

An Overview of the Fluid Engage Architecture

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Topics We'll Cover

- Engage's technology goals
- The Fluid approach
- Shape of the Engage architecture
- How Infusion fits
- Services layer
- Mobile applications
- User interfaces and the exhibit toolkit
- Mapping and visualization



Challenges

- Accessibility in the digital environment can be complex and confusing
- Lack of continuity across spaces
- Hard to weave together data & systems
- Mobile space is chaotic
- Hard to integrate visitor-generated content and social networking

Engage's Technology Goals

- Enable great design
- Interconnected data
- Approachable: easy to extend/adapt
- Bridging: connect physical and online
- Scalable (up & down) and forward-looking
- Fun, cheaper, easier development



The Open Web Today

- Multi-touch gestures
- Audio and video
- Vector graphics and animation
- Great accessibility
- All work on mobile today!
- Stable and deeply interoperable
- Everyone knows it

Engage at a Glance

- Interconnected data: **services and feeds**
- Bridging spaces: **mobile apps**
- **Exhibit toolkit**: great user experiences
- Making connections: **mapping**
- **Accessibility** all the way through

A Metaphor: UX Weave



freeform knit & crochet fabric by Prudence Mapstone

A Metaphor: UX Weave



hand-dyed weave by Felicia Lo

Tech sandwiches...

