



What's After Web 2.0?

Environmental Protection Agency

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“Enabling Environmental Protection Through Transparency and Open Government”

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What is Web 1.0 2.0 3.0?

The evolution of the Internet has sparked a game-changing revolution in business, society and government

- Web 1.0 – Business to Person (**Web**)
 - “This is a new way to push out company brochures!”
- Web 2.0 – Person to Person (**Social Web**)
 - “It has been said that two heads are better than one...now we're saying 100 are better than two”
- Web 3.0 – Data to Applications (**Semantic Web**)
 - “I want to analyze the data myself”
 - “I want to ask questions in natural language”

See Wikipedia for more discussions and references on this terminology

Outline

- What is Web 2.0?
- What is Government 2.0?
- After Web 2.0 is Web Squared (#epagov2)
 - Cloud Computing
 - Mobile Applications
 - Location Awareness
 - Analytics and Semantic Data
- Reflections

Note: this is a conceptual and not a comprehensive tour

Web 2.0 by Example – Communication

- Facebook (www.facebook.com/press/info.php?statistics)
 - 400M users,
 - 50% on any given day, 500 billion minutes per month
 - 160M objects (pages, groups, events)
 - 25 billion pieces of content shared each month
 - average user creates 70 pieces of content each month
- Twitter (www.huffingtonpost.com/2010/04/14/twitter-user-statistics-r_n_537992.html)
 - 106M users
 - 300,000 new users per day
 - 55 million tweets per day
 - 3 billion API requests per day
- Blogs & RSS feeds
 - Greenversations (blog.epa.gov/blog)



These numbers from May 2010 are changing rapidly

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Web 2.0 by Example – Sharing

- YouTube (see Yahoo answers at bit.ly/cNTFhy)
 - 360M videos (=1,200 years); 500K uploaded daily
 - 20hr of content uploaded each minute
 - 1 trillion clicked daily
- Flickr
 - 4B+ images,
 - 3M GeoTagged
- Slideshare (www.slideshare.net)
 - 25M monthly visitors, 70M monthly pageviews



Web 2.0 by Example – Collaboration

- Wikipedia (en.wikipedia.org/wiki/Wikipedia:Size_comparisons)
 - 3.5 million articles (English)
 - 1.74 billion words in 9.25 million articles in 250 languages
- Amazon (www.amazon.com)
 - Product catalog enhanced by user descriptions
- eBay (www.ebay.com)
 - Auctions and comparable pricing
- Craigslist (www.craigslist.org/about/sites)
 - 20B page views per month
- iTunes store (www.apple.com/itunes)
 - Ratings and rankings
 - 200,000 apps (248apps.biz/app-store-metrics/)
 - 10B downloads (1B apps)



WIKIPEDIA

amazon.com.



craigslist



Vision for Government 2.0

- Open Government
 - Transparency: Recovery.gov
 - Open Data: Data.gov
 - Grant applications: Grants.gov
- Engaging Citizens
 - WhiteHouse.gov
 - All agencies
- Lowering Cost by embracing consumer technologies
 - Cloud computing and the model around cloud computing
 - Vast array of free and paid IT services: Apps.gov “storefront”
 - Improve procurement (GSA: IaaS, SaaS, PaaS)
- Innovative Path
 - Technology needs to enable a core mission
 - Injecting innovations as they happen in the country
 - Leverage community clouds: NASA “Nebula” and DOE “Magellan”
 - Look at models that have succeeded



Vivek Kundra's 2009 FOSE address, Mar 12, 2009

http://www.1105govinfoevents.com/FOSE/conference/FOSE09_Keynote_Kundra.pdf

But Government 2.0 is not Web 2.0

- Security
- Privacy
- Data Records Management and Integrity
- Governance
- Quality Control
- Transparency
- Cross-Agency Data Center Consolidation
- Green-IT
- Agility



The State of Web 2.0 in Government

- New Communication Channels
 - Twitter
 - Facebook
 - Blogs
- Collaborative Dialog
 - GovLoop (<http://www.govloop.com/>)
 - OpenEPA (<http://openepa.ideascale.com/>)
 - Prior art contributions at USPTO
 - (<http://www.whitehouse.gov/open/innovations/Peer-to-Patent/>)
- Data Sharing
 - NARA Access to Archival Databases (archives.gov/aad)
 - 30 agencies, 600 databases, 85M records

See more examples at <http://www.whitehouse.gov/open/innovations>



After Government 2.0 is Government Squared

- Web 2.0 is maturing and is about people
- Web 3.0 is emerging and is about data
- Rename as Web Squared for rate and nature of change

- Government 2.0 is embracing Web 2.0
- The next change is Web Squared, along four directions
 - Cloud Computing
 - Mobile Applications
 - Location Awareness
 - Analytics and Semantic Data

