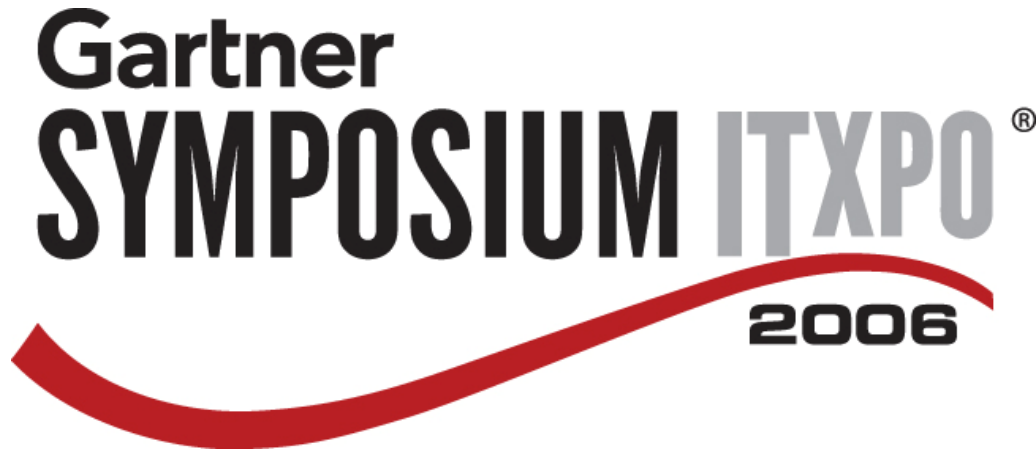


---

# Web 2.0 Basics: Principles, Practices and Platforms for the Enterprise



**8-13 October**  
**Orlando, FL**

---

Symposium/ITxpo 2006

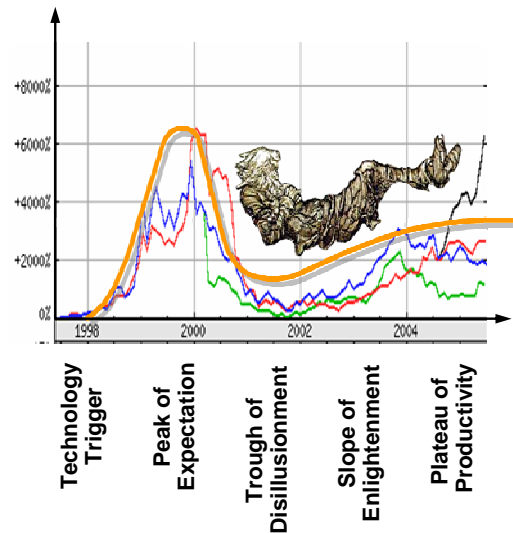
David Cearley

October 8-13, 2006  
Walt Disney World Dolphin  
Orlando, FL

### Key Issues

1. How can Web architectural principles and technologies be applied safely?
2. How can the enterprise deal with the social, participative, and open community and business models?
3. What best practices can be learned from the Web platforms developed by Amazon and others?

#### Second Internet Revolution



Gartner.

Technologies such as Ajax, community tools such as blogs and wikis, and approaches for composite applications such as mashups have all become popular on the Internet. However, just because a Web 2.0 technology or methodology is well known doesn't mean that it can be safely deployed by the enterprise without appropriate controls. Learn how to apply Web 2.0 technologies and methodologies in an enterprise-class manner.

**Strategic Planning Assumptions:** Through 2008, the majority of Global 1000 companies will adopt technology-related aspects of Web 2.0, but fail to adopt the social and participatory community dimensions, and the result will be minimal business impact (0.6 probability). By year-end 2009, 70% of periodically published corporate information will be offered in a standard syndication format, such as RSS or ATOM (0.8 probability).

