

# Leap Motion using HTML5 & CreateJS

TVO IdeaShaker Innovation Lab



# Outline

- Intro
- RequireJS
- CreateJS
- Flash CS6 Sprite Sheets
- LeapJS
- Leap Motion Usability and Best Practices

# The Team

- David Neumann : Manager, IdeaShaker Innovation Lab
- Paul McMonagle : Lead Developer, IdeaShaker Innovation Lab
- Yohei Yamaguchi : Developer, IdeaShaker Innovation Lab

# IdeaShaker



TVO's IdeaShaker innovation lab focuses on the identification and exploration of digital trends, and innovative ideas. This internal incubator tests new business opportunities for incremental value creation and operational success in digital.

# Mobile

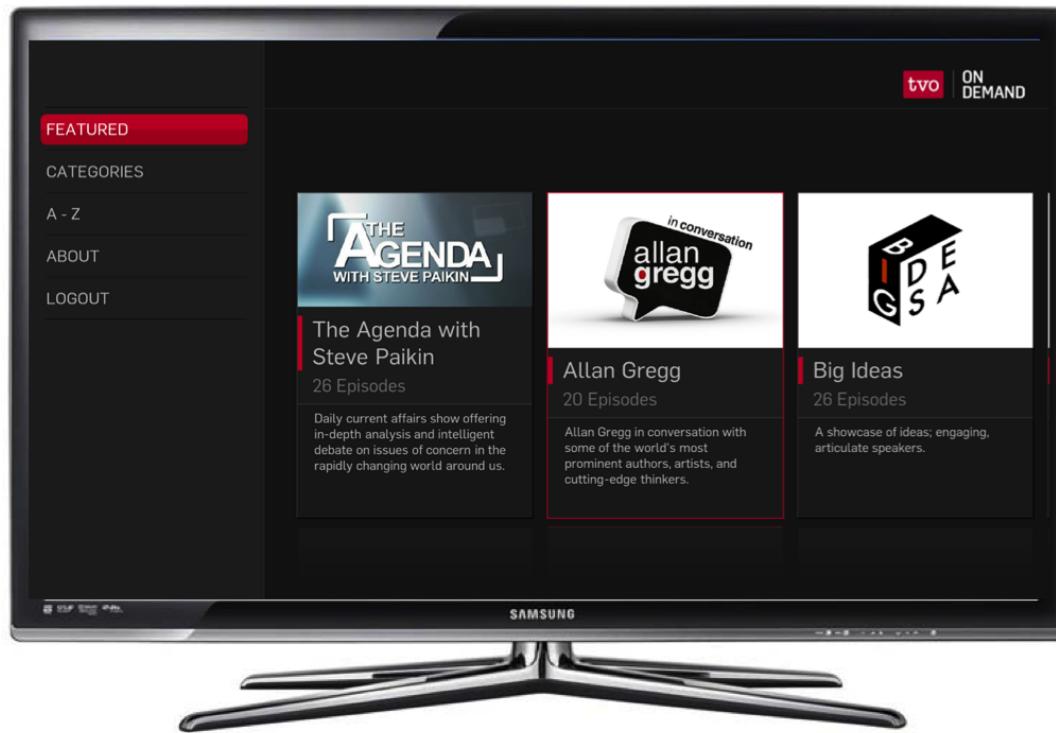
TVOKids BlackBerry Apps  
Featured in BlackBerry Store



# Google TV



makes you think



Featured in Google Play

# iPad



- Featured by Apple

# iPhone



- Featured by Apple
- 15,000+ downloads in the first 2 weeks
- One of the first physical games featured by Apple
- Developed in support of the documentary

