20. Situational Applications and Mashups

5 November 2008

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Plan for Today's Lecture

Platforms for Composite Applications

Mash-ups

Mash-ups {and,or,vs} Composite Applications

A Vision: Rapid Service Discovery and Composition

An "agile," "adaptive," "on demand" [insert other buzzwords here] enterprise needs to be able to quickly and cost-effectively change how it does business and who it does business with (suppliers, business partners, customers), etc.

The IT organization must respond by extending existing applications, building new custom applications, or licensing and implementing new packaged applications -- but these take time

Similarly, in "crisis management" or "emergency response" contexts novel configurations of national, state, and local government agencies need to consolidate and exchange information to coordinate their response

So there is a clear need to be able to rapidly discover and combine multiple services and information resources

Requirements for Efficient Rapid Composition

Do I know what services I'm looking for?

Do I know where to look? Can I find the service or information resource I'm looking for?

Are the services compatible from a business perspective?

Is the service technically compatible? (technical interface compatibility)

Can I transform the service inputs or outputs to achieve compatibility?

Do the services meet my quality and performance requirements?

The Reality -- Hand-Crafted Composition

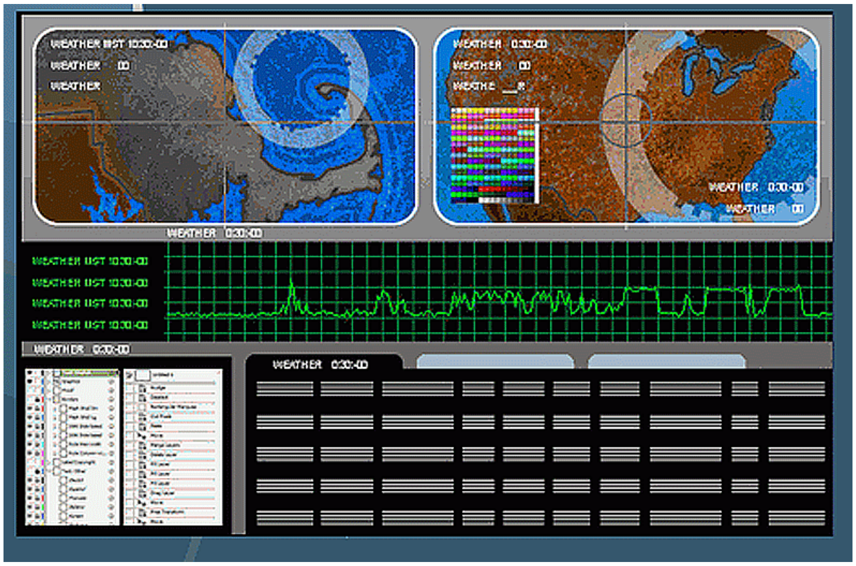
Most services and information resources aren't listed in authoritative public registries

Service descriptions are often limited to technical interfaces, lacking information needed to assess business model, business process, and QoS compatibility

Emerging platforms for composite applications are limited in the kinds of document interfaces they can handle (e.g., optimized for services operating on relational databases) or still require some "programming" expertise

(Some platforms support reuse of integration semantics, but they are not sufficiently grounded in ontologies or reference models to enable automated mapping and transformation)

Sun Java Composite Application Platform



Sun Java CAPS Description

http://developers.sun.com/javacaps/caps_ds.pdf

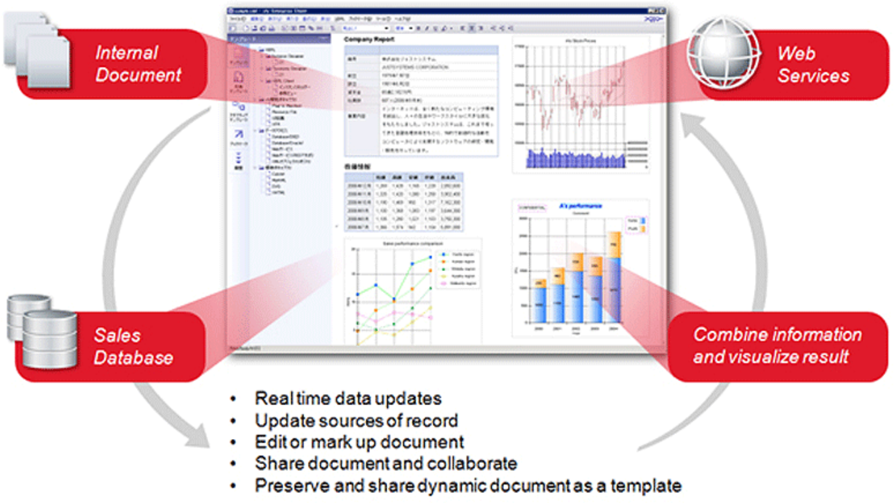
Java CAPS combines the functionality of existing legacy and packaged applications, as well as recently developed, reusable services, in an intuitive composite application integration infrastructure

