

HPVIS and the "Architecture of Participation"

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What is "The Architecture of Participation?"

- ▶ Term coined by Tim O'Reilly to describe social computing environments in which users are an integral part of adding value to data
 - Perhaps best exemplified via recommendations, reviews on Amazon.com
 - Wikipedia is another popular example
- ▶ "Architecture of Participation" is a fundamental element of what has been dubbed "Web 2.0"
- ▶ A philosophy regarding data, users, and application development

Why is this Relevant to HPVIS?

- ▶ Brion Cook's goal of "...a database that meets everybody's needs" is laudable
- ▶ But it's not *possible*!
- ▶ Web 2.0 concepts – rooted in the Architecture of Participation – can move us closer to the realization of that goal than a monolithic application
 - By opening up development routes never anticipated
 - By harnessing the collective energies and efforts of a much broader development team
 - By facilitating integration of HPVIS data with other information

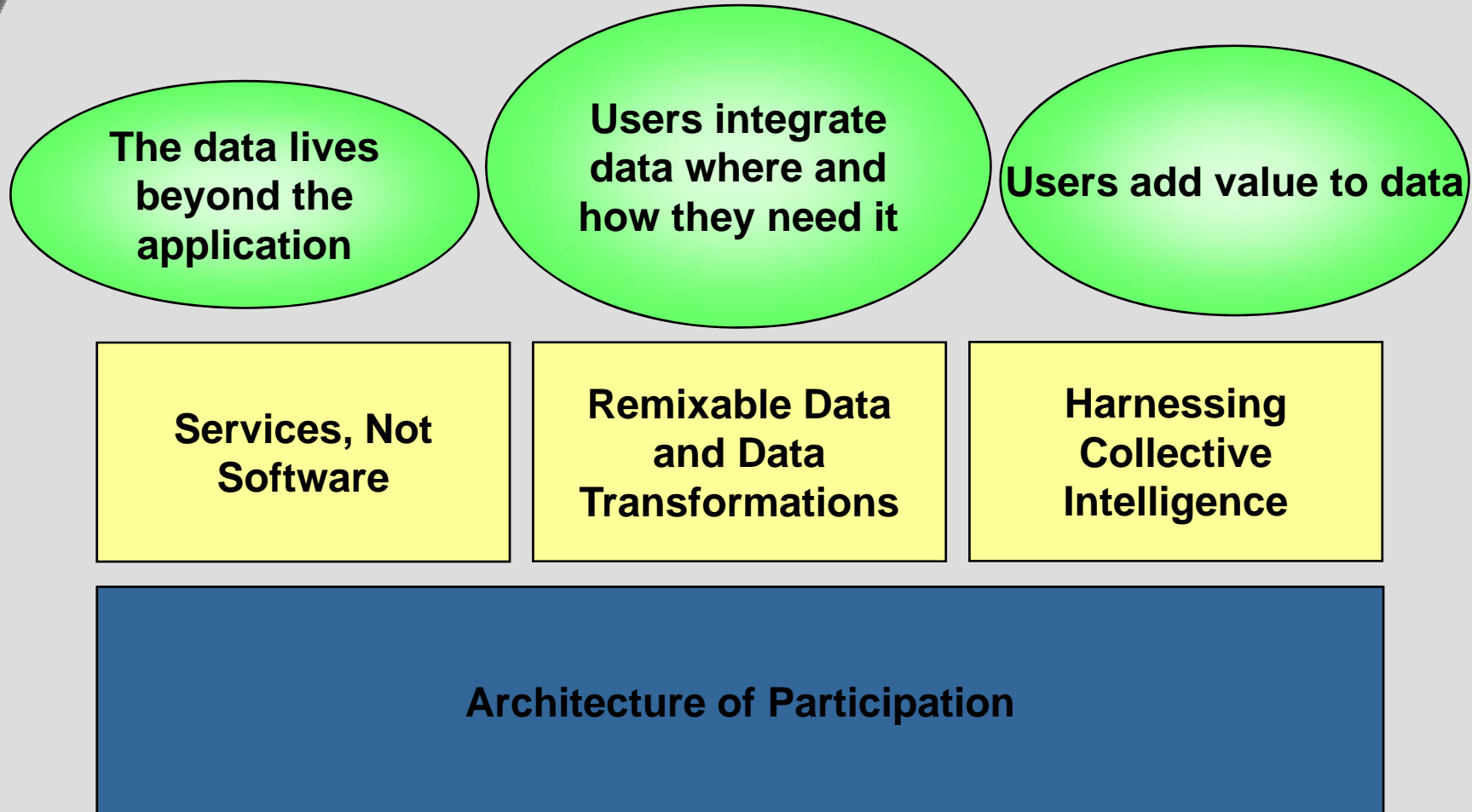
What are the Key Themes Underpinning Web 2.0?

