

Mashup the OODA Loop

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Outline

- Web 2.0 Overview
- Mashup Overview
- Mashup Development Tools
- Mashup Support to Army Mission

Information Integration

- The Web provides a wonderful resource of information, but what we really want is some way to combine the information from a multitude of sources
- There are two ways to do so
 - APIs (Application Programming Interface)
 - Mashup Tools

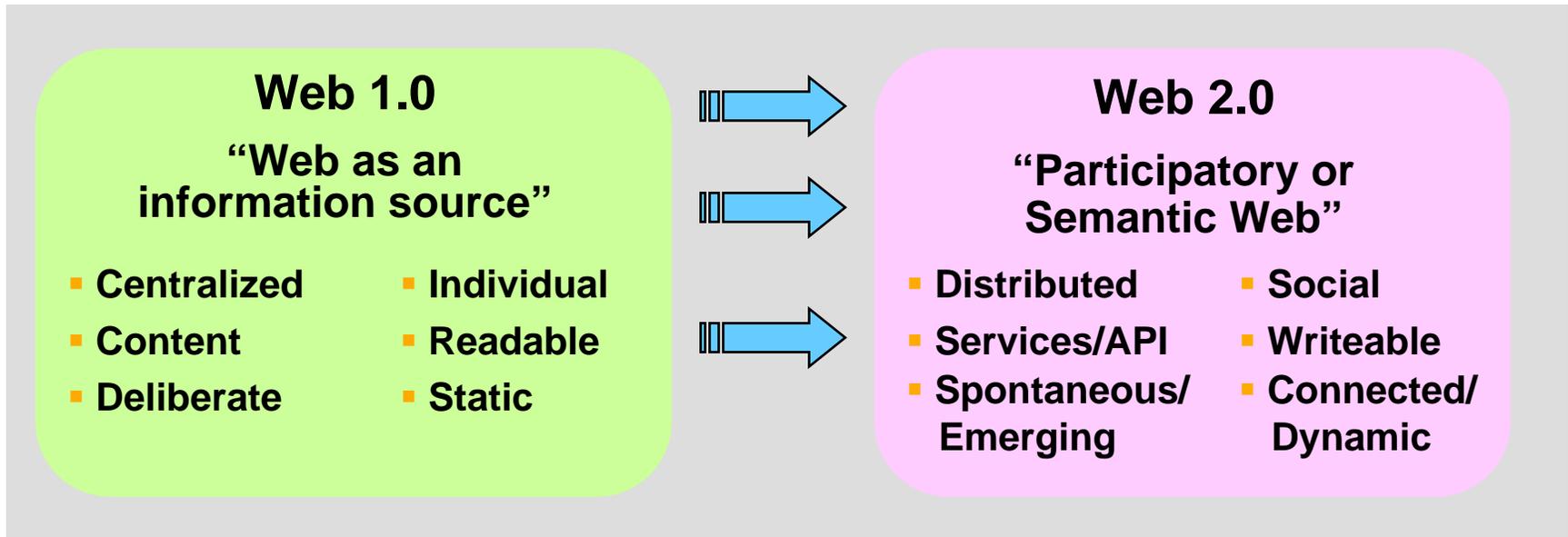
API

- Developed by the information **developer** or content provider
- Access to specific data is controlled by the what the **developer** wants to expose to the world
- Development process is fairly **slow**

Mashup

- Developed by the information **user**
- Access to specific data is defined by the **user**
- Development process is very **fast**

Web 2.0 Overview



- Web 2.0, a phrase coined by O'Reilly Media refers to a perceived second generation of web-based communities and hosted services which facilitate collaboration and sharing between users
 - Although the term suggests a new version of the World Wide Web, it does not refer to an update to Web technical specifications, but to changes in the ways systems developers and end users have used the web platform

Web 2.0 Bottom Line

- Web 2.0 applications and mashup tools provide a very powerful ability to retrieve and organize data from multiple sources
 - If you have an IP address a user can obtain and manipulate the data in endless ways
 - This capability is cheap, fast, and easy
- Formal coordination between developer and end users are minimized (or done away with all together)
 - User typically has trouble defining exactly what they want
 - Developer seldom understands exactly how the user will operate the system

Mashup Description

- Definition: A web site or application that combines content from more than one source into an integrated presentation
- A mashup application is composed of three components
 - API/content provider
 - Mashup site
 - Client's web browser
- Each site is logically and physically disjoint and are normally separated by both network and organizational boundaries
- The API/content providers are often unwitting of how their information is being used

The term *mashup* was borrowed from the pop music scene that indicates a new song that is mixed from the vocal and instrumental tracks from two different songs (usually belonging to different genres).