.. a proven set of end-to-end graphical tools that deliver optimized source code for standards-based collaboration and business process execution...

Developers may operate on the graphical model or directly on the source code which is synchronized with the graphical model

Webcast about Java CAPS (http://webcast-west.sun.com/interactive/08D01561/index.html)

XFY



- Real time data updates
- Update sources of record
- Edit or mark up document
- Share document and collaborate
- Preserve and share dynamic document as a template

XFY Description

xfy is a powerful document-based composite application framework...

that allows organizations to rapidly unify content and data in a single dynamic document.

With no technical knowledge, business users can rapidly assemble rich document-based applications that bring together isolated content and data from disparate sources.

xfy dynamic documents are, in essence, applications

Lowering the Programming Threshold

Composite applications platforms reduce the amount of "programming" expertise needed to design and assemble an application, but don't eliminate it

Nevertheless, if 12 million people say they "program in the workplace" but only 3 million have that as their job, then people who aren't programmers are doing something they call programming (from "Changing the corporate IT development model")

Some of this might actually be programming, but most of it is something else, especially "programming" using spreadsheets

How low can the threshold go?

Nonprogrammer Programmers

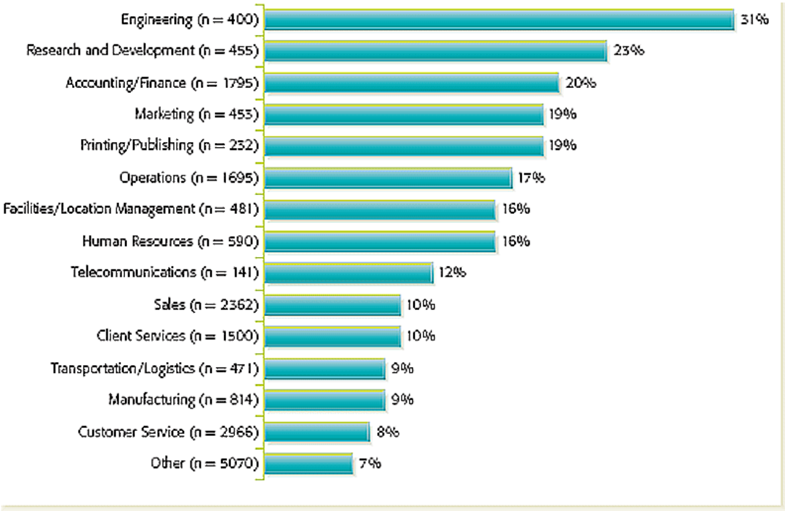


Figure 1
Percentage of employees who conducted ad hoc development during a 12-month period

Characteristics of Nonprogrammer Programming

Incorporates existing functionality

Not a formal project

Very context specific; intentionally "brittle" in focus

Informal software engineering

Low levels of programming expertise

Is Using Google "MyMaps" Programming?

Google MyMaps

- plot your data on a map without having to use Google Map API

Defining "Mashup"

A “mashup” is a lightweight tactical integration of multi-sourced applications or content into a single offering (Gartner)

Web application hybrid that combines data from more than one source into a single integrated tool (Wikipedia)

Mashups are loosely coupled distributed systems... to the extreme. The developers of the individual components do not know each other and possibly do not even know that their application is being used as a component by another application (Wilde)

Data flows that take information originating from one source (or user input), applying web services to augment or transform the information, and then visualizing the results

This is Not a New Idea

The original and still most popular mashup tool is the spreadsheet... which made the PC happen in the 1980s

Musical remixing and sampling has a long history, and a music mash-up is a song created out of pieces of two or more songs, usually by overlaying the vocal track of one song seamlessly over the music track of another