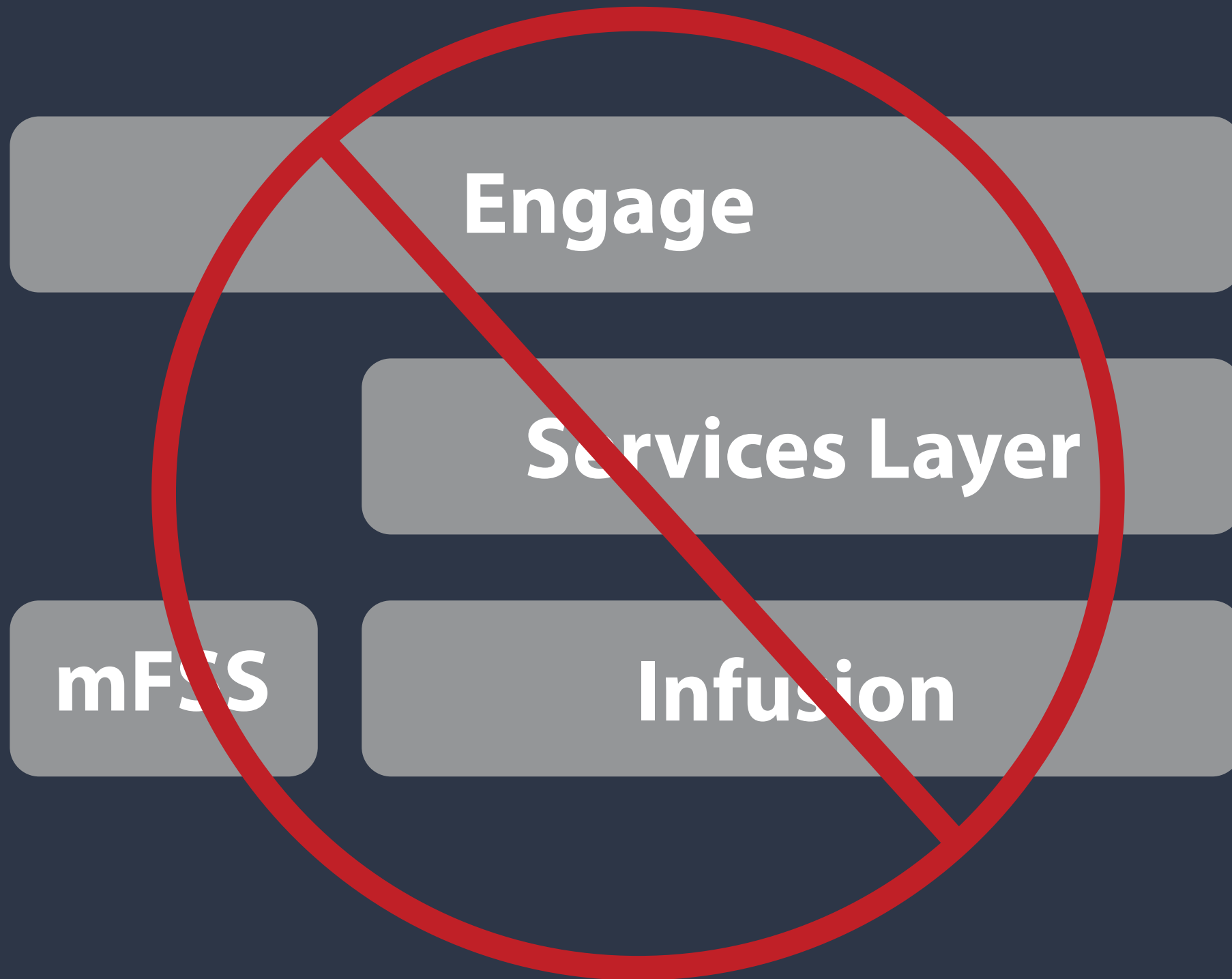
Engage

Services Layer

mFSS

Infusion

Tech sandwiches... not so tasty



Collections
Content Management Systems
Online Exhibit Web Sites
The Web at Large

Components

Tags

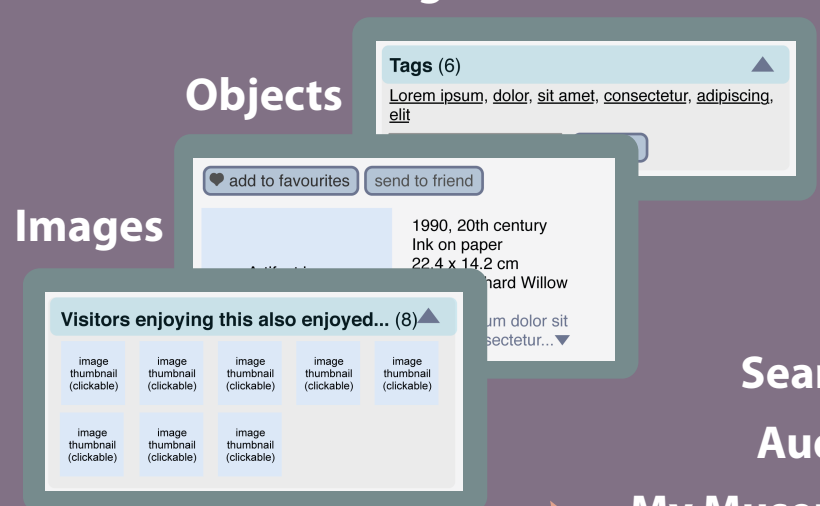
Objects

Images

Search

Audio

My Museum



The screenshot shows a web interface with several components: a 'Tags (6)' dropdown menu with placeholder text 'Lorem ipsum, dolor, sit amet, consectetur, adipiscing, elit'; an 'Objects' section with a 'add to favourites' button and 'send to friend' button; an 'Images' section with a list of image thumbnails; and a 'Search' section with a search bar and a 'My Museum' button.