O'Reilly identified the following key themes:

- ▶ Cost Effective Scalability
- ▶ Software Above the Level of a Single Device
- ▶ *Services, not Packaged Software*
- ▶ *Remixable Data Sources & Data Transformations*
- ▶ *Harnessing Collective Intelligence*
- ▶ *“Architecture of Participation”*

Highlighted themes are probably the most critical to HPVIS

Elements of the Architecture



Services, not Packaged Software – Web-based API's and Mash-ups

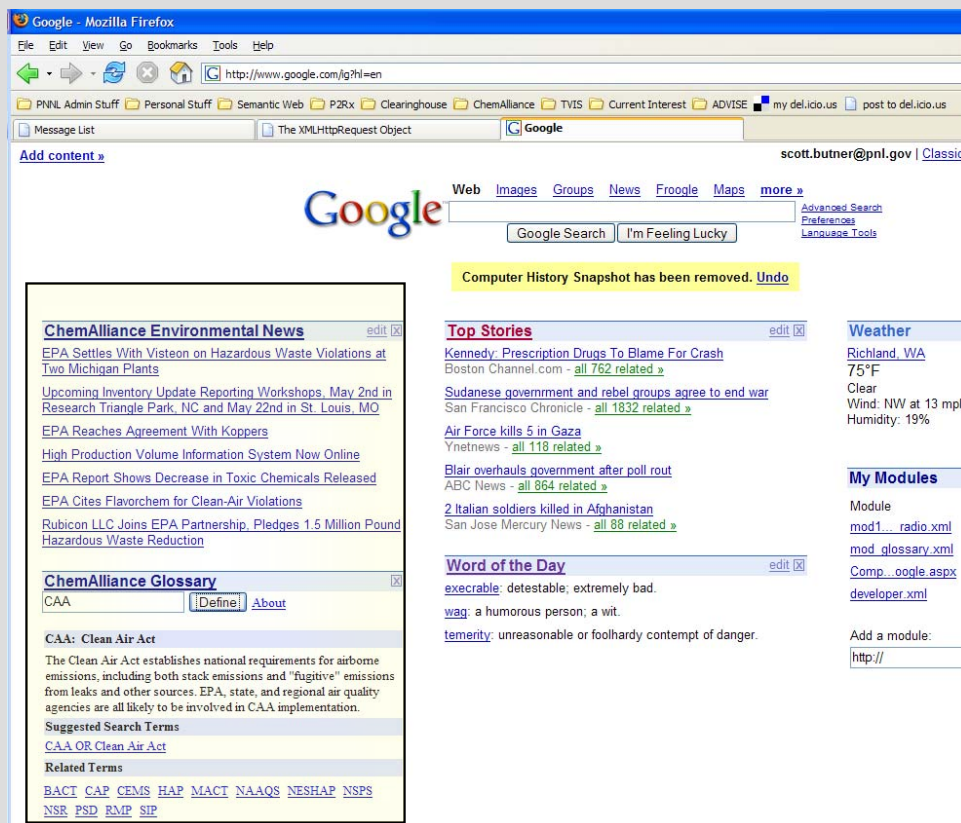
- ▶ Web-based APIs (Application Programming Interfaces) provide access to sophisticated capabilities without heavy programming requirements
- ▶ Can be combined in “Mash-ups” to extend capabilities or add value to data