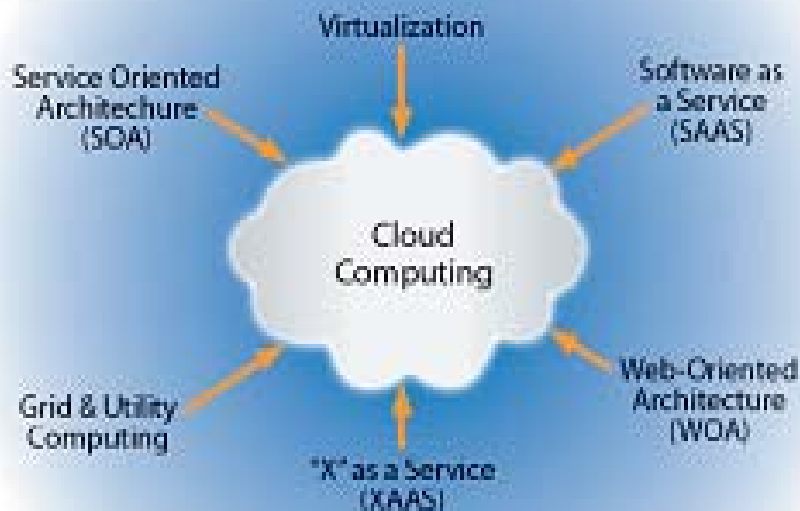
Coined by Tim O'Reilly and John Battelle 2009,
www.web2summit.com/websquared

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What is Cloud Computing

“A pay-per-use model for enabling available, convenient and on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”

NIST Definition



GSA U.S. General Services Administration

Today, we (SAIC) see a requirement for SOA and services delivery in virtually every major federal agency IT services procurement. Tomorrow, we anticipate seeing “cloud”. GSA is pursuing:

- Infrastructure-as-a-Service (IaaS)
- Platform-as-a-Service (PaaS)
- Software-as-a-Service (SaaS)

NIST has defined four (4) cloud delivery models:

- Private cloud
- Public cloud
- Hybrid cloud
- Community cloud



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Examples of Cloud Computing

- Amazon Web Services (aws.amazon.com)
 - Computing, Content Delivery, Database, E-commerce, Messaging, Monitoring, Networking, Payments & Billing, Storage, Support, Web Traffic, Workforce
- Google (www.google.com)
 - Search, mail, calendar, documents, reader, picassa
 - Google Earth, maps, groups, Google Health, YouTube, Android
- Salesforce.com
 - Business Processes as SaaS
 - Lash together a workflow (Force.com)
- Microsoft (www.microsoft.com)
 - Windows Azure
 - Microsoft Online Services (sharing documents)



Please check with these vendors directly



Next-Step Recommendations

Look at existing and upcoming projects

- How do I view computing as a utility?
- Do I have restrictions on physical location?
- Do I have surge requirements?
- What is the state of security options?
- Public, private or hybrid clouds?
- Metrics on current infrastructure costs and loads
- Can I purchase as a service instead of a dedicated solution?
- How can I make my organization more Transparent
- What Services can we provide to the Citizen
- Green IT and Data Center Consolidation



Mobile Applications

To meet the 24x7 pressure

- Devices
 - Differing form factors
 - Differing interactions
- Anywhere access
 - Wifi or cellular
- Always connected
- Content Applications
- Syncing



Rise of iPhone and Android and Blackberry and...

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Mobile Application Examples

- Streaming Content
 - Radio, (Pandora), TV (ABC) and movies (Hulu), Steam (video games)
- Information Applications
 - iTunes app store, App Market, App World
- Communication Applications
 - Voice, text, pictures, videos
 - Blackberry email, calendar,...
- Anywhere access applications with syncing
 - Evernote
 - Kindle books
- Storage
 - MobileMe, Carbonite, DropBox



Mobile Application Issues and Next Steps

- Security
 - Encryption
 - Sterilization
 - Enforcement of Enterprise Policy
- Privacy
- Thin Client (data resides on server not the device)
- Expectations of 24x7 access by employees (especially Gen-Y)
- Human Factors for small screens and keyboards
- Method of Connectivity (wifi, 3G,...)
- 508 Compliance
- Multi-Platform development and compatibility
- Appropriateness in environments