Mashup Development Tools List

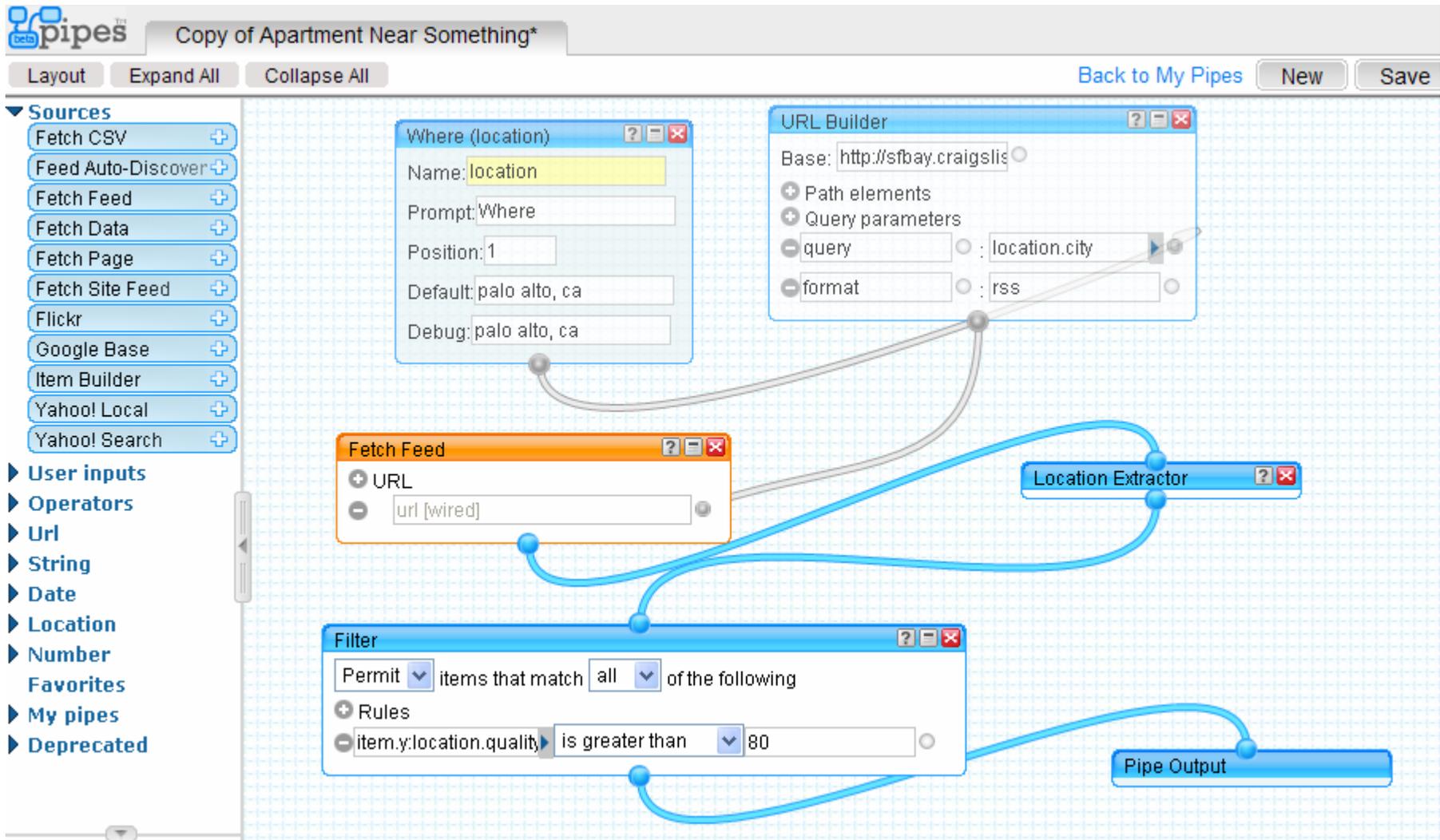
- Yahoo Pipes
- Kapow Technology
- Microsoft Popfly
- IBM Lotus Mashup
- Google Mashup Editor
- etc

Yahoo Pipes

- Yahoo Pipes is a free on-line service that provides a visual editor that allows non programmers to remix popular data types (video, picture, text, etc)
- Currently allows conglomeration and filtering of numerous data sources
 - Yahoo Search and Yahoo Local
 - Fetch (retrieves one of more feeds from URL(s))
 - Google base
 - Flickr
 - More to be added over time (e.g. Google Maps)
- Yahoo provides a library of existing downloadable pipes users can borrow and contribute to