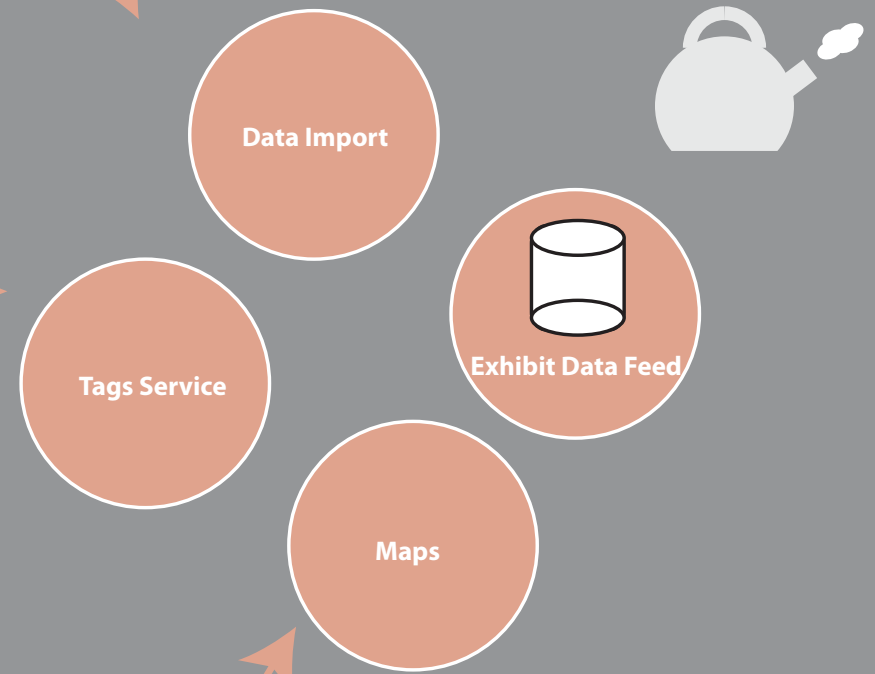
Services

Data Import

Tags Service

Exhibit Data Feed

Maps



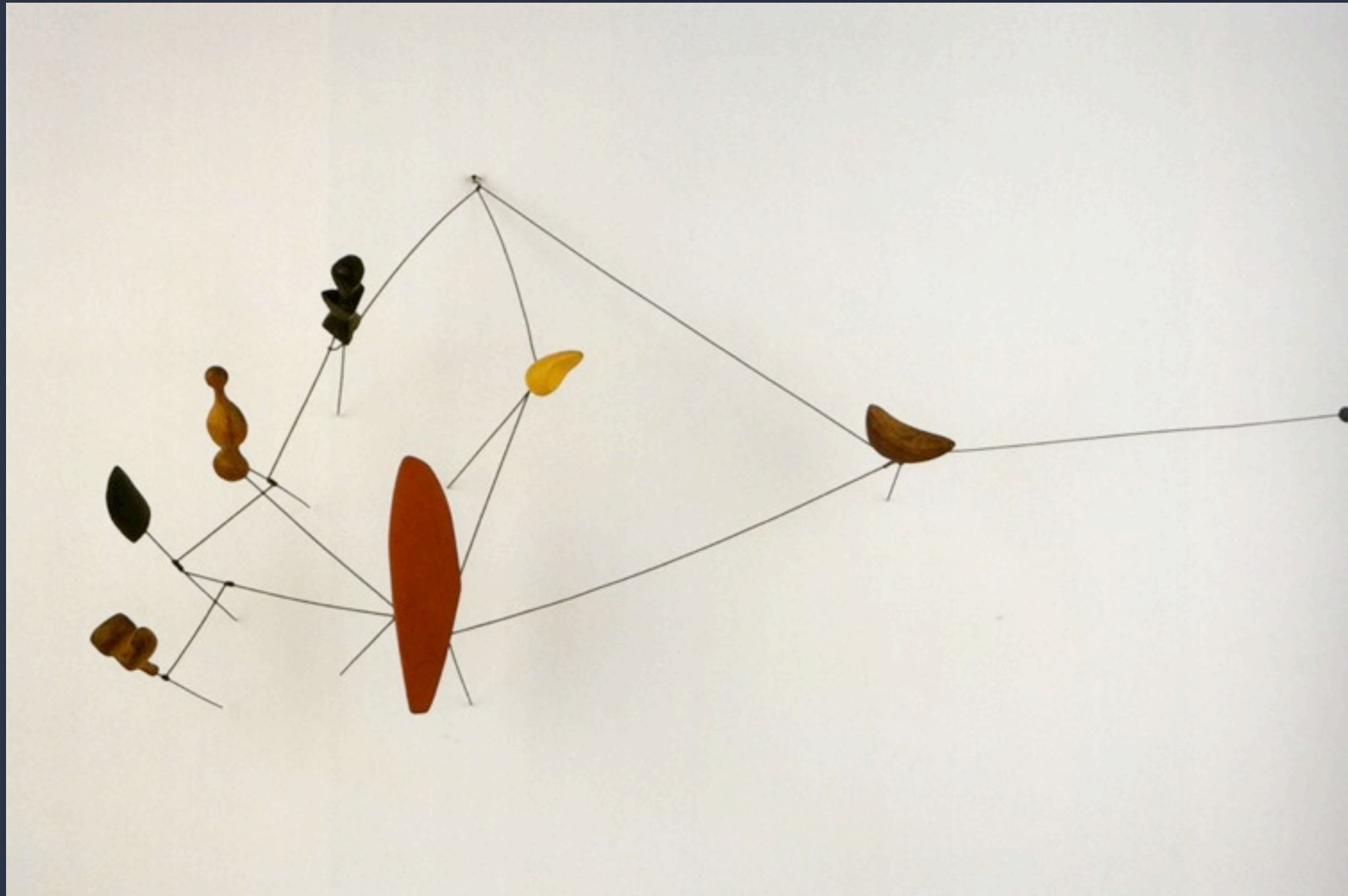
The diagram shows four services represented by orange circles: 'Data Import' with a kettle icon, 'Tags Service' with a double-headed arrow icon, 'Exhibit Data Feed' with a database cylinder icon, and 'Maps' with a map icon.



How Does Infusion Fit?



What is Infusion?



Constellation by Alexander Calder

What is Infusion?

- A toolkit built by the Fluid community
- Directly responds the hard stuff:
 - Accessibility
 - Better usability
- All the building blocks you need for creating great rich Web apps
- Solid, shipping product used around the world



Uploader

Upload Files ✕

File Name	Size	
LICENSE.txt	12.1 KB	✓
maven.xml	1.8 KB	✓
pom.xml	0.9 KB	✓
project.properties	0.1 KB	✓
project.xml	1.2 KB	
README.txt	5.4 KB	

Uploading: 5 of 6 files (15.9 KB of 21.3 KB) [Add more](#)

Pager

Site Settings

General Members Roles & Permissions Site Backup & More

Members

Select All | Select All Visible | Unselect All | 0 Selected

1-10 of 187 items | View 10 Per Page | Prev 1 2 3 ... 17 18 19 (last) Next

Members	Email	Role	
<input type="checkbox"/> Joe I. Instructor	joe@sakai.university.edu	Instructor	Active
<input type="checkbox"/> Mike A. Smith	msmith@yahoo.com	TA	Active
<input type="checkbox"/> Jane Doe	j.doe@sakai.university.edu	Student	Active
<input type="checkbox"/> Laura S. Roberts	roberts_laura@gmail.com	Guest	Active
<input type="checkbox"/> Erin A. Wilson	thewilsons@hotmail.com	Student	Active
<input type="checkbox"/> Ben Singer	singer21@hotmail.com	Student	Active
<input type="checkbox"/> Bhaktavatsalam Bhayakridbhayanashanachar	bb@local.host	Student	Active
<input type="checkbox"/> Dept Admin	da1@local.host	Instructor	Active
<input type="checkbox"/> Angelo Haslip	ah@local.host	Student	Active

Albert Zimmerman
Rob van der Voo

http://build.fluidproject.org/fluid/sample-code/pager/sakai-site-setting/site_setting_members.html#

UI Options & FSS

The screenshot displays the 'My Dashboard' interface with a 'User Interface Options' dialog box open. The dialog is divided into two main sections: 'Easier to see' and 'Easier to find'. The 'Easier to see' section includes settings for font style (Serif), minimum text size (with a slider), text spacing (Regular), line spacing (with a slider), contrast (Medium Contrast), background images (Yes/No), and simplified layout (Yes/No). A 'Preview window' on the right shows a live preview of the dashboard with the same tool list. At the bottom of the dialog are 'Reset', 'Save and apply', and 'Cancel' buttons. The background dashboard shows a sidebar with 'Tools' (Home, Profile, Membership, Schedule, Resources, Worksite Setup, Preferences, Account) and 'Add Widgets' and 'Edit Appearance' buttons at the bottom.

