



## Museum Mashups



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## Threads.

**Context.** How are *mashups* the same and *different* than systems and techniques that we've worked with before?

**Technology.** What are the elements that make up mashups? What are APIs and what's available? How do we connect? Build?

**In Our Field.** How do mashups "fit in" with museum culture and our mission? What are the benefits and drawbacks?

**Usability & Design.** What are the best practices are emerging for mashup design? What is the user experience like?

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Today.

**The Introductory Presentation.** A look at mashups and their use and potential use in the museum world.

**Under the hood.** A look at mashups that use Google Maps and Flickr web services.

-break-

**Project Mashup.** Design a compelling museum mashup.



One of the central concepts in **Complex Systems** is **Emergence**. It is this automagical process through which elements of a system give rise to a higher order system. Emergence is how physics becomes chemistry and chemistry becomes biology. It is how web 1.0 evolved into web 2.0, and how that, in turn, will become the next web.

While the exact mechanics of emergence is complicated and far from being completely understood, scientists know that a new system emerges as a combination of its elements and their interactions. In other words, complex systems are really networks - where elements interact with each other and give rise to a new system.

Perhaps today we are witnessing one of the most vivid examples of emergence - the remixing of the world wide web. The parts of the new web have crystallized - blogs, photos, video, audio, maps, RSS, social network profiles and even plain old HTML pages have formed an impressive network, that now can be mined and remixed.

**Mashups are really nothing new, the web has been a programmable oyster for at least a few years now.**

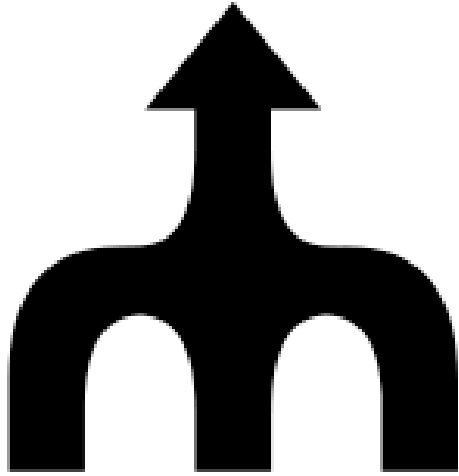
- Alex Iskold - [http://www.readwriteweb.com/archives/yahoo\\_pipes\\_web\\_database.php](http://www.readwriteweb.com/archives/yahoo_pipes_web_database.php)



**Emergence** is the development of complex organized systems. Like intelligence in the field of AI, or agents in distributed artificial intelligence, emergence is a central concept in complex systems yet very controversial.

"Perhaps the most elaborate recent definition of emergence was provided by Jeffrey Goldstein in the inaugural issue of *Emergence*. (Goldstein 1999) To Goldstein, emergence refers to "the arising of novel and coherent structures, patterns and properties during the process of self-organization in complex systems."

The common characteristics are: (1) radical novelty (features not previously observed in systems); (2) coherence or correlation (meaning integrated wholes that maintain themselves over some period of time); (3) A global or macro "level" (i.e. there is some property of "wholeness"); (4) it is the product of a dynamical process (it evolves); and (5) it is "ostensive" - it can be perceived.



A mashup is a website or application that combines content from more than one source into an integrated experience.

"We know we don't have a corner on creativity. There are creative people all around the world, hundreds of millions of them, and they are going to think of things to do with our basic platform that we didn't think of. So the mashup stuff is a wonderful way of allowing people to find new ways of applying the basic infrastructures we're propagating."

Vint Cerf

## Quick Stats

Total Mashups Listed

1668

Total APIs

395

Mashups/Day

3.07

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Keeping you up to date with the latest on mashups and the new Web 2.0 APIs

March 14, 2007

### Mashup of the Day »

Netvibes Digg Widget



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March 14, 2007

**Best New Mashups: Ads, Music and Wii**

Here's a mix of new, interesting mashups that use a wide variety of the 395 APIs listed [here](#), none of which are maps.