### Web 2.0 Focal Points

#### Web Technology

- Principles: WOA, data-driven, syndicated content, rich semantics, mashable, rich client, build by example
- Aspects: Architecture & Platforms



#### Web Community

- Principles: Participation, collaboration, social, transparent
- Aspects: People, Interaction, Data



#### Web Business

- Principles: Long-tail, continuous innovation, collaborative offerings, open business models
- Aspects: "Ecosystem," process, value models



Technology Aspects: WOA (e.g., IFaP, REST, POX, WS\*, modular, embeddable, distributable), Data-Driven (e.g., XML, BPEL), Syndication of content (RSS/ATOM), Rich Semantics (eRDF, RDFa, microformats, Semantic Web, Semantic Reconciliation, Metadata), Mashable Applications (Remix and scripting, PHP, Javascript), Build by example (show source, cloning), Rich Client (just fast enough just in time, Ajax, Offline Ajax, Flex, Microsoft, etc.), Persistent Web (Caching, streaming, managed client, "Web on client")

Web Platforms: Capabilities-based ecosystem, expose content/logic/interface/model via WS\*, POX, REST, remix model for composite applications, software as a service (tech aspect), RSS.

Community Aspects: People: Blogs/podcasts, wikis, personal mashups. Interaction: Open-source development, social networks, community ratings, collective intelligence, Community service and support, collaborative content creation. Data: Tagging, "folksonomies," user-created content, data about users.

Business Aspects: Ecosystem: Delivering business process as a service to be remixed (the business side of mashup), viral marketing, syndication. Process Models: Customer/community dependencies, business of remix, information replaces relationships as key ingredient. Value Models: Pricing models (usage, subscription, derivative/commission, revenue sharing), micropayments, advertising models (impression, intent, conversion).

**Strategic Planning Assumption: The Web will continue to play a major role in driving and influencing the evolution of computing architecture through 2020 (0.8 probability).**

Web-Oriented Architecture Beyond Web 2.0					
1995	2000	2005	2010	2015	2020
<b>World Wide Web</b>		<b>Web 2.0</b>		<b>Real-World Web</b>	
Access:		Participation: What I can contribute		Context: What I can find What I need to know	
Accessible		Programmable		Proactive	
Account management		Community management		Identity management	
Brand determines quality		Peers determine quality		Need determines quality	
Broad user access		Rich user interface		Environment as interface	
Tagging for improved display		Tagging for improved human access		Tagging for improved machine access	
<b>Technology Foundations:</b>					
<b>Browser, Web Store</b>		<b>Broadband, Rich Link/Content Models</b>		<b>Semantic Technologies Sensor Networks</b>	
<b>Pain Points:</b>					
<b>Interface limitations</b>		<b>Physical v. cyber gulf</b>		<b>Dependence on augmented reality ... and more</b>	
<b>Development skills</b>		<b>Multiple digital identities</b>			

The Internet is a societal, epochal technology that does not progress uniformly but in a sequence of dependent waves. The capabilities of earlier waves create new information and knowledge tools, which permit the creation of the next wave. The 1980s Internet enabled computer and information scientists to exchange ideas and experiment with models, which gave rise to the World Wide Web. This, in turn, allowed global technological, business and social interaction, which gave rise to Web 2.0. As Web 2.0 progresses, the tools it provides will enable at least one more major evolutionary stage to occur, and this will coincide with important hardware price/performance tipping points.

The next Internet wave will include a fundamental extension of machine, sensor and semantic capabilities that tackle unsolved but high-value opportunities (for example, further automation, richer information discovery, greater individual control of identity and "real-world Web" capabilities, such as augmented reality and ambient intelligence). Many of the raw technology capabilities are already here, but as with previous waves, they will take several years to reach a critical mass of maturity and adoption.

*Action Item: Business leaders and technology strategists should exploit the intrinsic value of Web 2.0, but also invest in building on its foundation for a more profound wave of innovation starting circa 2012.*

**Strategic Imperative:** Avoid the *Tragedy of the Commons* and the *Tragedy of the Anticommons*: Balance the use of the four freedoms to grow the pie rather than IP (and delivering service) to increase your share.

### The Ethos of Participation: Primary Principle for Web 2.0

#### The Four Freedoms:

1. Freedom to **use**
2. Freedom to **study**
3. Free to **copy**
4. Freedom to **improve**

+ Freedom to profit

Paraphrasing The Free Software Definition at <http://www.gnu.org/philosophy/free-sw.html>  
Celtic Tree of Life - original design by Welsh artist Jen Delyth ©1990, used with permission.