My Dashboard

User Interface Options

▼ Easier to see

Font style: **Serif**

Minimum text size: pt

Text Spacing: **Regular**

Line Spacing:

Contrast: **Medium Contrast**

Background Images: Yes No

Simplified Layout: Yes No

► Easier to find

Preview window (updates automatically)

Tools

Home ×

Profile ×

Membership ×

Schedule ×

Resources ×

Worksite Setup ×

Preferences ×

Account ×

Reset Save and apply Cancel

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Fluid

UI Options: High Contrast Theme

My Dashboard

User Interface Options [Close]

▼ Easier to see

Font style:

Minimum text size: px

Text Spacing:

Line Spacing:

Contrast:

Background Images: Yes No

Simplified Layout: Yes No

► Easier to find

Preview window (updates automatically)

More Tools [Settings] [Close]

Add Tools Toggle View

Home	[remove]
Profile	[remove]
Membership	[remove]
Schedule	[remove]
Resources	[remove]
Worksite Setup	[remove]
Preferences	[remove]
Account	[remove]

img 1

img 2

img 3

[Reset] [Save and apply] [Cancel]

Add Widgets Edit Appearance

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How We'll Use Infusion

- Infusion is the backbone of Engage
- Gives us accessibility, flexibility for UIs
- Infrastructure for doing mashups and social networking
- Works with any Web application
- Themes for great-looking mobile apps



Services and Interoperability



Services and Interoperability

- It's hard to make systems talk
- Risk: duplicated data, redundant effort
- Goal: create an open architecture for sharing data
- Services and data feeds make up an Engage content ecosystem



Engage's Approach to Data

- Every collection is unique
- Lots of different schemas and formats
- Hard to get everyone to agree on one
- Treat schemas as adaptable
- Document-oriented, schema-less

Services Layer

- Collection of exhibit-related data feeds
- Services for common activities:
 - Importing and sharing exhibit data
 - Search
 - Social: tagging, discussion
 - Personal collections
- Standard Web tech: REST and JSON

The Mobile Experience

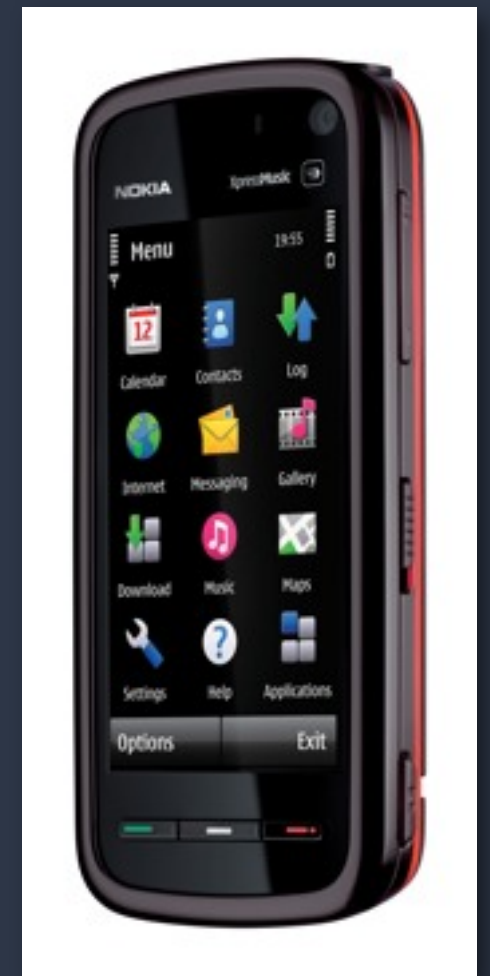


Big Question for Museums:

What platforms should we support?



Everything?

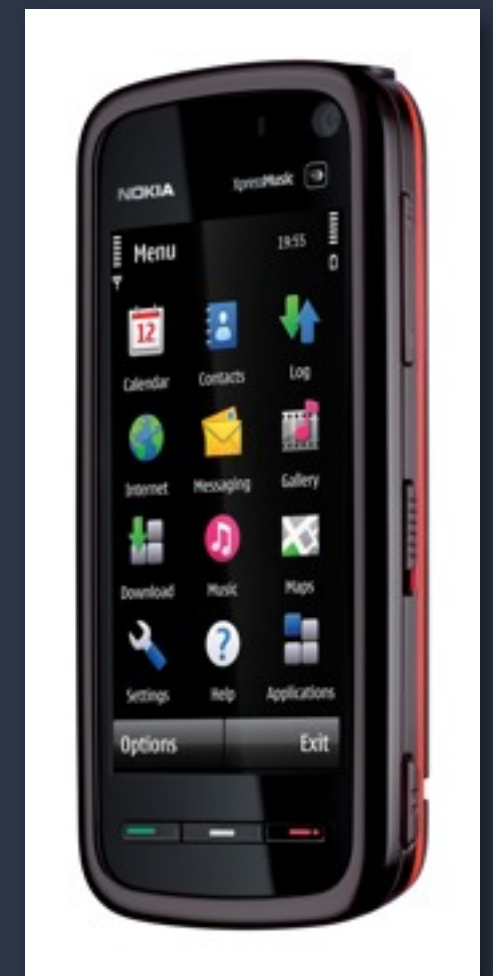


Everything?