Posted by John Musser. [Read the rest of this entry...](#)

March 13, 2007

**New APIs: Domains, Email and Voice**

With the [latest set of APIs](#) listed at ProgrammableWeb you could: find a name for your new web domain, report on its health, setup email campaigns to promote it, and integrate it with PSTN voice services. Here's a quick rundown of what they are:

Posted by John Musser. [Read the rest of this entry...](#)

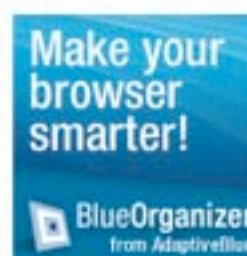
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## What are the elements of mashup?

1. A web service with API (application program interface).
2. Programming or scripting to connect to the Web service.
3. Some original material/content (or another other Web service).
4. Design and programming or scripting for presentation.



## How do I program or build my mashup?



**HTML & JavaScript (AJAX)** embedding, deep linking, connecting to web services (can be used in combination with service-side technologies).



**Macromedia (Adobe) Flash** embedding, deep linking, connecting to server-side technologies, XML & RSS consumption...



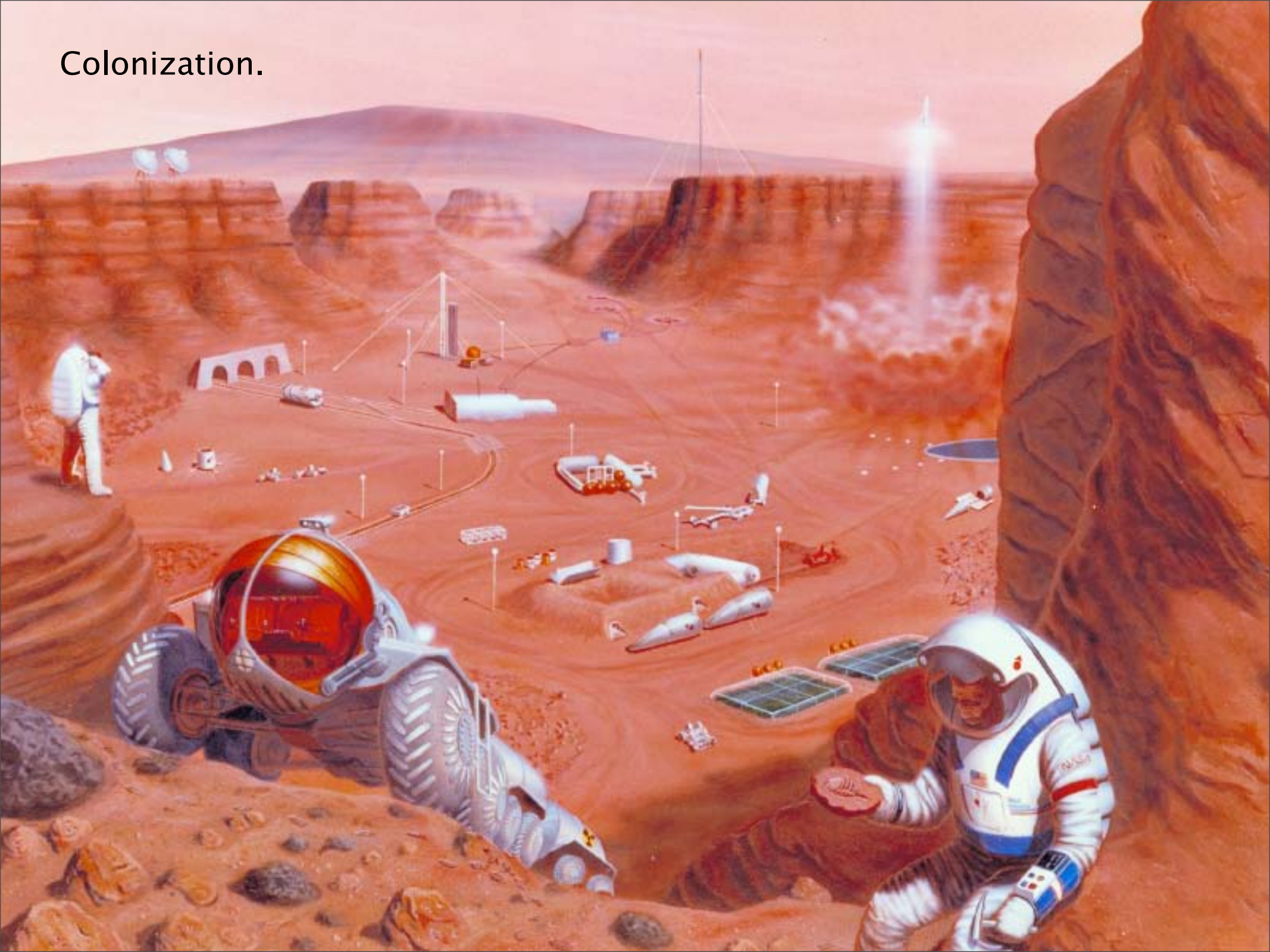
**Server-side technologies** PHP, CF, ASP, CGI, SQL, Ruby on Rails, generating RSS, generating XML...



