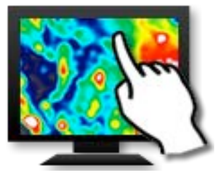


Open exhibits

www.openexhibits.org

This material is based upon work supported by the National Science Foundation under Grant Number Division of Research on Learning in formal and informal settings #1010028. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

Jim Spadaccini
and Paul Lacey

Open exhibits

Today!

- What is Open Exhibits? Introduction.
- Overview of Software
- Community & Future Development

THE SOFTWARE

- Managing Modules in Templates (Collection Viewer)
- Replacing Media in Modules & Templates
- Customizing Templates & Modules via XML
  - (Magnifier) Styles
  - (gMap) Qualities
  - (Collection Viewer) Gestures

<break> *3:30 -3:45 PM*

- Fun with Kinect
- ActionScripting Interactions - Module Structure / Adding Gestures, Physics.
- SENSUS Networking Demo - Windows 7, Android and iOS working

Open exhibits

What is it?

A multitouch and multiuser software initiative funded by the National Science Foundation.

The software is free to students, museums and other educational organizations.

Open Exhibits received funding on September 15, 2010. It is a three-year project.

Open exhibits

What is it?

Open Exhibits provides tools that allows both programmers and non-programmers to create multitouch exhibits.

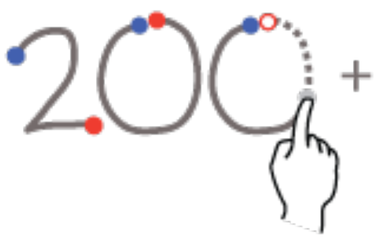
Flash, Flex and Air developers can take advantage of open source software modules and templates.

Non-programmers can populate pre-built templates to create new exhibits.

Open exhibits

What is it?

Open Exhibits core is essentially the educational version of GestureWorks, a multitouch framework for Adobe Flash, Flex, and AIR.



Open Exhibits core has over 200 gestures built in and includes a multitouch simulator. It supports simultaneous gesturing and has a point-clustering algorithm. It also allows for elegant degradation of touch events to mouse events on non-touch systems.

Open exhibits

What is it?

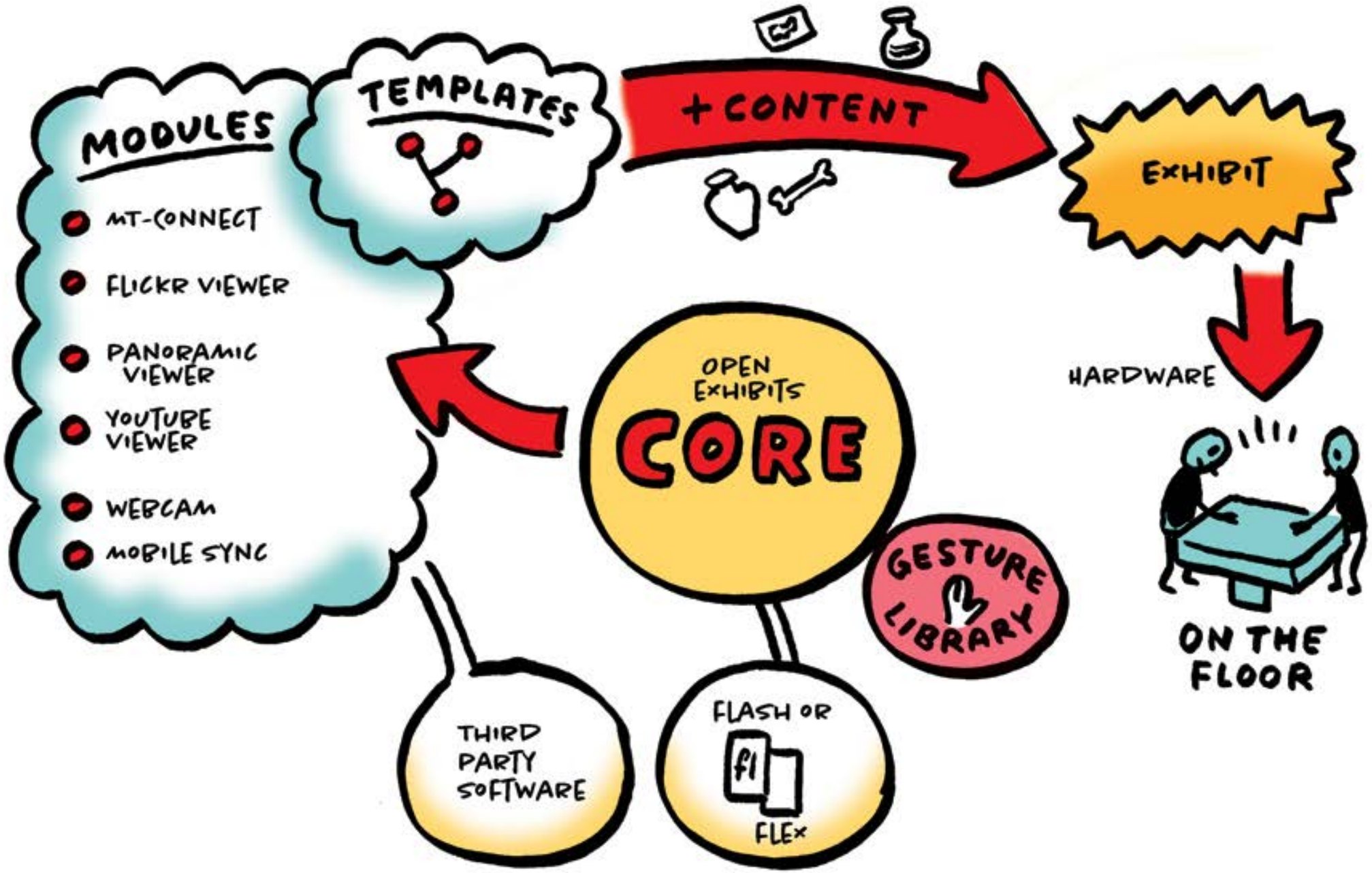
Modules are functional components that can be used as building blocks for templates and exhibits. They focus on a single application functionality and can be used alone or combined to create rich templates and exhibits.