Objective-C

Java

C++



Cocoa Touch

Android SDK

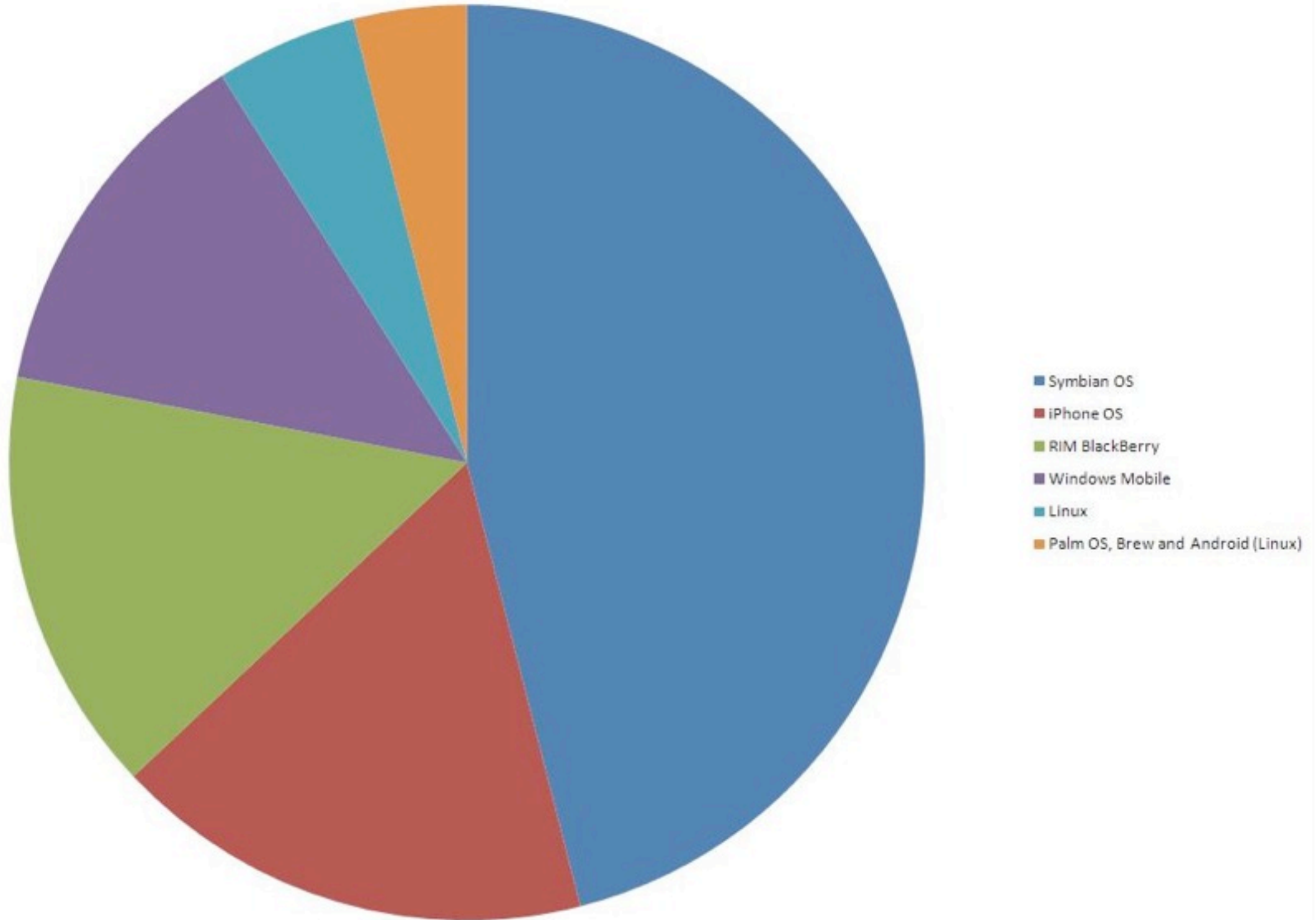
Carbide



Only One?



Only One?