The term *pipes* comes from the Unix operating system terminology that provides an ability to connect sources of data to filters and utilities

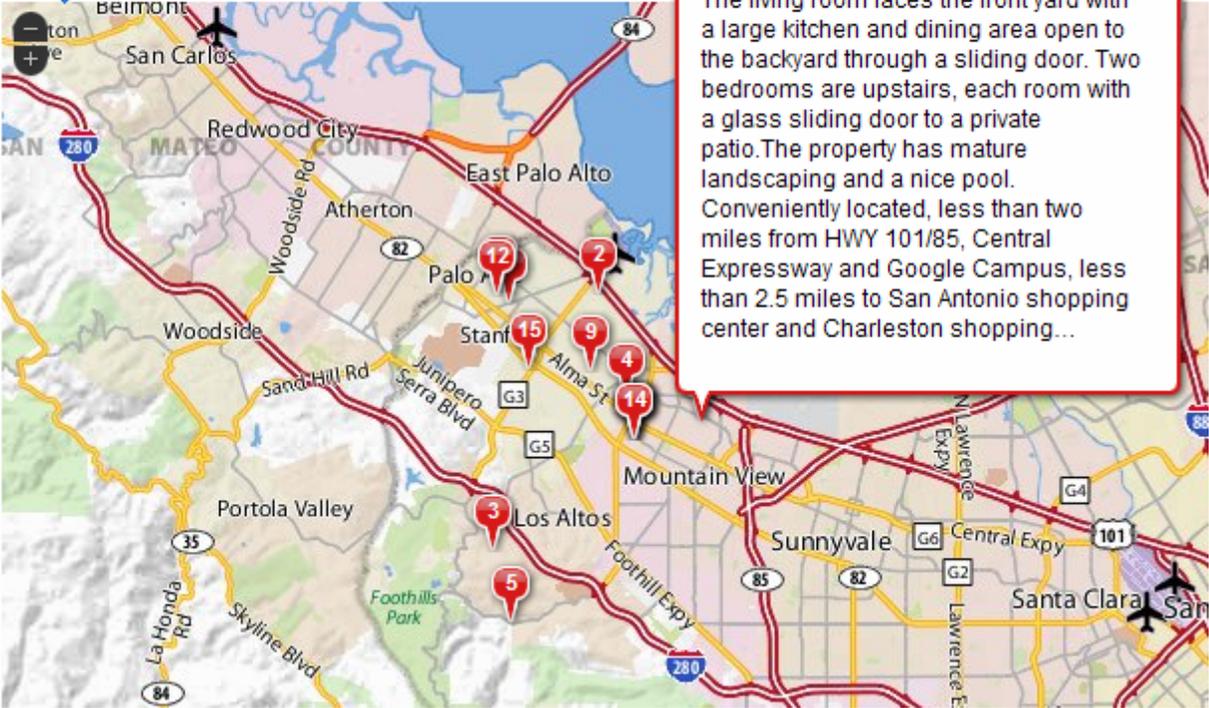
Sample Yahoo Pipe



Sample Yahoo Pipe (Output)

Where

Map List



NICE TOWNHOUSE, LARGE YARD, W/D, NEAR PALO ALTO (mountain view) \$1950 2bd

Deluxe 2 bedroom 1 ½ bath townhouse with front patio & large private back yard. The living room faces the front yard with a large kitchen and dining area open to the backyard through a sliding door. Two bedrooms are upstairs, each room with a glass sliding door to a private patio. The property has mature landscaping and a nice pool. Conveniently located, less than two miles from HWY 101/85, Central Expressway and Google Campus, less than 2.5 miles to San Antonio shopping center and Charleston shopping...

Kapow Technology

- Provides access to extremely large amount of information on the network (Internet or Intranet) that is not readily accessible by a defined Application Programming Interface (API)
- Greatly increases the amount of web data available to mashup tools such as Yahoo Pipes
 - Provides a “screen scraper” which extracts text data from the PDF, XML, Excel files
 - Provides access to the 99% of web sites that do not have an API

Kapow Example (1)

MMS	Home	Search	Topic Index	About MMS	What's New	U.S. Department of the Interior
	Gulf of Mexico Region Offshore Information					
Plans Tracking Info	Deepwater Information					
Deepwater Info	<p>The deepwater portion of Gulf of Mexico has shown a remarkable increase in oil and gas exploration, development and production. In part this is due to the development of new technologies reducing operational costs and risks, as well as the finding of reservoirs with high production wells. There are about 90 announced Gulf deepwater prospects--the Gulf operators have been setting and surpassing records in water depth and length using new and improved proven technology.</p>					
FPSO Information	<p>Current Deepwater Activity (Updated weekly) </p>					
Royalty Relief						
Safety Information						
OCS Regulations						
NTL's/LTL's						
Atlas Project						
Fields & Reserves						
Resource Assessment						
Eastern Activities						
Atlantic Activities						