Roots in "Portal" Applications

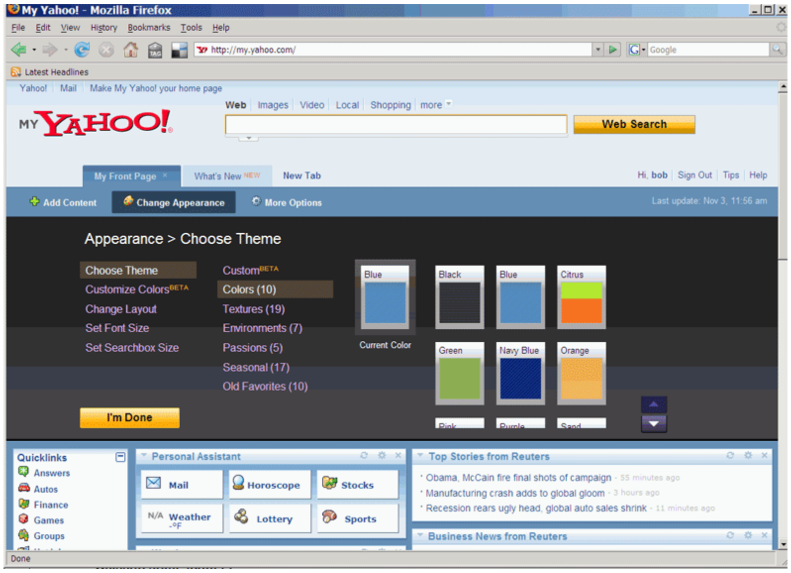
Yahoo! created a style of end-user tailorable application in which the user customizes the content and layout of the Yahoo! Home page

Each piece or channel of content is contained in a “portlet” (see OASIS Web Services for Remote Portlets Specification (http://docs.oasis-open.org/wsrp/v2/wsrp-2.0-spec.html))

In portals, content aggregation takes place on the server, and in the UI is “side by side” aggregation

In mashups, content aggregation takes place on the client side in “melting pot” style

Mashup Motivation: Portal Customization



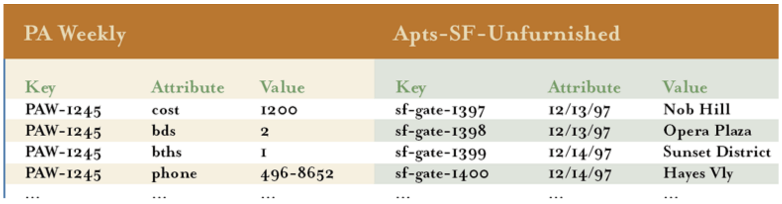
- Obama, McCain fire final shots of campaign - 55 minutes ago
- Manufacturing crash adds to global gloom - 3 hours ago
- Recession rears ugly head, global auto sales shrink - 11 minutes ago

Roots in E-commerce Catalog Integration and Price Comparison

Dumb "screen scrapers" used for price comparison in the early days of web commerce (e.g., bizrate 1998)

"Smart" approaches to "unifying heterogeneous information models" also in use at same time (e.g., Tesserae) http://doi.acm.org/10.1145/274946.274954

Tesserae's "Smart" Unification (1998)



PA Weekly			Apts-SF-Unfurnished		
Key	Attribute	Value	Key	Attribute	Value
PAW-1245	cost	1200	sf-gate-1397	12/13/97	Nob Hill
PAW-1245	bds	2	sf-gate-1398	12/13/97	Opera Plaza
PAW-1245	bths	1	sf-gate-1399	12/14/97	Sunset District
PAW-1245	phone	496-8652	sf-gate-1400	12/14/97	Hayes Vly
...	...	...	...	...	...

```
city(x, "Palo Alto")          <= city(x, "PA")
bedrooms(x,b)                 <= bds(x,b)
region(x, "Silicon Valley")   <= (x, "Santa Clara") or city
                                 (x, Sunnyvale)
area-code (x,y)               <= city (x, c) and city-code (c, y)
```

good-rental (x) <= loc (x, l_1) and loc(Stanford, l_2) and distance (l_1, l_2) < 5

So Why The Hype About Mashups NOW?