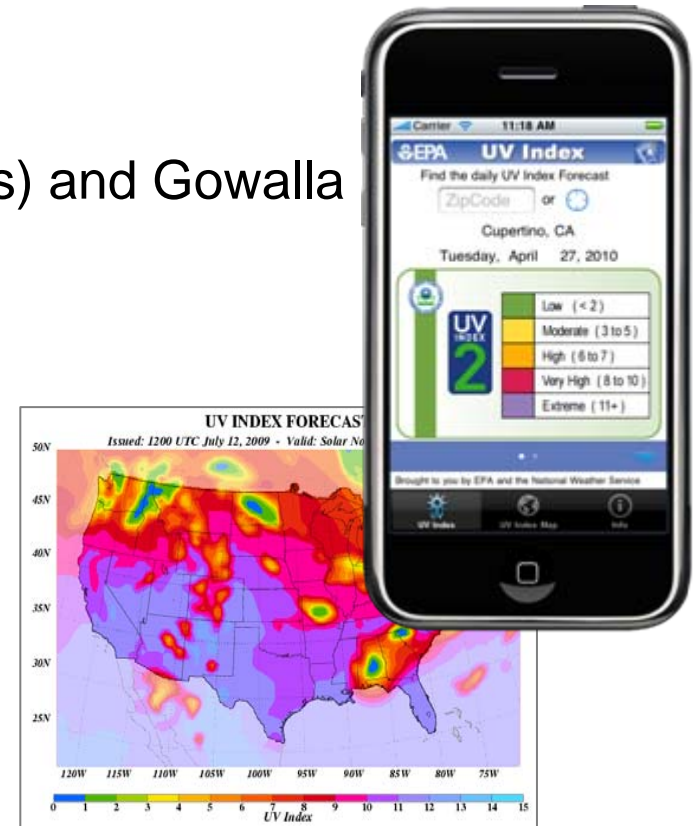
Adding Location to applications is a game-changer

- Mobile Devices have a location
- Improved positioning
 - IIF generation of GPS satellites give 3ft resolution
- Location-based information access
- Location-based input
- Location-based communities
- Internet of Things

Can get back to local community not just topical

Location-Based Examples

- Browsers
 - Safari, Chrome, ...
- Social plus location - Foursquare (1M users) and Gowalla
- Apps (WeatherBug, Maps)
- Communication by location
 - Twitter
- Search by Location
 - Google Search
 - EPA iPhone app for Ultraviolet Index
- Photographs with GPS tagging
- Augmented Reality
 - Layers one, Spyglass, google starmap
- Sensors
 - RFID, bar codes, anyone with a camera phone



Location Issues and Next Steps

- Security
- Privacy
- How do I add query-by-location in all searches
- What could I solicit from citizens as input?
- What kind of citizen sensor data could I solicit?
- How do I create geo-tagged RSS feeds?



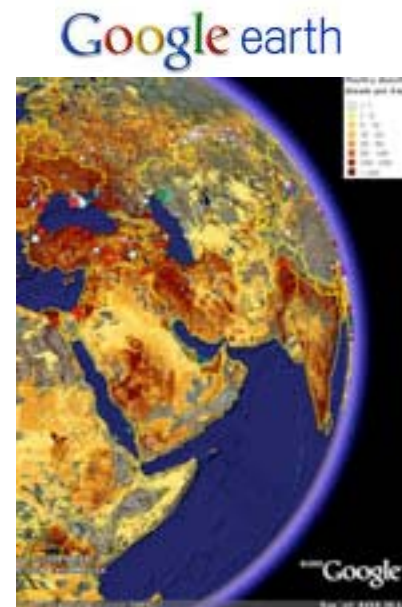
Analytics

- Open Data
- Semantic or linked data
- Voice and Image analysis
- Mashups
- Measurement
- Augmented Reality



Analytics Examples

- Open Data (<http://www.opendatacommons.org/>)
- Linked Data (linkeddata.org)
- Ontologies (semanticweb.org)
- Voice and image analysis
 - SnapTell (www.snaptell.com)
- Measurement
 - Walmart, 100M customers per week
 - 1B rows of data per day, Petabytes of data
- Mashups (www.webmashup.com/)
 - Google Earth (earth.google.com)
 - Maps, street view, sky, ocean, historical, Mars, Moon
 - Photographs, Wikipedia, YouTube, buildings, Weather
- Augmented Reality
 - Layar, Spyglass, Theodolite,