The screenshot shows a web browser window titled "P2TECH - Group Map by Frappr Maps - Mozilla Firefox". The address bar shows "http://www.frappr.com/p2tech". The page content includes a navigation menu with "Group Map", "Group Photos", "Group Forums", "Group Widgets", "Contact Admin", and "Admin". Below the menu are several advertisements for "Chemical/Hazmat Software", "SPCC Plans", and "Environmental Education". A central section titled "P2TECH - 64 Members" includes a description of the group and a map of North America with orange location markers. A pop-up window for "Thomas Vinson-Peng Austin (TX)" displays a photo of a person climbing a tree. To the right of the map is an "Add To Map" form with fields for Name, Email, and US Zip, and a "Map Markers" table. The table has columns for Name, Location, and Date, and lists members like Joann Cortese, Garrette Clark, Dave Norem, Zero Waste Alliance, Dave Kunz, Rick Yoder, and Steve K. Seal. The bottom of the page features a "Other Groups" section with various icons and a footer with "javascripvoid(0)".

FrappR -- <http://www.frappr.com/p2tech>

Remixable Data Sources & Data Transformations

- ▶ Modular content and web services allow users to “mix and match” their own content
- ▶ Allows content providers to get a place on the daily desktop

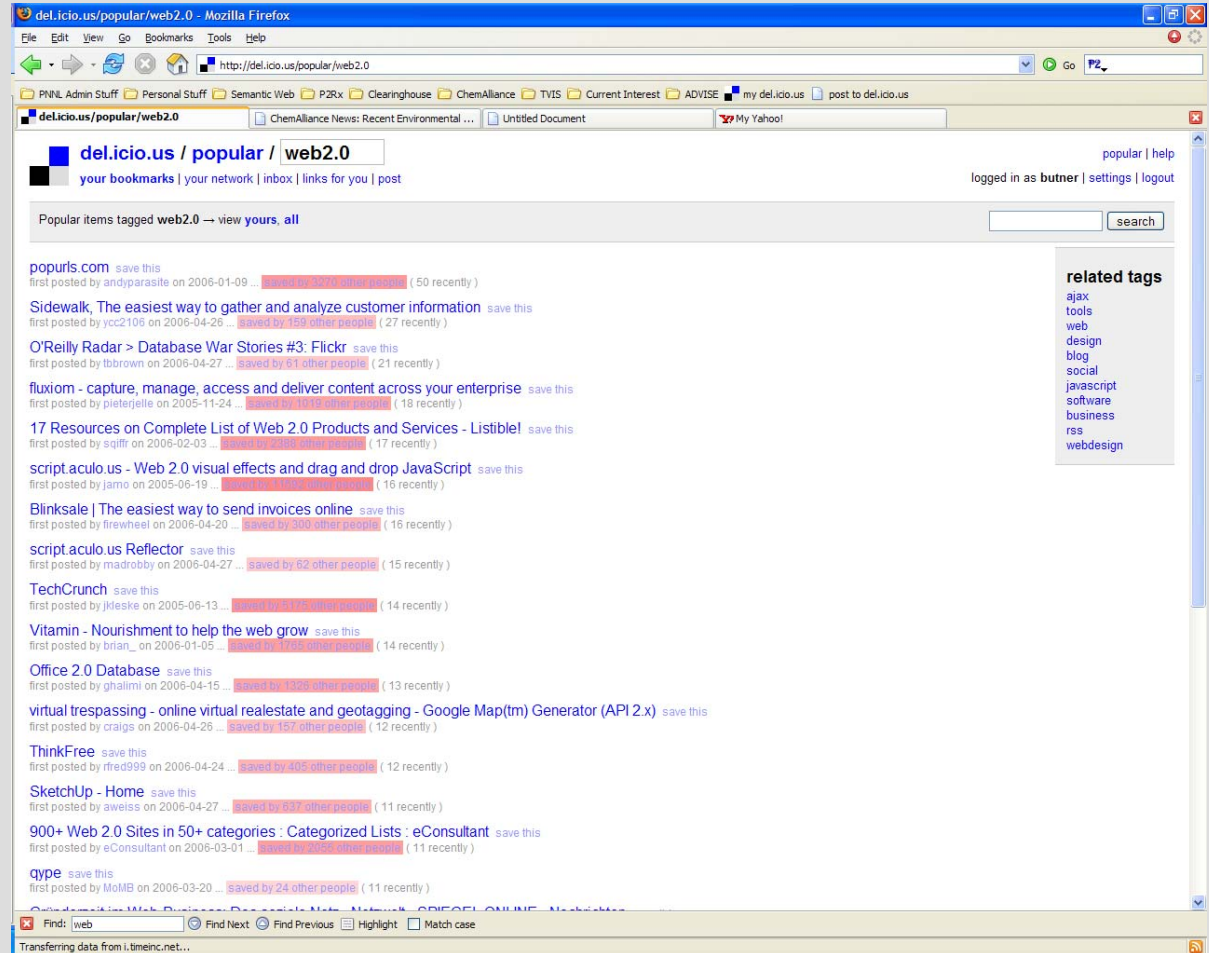


Google personalized homepage – easy modular content
http://www.chemalliance.org/webservices/modules/mod_glossary.xml&q=chemalliance&start=0

Harnessing Collective Intelligence – Folksonomy & Tagging

Turns the idea of “controlled vocabularies” upside down

Users decide how to label information; convergence on terms (“tags”) is an evolutionary process



The screenshot shows a Mozilla Firefox browser window displaying the del.icio.us website. The address bar shows the URL <http://del.icio.us/popular/web2.0>. The page title is "del.icio.us / popular / web2.0". The main content area lists various items tagged with "web2.0", including:

- popurls.com
- Sidewalk, The easiest way to gather and analyze customer information
- O'Reilly Radar > Database War Stories #3: Flickr
- fluxiom - capture, manage, access and deliver content across your enterprise
- 17 Resources on Complete List of Web 2.0 Products and Services - Listible!
- scriptaculo.us - Web 2.0 visual effects and drag and drop JavaScript