Kapow Example (2)

MMS	Home	Search	Topic Index	About MMS	What's New	U.S. Department of the Interior
	Gulf of Mexico Region Offshore Information					

- Plans Tracking Info
- Deepwater Info
- FPSO Information
- Royalty Relief
- Safety Information
- OCS Regulations

D Deepwater Information

The deepwater portion of Gulf of Mexico has shown a remarkable increase in oil and gas exploration, development and production. In part this is due to the development of new technologies reducing operational costs and risks.

Current Deepwater Activity

<i>Operator</i>	<i>Area/ Block</i>	<i>OCS Lease</i>	<i>Rig Name</i>	<i>Prospect Name</i>	<i>Water Depth (ft)</i>
Shell Offshore Inc.	AC 857	G17565	NOBLE CLYDE BOUDREAUX	Great White	7,814
Exxon Mobil Corporation	WR 584	G20351	OCEAN EIRIK RAUDE		7,120
Devon Energy Production Company, L.P.	WR 758	G17015	DIAMOND OCEAN ENDEAVOR	Jack	6,964
BP Exploration & Production Inc.	GC 743	G15607	GSF DEVELOPMENT DRILLER II	Atlantis(GC)	6,824

Kapow Example (3)

MMS Home Search Topic Index About MMS What's New U.S. Department of the Interior

Gulf of Mexico Region Offshore Information

- Plans Tracking Info
- Deepwater Info
- FPSO Information
- Royalty Relief
- Safety Information
- OCS Regulations

Deepwater Information

The deepwater portion of Gulf of Mexico has shown a remarkable increase in oil and gas exploration, development and production. In part this is due to the development of new technologies reducing operational costs and risks, as well as

Current Deepwater Activity

NOAA Satellite and Information Service

NODC

National Oceanographic Data Center



You are here: [NODC Home](#) > [Access Data](#) > [Buoy Home](#) > Western Gulf of Mexico

Use the Buoy ID text links below or click on ID in the map.

- Western Gulf of Mexico >>
- [42001](#)
- [42002](#)
- [42006](#)
- [42008](#)
- [42010](#)
- [42011](#)
- [42017](#)
- [42019](#)
- [42020](#)
- [42035](#)
- [42038](#)
- [42041](#)
- [42055](#)

Western Gulf of Mexico



Kapow Example (4)