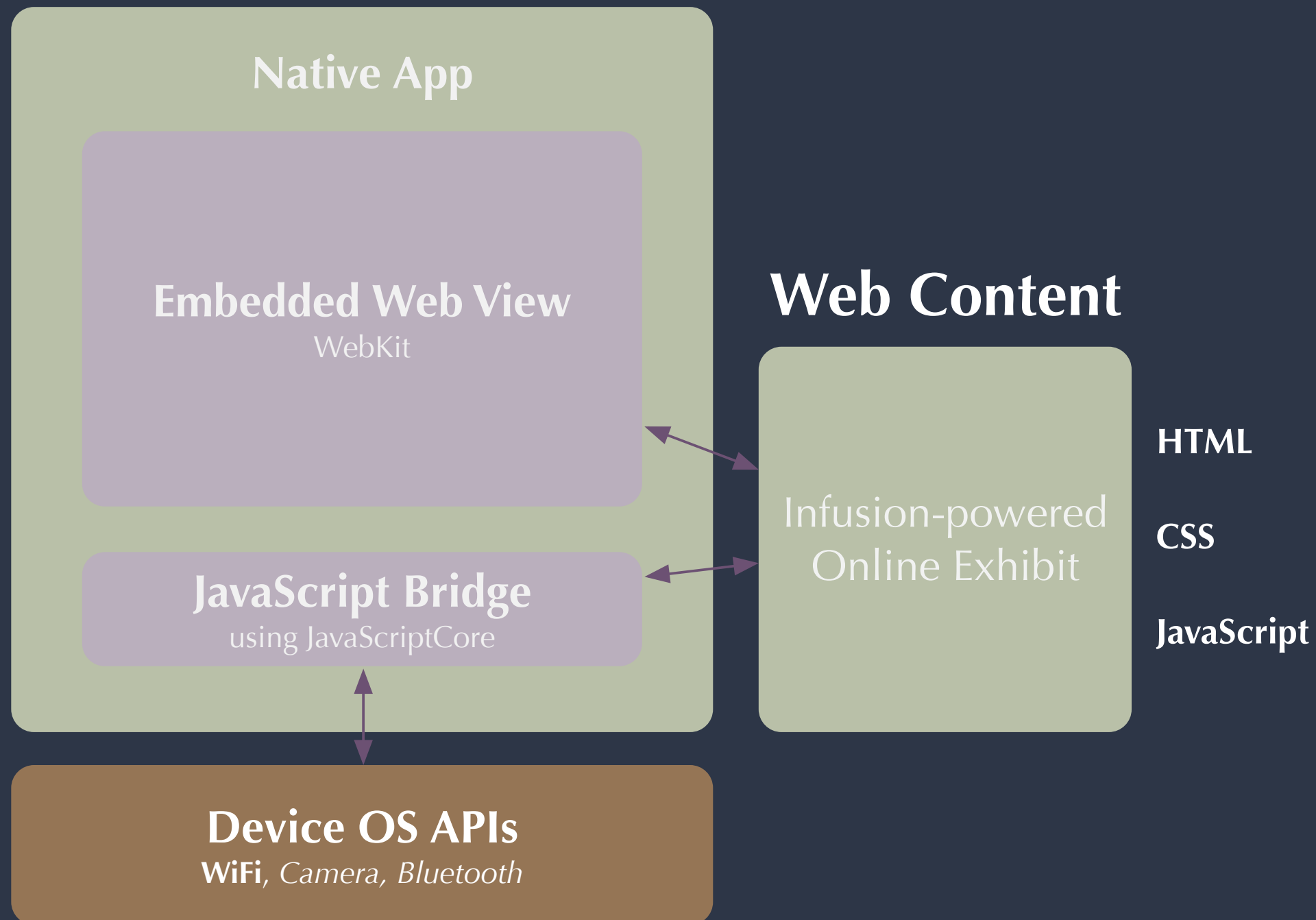
Mobile: Embrace the Web

- Phones now have *great* browsers built in
- Web design is ubiquitous and familiar
- Use standard HTML, CSS, and JavaScript
- Blends seamless into existing sites
- Thin native apps provide access to interactive features (camera, bluetooth)