Templates are full exhibits without content. You can add content via external XML files or customize a template to include other modules or new functions.

Exhibits are floor-ready applications. Content is included, but exhibits can be modified to include other data or modules.

RECIPE FOR AN OPEN EXHIBIT

OPEN EXHIBITS: THE SUM OF ALL PARTS



Templates

Collection Viewer

v1.2.1 Updated March 30, 2011
posted: 11-15-2010 Matthew Valverde

Download | Versions | Documentation

The Collection Viewer is a stand-alone media viewing application. It can use any combination of the six Open Exhibits core modules (Flickr Viewer, Key Viewer, Video Viewer, YouTube Viewer, Image Viewer and GMap Viewer) to create a rich application with image, video, and mapping objects and a customizable onscreen keyboard.

14 project comments 695 downloads 1 favorite Tweet 6 Share 1 3 people

Magnifier Viewer

v1.0 Updated March 30, 2011
posted: 03-30-2011 David Heath

Download | Versions | Documentation

The Magnification Viewer is a stand-alone media viewing application. It can use any combination of the six Open Exhibits core modules (Key Viewer, Flickr Viewer, Image Viewer,GMap Viewer with optional Video Viewer and YouTube Viewer) to create a rich application with image, video, and mapping objects and a customizable onscreen keyboard.

0 project comments 4 downloads 0 favorites Tweet 0 Share 0 1 person

2 Templates are currently available

Modules

Mask Image Viewer

v1.1 Updated February 24, 2011
posted: 02-24-2011 Paul Lacey

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This multitouch module gives the ability to view interactive masked images. It uses two images and a shaped mask to dynamically mask sections of one image using the second. Users can pan around the mask using the drag gesture, zoom and rotate. Additionally the image itself can be dragged, scaled and rotated using the gestures on the image frame.

0 project comments | 154 downloads | 1 favorite | Tweet 3 | Share 0 | Like 1

Panoramic Viewer

v1.0 Updated February 15, 2011
posted: 02-15-2011 Paul Lacey

Download | Versions | Documentation

The PanoramicViewer is a module that uses the AWAY3D API to create interactive high resolution zoomable 360 degree panoramic viewing windows. Multiple touch object windows can independently display individual panoramic views with different sizes and orientations.

0 project comments | 239 downloads | 4 favorites | Tweet 0 | Share 1 | 2 people

10 Flash and 2 other Modules are currently available

Live Video Viewer

v1.0 Updated January 28, 2011
posted: 01-28-2011 Paul Lacey

Download | Versions | Documentation

The LiveVideoViewer module can be used to display live web camera video. The video feed viewing area can be resized and dragged about the stage with each web cam or live video feed acting as an independent multitouch object.

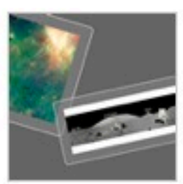
Note: The number of cameras shown on stage is ultimately limited by the number of distinct cameras that are simultaneously recognized by Flash.

0 project comments | 147 downloads | 1 favorite | Tweet 1 | Share 0 | 1 person

Giga Pixel Viewer

v1.0 Updated January 18, 2011
posted: 01-20-2011 Paul Lacey

Download | Versions | Documentation



This multitouch module gives the ability to view and explore giga pixel images. It uses image tiles to dynamically re-create the giga pixel image at various zoom levels. Users can pan around the image using the drag gesture, zoom stepwise using the double tap gesture and zoom continuously using the two finger zoom gesture.

3 project comments | 228 downloads | 1 favorite | Tweet 1 | Share 1 | 3 people

Video Viewer

v1.1 Updated December 15, 2010
posted: 11-15-2010 Matthew Valverde

Download | Versions | Documentation

The VideoViewer is a module designed to display media content in the form of digital video. Multiple videos can be displayed on stage and each video can be moved, rotated and scaled using the TAP, DRAG, SCALE and ROTATE multitouch gestures as well as controlled using standard PLAY, STOP, BACK, FORWARD and PAUSE touch buttons.

The Video Viewer takes videos in FLV format.

9 project comments 240 downloads 2 favorites Tweet 2 Share 0 3 people

Google Maps Viewer

v1.0 Updated November 14, 2010
posted: 11-15-2010 Paul Lacey

Download | Versions | Documentation

The GMapViewer is a module that uses the Google Maps API to create an interactive mapping window. Multiple touch object windows can independently display maps with different sizes and orientations.

8 project comments 328 downloads 3 favorites Tweet 4 Share 1 Like 2

Image Viewer

v1.1.1 Updated March 30, 2011
posted: 11-15-2010 Matthew Valverde

Download | Versions | Documentation

The Image Viewer module allows you to create an application composed of multiple image objects. These objects can be rotated, dragged, scaled and flicked, and an info button on the bottom of each image allows the user to "flip" each image to view more information.