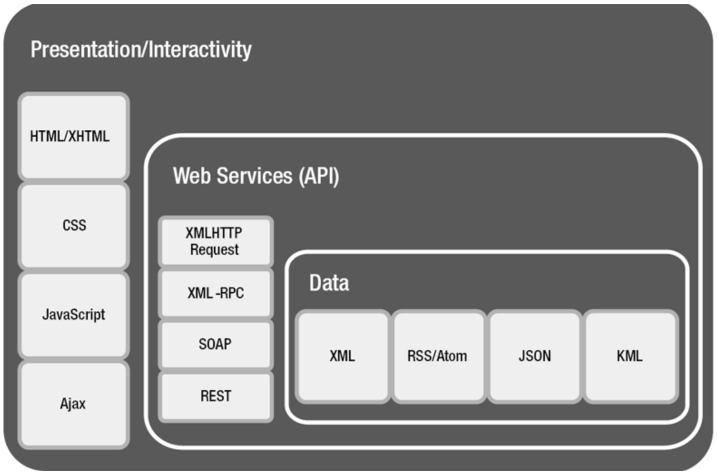
The amount of information available on the Web as XML "content" (as opposed to HTML"presentation information") has been growing rapidly

Much of this information is now accessible via web services, as well as through lower-effort programming models like RSS and ATOM feeds

New "mashup making" tools continue to lower the programming threshold

A surprising amount of tolerance and even encouragement by service and information providers to allow the reuse of their content

Minimal Mashup Architecture



Map Mashups

Most common type of mashup

Emerged because Google (and later the web-based map apps) offered access to "geographical information" in a vastly more accessible way than previous Map/GIS

Hard to believe that map mashups are only 3 years old, and that there was some doubt that google would even allow them!

Not entirely clear when map is "visualization widget" for database content and when it is really a mashup

Map Mashup Examples

Housing Maps (http://www.housingmaps.com/) - mash of craiglist and google

Oakland crimespotting (http://oakland.crimespotting.org)

Geocoding (http://mapsapi.googlepages.com/batchgeo.htm)

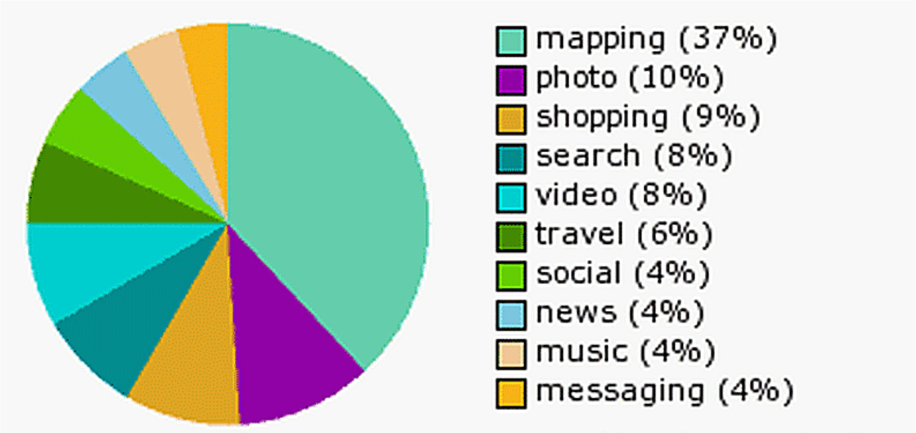
Categorizing Mashups

By targeted user (for yourself only, anyone, someone in your business)

By content type (map, photo, video, news)

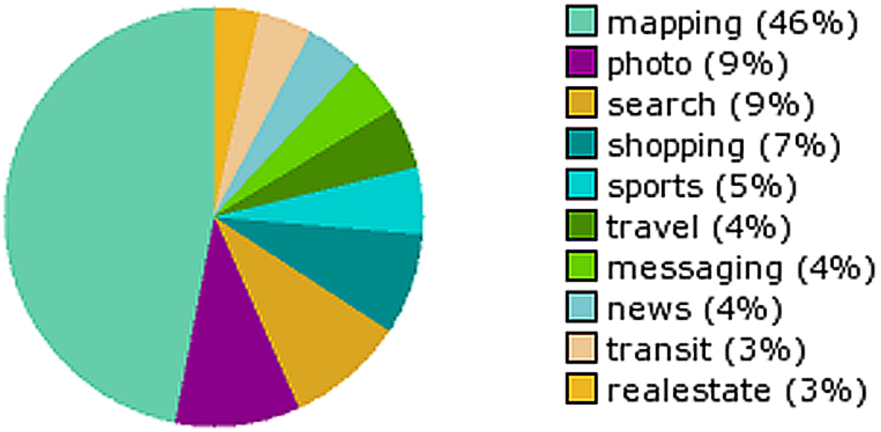
By primary function (search, shop, locate)