## What benefits do mashups provide?

- Web services can provide unique and dynamic content for museum websites (i.e. maps, visitor photos, etc.)
- Mashups provide essentially “free” services that museums can take advantage of.
- If properly implemented, in some cases, mashups can save hundreds of hours of development time over “building it yourself” or provide services that can’t be created in other way.
- Mashups can allow museums to connect with new audiences, in new ways...

Colonization.





## What are the drawbacks?

- Open APIs while numerous are commercial in nature, few nonprofit or museum entities have developed web services.
- Web services providers can change the terms, shut down, or begin to charge for open APIs.
- Making requests from multiple service providers can slow down your web site and impact user experience. (“Caching” and other techniques can help—but these require expertise to implement.)
- Specialized technical skills are needed. This is still relatively new so not so many people have deep knowledge. Multifaceted development environment (scripting, database, server-side, etc.)



## Design Considerations

**Some limitations.** By their nature Web services can only be customized to a certain degree. *Terms of use* may further reduced the ability to customize. Designers may need to deal with logos, links, controls, specific image or data “sizes,” etc.

**The Familiar.** Some web services such as Google Maps, provide users familiar interface elements this is a plus for usability.

**Performance issues.** When bringing in complex (or multiple) Web services sites can be slow to load. Advanced programming maybe necessary to compensate for load times and service outages.



## The Next Generation?

**Unprecedented Growth.** Over 1500 mashups are listed on the ProgrammableWeb, there are many more to come.

**More Standardization.** API's currently differ dramatically. There are 398 APIs, there will likely be more in the future. Standards will emerge.

**No Programming Necessary.** A generation of mashup-making applications will likely appear. Yahoo! Pipes is an example of this.

**Data-overload and Redundancy.** Too much duplicated and irrelevant information.

**Better Design.** Many mashups are made by inspired individuals with limited usability and design skills. Bigger teams with more specialized design and information architecture skills will become more involved in building mashups.



## Final thoughts in this Introduction.

Mashups provide a compelling tool for Web/Exhibit development but one that may not fit every project.

The technical hurdles involved in complex mashup development can be daunting.

Mashups can help provide the most “unified” approach for museums looking to colonize social spaces.

Museums, nonprofits, and the scientific community need to make more open APIs available, allowing developers to create a new generation of visitor experiences.



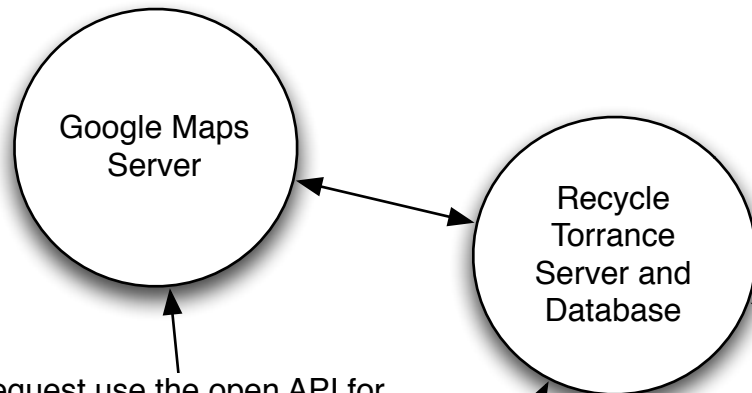
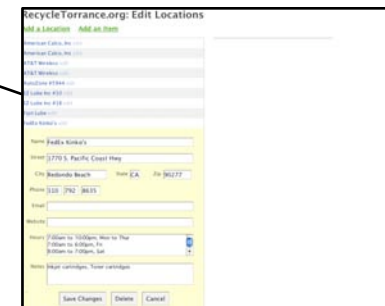
**Under the hood.** A look at some mashups that use Google Maps and Flickr web services.