Usefulness grows the pie  
Profit is your piece of the pie  
It is better take small pieces of growing pies  
Than large pieces of shrinking pies

The diagram illustrates the 'Virtuous Cycle' as a circular flow. At the center is a grey circle labeled 'Virtuous Cycle'. Surrounding it are four blue arrows pointing clockwise. The top arrow is labeled 'Consumer Distributor', the right arrow is labeled 'Distilled Intelligence', the bottom arrow is labeled 'Supplier Producer', and the left arrow is labeled 'Content'. The arrows are connected by a series of black, interlocking loops that form a circular border around the central cycle.

This is a paraphrase of Richard Stallman's *The Free Software Definition*. See <http://www.gnu.org/philosophy/free-sw.html>. Though Richard Stallman articulated the "Four Freedoms" in the context of software, it applies generally to any shared resource. It is by enabling such freedoms that the power of mass innovation by large numbers of stakeholders is unleashed. And it is the power of such mass innovation that drives the emergent nature of the Internet and the Web. Resources and systems that are open to use, study and improvement by many stakeholders will improve faster and be used more broadly than closed resources and systems.

**Tragedy of the anticommons** (from Wikipedia): The tragedy of the anticommons occurs when rational individuals (acting separately) collectively waste a given resource by underutilizing it. This happens when too many individuals have rights of exclusion (such as property rights) in a scarce resource. This situation (the "anticommons") is contrasted with a commons, where too many individuals have privileges of use (or the right not to be excluded) in a scarce resource. The tragedy of the commons is that rational individuals, acting separately, may collectively overutilize a scarce resource.

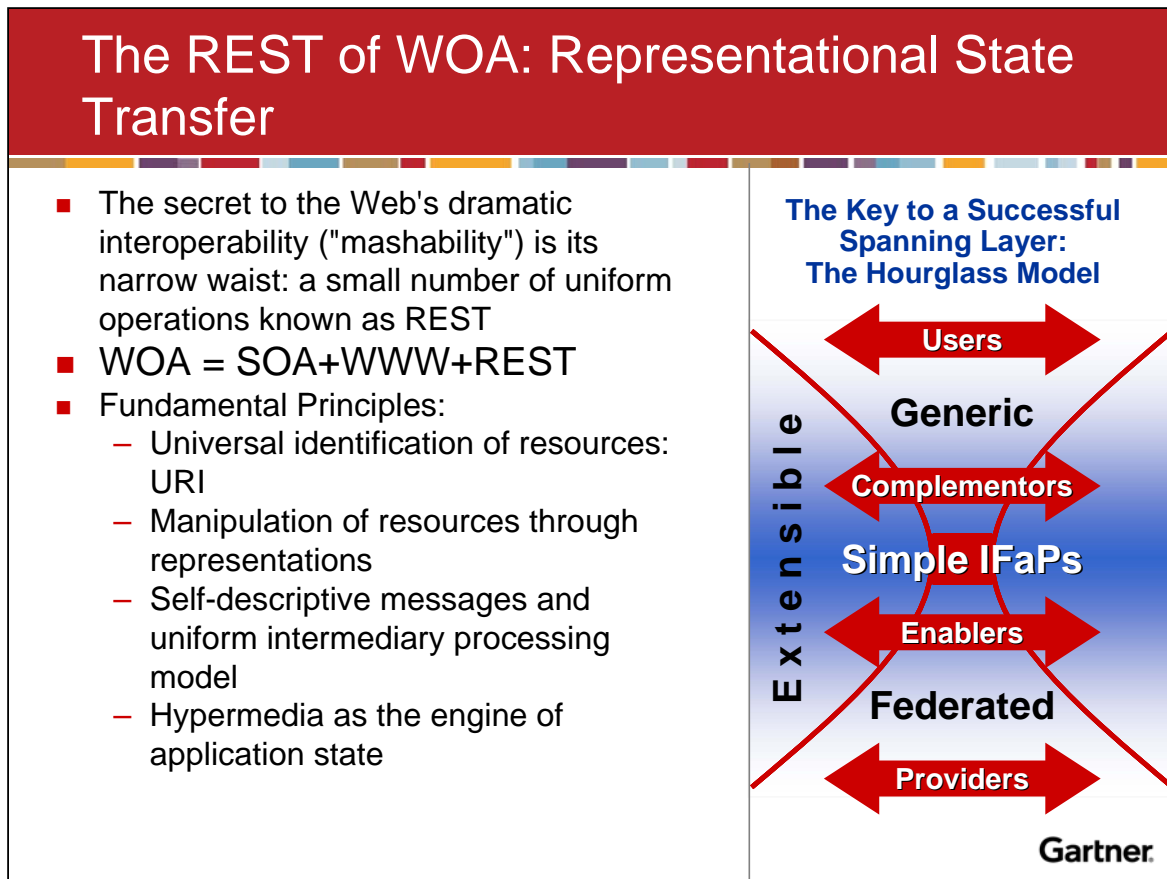
The goal is to create an open-ended community and not a walled garden. By relinquishing control, the provider of an application/site/service will have more users and mass market adoption. MySpace.com is a perfect example of this reality. By taking an old existing concept of a portal, but providing a completely open model that allowed users to creatively modify and extend the space however they wish, MySpace.com generated explosive interest and adoption.

