What Software Development Tools Can Learn From the Web...

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web 2.0 is defined as having two elements:

1. A set of new Web-based technologies, including AJAX, RSS, XML and cascading style sheets that enable the web to become a platform for dynamic content creation and distribution.

2. A new generation of web-based communities and hosted services — such as social-networking sites, wikis, and folksonomies — which aim to facilitate creativity, collaboration, and sharing between users.

"The point isn't the features, it's the underlying philosophy of relinquishing control."

Web 1.0 users were consumers of information
Web 2.0 users are participants in the conversation

• A **social network** is a network of people
• But it is not about the people – it's about **relationships**
• The value is **in** the relationship or tie “between” people
web 2.0 presents users with new capabilities

- Social Networks
- Blogs
- Collaboration
- Feeds/Filters
- Start Pages
- Mobile
- Real Time & Place Shifting
- Search
- Destinations
- Microsites
- Portals
- Participation
- Community
- Enhanced Site Experiences
- On Demand
- Gaming & Virtual Worlds
- Personal
- Social Networks
- Blogs
- Feeds/Filters
web 2.0 is not just a B2C phenomenon

IT Professionals Participate in Social Media for Work Related Purposes

Note: n=203; *by posting questions or contributing to discussions; **focused on systems or security management
Source: King Research, "The Value of Online Communities: A Survey of Technology Professionals" commissioned by KACE Networks, June 2007
So what does big blue know about web 2.0?

IBM offers cutting-edge technologies and tools to develop and deliver web 2.0 applications that are:

- Simple to Build
- Quick to Remix
- Easy to Extend

Continuous Dynamic Web 2.0 Development Live!

Rational software
Lotus software
WebSphere software
Information Management software
People, not organizations, build great software.

What is Jazz?

Developing software in a team is much like playing an instrument in a band. Both require a balance of collaboration and virtuosity. Jazz defines a vision for the way products can integrate to support this kind of collaborative work, and a technology platform to deliver on this vision.

Jazz is a scalable, extensible team collaboration platform for integrating work across the phases of the development lifecycle. We believe Jazz will help teams build software more effectively while making the software development activity more productive and enjoyable.

Jazz is built on Eclipse and other open technologies, and will serve as the foundation for Rational’s Software Delivery Platform and partner ecosystem.

What's new

Looking back at EclipseCon, looking ahead to RSDC

Several members of the Jazz team attended EclipseCon 2008 in Santa Clara, California. We’ve written up reports on several of our Jazz-related talks on the Jazz Team Blog. Our next stop is the Rational Software Developer Conference (RSDC) which takes place between June 1-5 in Orlando, Florida. Watch Jazz.net for more RSDC information in the coming weeks.

More >>

Team Concert Beta 2 is Here!

The Jazz Team is happy to announce that Rational Team Concert 1.0 Beta 2 is now available for download. Rational Team Concert is the first product based on the Jazz Technology Platform. We encourage all community members to upgrade to Beta 2.
What can and have we learned from the Web?

- We’re building a new set of team tools for software development:
  - “Jazz” developed by developers for developers at jazz.net

Chartered with a new “web 2.0” mindset for IBM Rational Software

- Individual productivity → collaborative team productivity
- Single co-located team → many, distributed teams
- Many different stacks and protocol → common, industry standard stacks and protocols with a focus on Web interface
- Closed development → open community development

Along the way, our thinking evolved in other directions, influenced by Web 2.0

- Eclipse and Java client-centric → many client and Web-centric
- Service-oriented → REST and resource-oriented
Development Evolution: Thinking differently

- Desktop/Database Integration → Global Integration
- Function First → Team First
- Manual → Process Aware & Transparent
- Pre-determined Tool Function → Dynamically Extensible
- Proprietary infrastructure → Internet Standards
- Rigid Process → Creative Collaboration

“We can't solve problems by using the same kind of thinking we used when we created them.” — Albert Einstein
Three aspects of our web 2.0 Experience

- **Web UI technology**
  - Enabling very expressive new Web UIs

- **Deep Influence of Web technology on the platform**
  - SOA-Eureka moment
  - Web as the scalability benchmark for distributed collaboration
  - Web architecture as the platform integration architecture

- **Community Involvement**
  - Working in the open
  - Not quite group-sourced, but heavily involved
  - Enabling our customers to quickly build communities
First Web UI – six months to build a classic Web UI, low interactivity

Second Web UI – two months, first AJAX UI, highly interactive

Third, fourth, fifth, and sixth iterations – as short as a month for a complete rework

The productivity frankly stunned us…

Our Graphic Designers are engaged on an unprecedented level
With a platform in place, and rich data services available, dashboards were a natural next step.