Mashup Categories (Nov 2008)



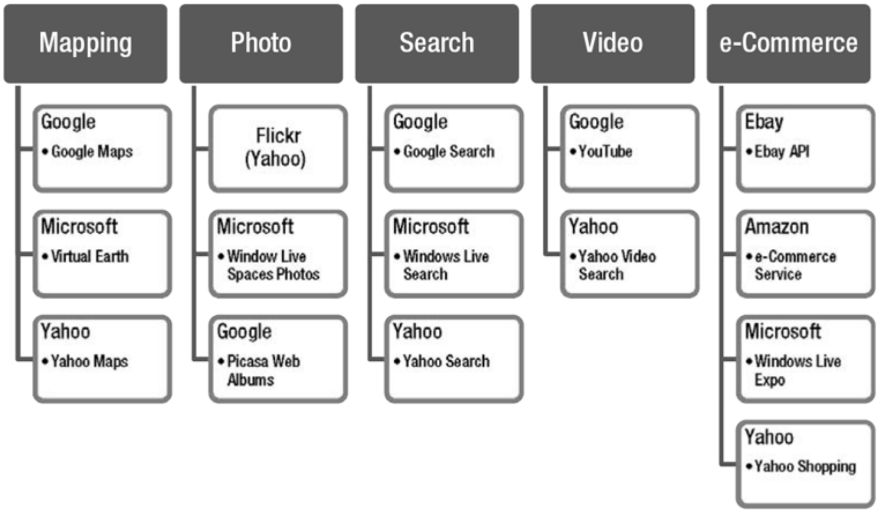
ProgrammableWeb.com 11/03/08

Mashup Categories (Sept 2006)



ProgrammableWeb.com 09/21/06

5 Types of APIs from "the Big 5" Firms



Mapping
- Google
  - Google Maps
- Microsoft
  - Virtual Earth
- Yahoo
  - Yahoo Maps

Photo
- Flickr (Yahoo)
- Microsoft
  - Window Live Spaces Photos
- Google
  - Picasa Web Albums

Search
- Google
  - Google Search
- Microsoft
  - Windows Live Search
- Yahoo
  - Yahoo Search

Video
- Google
  - YouTube
- Yahoo
  - Yahoo Video Search

e-Commerce
- Ebay
  - Ebay API
- Amazon
  - e-Commerce Service
- Microsoft
  - Windows Live Expo
- Yahoo
  - Yahoo Shopping

Mashup Design Dimensions

Search capability?

Static, or tracking changes/ monitoring?

Browser-based, or widget/gadget based?

Personalizable? Is the mashup designed for content creation or just exploration/browsing (can user enter information or just make selections/filter on other data)

Based on an existing folksonomy or tag set?

Mashup Directories and Resources

Programmable Web (3469 as of 3 Nov 2008)

"What do we mashup" (Hong and Wong)
http://doi.acm.org/10.1145/1370847.1370855

Greasemonkey

Somewhat similar in purpose to mashups and portal platforms are "Greasemonkey" scripts (http://userscripts.org/)

Greasemonkey is a Mozilla Firefox extension that installs scripts that make on-the-fly changes to most HTML-based web pages

These changes made to the web pages are executed every time the page is opened

Typical Greasemonkey functions:

- Auto-filling of forms
- Text highlighting and other format alteration
- Removing specific content
- Add content
- Add links, buttons, or any other HTML element

Mashups vs Composite Applications

User expectations about the "-ilities"