#### The Four Freedoms:

1. Freedom to **use** the resource, for any purpose
2. Freedom to **study** how the resource works and to use that knowledge for any purpose
3. Free to **copy** the resource and to distribute copies to others
4. Freedom to **improve** the resource, adapt it to your needs and distribute your improvements

**Strategic Imperative:** Information and process should be embedded in the Web, not just communicated by the Web.

**Strategic Planning Assumption:** By 2010, WOA will account for 60% of SOA development in the enterprise (0.7 probability).

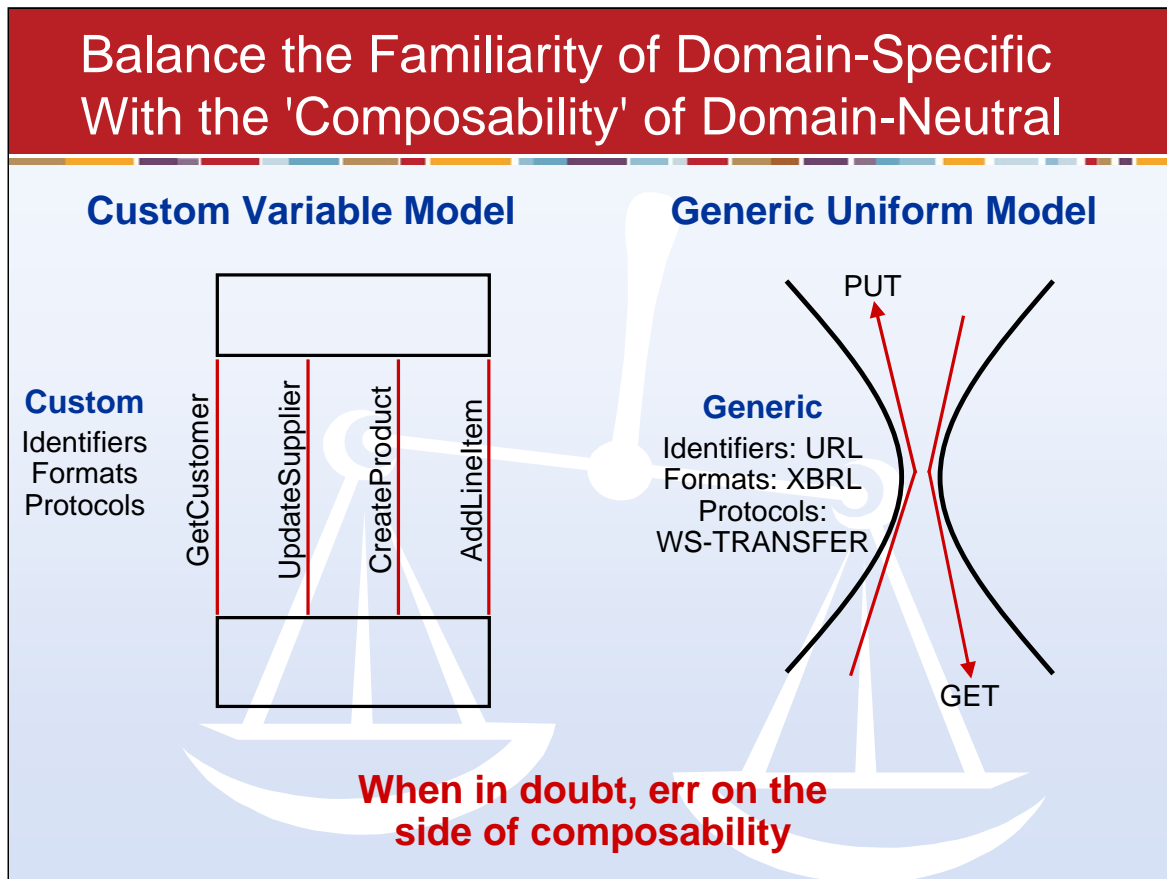


"The name "Representational State Transfer" is intended to evoke an image of how a well-designed Web application behaves: a network of Web pages forms a virtual state machine, allowing a user to progress through the application by selecting a link or submitting a short data-entry form, with each action resulting in a transition to the next state of the application by transferring a representation of that state to the user." –Roy Fielding