# Leap Motion



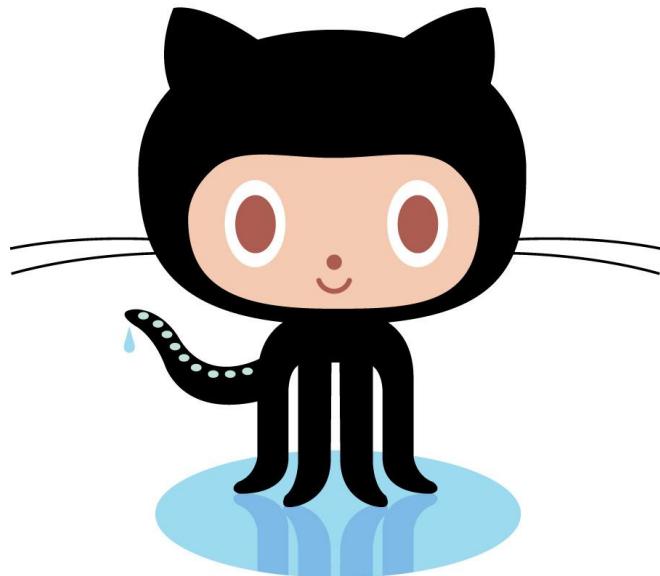
- Gesture in education
- Active/embodied learning
- Consumer ready

# Lesson Files

Stop scribbling down that code!

You can find our demonstration files at:

[github.com/pmcmonagle/html5toronto-leapmotion-lessosn](https://github.com/pmcmonagle/html5toronto-leapmotion-lessosn)