Completely customizable, the customization is customizable.

Graphically beautiful, and our most interactive UIs...

Team and User scoped dashboards...
web 2.0 Platform Influences: Service-oriented “Eureka!”

- We built our first REST services to support the AJAX Web UI
- Separation of client and server via a simple contract is an obvious “good thing”
- In practice, it was amazing how well it enabled the UI and platform teams to collaborate
  - Quick, lightweight resource specification in JSON
  - Parallel UI and service development
  - Rapid iteration on both sides
- Hmmm, this SOA stuff seems to be for real…
The new reality for software development teams is multiple teams in many physical locations.

- WAN connectivity to a central server must perform
- Central servers must support many users
- An extensible platform will serve a diverse set of resources

Sounding more and more like the Web, which seems to be scaling pretty well…
Resource storage
- Learning from the experiences of the Web 2.0 leaders
  - Joe Gregorio’s survey of “megadata” – Google, eBay, IBM Research
  - Heavily indexed data, no or minimal transactions, constrained query support, no foreign key constraints or triggers, de-normalized
  - No JOINS!

Iterated through three significant persistence layer architectures (+1)
- Classic ORM → Optimized ORM (off-the-shelf persistence components)
- Optimized ORM → Indexed resource store (current architecture)
- Indexed resource store → RDF store (being explored in the JRS incubator)
Good news on software development artifacts as Web Resources

- Project caches are phenomenally effective → 90% common working set
- Local team caches should be even more effective

Currently content, like SCM file bytes, can leverage HTTP caching

- As more clients get on the REST bandwagon, we can expand caching
  - Secure caching proxy is an issue we are now addressing…
A set of Architectural Principles…

‣ Separation of data from tool/UI: Specification and standardization of data

‣ REST hypermedia architecture [Fielding] for data
  › Client-server
  › Stateless servers
  › Caching
  › Uniform Interface
  › Layering
  › On-demand code

‣ Passion for open systems and standards
  › HTTP and ATOM/APP
  › No “special tricks”: mixed clients and servers
  › Published, standardized data formats (resource representations)

‣ Open, extensible [meta-]model through typeless URIs
  › Client driven by data mime-types, not [meta-]model assumptions

‣ Rely on universal search and query, not fixed lists, trees, graphs
“Open Commercial Development”

- An experiment in a new business model for open development of commercial products
- There are benefits other than the price tag for Open Source. Can we deliver those to our customers?

- Jazz.net is open to the public
- Code available for download weekly
- News, blogs, bulletin boards
- Direct access to Jazz bug repository
- Visibility to live plans

- Community participation is growing
- Registrations continue to grow
- Provide about 1 in 10 bugs and about 1 in 4 forum posts
- Several surprise pilot successes – the Community is helping itself
Jazz.net: Jazz Technology Platform

The Jazz platform is built on Eclipse technology and will serve as the future foundation of the IBM Rational Software Delivery Platform and its partner ecosystem. Unlike traditional processes where customers have little visibility into a new product until it is shipped, Jazz is being developed openly at jazz.net. You can view project progress, download builds as they are available, submit defect reports and join the conversation on Jazz vision.

developerWorks Jazz space

Learn the latest about Jazz on developerWorks via the Jazz space.
Introducing IBM Rational Team Concert
Software delivery without borders

Collaborative software delivery for small and mid-sized distributed teams

- Integrates the entire team around a team server
- Enriches the Jazz platform with integrated SCM, Build and Work Item management

Powered by the Jazz Technology Platform

- Collaborate in context of everyday activities
- Right-size governance to unique team and project needs
- Be productive on day one with dynamic provisioning of users and teams
- Open and extensible architectural vision which will enable organizations to assemble their ideal platform using preferred tools and vendors

Download the latest beta version from http://jazz.net
PROJECT BLUEGRASS

IBM Research project that is extending Jazz to virtual world...