MMS

Home

Search

Topic Index

About MMS

What's New

Gulf of Mexico Region
Offshore Information

U.S. Department
of the
Interior

Plans Tracking Info

Deepwater Info

FPSO Information

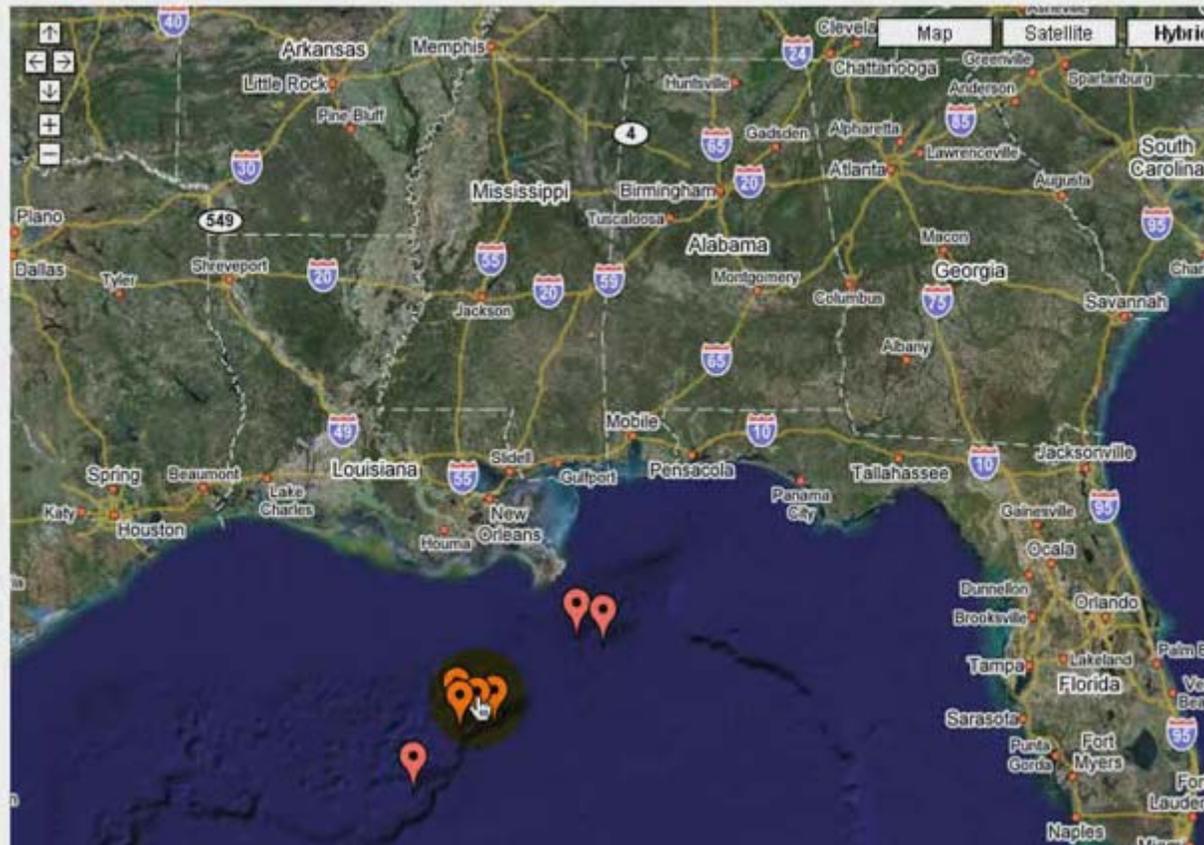
Royalty Relief

Safety Information

OCS Regulations

Deepwater Information Rig Management

The
oil a
d...



NOAA Satellite and Information

NODC
National Oceanographic Data

You are here: [NODC Home](#)

Use the Buoy ID text link
or click on ID in the map

- Western Gulf of Mexico
- [42001](#)
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- [42017](#)
- [42019](#)
- [42020](#)
- [42035](#)
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- [42055](#)

Kapow Example (5)