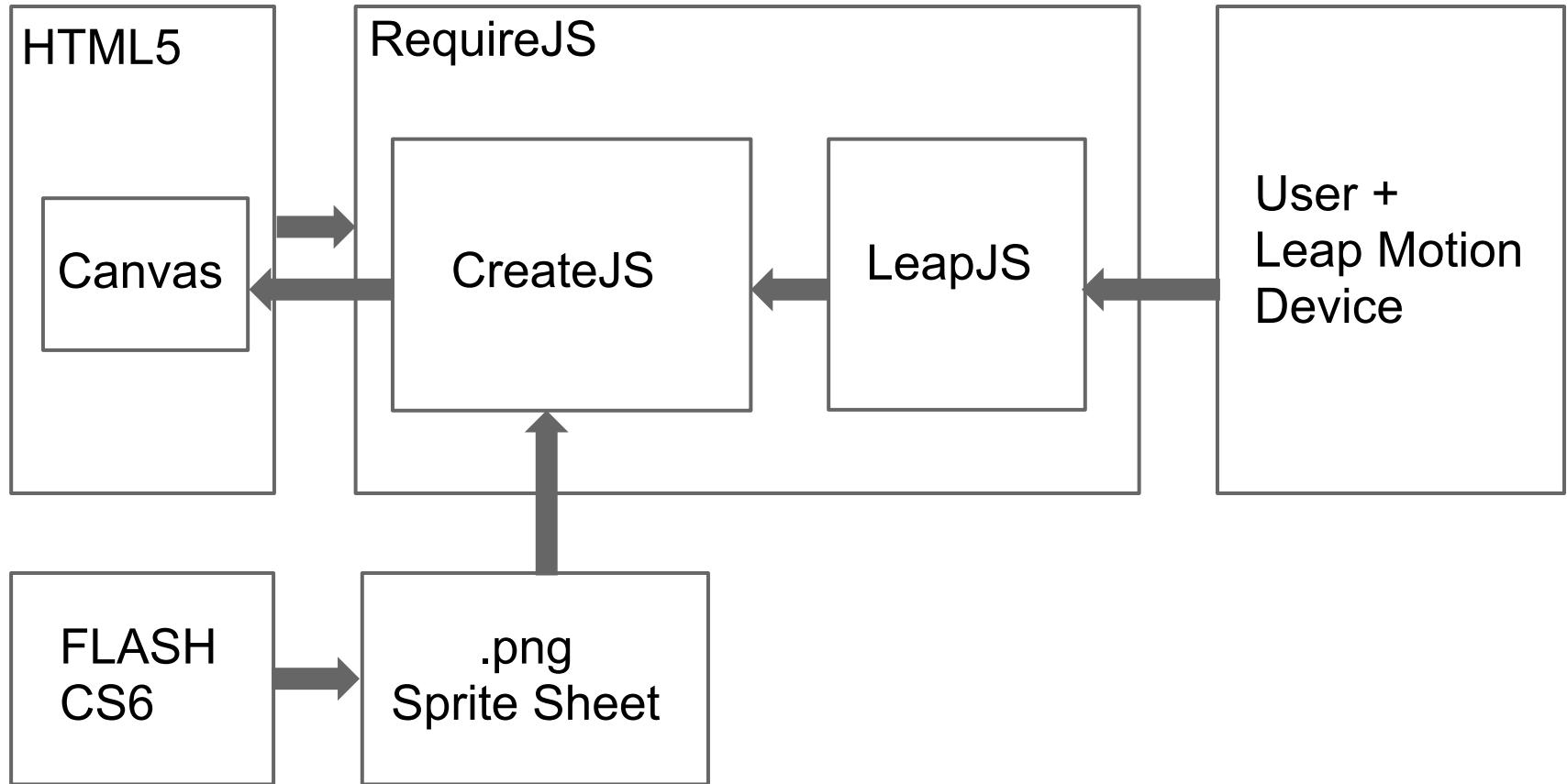


# Our Leap Motion Project



Demo  
Leap Motion Device and Samples  
+ Our Game

# Project Overview



# RequireJS

## What is RequireJS?

- It is a library that aids in writing modular JS