Depth and robustness of integration

The "pragmatic - experiential" continuum

Dimensions of User Expectations

Data completeness and quality

Performance and QoS

Scaleability

Security, access control

The Integration Continuum

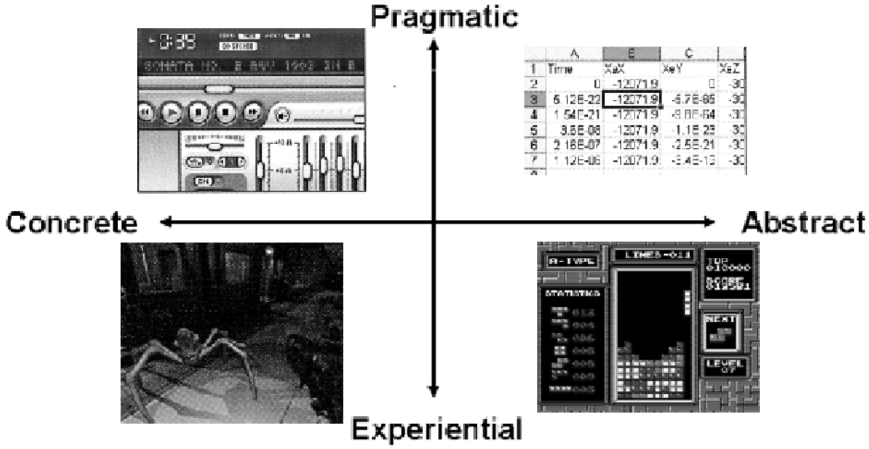
instance-based (e.g., from scraping)

datatype-based

schema-based

model-based

Pragmatic - Experiential Continuum



Mashups as Vehicles for "Community Creation"

Where does the application fall on the continuum between pragrmatic and experiential activity?

Is the mashup a way to get work done, or to create a community?

Mashups might (intentionally or unintentionally) violate social norms about information disclosure or "what should be talked about"

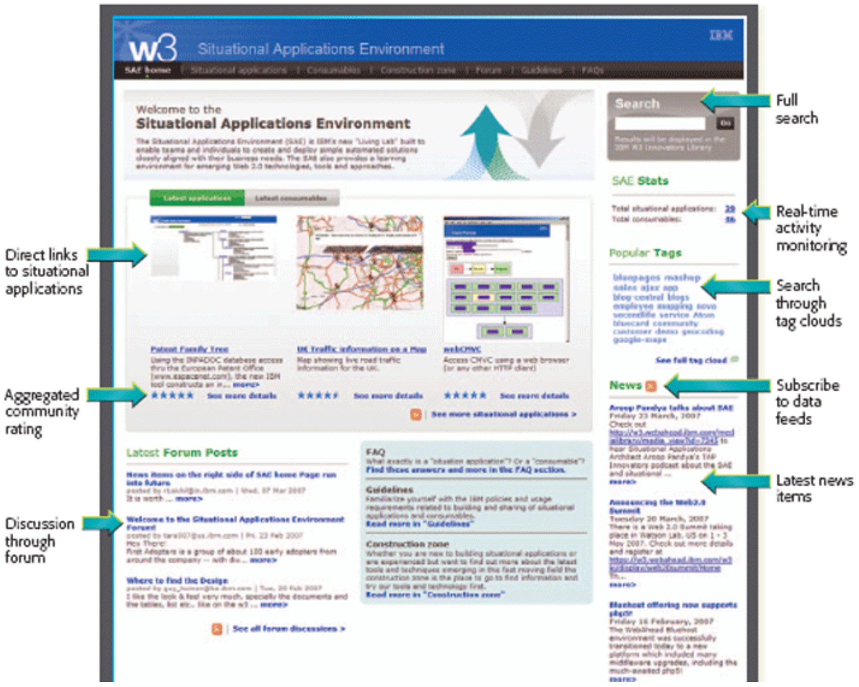
(E. Goodman & A. Moed, "Community in mashups; The case of personal geodata?")

The Changing Role of Corporate IT

"from solution developer to solution enabler"

the emergence of "situational applications" introduces complexity in monitoring, event analysis, patch management, troubleshooting, and other systems management tasks

IBM's Situational Applications Environment


Full search
Real-time activity monitoring
Search through tag clouds
Subscribe to data feeds
Latest news items
Direct links to situational applications
Aggregated community rating
Discussion through forum

w3 Situational Applications Environment IBM

SAE home | Situational applications | Consumables | Construction zone | Forum | Guidelines | FAQs

Welcome to the
Situational Applications Environment

The Situational Applications Environment (SAE) is IBM's new "Living Lab" built to enable teams and individuals to create and deploy simple automated solutions closely aligned with their business needs. The SAE also provides a learning environment for emerging Web 2.0 technologies, tools and approaches.