While REST is an architectural style that is well known and hotly debated in the developer blogosphere, it is relatively unknown to enterprise ITO management. This is unfortunate because if you strip away the rhetoric and misunderstanding surrounding REST, it is clear that the principles emphasized by REST are precisely those that made the Web the phenomenal success that it is. Simply put, REST describes the Web as a full blown application architecture, not just a GUI architecture or a transport architecture.

*Strategic Planning Assumption: By 2008, leading practice users will adopt strategies for gradually transitioning from the paradigm of the Internet/Web as a strategic information communication medium to a strategic information processing, persistence, sharing and analysis medium (0.8 probability).*

**Strategic Planning Assumption:** By 2008, Web services best practices will have shifted away from ad hoc approaches to accessing and updating stateful resources to a uniform approach based on a small set of state-management operations (0.8 probability).

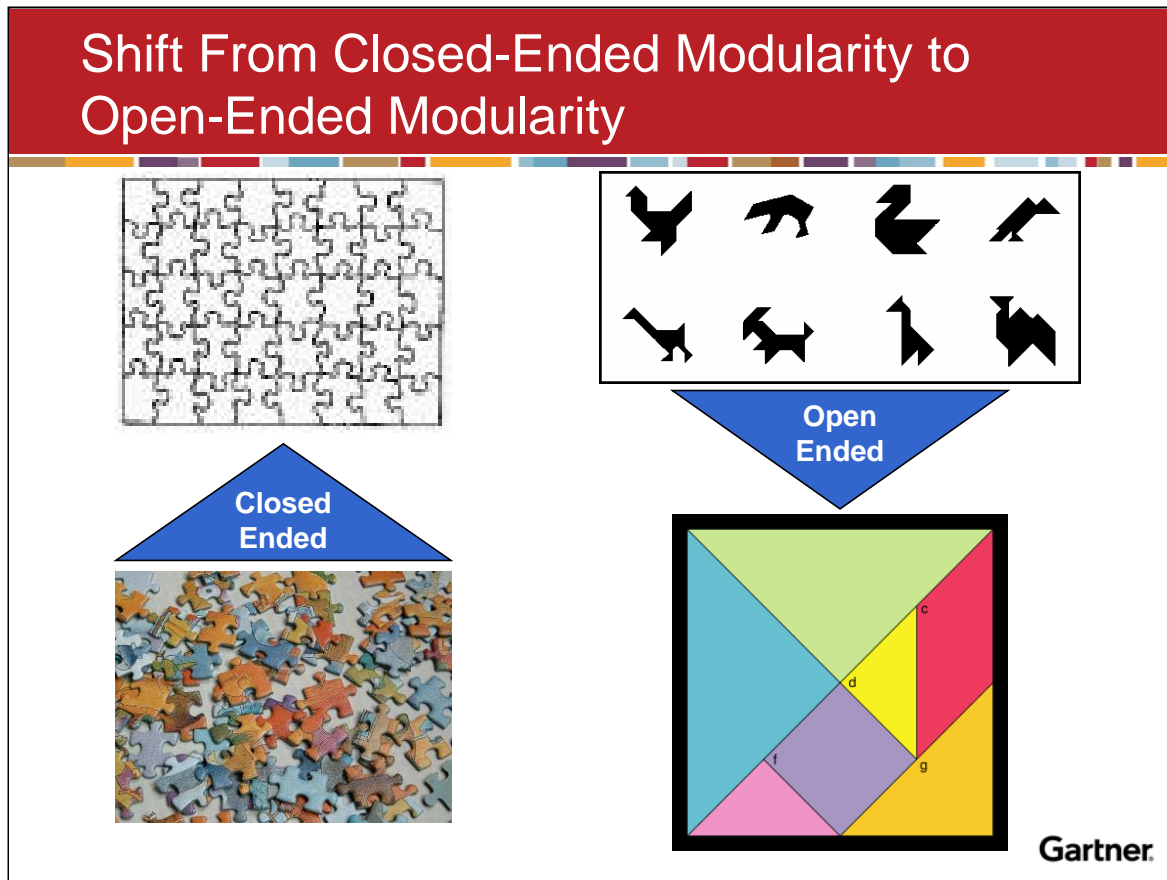