- It allows modules to list dependencies
- It grabs JS on the fly based on dependencies
- It includes a NodeJS tool for optimization and minification of your project

# RequireJS

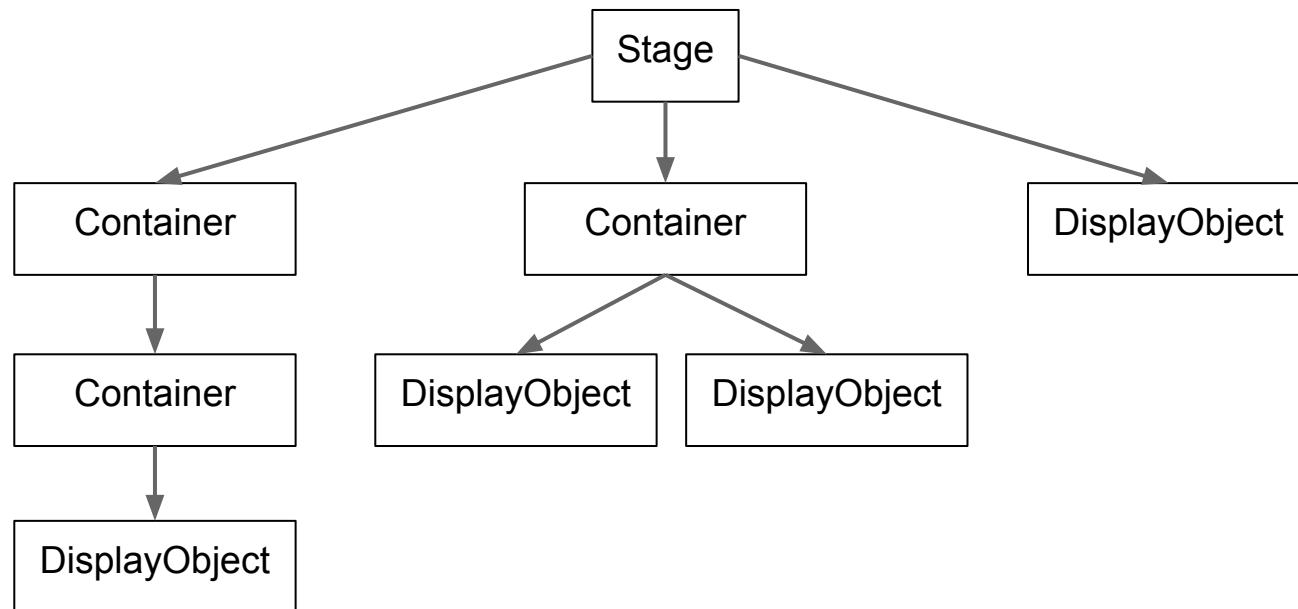
## Why did we use RequireJS?