6 project comments 307 downloads 2 favorites Tweet 1 Share 0 Like 2

YouTube Viewer

v1.0 Updated November 14, 2010
posted: 11-14-2010 Matthew Valverde

Download | Versions | Documentation

The YouTube Viewer is a module that uses the YouTube API to display video content from YouTube in the form of an interactive video player window. Video can be streamed from a specified YouTube account along with associated meta data.

0 project comments 84 downloads 1 favorite Tweet 1 Share 0 Like 2

Open API

v1.0-alpha Updated November 15, 2010
posted: 11-15-2010 James Kassemi

Download Versions Documentation

Open API allows you to create a public API into your collection (or any other MySQL) database. An external config file allows users to set parameters for which data can and cannot be accessed by the API.

0 project comments 109 downloads 1 favorite Tweet 1 Share 0 1 person

MT-Kinect

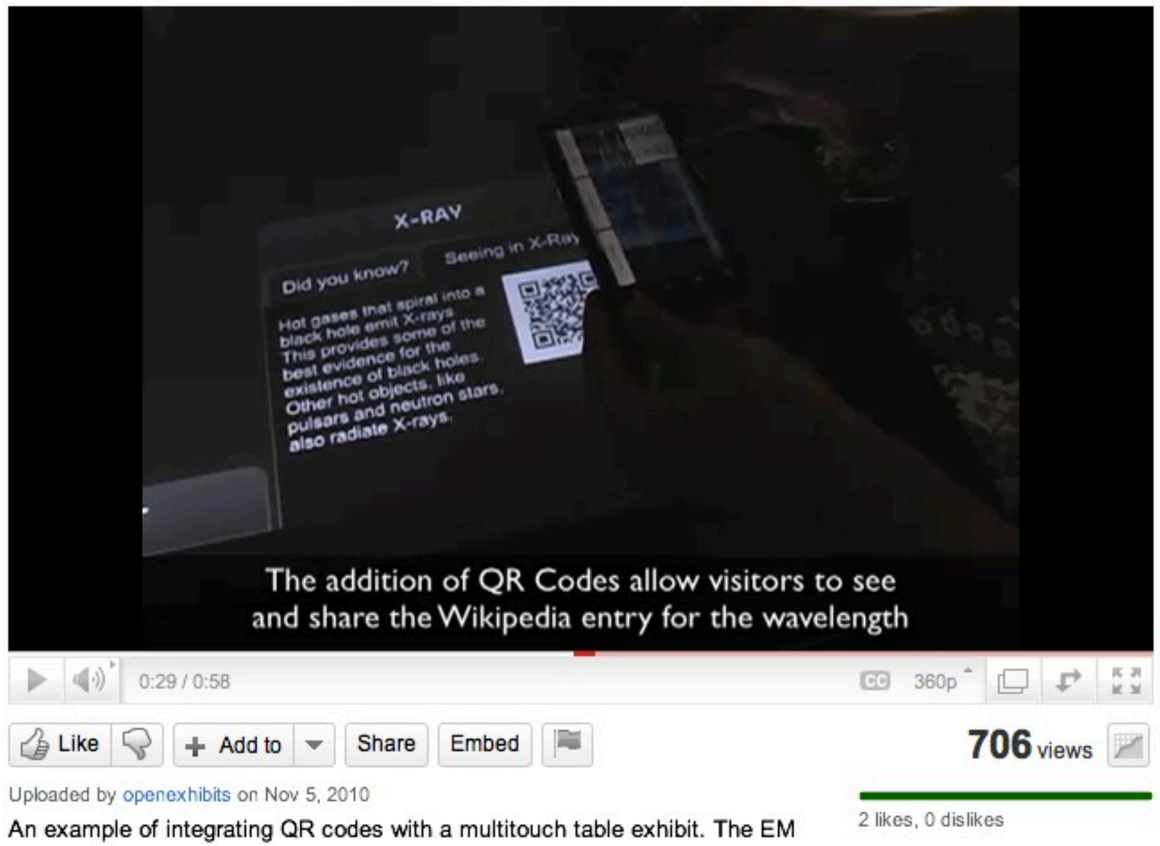
v1.0-alpha Updated January 19, 2011
posted: 01-19-2011 James Kassemi

Download Versions Documentation

Enables the development of multitouch applications with the Microsoft Kinect that use gesturing rather than direct touches. This virtual webcam driver outputs an image from a depth range that can be used with any blob tracking software that supports DirectShow (like CCV).

This module does not require the use of GestureWorks or Open Exhibits Core.

37 project comments 859 downloads 4 favorites Tweet 1 Share 0 3 people



http://www.youtube.com/watch?v=Iw-Ox0rVS0Y

Examples of prior work: EM Spectrum with QR Codes

http://www.youtube.com/watch?v=HwQRPHDSJIU

Open exhibits

Community

Community website up since November 15, 2010

809 Members as of March 30, 2011

1546 Twitter Followers and 910 Email subscribers

Recently held a "Design Summit" with around 35 partners, advisors, and invited guests.