It's not about minimizing verbs and maximizing nouns and clauses. It's about balancing verbs, nouns and clauses to create a language that feels "natural" across a wide variety of similar but distinct domains. For example, RSS feels natural for a wide variety of structured sequences of content (for example, Open Search — a sequence of search results, or Blog Feed — a sequence of new blog entries). Instead of creating a protocol for just purchase orders (even a wide variety of them), consider creating a protocol for any kind of ordering process (such as including shopping cart orders using credit card payment).

*Strategic Imperative: Move beyond the "cargo cult" belief that fewer operations are always better to a deeper understanding of the trade-offs between domain-specific languages and domain-neutral ones.*



**Strategic Planning Assumption:** By 2015, traditional forms of enterprise middleware and application architecture will be superseded by emergent forms of Web architecture (0.8 probability).



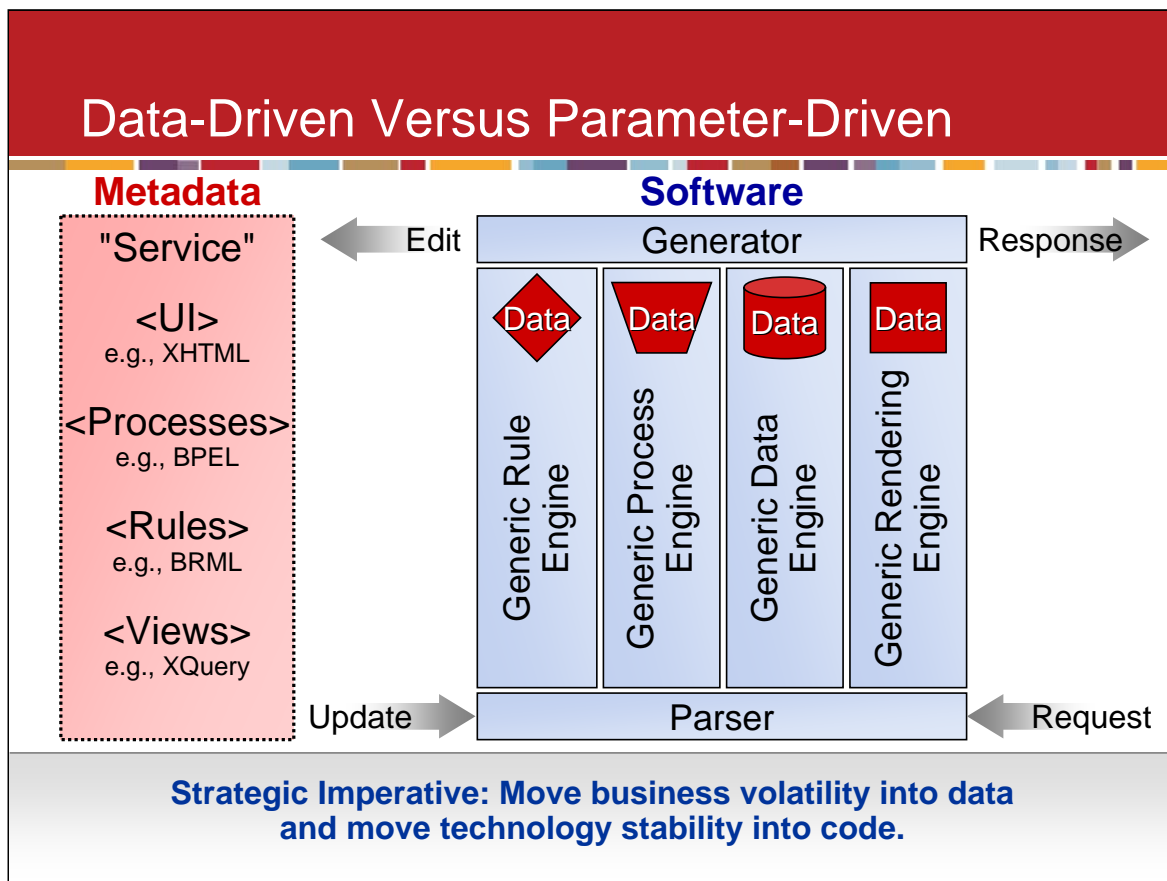
A jigsaw puzzle is modular, but it can only be composed in one way. A tangram is a "tiling" puzzle that is also modular, but can be composed to make an infinite variety of shapes.