MMS

Home

Search

Topic Index

About MMS

What's New

Gulf of Mexico Region
Offshore Information

U.S. Department
of the
Interior

Plans Tracking Info

Deepwater Info

FPSO Information

Royalty Relief

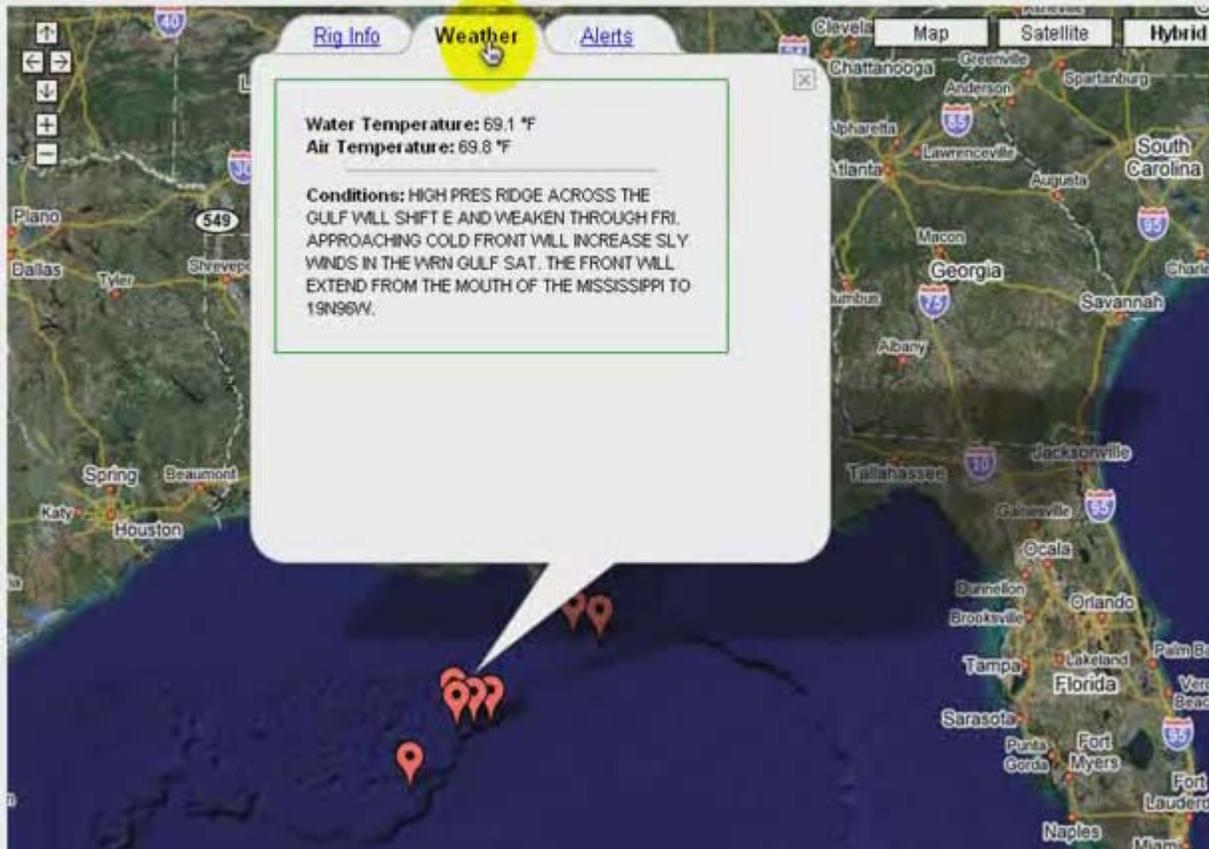
Safety Information

OCS Regulations

Deepwater Information

Rig Management

The
oil &
gas



NOAA Satellite and Information

NODC
National Oceanographic Data

You are here: [NODC Home](#)

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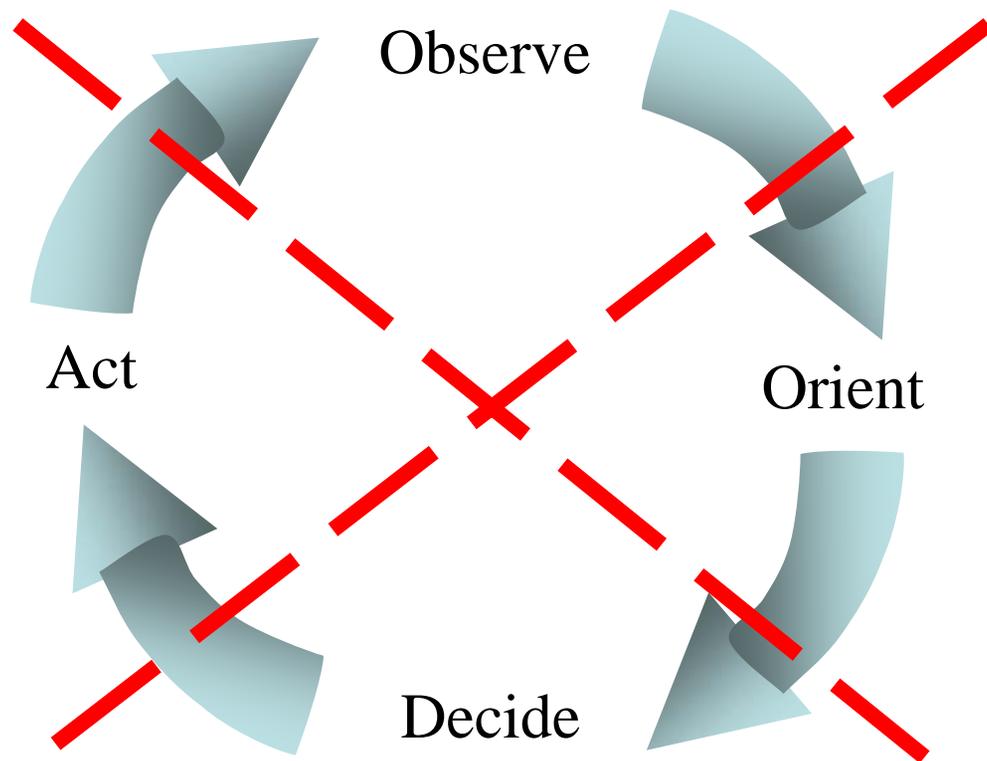
Mashup Implications for the Software Development Cycle

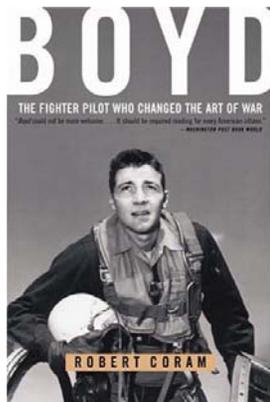
- Since mashup tools are targeted at users (not developers), there is the potential to break the lengthy software development process by empowering end users to create their own applications
 - it's like providing a MS-Word like environment where end users (not developers) can create everything from a grocery list of items to pick up on the way home, to lyrics for hip hop songs, to treatises on global warming, to CONOPS, etc

“The entire CONOPS for how services [mashups] are built shifts from a ‘pass-requirements-to-techies-and-wait-for-the-next-development-cycle’ approach to a ‘mash-it-up-right-now-and-keep-it-if-it-works’ approach. This approach only works if there is a community of users posting [mashups], using [mashups], modifying [mashups] and tagging useful [mashups]”.