Hybrid App Illustrated

Mobile Device



Mobile FSS

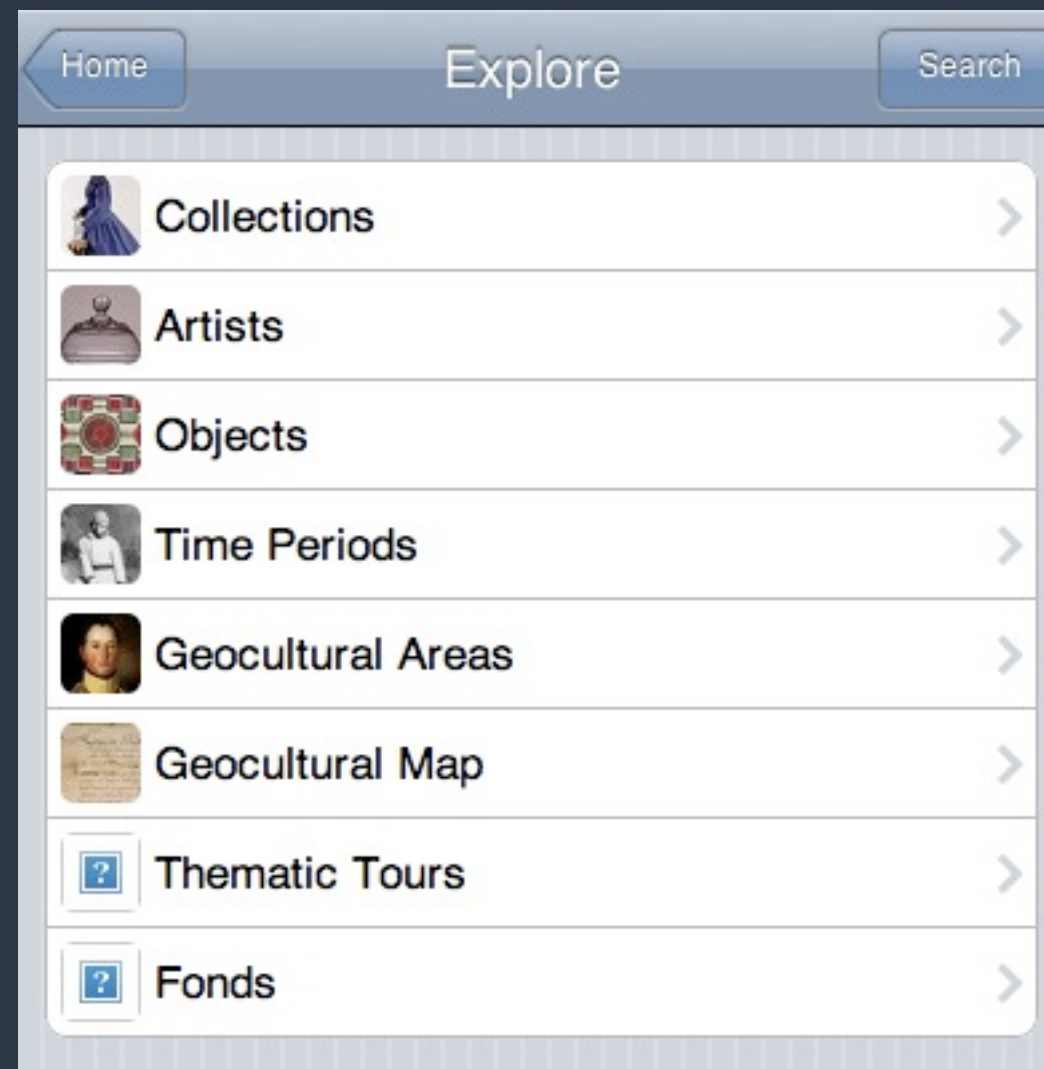


Exhibit Toolkit



Exhibit Toolkit

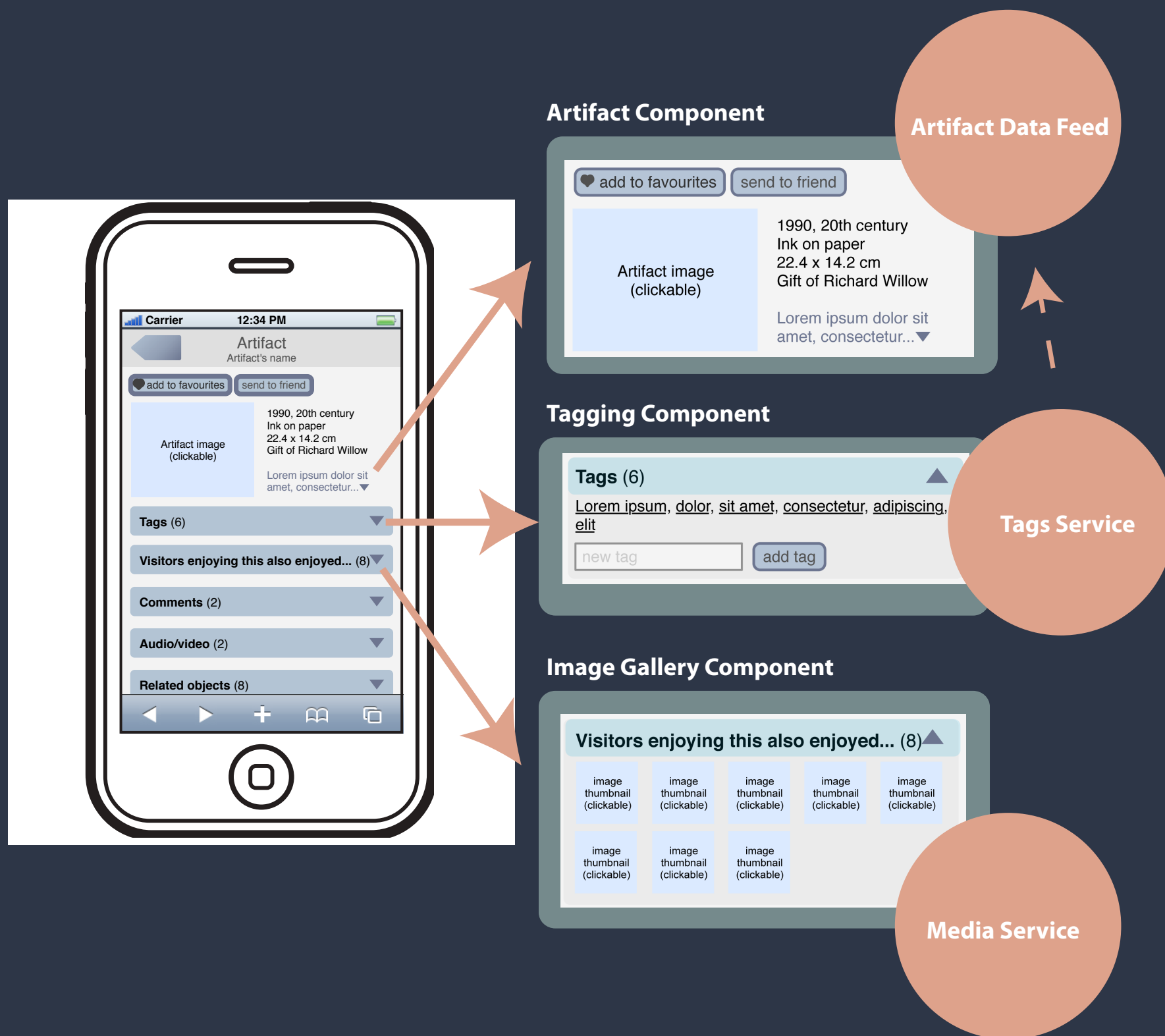
- Goal: fit seamlessly into existing workflow
- UI components, templates, and data feeds
- Wire them up to create great experiences
- Use them with any Web authoring tool