Utilizing the IBM Jazz technology, developers can work, chat and brainstorm around a virtual water cooler while "seeing" their teammates alongside interactive visual representations of ideas, data from the Web and from Jazz-based sources.
End-to-End Mashup Workflow

- End-to-end mashup capabilities,
- User freedom with safe IT support
Simple to Build, Quick to Remix: New IBM Mashup Tools

Lotus Mashups (Assembly-centric)
- Assemble widgets into dynamic mashups
  - Graphical, browser-based assembly tool
  - Easy-to-use IDE for codeless creation of dynamic widgets
- Sharing + discovery of mashable widgets

Infosphere MashupHub (Information-centric)
- Unlock Information and transform into new feeds
  - Data connectors and feed generation
  - Visual, data transformation tooling

WebSphere sMash (Scripting-centric)
- Utilize dynamic scripting languages to create and run widgets and situational applications, enabling mashups
IBM Mashup Center: Beta Now Available

- Unleash business users from the limitations of fixed application landscapes
- Unlock information buried in information silos: enterprise, departmental, Web, and personal data
- Utilize visual tools for transforming and re-mixing Web 2.0-style feeds
- Quickly uncover new business insights by easily assembling information from multiple sources in a browser – when it is needed
- Fuel Innovation while applying the appropriate levels of IT control
WebSphere sMash: web 2.0 meets SOA

- Improves developer productivity and efficiency through the support of dynamic scripting languages (Groovy and PHP)
- Leverages Web 2.0 technologies for service invocation, service composition and data interchange
- Visual tools for developers to build Widgets for use in Lotus Mashups
web 2.0 Heads or Tails: what to use when?
security web 2.0 Application Architecture

- Desktop: Antivirus Protection
- Transport: Encryption (SSL)
- Network: Firewalls / Advanced Routers
- Web Applications: Web Servers, Databases, Backend Server, Web Application
Hacking issues with web 2.0 applications

- Your web 2.0 applications are vulnerable to these common attack types
  - JavaScript hijacking
  - Prototype hijacking
  - Cache Poisoning
  - DNS Attacks

- Technologies at risk: Web Services & AJAX

- Fundamental Problems with AJAX
  - Architectural & framework weaknesses
  - Authentication & authorization
  - Attack surface fragmentation
  - Transport
  - Communication management
  - Can not trust the client
Motives Behind App Hacking Incidents

Source: WASC 2007 Web Hacking Incident Annual Report
Reality: Security & Spending are Unbalanced

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<th>Security</th>
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<tr>
<td>% of Attacks</td>
<td>% of Dollars</td>
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<tr>
<td>75%</td>
<td>10%</td>
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<td>25%</td>
<td>90%</td>
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75% of All Attacks on Information Security Are Directed to the Web Application Layer

2/3 of All Web Applications Are Vulnerable

Sources: Gartner, Watchfire
Find and fix web 2.0 application security issues

Web application and web service security and compliance testing

- Individual and enterprise scalable solutions for assessing and remediating security vulnerabilities
- Different solutions for developers, testers, security professionals, and management
How to get started when you leave here

‣ Stop by Booth 410 in the and see demonstrations and listen to theatre presentations and get an iTunes download card

‣ Learn more about IBM and our support for Web 2.0 and download the Web 2.0 Development e-kit at http://www-306.ibm.com/software/info/web20

‣ Participate in the open commercial development of Jazz by joining the community at http://jazz.net

‣ Learn more about the future IBM Rational product roadmap on the Jazz Technology Platform and Rational Team Concert the first product available in Beta http://www.ibm.com/rational/jazz/roadmap

‣ Learn about IBM Mashup tools at http://www.ibm.com/software/info/mashup-center

‣ Learn how to secure your web 2.0 apps at http://www.ibm.com/software/info/sdp/appscan
### Booth Demos:

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<td>IBM WebSphere DataPower, SOA Appliances &amp; WebSphere MQ</td>
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<td>Ignite Your web development with Web 2.0</td>
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### Theater Presentations:

**Thurs., April 24**

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<tr>
<th>Time</th>
<th>Presentation</th>
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<tbody>
<tr>
<td>11:00 AM</td>
<td>Who says you need a PhD in Ajax to build Web 2.0 application? Rational tools: Rich Web development for the rest of us</td>
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<tr>
<td>11:30 AM</td>
<td>IBM WebSphere Smash</td>
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<tr>
<td>12:00 PM</td>
<td>Positioning for Success: Enterprise Informational Mashups</td>
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<tr>
<td>12:30 PM</td>
<td>Data as reusable services</td>
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<tr>
<td>1:00 PM</td>
<td>Web 2.0 - How Secure Are Your Applications?</td>
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<tr>
<td>1:30 PM</td>
<td>Build, Mix &amp; Extend with technologies, products &amp; services from IBM developerWorks</td>
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<tr>
<td>2:00 PM</td>
<td>A closer look at IBM's Web 2.0 Energy Efficient Platform</td>
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<tr>
<td>2:30 PM</td>
<td>Introducing Lotus Mashups</td>
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<tr>
<td>3:00 PM</td>
<td>Power &amp; Cooling Considerations for Web 2.0</td>
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**Friday, April 25**

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