- Game developers are used to an application structure where:
  - Each class is in a separate file
  - Class files are organized into packages/namespaces
  - Class files clearly list their dependencies (ie. import)
  - The Document (eg. FLA) links to a single Document Class (eg. Main.as)
- RequireJS allows us to implement an application structure just like this!

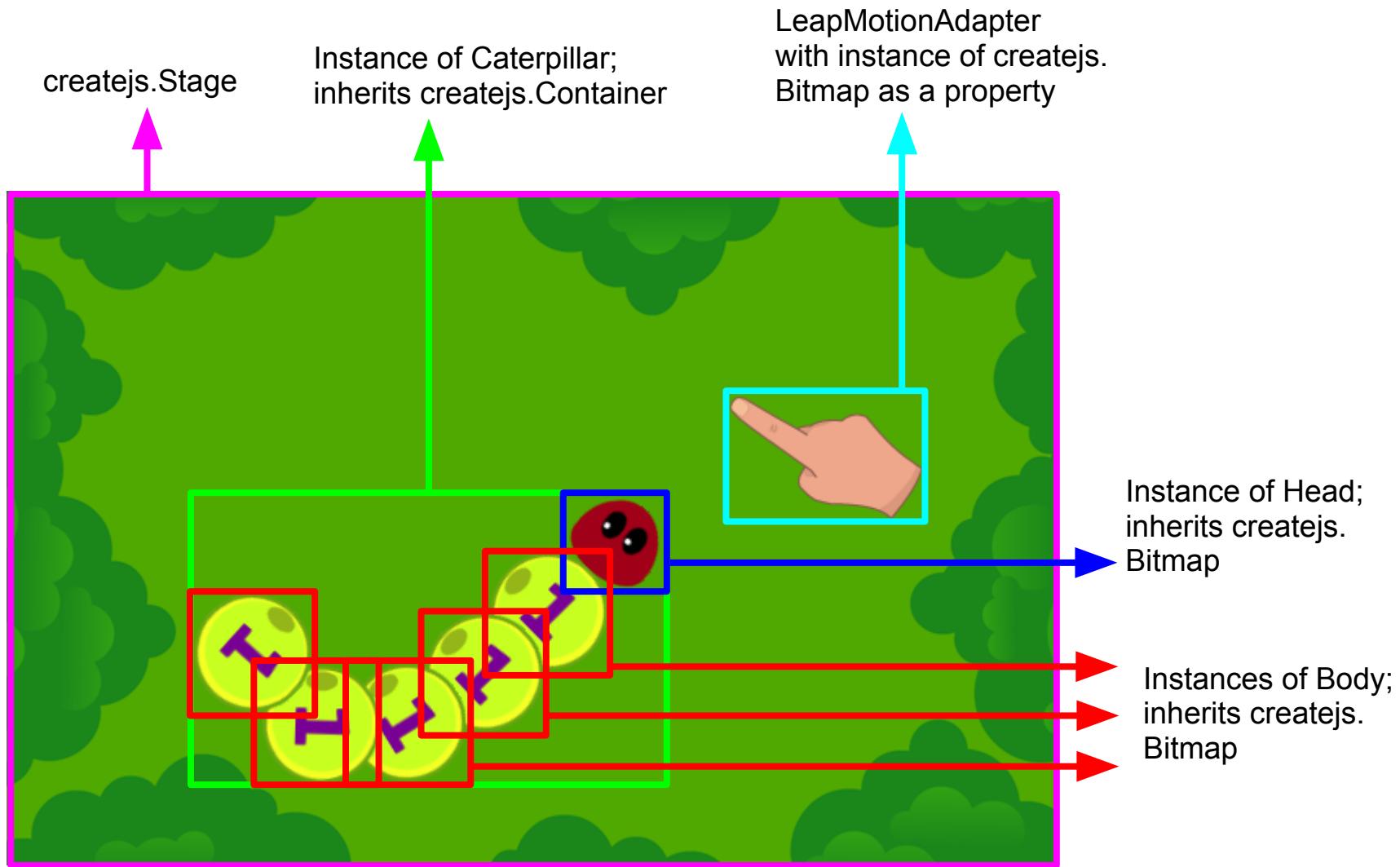
## What is CreateJS?