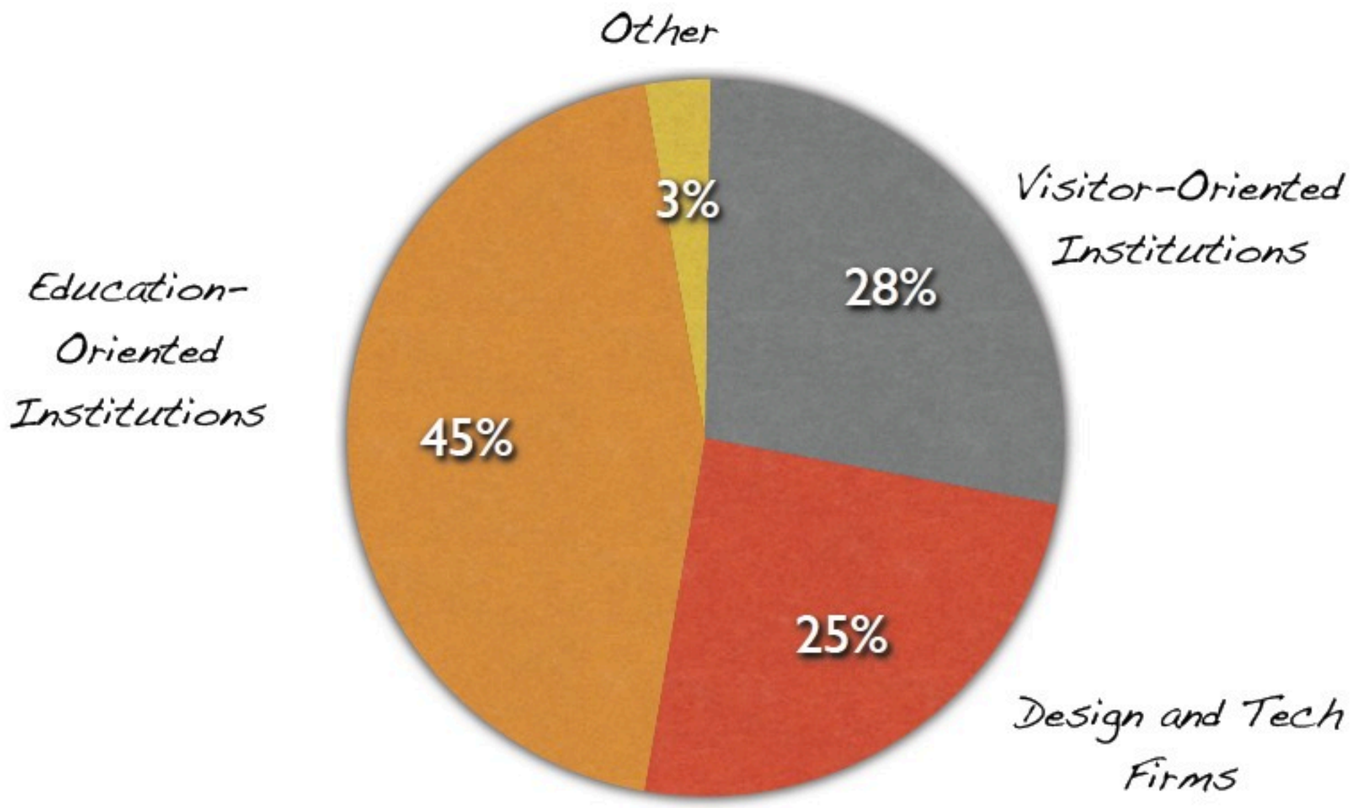
Open exhibits

Community

2 Templates, 12 Modules are available as of March 30, we've had 3722 Software downloads since the site launched.

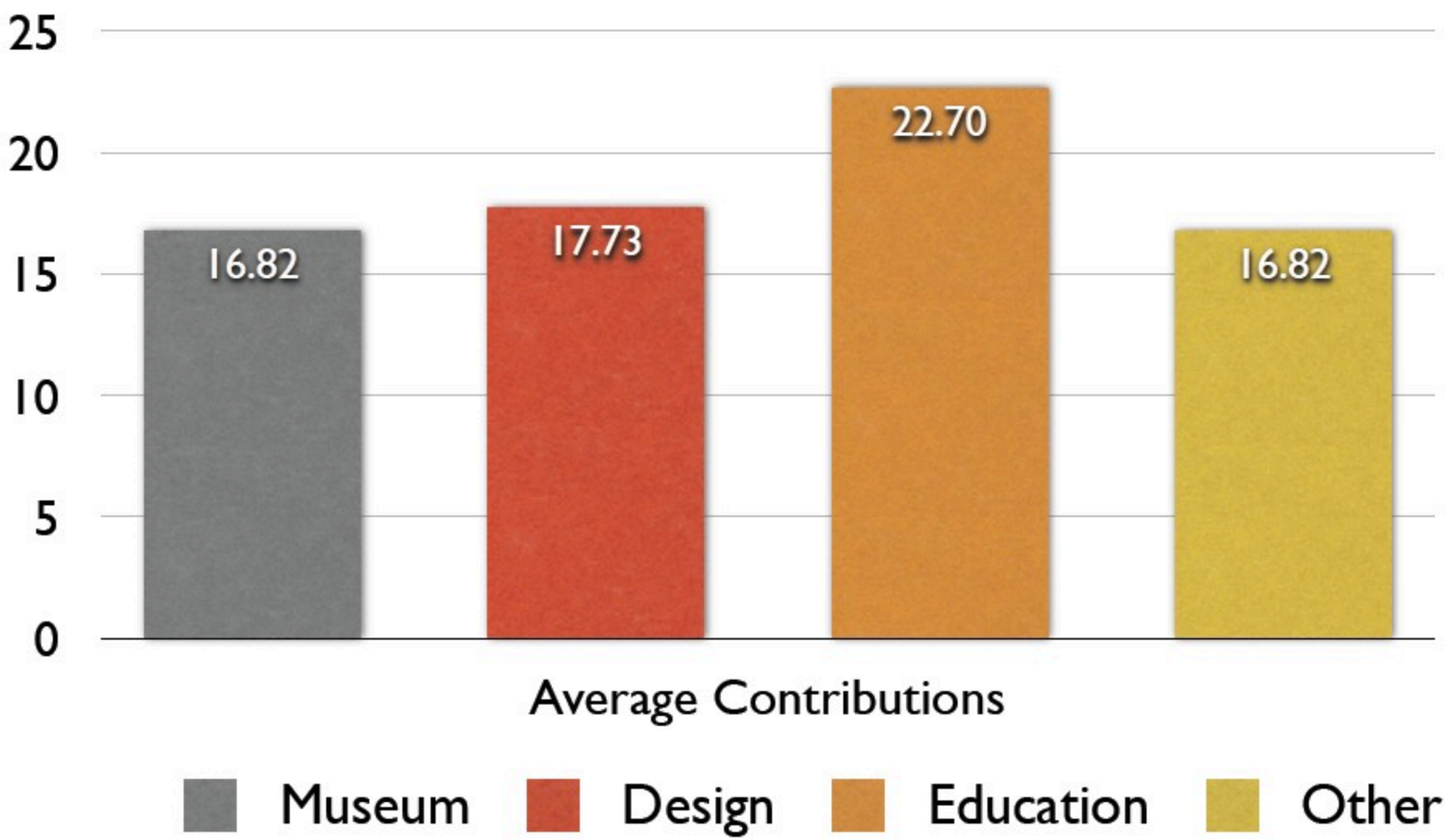
An RSS module/template is planned to be released next. First full "exhibits" to be released later this year.