- Blinksale | The easiest way to send invoices online
- scriptaculo.us Reflector
- TechCrunch
- Vitamin - Nourishment to help the web grow
- Office 2.0 Database
- virtual trespassing - online virtual realestate and geotagging - Google Map(tm) Generator (API 2.x)
- ThinkFree
- SketchUp - Home
- 900+ Web 2.0 Sites in 50+ categories : Categorized Lists : eConsultant
- qype

Each item includes a "save this" link and a "saved by X other people (Y recently)" indicator. A search bar is visible at the top right, and a "related tags" sidebar is on the right side of the page.

<http://del.icio.us/> -- a prominent social bookmarking site

"Architecture of Participation" – Wikis and Blogs

- ▶ Web 2.0 puts the ability to create content – for better or worse – into the hands of users
- ▶ By simplifying and democratizing web content development, it creates new opportunities and new challenges for “authoritative sources”
- ▶ Realize that this is going on with or without you and your program!

The image shows two overlapping browser windows. The top window is a Wikipedia article titled "Resource Conservation and Recovery Act". The text describes the RCRA, enacted in 1976, as a Federal law of the United States. It mentions the Environmental Protection Agency (EPA) and its goals, such as protecting the public from harm caused by waste disposal and cleaning up toxic substances. The bottom window is the Swivel-Graphs website, which features a "Featured Graphs (This Week)" section. It displays several data visualizations, including a bar chart titled "Prisoners/100' by Country", a line graph titled "Ways of Dying", and a line graph titled "Per Capita Income vs. Property Crime". The website also includes navigation links like "Home", "Graphs", "Data", "People", and "Upload", and a search bar.

Wikipedia entry on RCRA --
http://en.wikipedia.org/wiki/Resource_Conservation_and_Recovery_Act

Early Adopters in the Environmental Domain

Earth Portal - Mozilla Firefox
<http://www.earthportal.net/about/eoe/>

EARTH PORTAL ENCYCLOPEDIA OF EARTH ABOUT THE EARTH PORTAL

**Be Informed...
BE @ EARTHPORTAL.NET**

THE ENCYCLOPEDIA OF EARTH

The Encyclopedia will be the first fully operational... already attracted a large group of distinguished international institutions, to develop:

- A free, fully searchable, trusted source of articles about the Earth
- A to Z coverage of topics describing the environment of Earth that span the natural, physical, and social sciences, the arts and humanities, and the professional disciplines
- An information resource that will be useful to students, educators, scholars, professionals, as well as the general public
- An authoring site that combines the authority of peer review with the power of Web-based collaboration
- A public reference site that is updated every 15 minutes
- Interactive links between the Earth Portal network of information portals and the articles in the Encyclopedia of Earth

Listen to an overview of the Encyclopedia of Earth project given by Dr. Peter Saundry in an interview with Sustainable Business Podcast. (**Audio MP3**)

We are now **recruiting** qualified authors and topic editors for the Encyclopedia of Earth. If you are interested or simply want more information, please send email to eoe@earthportal.net.

Ciclo-Cycle || The Ciclo-Cycle Workspace - Mozilla Firefox
<http://ciclo-cycle.obiki.org/index.html>

Life Cycle Initiative

The Ciclo-Cycle Workspace [Login or Register](#)

The Ciclo-Cycle Workspace is a collaborative workspace for people who work in the environmental domain. The site is a place where people can collaborate and share information.

Regional LCA Networks
 Latin American LCA Network
 South East Asian LCA Network
 African LCA Network

Materials Flow Analysis
 September 2005 Meeting
 General MFA Dialogue

SETAC Working Groups
 Input Output Analysis
 Life Cycle Costing

Life Cycle Initiative
 Inventory (LCI)
 Impact Assessment
 Management (LCM)
 Cross-Cutting Task Forces
 Management (LCM)

The LC Calendar
 How to Use
 Test new event
 The Calendar

Ad Hoc Working Groups
 Other Activities
 LCA and Buildings

This site is powered by **Obiki**, an open-source content management system.

Pollution Prevention Planner V3 - Mozilla Firefox
<http://www.zerowastenetwork.org/p2plan/index.cfm>

P2Planner Pollution Prevention Planner [leave](#)

Step 1 Step 2 Step 3 Final Step

Welcome!

Prepare a Pollution Prevention Plan

Use this tool to help you complete a pollution prevention plan which will save money by reducing your waste. This tool will help you design a plan that complies with [Texas' pollution prevention \(P2\) planning requirements](#). However, many companies who are not required to do planning use this tool to increase the efficiency of their operation.

Username:

Password:

login

[Create New Account](#)

SOUTHWEST NETWORK FOR ZERO WASTE This tool is provided by the [Southwest Network for Zero Waste](#). In cooperation with the [Texas Commission on Environmental Quality](#), information supplied using this tool will be shared for the purpose of promoting and advancing pollution prevention.

Questions about the Waste Reduction Policy Act e-mail: ppc@teeq.state.tx.us

Questions, suggestions and comments about this website? [Let us know!](#)

Waiting for www.zerowastenetwork.org...

Applying the “Architecture of Participation” to HPVIS

- ▶ Enable service-level access to the data
 - Ad-hoc queries should support web services interface, XML outputs, and some degree of self-documentation
 - Support for queries that enable mash-ups:
 - List of all chemical names, mapped to ID
 - Query by CAS
- ▶ Link to folksonomy-based “workspace”
 - Users need the ability to link HPVIS data with other information resources
 - Folksonomy would allow new categories to be defined
 - E.g., by product, location (facility), project
- ▶ Support for visualizations of data
 - Compelling applications of the data are often facilitated by compelling presentation of the data

Applying the “Architecture of Participation” to HPVIS (continued)

- ▶ Harness collective intelligence and social participation more effectively
 - Much of the data in HPVIS is narrative and/or bibliographic in nature
 - Lends itself to wiki format quite nicely!
- ▶ Make the semantics explicit
 - At the very least, publish a data dictionary!
- ▶ Harness the spirit of “perpetual beta”
 - E.g., Google’s “Summer of Code”, Yahoo’s API library
 - Open doors to making your user community part of the development team

Conclusions

- ▶ Some – maybe the best – applications of HPVIS data have not yet been envisioned
- ▶ Emerging trends in web technology facilitate much greater interaction between user community and the data they need
- ▶ HPVIS tool as configured does little to support this approach
- ▶ “opening up” the data can be done without abandoning the existing investment in data, technology