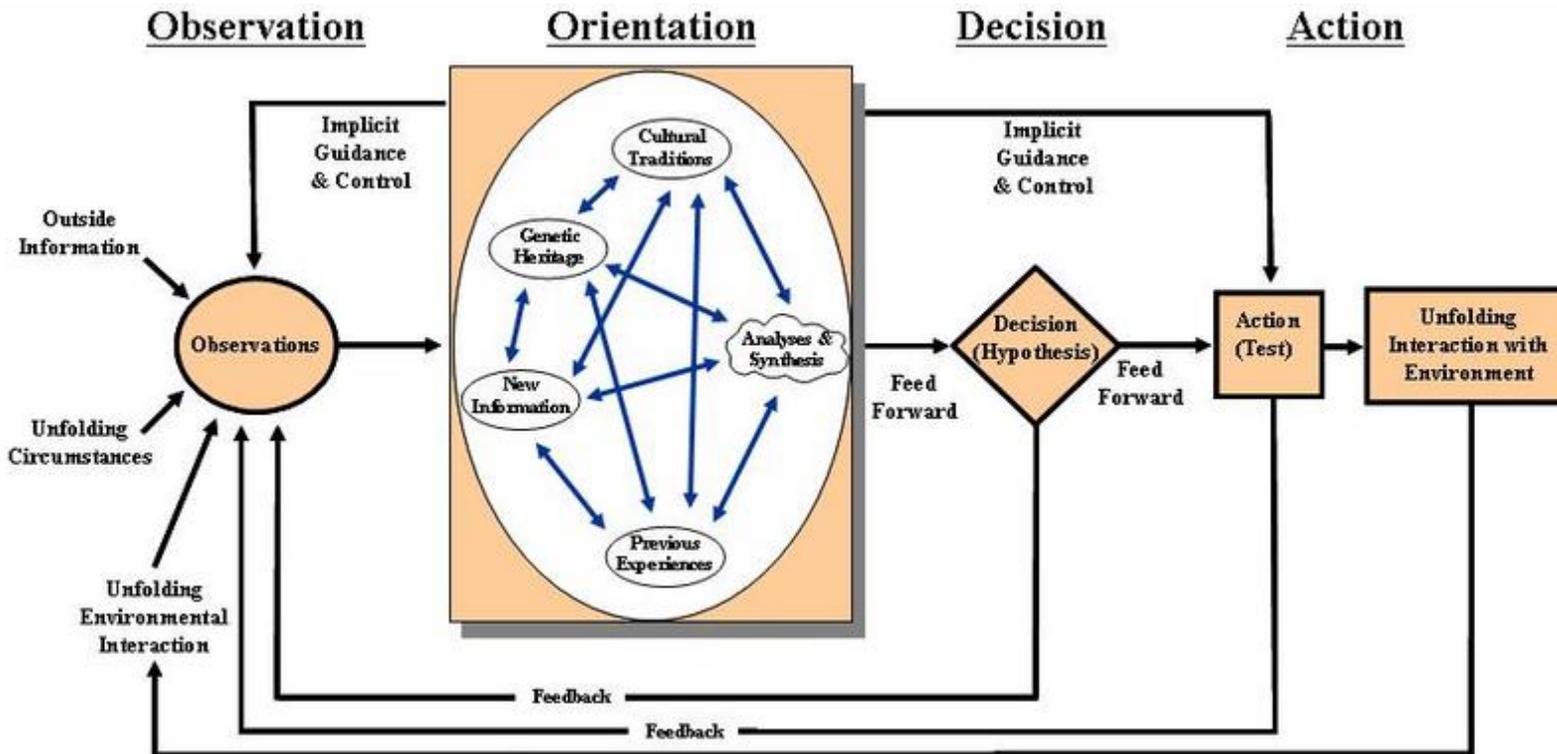
MITRE Analyst, Jacob Heim

^{^ Not} The OODA Loop





Boyd's Real OODA Loop



Source: Chet Richards, "Certain to Win", Xlibris Corp, 2004

Mashup Support to Army Mission

■ IED Forensics Use Case

Event 1: Bomb explodes in market square

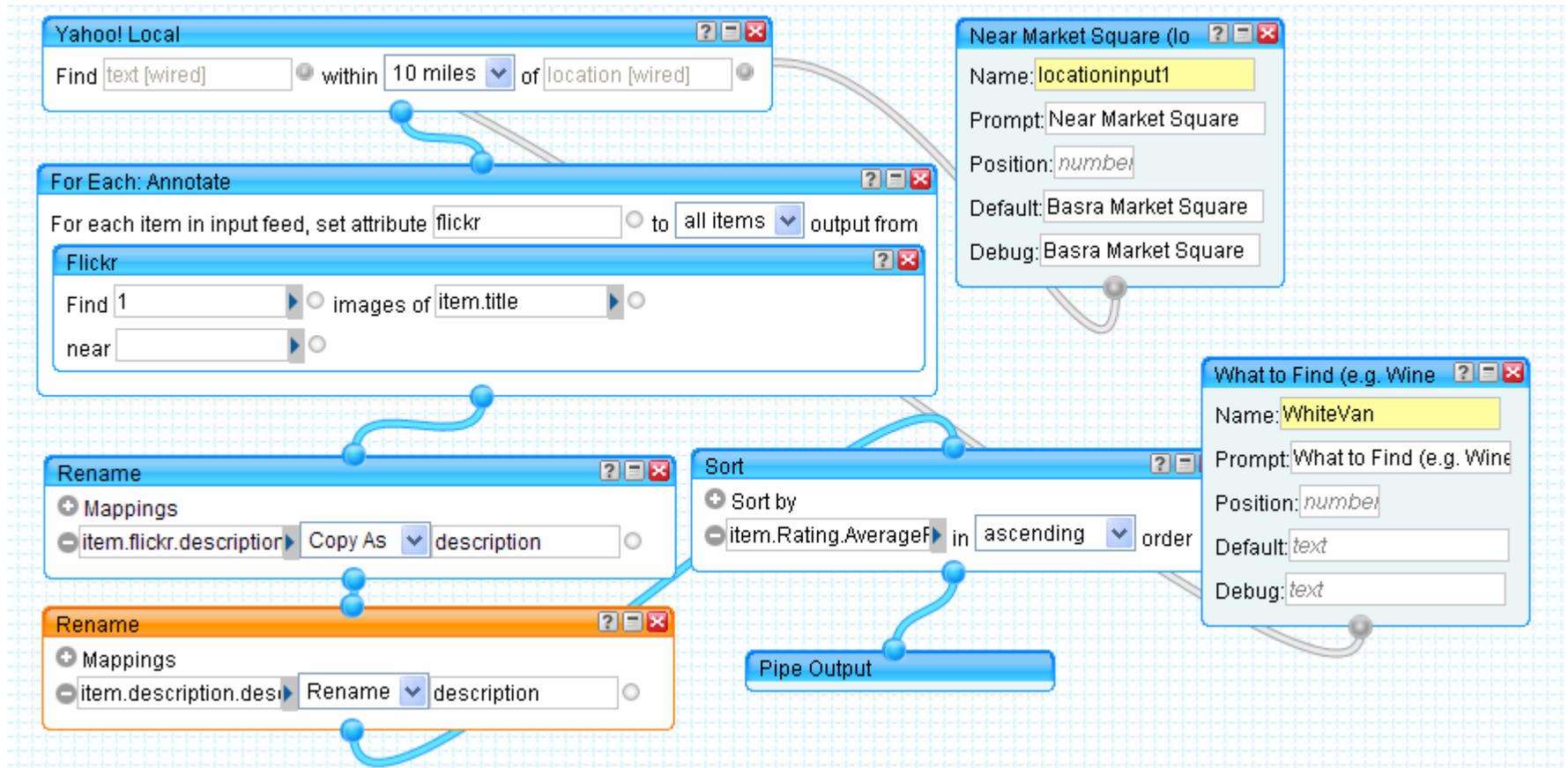
Event 2: Eyewitnesses reports indicate bomb was in a white van

Event 3: Intelligence analyst quickly constructs a yahoo mashup pipe to search for all instances of 'white van' within a 10 mile radius of the market square

- access feeds from traffic cameras
- access feed from UAV video

Event 4: Pictorial history allows analyst to backtrack van to warehouse where it was fitted with explosive device

IED Forensics Analysis Mashup



IED Forensics Analysis Mashup Result



 **Attack**

 **Camera/Video Feeds**

Conclusion

- The world (and the military) is awash in data. The total amount of data collecting during a year is staggering and growing. One report cited we already don't process at least 50% of the information we collect. What is needed isn't more sensors or data collection capability, but better tools to process/analyze the data we already have

“In an age of abundant, almost limitless, information and communications capabilities, decision makers are increasingly faced with the problem of too much information, rather than too little. In today’s information-oriented society, winnowing, filtering, correlating, and fusing information have become as important as acquiring the information, or (regrettably) even as important as its content, if not more so.”

Command Concepts: A Theory Derived from the Practice of Command and Control, A Rand Publication, Builder, Banks, and Nordin