Members - Data from Rockman Et Al

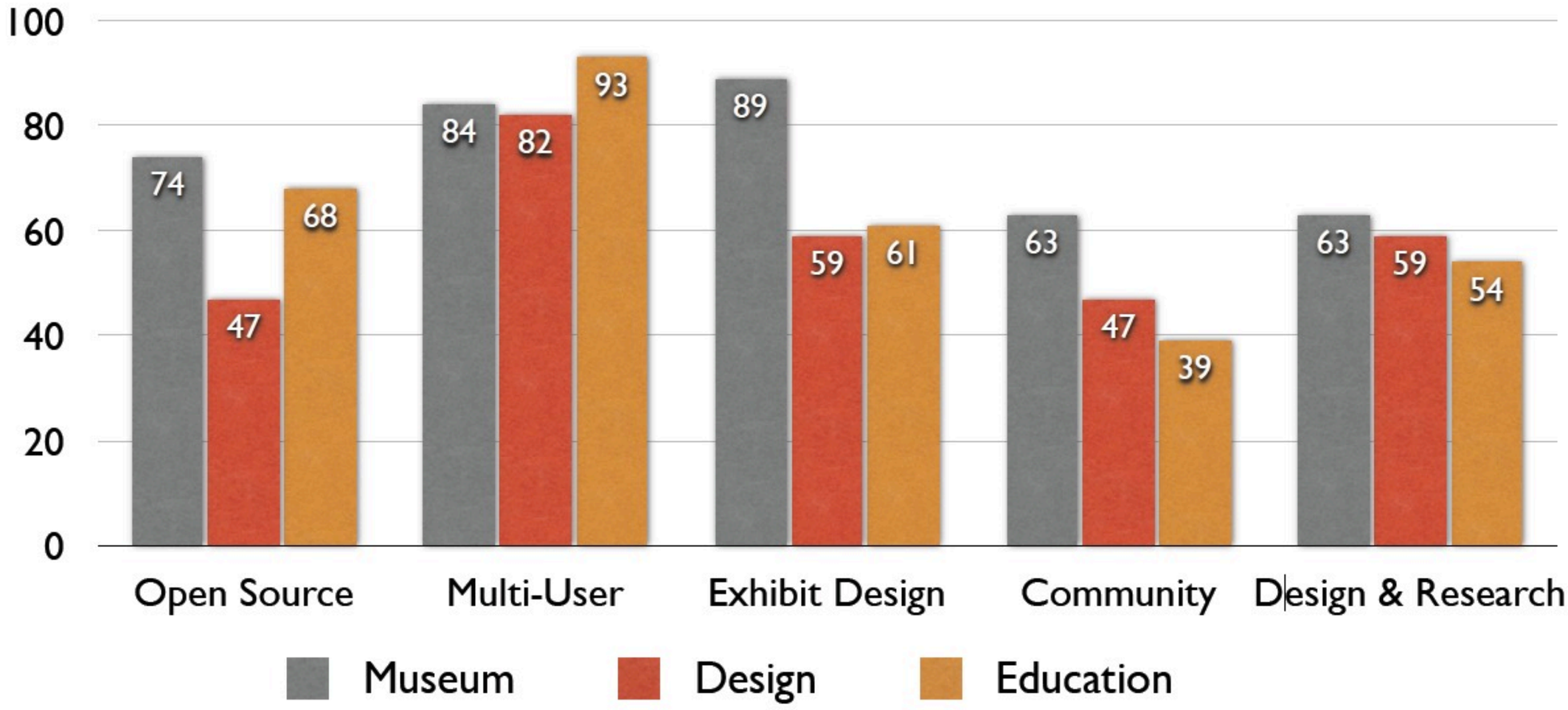


* Based on Data from 689 Community Members (March 2011)

Online Activity - Data from Rockman Et Al



Respondents' Reasons for Involvement by Type (Percentage)



Data from Rockman Et Al

Open exhibits

Community Challenges

• Bridge the gap between University student members and museums.

• Create a forum, to allow for better cross-communication.

• Make everything easier to use: the site, the software, everything.

• Open source the *Core* and connect with more developers!