You can do open ended with SOAP/WSDL but the conventional wisdom drives you to closed ended.

*Strategic Imperative: Keep three basic concepts in mind when moving to WOA: Less is more, simpler is better, and easy beats hard.*



**Strategic Imperative: Move business volatility into data, and move technology stability into code.**



Put what changes into (meta)data; put what is stable into code. New focus is on modularizing data, not just modularizing code. Rule of Representation: Fold knowledge into data so program logic can be stupid and robust. (From <http://www.faqs.org/docs/artu/ch01s06.html>)

Even the simplest procedural logic is hard for humans to verify, but quite complex data structures are fairly easy to model and reason about. To see this, compare the expressiveness and explanatory power of a diagram of (say) a 50-node pointer tree with a flowchart of a 50-line program. Or, compare an array initializer expressing a conversion table with an equivalent switch statement. The difference in transparency and clarity is dramatic.

Data is more tractable than program logic. It follows that where you see a choice between complexity in data structures and complexity in code, choose the former. More: in evolving a design, you should actively seek ways to shift complexity from code to data.

The Unix community did not originate this insight, but a lot of Unix code displays its influence. The C language's facility at manipulating pointers, in particular, has encouraged the use of dynamically modified reference structures at all levels of coding, from the kernel upward. Simple pointer chases in such structures frequently do duties that implementations in other languages would instead have to embody in more elaborate procedures.

**Strategic Planning Assumptions:** By year-end 2008, 75% of enterprise software providers will have Web-based software as a service delivery model that includes Web APIs to create mashups (0.7 probability). By 2010, Web mashups will be the dominant model (80%) for the creation of composite enterprise applications (0.7 probability).

### Mashups: Web-Centric Composite Applications



#### How and Where Applied

Production			
Opportunistic			
Experimental			
	External Blind Access	External Relationship	Internal

#### ■ Today

- Opportunistic mashups
- Developer centric
- Mashups for new offerings

#### ■ Future

- Enterprise Mashups
- End User Friendly
- Mashups for personal applications

**Gartner.**

A mashup is a Web site or Web application that combines content from multiple sources into a single, integrated presentation. A mashup uses a variety of public interfaces, including APIs, Web service calls, JavaScripts and Web feeds (for example, RSS, Atom) to source the content. The term was inspired by a similar use of the term in pop music, where it refers to the practice of creating a new song by assembling purloined parts of other existing songs. A rich community is growing on the Web, experimenting with mashups based on APIs from eBay, Amazon, Google and host of other companies. Examples include.

- Google, Microsoft and Yahoo provide map APIs that have resulted in mashups of data and geography that in turn drive traffic and advertising.
- Amazon Web Services (AWS) provides access to platform and product data. As of the fourth quarter of 2005, it reportedly had more than 120,000 developers and over 975,000 active seller accounts with many using AWS.
- Amazon, Google and others provide a variety of infrastructure services that can be incorporated into mashups. For example, Amazon simple queue service offers what it claims is a reliable and scalable hosted queue for buffering messages between distributed application components.
- Smashforce is Salesforce.com's code name for its Ajax Web services toolkit. Salesforce is one of the first application software vendors to offer enterprise developers toolkits for this style of Web services.
- FedEx and UPS provide shipping services that can be incorporated into a mashup.

**Strategic Planning Assumptions:** By year-end 2008, more than 90% of public Web sites that have more than 100,000 visitors per day will be using some form of Ajax technology (0.8 probability). By year-end 2008, more than 80% of new Web applications will rely on client-side JavaScript, either explicitly through snippets and widgets, or implicitly through declarative XML models (0.7 probability).