- It is a library that simplifies development for HTML5 using Canvas and Audio
- It uses terminology similar to Flash,  
eg. "Stage", "DisplayObject"
- It enables preloading of Audio and Image files with visual feedback

- The Display Object Hierarchy Example:



# CreateJS



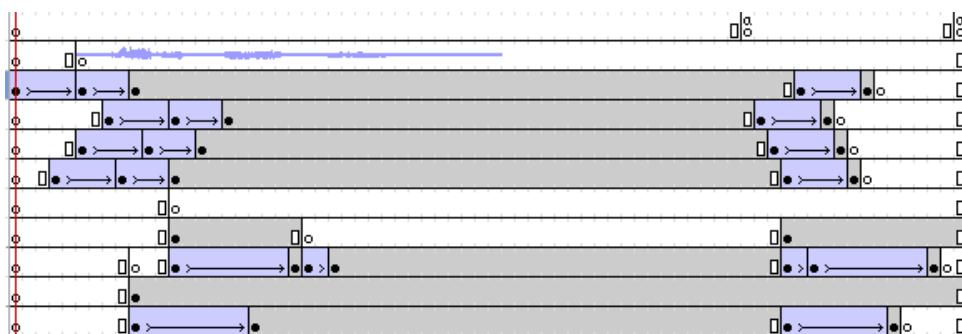
# Flash CS6 Sprite Sheets

Timeline animation to HTML5

**FLASH**



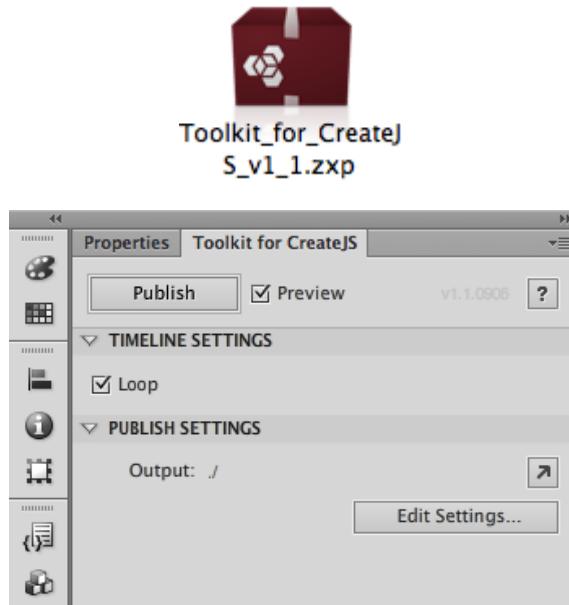
**HTML**



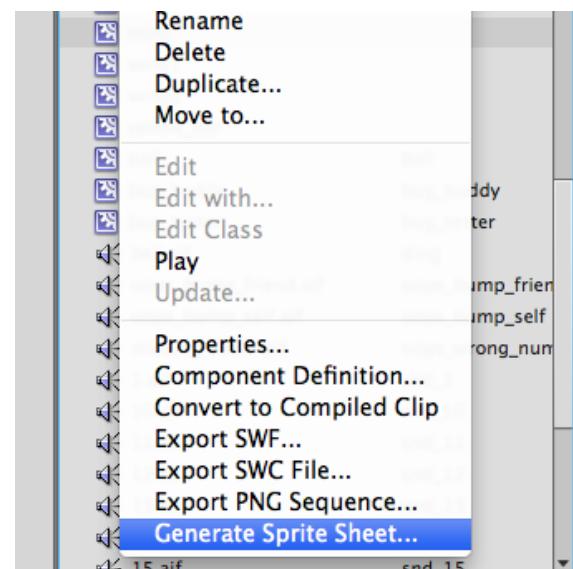
# Flash CS6 Sprite Sheets

Two ways to convert