• Provide better access to cheap hardware and devices and DIY projects.

Open exhibits

And now let's try the software!

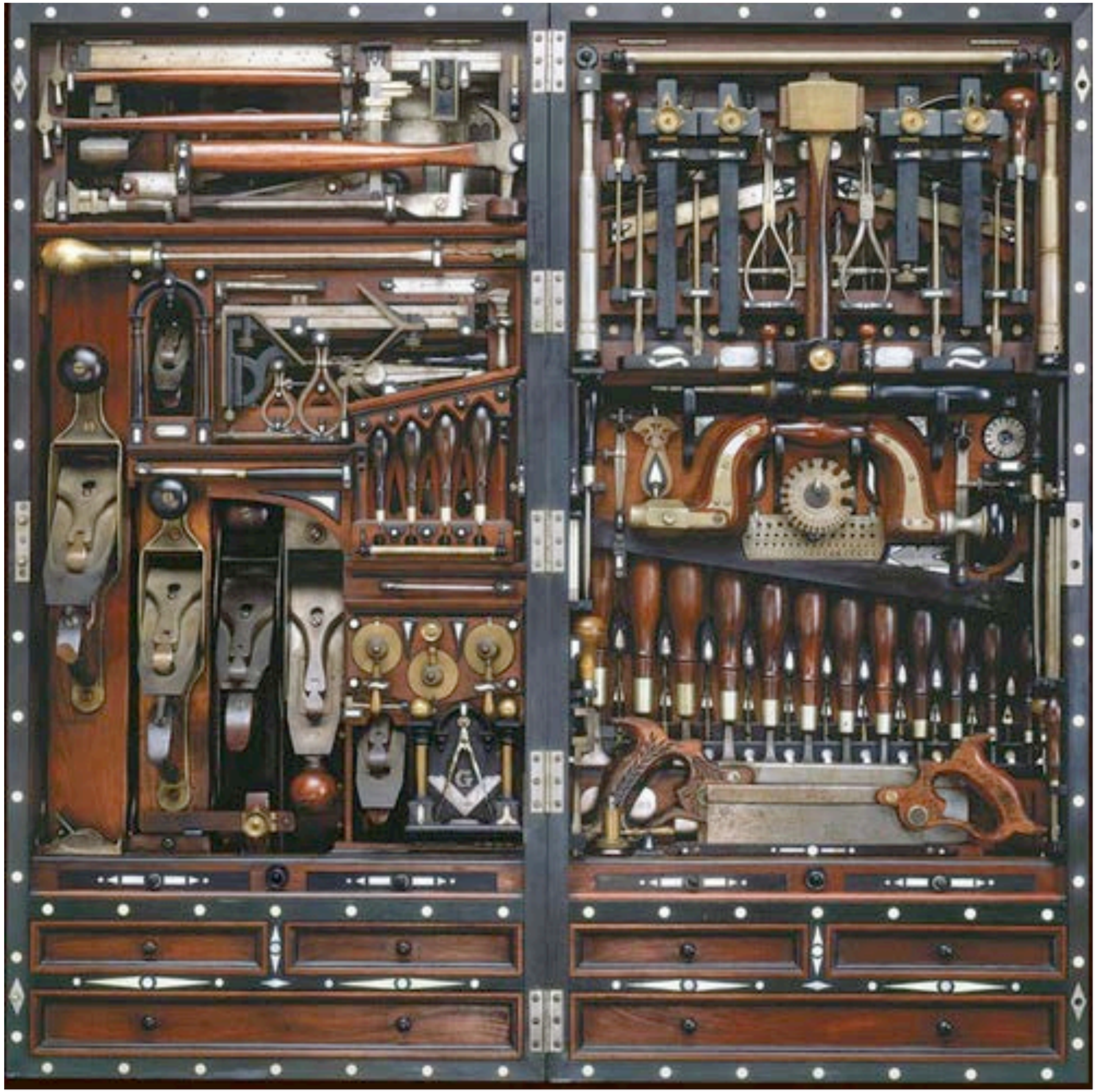


Image Credit:
finewoodworking.com 1993.
300 tools, most can be accessed without removing other tools

Open exhibits

Managing Modules in Templates (Collection Viewer)

- What is a template and what is a module ?
- Adding and removing module objects in the collection viewer
- Challenges with using multiple objects on stage

Open exhibits

Using the Collection Viewer to create dynamic exhibits

- Dynamic object displays
- Display cycles
  - Open ended exploration
- Leveraging online content
  - The Flickr module (Youtube and Google Maps)
- Online editing and contribution
  - Live content
  - Live webcam video feeds

Open exhibits

Replacing Media in Modules & Templates

- Object based architecture
  - Object media source
  - Object media properties
  - Object meta data