## Where to Recycle

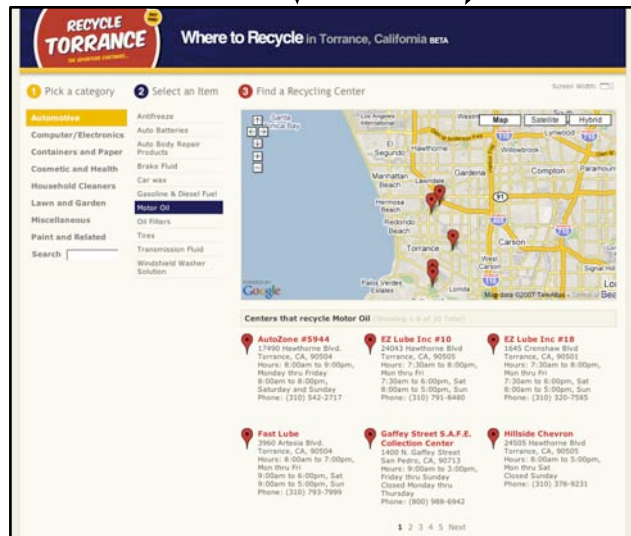
Data model: Google Maps API  
Presentation model: Web mashup

A secure admin page allows City of Torrance staff to upload locations, items, and other important information.

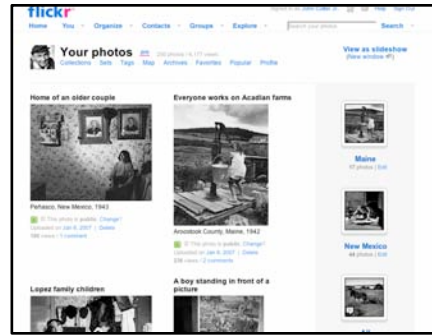
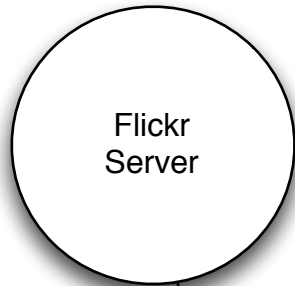


Request use the open API for Google Maps. (Javascript)

Locations, Items and other information are stored in a database.



AJAX & PHP calls up the information from the database.



## The American Image: The Photographs of John Collier Jr.

Data model: Flickr API  
Presentation model: Web mashup

Request use the open API for Flickr.  
Requests are made for particular photographs (in some cases with groups), text descriptions, and tags.

Visitors to the American Image site can click on photos to go to the Flickr site. "Comments" on the Flickr site link back to the American Image.