Toolkit for CreateJS



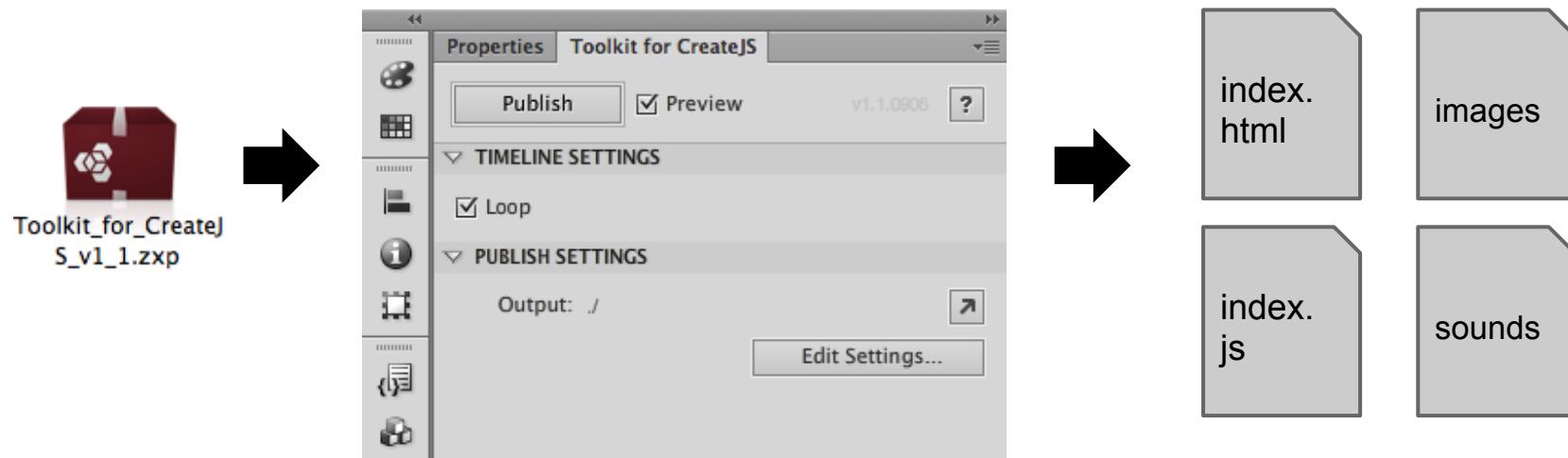
Sprite Sheet Generator



# Flash CS6 Sprite Sheets

## Toolkit for CreateJS

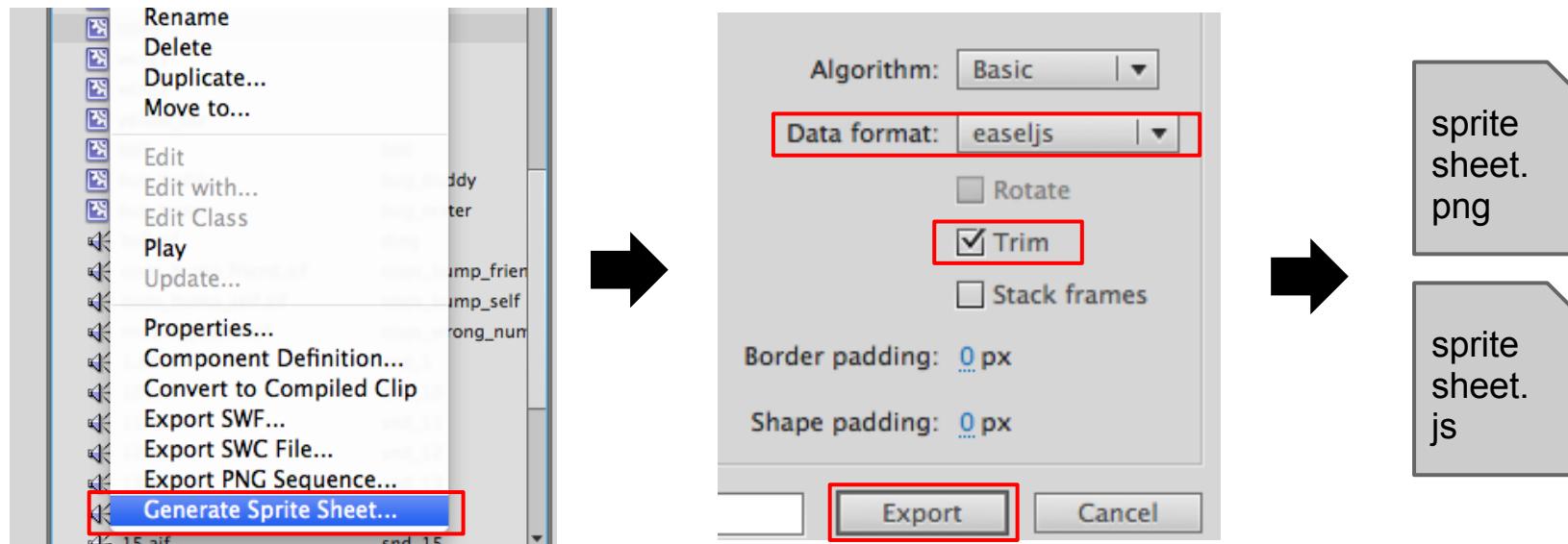
- Free Extension
- AS3 friendly
- Extract sound files (mp3) from timeline



# Flash CS6 Sprite Sheets

## Sprite Sheet Generator

- Export sprite sheet "png" file and "js" file
- Supports "EaselJS" data format
  - \*EaselJS : Library of CreateJS suite. API makes canvas Flash like
- Able to export each MovieClip in the library