Open exhibits

Customizing Templates & Modules via XML

- (gMap) Qualities
- (Magnifier) Styles
- (Collection Viewer) Gestures

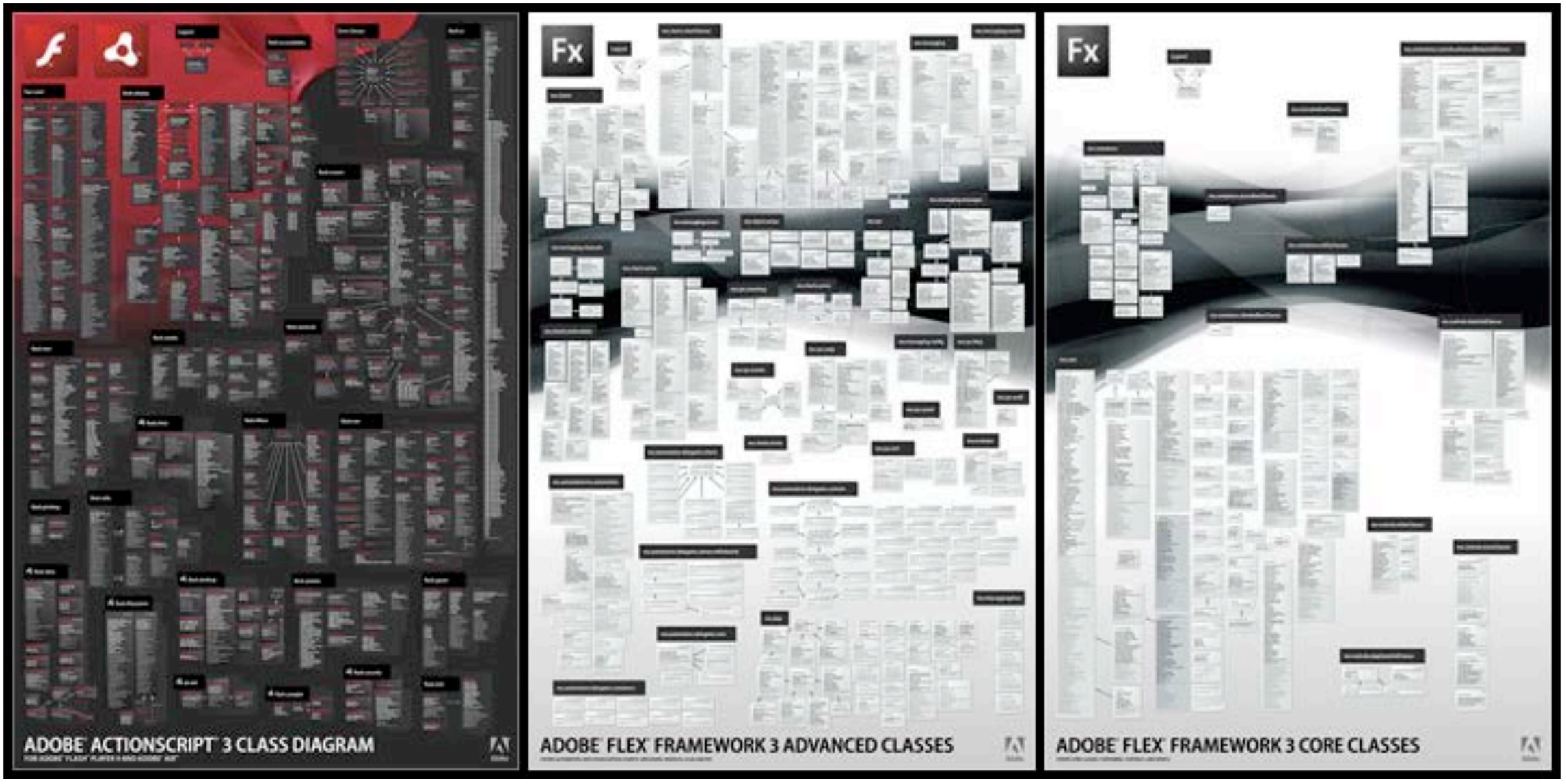
```
<GlobalSettings><!-- Sets the initial, min and max scale v
        <!-- <scale></scale> --><!-- Sets the images's ful
        <amountToShow>2</amountToShow>
        <globalScale>0.2</globalScale><!-- The size images
        <imagesNormalize>500</imagesNormalize><!-- Sets th
        <maxScale>2.5</maxScale><!-- The maximum size the
        <minScale>.5</minScale><!-- The minimum size the
        <infoPadding>18</infoPadding><!-- Sets the padding
        <maskSize>200</maskSize>
        <maskShape>square</maskShape>
</GlobalSettings>

<FrameStyle><!-- Sets the style of the frame that surround
        <frameDraw>true</frameDraw><!-- Sets whether or no
        <padding>60</padding><!-- Sets the padding (thickn
        <cornerRadius>20</cornerRadius><!-- Sets the radiu
        <fillColor1>0x888888</fillColor1><!-- Sets the fil
        <fillAlpha>0.55</fillAlpha><!-- Sets the opacity o
        <outlineColor>0xFFFFFF</outlineColor><!-- Sets the
        <outlineStroke>2</outlineStroke><!-- Sets the thic
        <outlineAlpha>0.8</outlineAlpha><!-- Sets the opac
</FrameStyle>

<MaskImageGestures><!-- Sets which gestures can be used on
        <drag>true</drag>
        <scale>true</scale>
        <rotate>true</rotate>
</MaskImageGestures>

<FrameGestures><!-- Sets which gestures can be used to man
        <drag>true</drag>
        <rotate>true</rotate>
        <scale>true</scale>
</FrameGestures>
```

image: application.xml, module.xml

Fun with Kinect

- Gross gesture control
  - The invisible wall
- Panning, Scaling, Climbing
  - How Kinect works
  - IR dot pattern, depth classification
  - object outline
  - image filtering
- CCV open tracker
  - open camera control, point isolation, TUIO point stream, Flash

Under The Bonnet, The Open Exhibits SDK



Open exhibits

AS3 Module Structure

- Flex interface model (consistency, clarity and expandability, portability)
- Object oriented model
- Usability