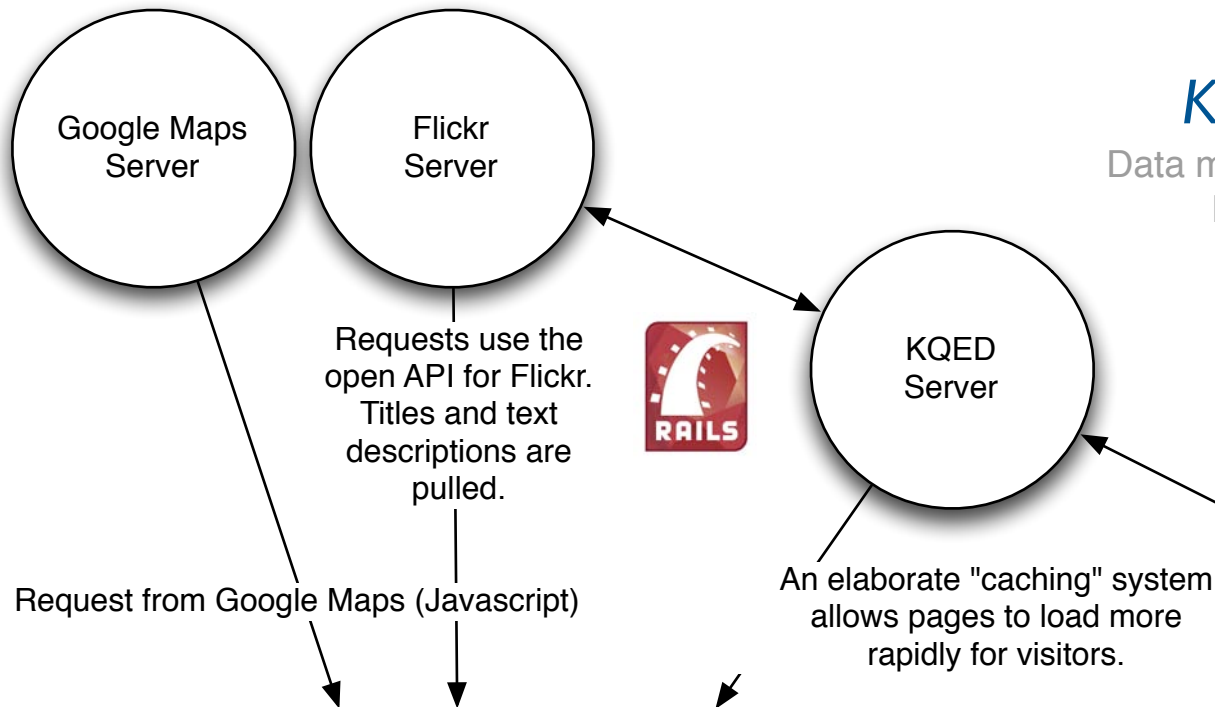


Flash is used to present the photographs in *The Collection* and the *Shooting Script*.

The Shooting Script draws photos directly from the John Collier Jr. Flickr account and from all Flickr users.

**Support Materials:**  
- text explanations

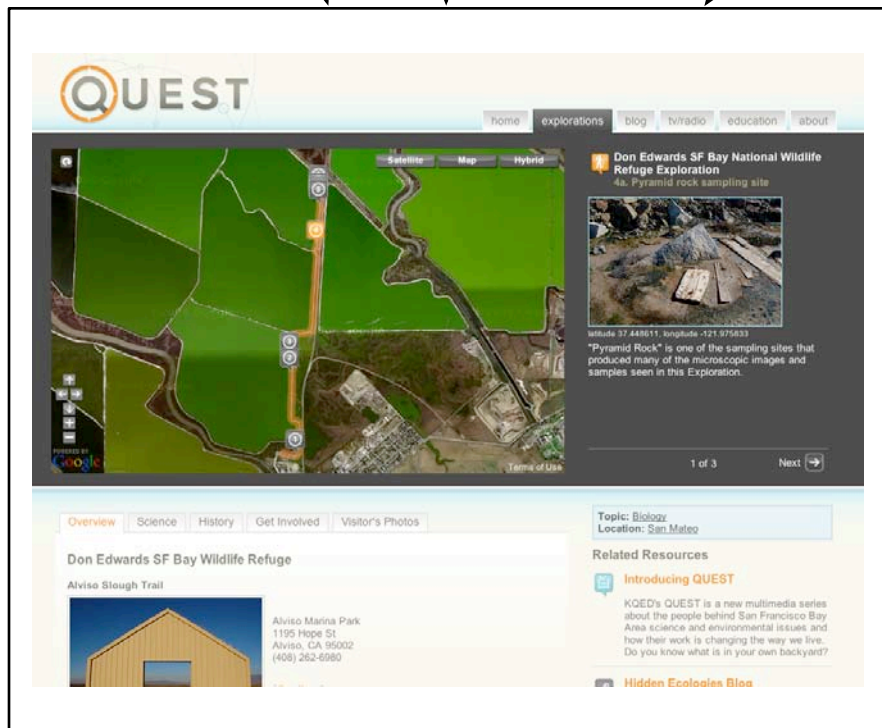
**Interpretive Tools:**  
Photos (Flickr comments)



## KQED Quest Explorations

Data model: Google API, Flickr API, Geocoded  
Presentation model: Web mashup

A secure admin page allows KQED Staff to update an exploration and upload a GPX file and assign a Flickr Photoset or Group.



### Support Materials: For mediating & explaining data-sets:

- text explanations (maps and ground-based photos)

### Interpretive Tools:

- Maps, and Ground-based Photos (Flickr notes and comments)