Latest applications | Latest consumables

Patent Family Tree
Using the INPADOC database access thru the European Patent Office (www.espacenet.com), the new IBM tool constructs an in... more>
★★★★★ See more details

UK Traffic information on a Map
Map showing live road traffic information for the UK.
★★★★ See more details

webCMVC
Access CMVC using a web browser (or any other HTTP client)
★★★★★ See more details

See more situational applications >

Latest Forum Posts

News items on the right side of SAE home Page run into future
posted by rtaikh@in.ibm.com | Wed, 07 Mar 2007
It is worth ... more>

Welcome to the Situational Applications Environment Forum!
posted by tara007@us.ibm.com | Fri, 23 Feb 2007
Hey There!
First Adopters is a group of about 100 early adopters from around the company -- with div... more>

Where to find the Design
posted by guy_human@be.ibm.com | Tue, 20 Feb 2007
I like the look & feel very much, specially the documents and the tables, list etc.. like on the w3 ... more>

See all forum discussions >

FAQ
What exactly is a "situation application"? Or a "consumable"?
Find these answers and more in the FAQ section.

Guidelines
Familiarize yourself with the IBM policies and usage requirements related to building and sharing of situational applications and consumables.
Read more in "Guidelines"

Construction zone
Whether you are new to building situational applications or are experienced but want to find out more about the latest tools and techniques emerging in this fast moving field the construction zone is the place to go to find information and try our tools and technology first.
Read more in "Construction zone"

Search
Go
Results will be displayed in the IBM W3 Innovators Library

SAE Stats
Total situational applications: 29
Total consumables: 66

Popular Tags
bluepages mashup sales ajax app blog central blogs employee mapping nova secondlife service Atom bluecard community customer demo geocoding google-maps
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News

Aroop Pandya talks about SAE
Friday 23 March, 2007
Check out http://w3.webahead.ibm.com/mod albrary/media_view?id=7345 to hear Situational Applications Architect Aroop Pandya's TAP Innovators podcast about the SAE and situational ...
more>

Announcing the Web2.0 Summit
Tuesday 20 March, 2007
There is a Web 2.0 Summit taking place in Watson Lab, US on 1 - 3 May 2007. Check out more details and register at https://w3.webahead.ibm.com/w3ki/display/web2summit/Home Th...
more>

Bluehost offering now supports php5!
Friday 16 February, 2007
The WebAhead Bluehost environment was successfully transitioned today to a new platform which included many middleware upgrades, including the much-awaited php5!
more>

IBM "Mashup Center"

The IBM "SAE" - an internal development environment - apparently has been productized as IBM "Mashup Center"

Capabilities: Unlock information sources - create easily consumable feeds from a variety of information sources inside and outside your enterprise.

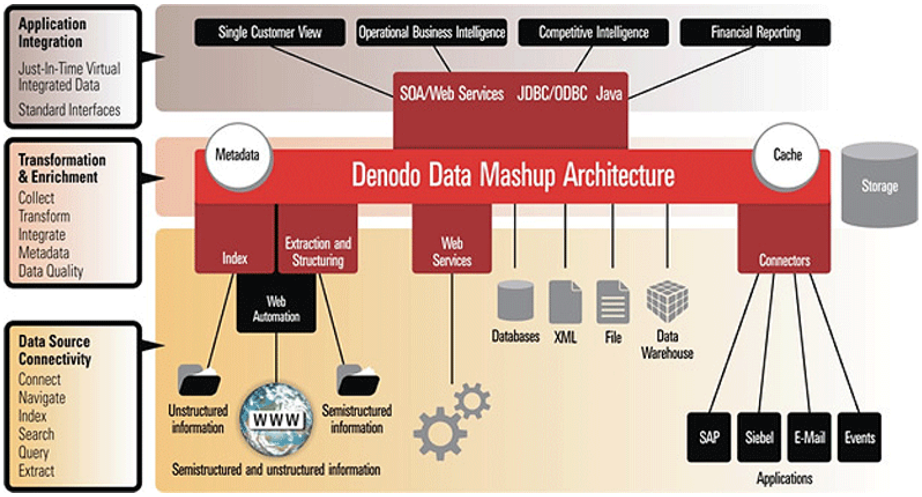
Rapid assembly of mashups via "drag and drop"

Discover and share assets in a catalog

Combine feeds and transform information

Create dynamic widgets - includes a powerful widget creation environment that enables developers of all skill levels to rapidly generate widgets without coding

Denodo "Enterprise Data Mashup" Architecture



Reading for November 10

Carl Kessler & John Sweitzer, Chapter 5 – Aligning with stakeholder goals, Outside-in Software Development, IBM Press, 2008.