Scripting Interactions AS3 - Multitouch Gesture events

- Adding touch listeners
- Adding gesture listeners
- Mapping gesture actions to specific properties

```
382         // gesture event handlers to act on mask shape object
383         private function dragHandler(e:GestureEvent):void
384         {
385             //trace("mask drag");
386             mShape.x += e.dx;
387             mShape.y += e.dy;
388         }
389         private function scaleHandler(e:GestureEvent):void
390         {
391             //trace("mask scale");
392             mShape.scaleX += e.value;
393             mShape.scaleY += e.value;
394         }
395         private function rotateHandler(e:GestureEvent):void
396         {
397             //trace("mask rotation");
398             mShape.rotation += e.value;
399         }
400
401         // -- gesture event handlers that act on the MaskImageDisplay object----//
402         private function objectDragHandler(event:GestureEvent):void
403         {
404             x += event.dx;
405             y += event.dy;
406         }
407         private function objectScaleHandler(event:GestureEvent):void
408         {
409             scaleX += event.value;
410             scaleY += event.value;
411         }
412         private function objectRotateHandler(event:GestureEvent):void
413         {
414             rotation += event.value;
415         }
```

Image: listener code snippet.

Scripting Interactions AS3 - Physics

- Enabling physics
- Changing physical settings

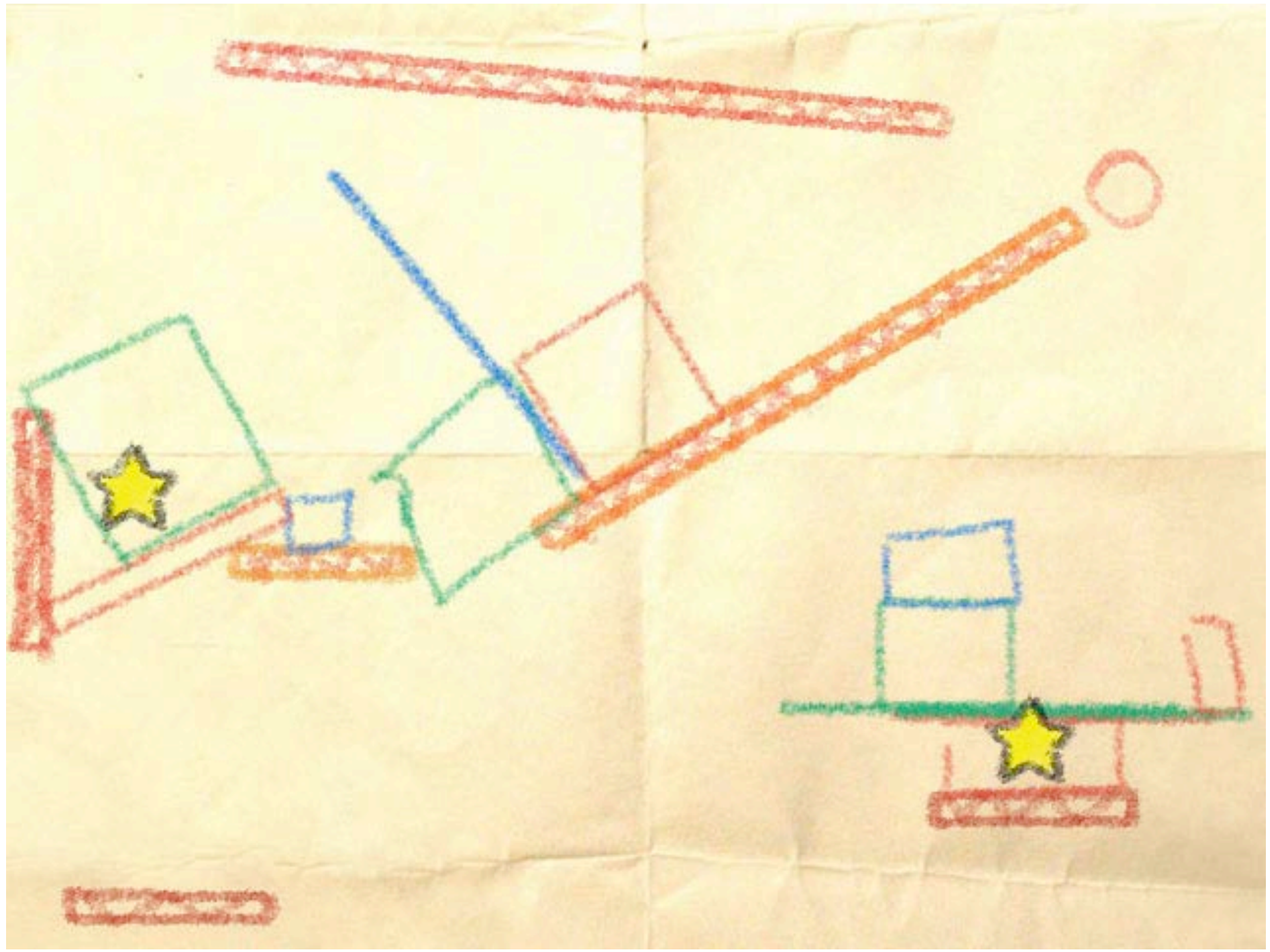


image: crayon physics

Natural User Networking?

FILED UNDER *Networking*, *Software*

KonnectUs cloud-based software makes easy cross-platform sharing a reality, we swoon (video)

By Christopher Trout *posted Mar 24th 2011 12:40PM*

Last year, we expressed a yearning for something we called the Continuous Client that would allow us to pick up on one device where we left off on another, and in less than a year we saw the advent of HP's "Touch-to-share" technology, but our dreams weren't fully fulfilled -- we longed for a platform that would

http://www.engadget.com/2011/03/24/konnectus-cloud-based-software-makes-easy-cross-platform-sharing/