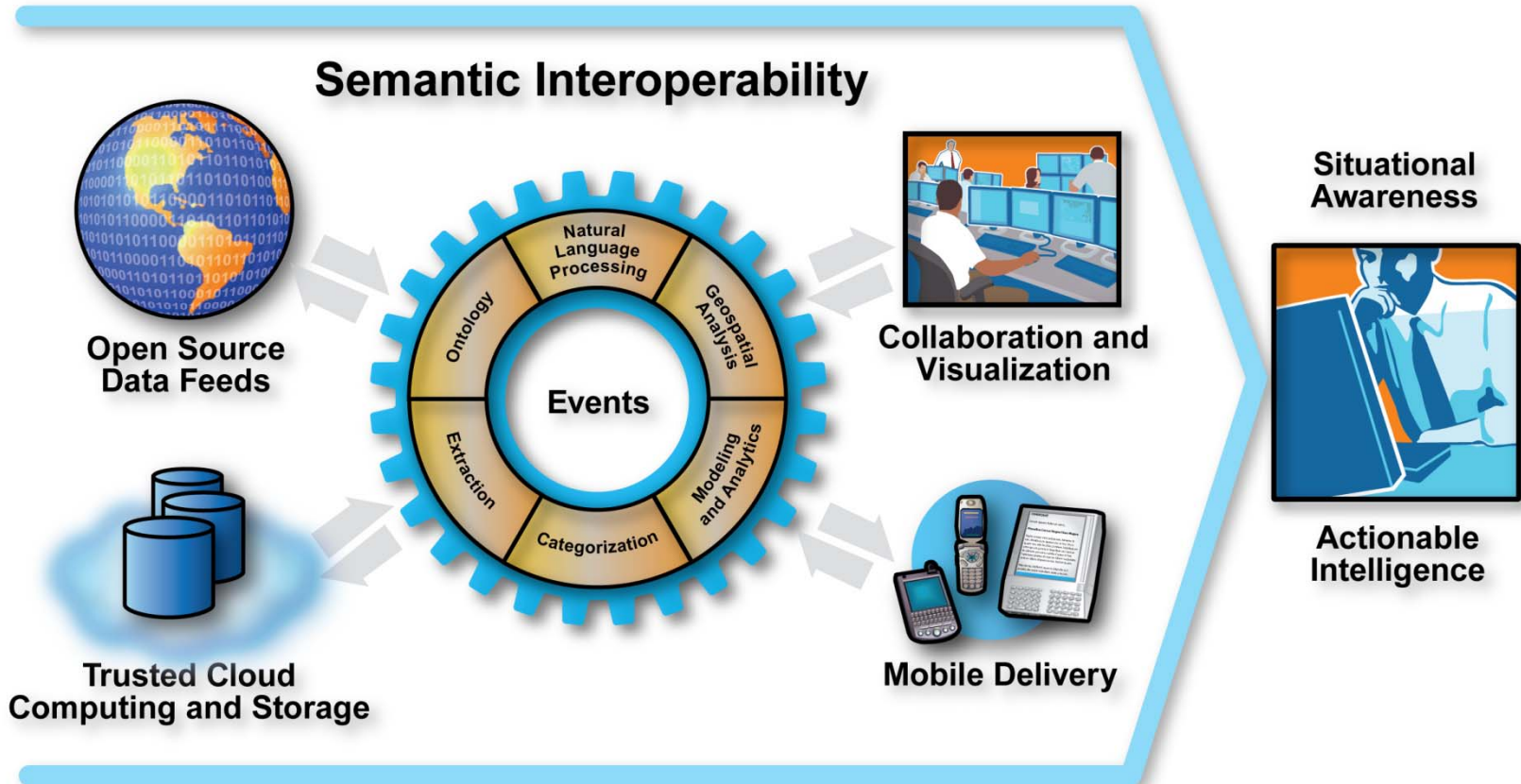


Analytics Issues and Next Steps

- Security
- Privacy
- Concerns over misuse or misinterpretation of the data
- How can I describe my data in an interoperable way?
- How do I provide data and not just views?
- What data do I have that is already public or appropriate for the public?
- What standards efforts are underway?
- What visual analytics tools would help me understand my data?
- Data migration (between sites and applications)
- Preservation Format

Note: PDF is not a data format

All Source Analytic Framework



A surveillance example leveraging Government Squared tools

Reflections

- Government 2.0 is not Web 2.0
- The next stage is not Web 3.0 but “Web Squared”
- The pillars of Web Squared are tightly coupled
- Pressure is increasing to use these technologies for government transformation
- Move toward a concept of data stewardship
- Citizens and new employees (Gen-Y especially) will expect these tools and interactions

- Follow sites (Mashable, ReadWriteWeb, NextGov)
- Follow twitter (#gov2, #gov20,...)
- Follow thought leaders (Tim O’Reilly, Nicholas Carr...)
- Join Communities (GovLoop)

Recommended Reading

- Open Government: Collaboration, Transparency, and Participation in Practice by Daniel Lathrop and Laurel Ruma
- Wiki Government: How Technology Can Make Government Better, Democracy Stronger, and Citizens More Powerful by Beth Simone Noveck
- Enterprise Web 2.0 by Krishna Sankar and Susan A. Bouchard
- The Big Switch: Rewiring the World From Edison to Google by Nicholas Carr
- How to Measure Anything: Finding the Value of Intangibles in Business by Douglas Hubbard
- Competing on Analytics: The New Science of Winning by Thomas H. Davenport and Jeanne G. Harris

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