format PNG with transparent white to avoid frame
 - o Set in TrackBuilder - Publish >> html Logo, file stored in /media folder.
- CSS Ver:
 - o Similar to Flash engine, interface skins are separated from player engine
 - o Some engine functions are embedded in CSS file
 - o Setting locked to tbEngine version in initial versions of update
 - o Editing of CSS file is not allowed, and no warranty is offered when changed
- SVG Btn:
 - o Graphic representation of buttons
 - o Setting locked to _Default in initial versions of update
 - o Files are copied to output at compile, placed in /buttons folder
- Background image
 - o Fills the full screen underneath all interface items, text, buttons etc.
 - o Image will be repositioned and cropped to fit browser window
 - o A default file setting (TrackBuilder - Global Interface >> html Def. Backgr.)
 - o Individual Events file setting (TrackBuilder - Media >> html Background)
 - o Compatible file formats PNG, JPG, GIF, BMP, any graphic that is browser compatible.
 - o Files are stored in /media folder
- Background Cover Alpha (opacity)
 - o Covers the background image to make Event text legible even if image is not toned down. This is similar to the Flash Engine setting Event Background Alpha.

- Default opacity is 70% (0% = fully transparent, 100% fully opaque)
- Background Cover Color
 - Adds color hue to background color,
 - Indicate color as Hex RGB (#RRGGBB, ex. White #FFFFFF, Black #000000, ...)
 - Default is white
- Event Media
 - Image placed to the right of intro text (desktop view) or above (mobile view)
 - Compatible graphic formats are anything supported by regular browser (png, jpg, gif, bmp, tiff, etc), video (mp4) and YouTube URL
 - Engine will automatically detect media type and display as image or video player.
 - More sophisticated use and placement of media to be developed
- Footer Cover Alpha and Cover
 - The bottom part of the screen where buttons are placed
 - Set as default for all screens (TrackBuilder – Global Interface), or
 - Set individually in Events (TrackBuilder – Media >> Footer Cover Color)



Using Video

In the Flash engine, a separate Flash player is used to launch a player and display video in FLV format. The new engine has a simplified setup for this purpose: It detects if the Event media setting is a video file format or Youtube URL, and loads a browser native video player as appropriate.

To use video, select an MP4 video file (place files in /media folder), or insert a Youtube video URL in the *html Event Media* setting (TrackBuilder Media screen).

Events which are set up in TrackBuilder as Launch Flash App / Video player will play as regular Events in the Javascript engine. This means that when updating a dataset to the new Engine, simply indicating a video file as Event media will play correctly on both engine versions.

To convert video files from FLV to MP4 use any editing or conversion program. Using VLC media player is recommended, it is available free from <https://www.videolan.org/vlc/download-windows.html>

To convert video using VLC, there is a batch conversion function built in:

- Open the player
- In the menu top left, open Media >> Convert / Save ... or press Ctrl + R
- Click Add+, select all the videos you want to convert
- Click Convert / Save bottom left
- The first time a conversion is run, set the conversion parameters by clicking the wrench button
 - o Encapsulation MP4/MOV
 - o Video Codec H.264, all other parameters auto or not used, framerate same as source
 - o Audio MPEG 4 Audio (AAC), Bitrate 128 kb/s or lower if you have a lot of videos +30 sec to reduce bandwidth and file size, Channels 1 (outputs mono), Sample rate 22050Hz
- Click Save, the conversion batch job runs.

Using Font html size

Inserting html codes in text is available just like in the Flash version. However the rendering is not the same. Where Flash renders in a scalable way which retains the proportion between font sizes across any platform, HTML / CSS does not. This means that selecting font size with fixed point indication will give unpredictable results across device types.

It is highly recommended NOT to use html font point size. Example result using font size 14 pt

- Flash or Javascript Desktop: This is 11 pt, and this is 14pt
- On mobile with 8 pt, **proportional rendition of 14**
- On mobile with 6 pt, **rendition of 14** (11 / 6 * 14)

To find all Events in a dataset where font size has been used, use the Event List Filter function in TrackBuilder (top left on all screens with Event list) and filter by "<font size". Other font attributes like , <i>, <u>, will render predictably across screen and browser window sizes.



External Apps

Like the Flash engine, external scripts may be developed for special functions. Currently there is two Javascript scripts available for use.

Risk Matrix:

- Displays 5x5 grid with red / orange / green areas. Uses same scorecard and variable naming convention setup as Flash version
- Download script files http://updates.trackbuilder.net/matrix_181025.zip
- Unzip .js and .css files to /sourcejs folder
- Update attribute for new or existing matrix display Events in Event >> External App Settings >> Source JS and Source CSS below setting for Application SWF Source.
- Set text for Legend X (Probability) and Y (Impact) – no default titles in the script files

elsLogin Event:

- Create a Login screen with user mail / PIN pair, same as elsLogin.swf for Flash engine
- Mail / PIN sets use the same validation encryption for Flash and Javascript versions
- Download script files http://updates.trackbuilder.net/elsLogin_190312.zip
- Unzip .js and .css files to /sourcejs folder
- Update attribute for new or existing Login Events in Event >> External App Settings >> Source JS and Source CSS below setting for Application SWF Source.
- Generate login PINs using existing Google sheet setup. Copies of the original sheet can be made to separate lists of access PINs, use sheet menu top left File >> Make a copy.
- ELS User PIN Generator original (for Chile):
<https://docs.google.com/spreadsheets/d/18rZnFYFxEtRsQ1b2S5VGNaSnh6Xp5tMWcdHYyb6WNVE/edit?usp=sharing>
- Fresh copy without existing PINs:
https://docs.google.com/spreadsheets/d/1MDBOUULLBn_i_8o0jFk34JUhu6g6tPSWGkl1uQ7VJY/edit#gid=0



Compiled Output

The compiled output will contain corresponding new folders in addition to the 4 folders currently created when compiling a dataset:

- /buttons - the svg button files for the Javascript / CSS interface
- /datafile - compiled data output (XML for Flash, JSON files for Javascript engine)
- /fonts - web fonts for Javascript engine interface
- /flashapp – external SWF files for Flash engine
- /localsrc – files for local fetch of content via URL for Flash and Javascript engine
- /media – graphics, audio (mp3), video for Flash (flv) and video for Javascript (mp4)
- /sourcejs – external JS files for Javascript engine (similar to /flashapp)
- New or changed output files in the root folder:
 - o js.html – launch Javascript engine
 - o tbEngine_yymmdd.js and .css – the engines that are launched by js.html
 - o swf.html – launch Flash engine
 - o index.html – launch JS or Flash engine depending on TrackBuilder Publish setting

Setting index.html

Like previous versions, the compiled output folder can simply be copied to a webserver as is – index.html is the default file to run in a server folder so no further customization is necessary.

To retain similar simplicity but accommodate that the compiler produces Adobe Flash and Javascript version in parallel, the compiler provides a setting: index.html SWF or JS. When copying the output folder to a server, three ways of launching the sim becomes possible (MYSIM in the URL below would be the acronym of the simulation or folder in which it is installed on the server):

- myserver.com/MYSIM – launches the version indicated as index.html
- myserver.com/MYSIM/swf.html – launches the Flash version
- myserver.com/MYSIM/js.html – launches the Javascript version

SCORM launch files are still linked to the Flash version in initial versions of TrackBuilder after the upgrade.