# Flash CS6 Sprite Sheets



# How we incorporated to our code

1. Load the sprite sheet image
  2. Load easeljs frames data to our class file

```
var data = {
  images: [Images.INTRO_SHEET],
  frames: [[0, 0, 56, 21, 0, -284, -140.6], [56, 0, 93, 32, 0, -266, -135.6], [149, 0, 165, 51, 0, -230, -126.6], [314, 0, 298, 84, 0, -164, -110.6], [612, 0, 447, 124, 0, -89, -90.6], [1059, 0, 495, 136, 0, -65, -84.6], [1554, 0, 491, 136, 0, -67, -84.6], [2045, 0, 482, 136, 0, -72, -85.6], [2527, 0, 475, 141, 0, -75, -83.6], [3002, 0, 609, 265, 0, 61, 40.4], [3611, 0, 585, 248, 0, 37, 25.4], [4196, 0, 564, 232, 0, 16, 10.3], 3999999999999999, [4760, 0, 663, 218, 0, 0, -3.6000000000000014], [5423, 0, 607, 206, 0, -15, -15.600000000000001], [6030, 0, 561, 214, 0, -28, -23.6], [6591, 0, 523, 232, 0, -39, -27.6], [7114, 0, 500, 244, 0, -48, -30.6], [7614, 0, 496, 248, 0, -52, -32.6], [0, 265, 494, 249, 0, -54, -33.6], [494, 265, 494, 249, 0, -54, -33.6], [988, 265, 494, 248, 0, -54, -33.6], [1482, 265, 494, 248, 0, -54, -33.6], [1976, 265, 494, 251, 0, -54, -33.6], [2470, 265, 494, 251, 0, -54, -33.6], [2964, 265, 494, 251, 0, -54, -33.6], [3458, 265, 494, 251, 0, -54, -33.6], [3952, 265, 494, 251, 0, -54, -33.6], [4446, 265, 494, 251, 0, -54, -33.6], [4940, 265, 494, 251, 0, -54, -33.6], [5434, 265, 494, 251, 0, -54, -33.6], [5928, 265, 494, 251, 0, -54, -33.6], [6422, 265, 494, 251, 0, -54, -33.6], [6916, 265, 494, 251, 0, -54, -33.6], [7410, 265, 494, 251, 0, -54, -33.6], [0, 516, 494, 251, 0, -54, -33.6], [494, 516, 494, 251, 0, -54, -33.6], [988, 516, 494, 251, 0, -54, -33.6], [1482, 516, 494, 251, 0, -54, -33.6], [1976, 516, 494, 251, 0, -54, -33.6], [2470, 516, 494, 251, 0, -54, -33.6], [2964, 516, 494, 251, 0, -54, -33.6], [3458, 516, 494, 251, 0, -54, -33.6], [3952, 516, 494, 251, 0, -54, -33.6], [4446, 516, 494, 251, 0, -54, -33.6], [4940, 516, 494, 251, 0, -54, -33.6], [5434, 516, 494, 251, 0, -54, -33.6], [5928, 516, 494, 251, 0, -54, -33.6], [6422, 516, 494, 251, 0, -54, -33.6], [6916, 516, 494, 251, 0, -54, -33.6], [7410, 516, 494, 251, 0, -54, -33.6], [0, 767, 494, 251, 0, -54, -33.6], [494, 767, 494, 251, 0, -54, -33.6], [988, 767, 494, 251, 0, -54, -33.6], [1482, 767, 494, 251, 0, -54, -33.6], [1976, 767, 494, 251, 0, -54, -33.6], [2470, 767, 494, 251, 0, -54, -33.6], [2964, 767, 494, 251, 0, -54, -33.6], [3458, 767, 494, 251, 0, -54, -33.6], [3952, 767, 494, 248, 0, -54, -32.6], [4446, 767, 490, 246, 0, -58, -33.6], [4936, 767, 471, 244, 0, -69, -36.6], [5407, 767, 428, 244, 0, -87, -37.6], [5835, 767, 361, 246, 0, -112, -36.6], [6196, 767, 337, 254, 0, -143, -28.6], [6533, 767, 321, 267, 0, -179, -12.600000000000001], [6854, 767, 307, 289, 0, -217, 15.39999999999999], [7161, 767, 289, 304, 0, -262, 45.4], [7450, 767, 60, 51, 0, -518, -185.6], [7510, 767, 60, 51, 0, -549, -159.6], [7570, 767, 60, 51, 0, -587, -134.6], [7630, 767, 0, 0, 0, 0, -0.60000000000000014], animations:{"all": [0, 71, false]}},
```

**require.js / preloader.js / extra functions**

# LeapJS

Where to find LeapJS:

[github.com/leapmotion/leapjs](https://github.com/leapmotion/leapjs)



# LeapJS

## Browser Support (eg. caniuse.com/websockets)



Now to get coding!

Demo

LeapJS Data and Possible Uses

It also works with NodeJS!

Bonus Demo (if there is time)  
NodeJS + LeapJS with NCurses Output

# Questions

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Demonstration Files:

[github.com/pmcmonagle/html5toronto-leapmotion-lessons](https://github.com/pmcmonagle/html5toronto-leapmotion-lessons)