Some Component Ideas

- Collection Browse and Search
- Image Gallery
- Audio Tour
- Interactive Map
- Tagging
- Comments, Discussion, Stories
- My Museum/My Collection

Components + Services



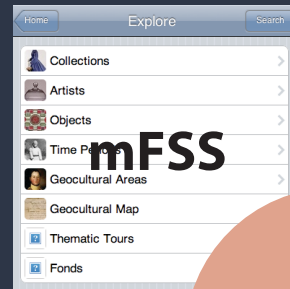
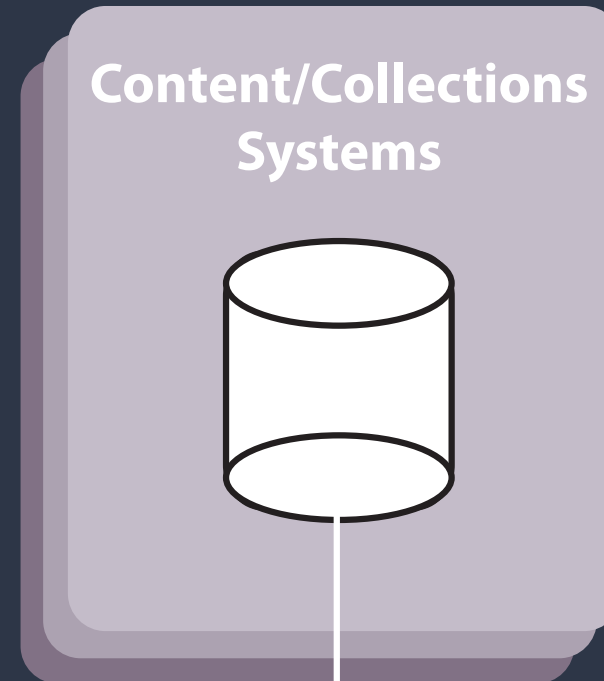
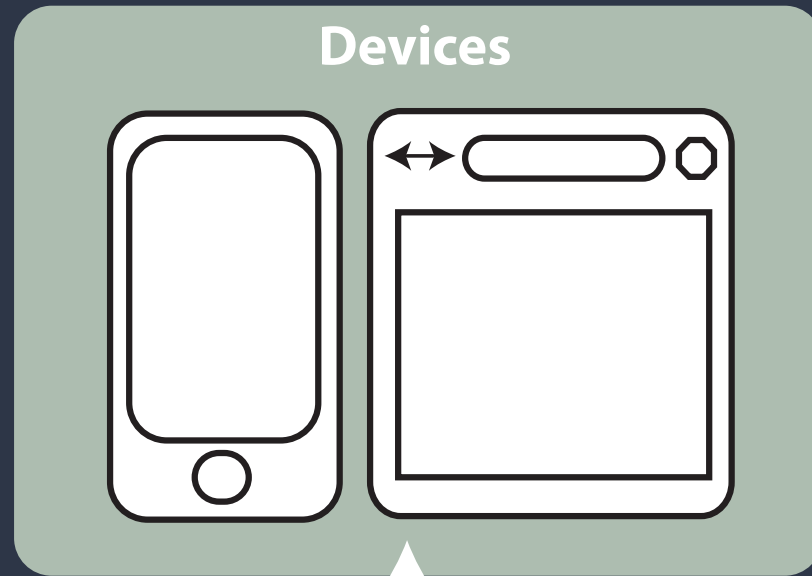


Exhibit Presenter

Data Import



Exhibit Data Feed



Mapping & Visualization



Mapping

- Mapping is a bridge between physical and online
- Broad definition: conceptual and spatial
- Draw relationships between objects
- Maps locate and visualize data and services (eg. search identifies object location)

Mapping Technology

- Authoring tool:
 - bring in your designed maps
 - tag and layer with information
- Interactive visualizations using Web technology: HTML 5

Location Awareness



Location Awareness



Location Awareness

- We're taking it slow, learning from others
- Start simple: **focus on content**
- Lots of potential in this space
 - Triggered audio tours
 - Context-aware information about exhibit
 - Accessible wayfinding

Potential Technologies

- 2D barcodes + phone camera
- WiFi positioning (WIPS is awesome)
- Bluetooth beacons
- Scene recognition
- Simple RFID tags

Technology Specifics



Technologies

- Things we've decided on:
 - Infusion + HTML, CSS & JavaScript UIs
 - Hybrid Web/native mobile apps
 - Schema-less database
 - RESTful services
 - Canvas for visualization



Technologies

- Things we'll decide on this week:
 - Specific database: **CouchDB**
 - Server technology: **JavaScript + JSGL**
 - Visualization: **Processing.js?**

JavaScript on the Server

- We looked at PHP, Ruby, Python: always just a slice of the developer pie
- JavaScript is the most-used language in the world
- Shared infrastructure: client and server
- A little crazy, but pretty solid



Technologies

- Things we'll decide along the way:
 - Location awareness:
 - RFID, 2D barcodes, WiFi?
 - More interoperability:
 - Museum APIs?
 - TourML, steve.museum, etc?

More Reading

<http://wiki.fluidproject.org/display/fluid/Engage+Architecture>