### Rich Internet Applications (RIA) Ajax Is Only the Beginning

#### Ajax

- XHTML + CSS + DOM + XMLHttpRequest

#### Ajax is a subset of RIA

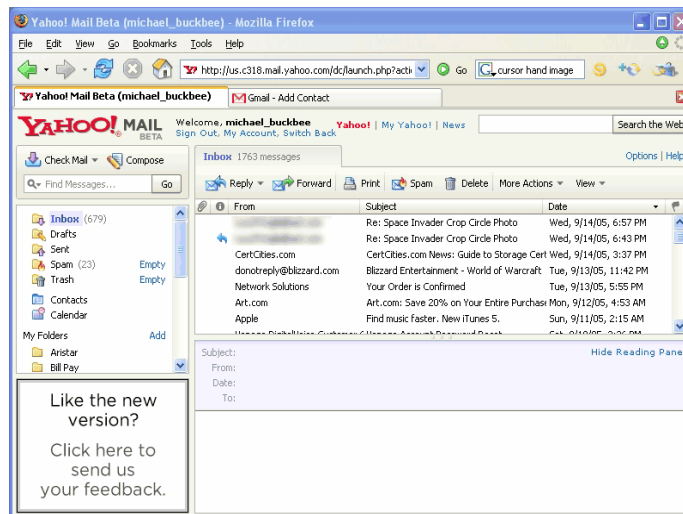
- Flash/Java Plug in
- IBM WCT
- Microsoft WPF

#### Limitations/Issues

- Offline Support
- Security

#### The Future

- Persistent Web
- Environmental UI



<http://www.buzzwordcompliant.net/?p=2>

**Gartner**

Ajax enables browser-based applications to have the interactive look and feel of desktop applications. JavaScript embedded in the Web page handles input from the user and instead of fetching a complete new page, uses XMLHttpRequest to fetch some data (usually in XML format) and then render it on the current Web page by updating the document object model (DOM). This can be done quickly enough with today's high-speed Internet connections to deliver surprisingly responsive interfaces. RIA technology in general, and Ajax technology in particular, can provide substantial improvements in the user experience that result in measurable business value. However, the benefits are not automatic and depend on an awareness of usability-centered design issues and a broad view of ajax beyond the client (i.e., leverage server side processing as part of an Ajax project). In addition users must not ignore the security implications of fine grained interaction

Gartner identifies four levels of Ajax adoption. : 1) snippet— code fragments that can be easily folded into existing applications, 2) widget— self-contained user interface components that can be bolted on, 3) Framework— comprehensive framework providing a development environment but requiring a rewrite of the application; and 4) Full Framework — an extended framework with linkage to a server side platform providing integration to back end systems. Through year-end 2008, the category of Ajax toolkits will remain fragmented, with more than 50 distinct choices, and with no package garnering more than 25% of the market (0.7 probability). Adoption of Ajax-based snippets and widgets will grow rapidly through year-end 2007, after which the growth rate will slow due to the pervasiveness of base-level Ajax use and due to the emergence of "full stack" RIA approaches, such as IBM Rich Client Platform and Microsoft Windows Presentation Foundation (0.7 probability).

Users should expect significant evolution in these models through 2010 as the Web model matures to embrace rich and complex client environments. Ajax represents only one part of an evolving distributed Web model that takes advantage of rich client capabilities and deals with sporadically connected and offline use cases. Other initiatives, such as Microsoft Live and IBM Workplace, also attempt to provide managed environments, assuming more robust client software. Through year-end 2007, there will be many different approaches to adding offline processing to Ajax-enabled applications, but no single package will predominate (0.7 probability).

**Strategic Imperative:** Break down the distinction between Web "content" (XHTML) and Web services data (XML) by creating data structures that are processable as data by machines and viewable as content by people.

### Semantic Hypertext: Pragmatic Semantic Web

#### Principles for designing data formats

- Solve a specific problem
- Start as simple as possible
- Design for humans first, machines second
- Reuse building blocks from widely adopted standards
- Modularity/"embeddability"
- Enable and encourage decentralized development, content, services

#### Example Microformats

- People and Organizations: **hCard**
- Calendars and Events: **hCalendar**
- Opinions, Ratings and Reviews: **VoteLinks, hReview**
- Social Networks: **XFN**
- Tags, Keywords, Categories: **RelTag**

#### Other Semantic Hypertext Approaches

- Structured Blogging
- RDFa
- Embedded RDF

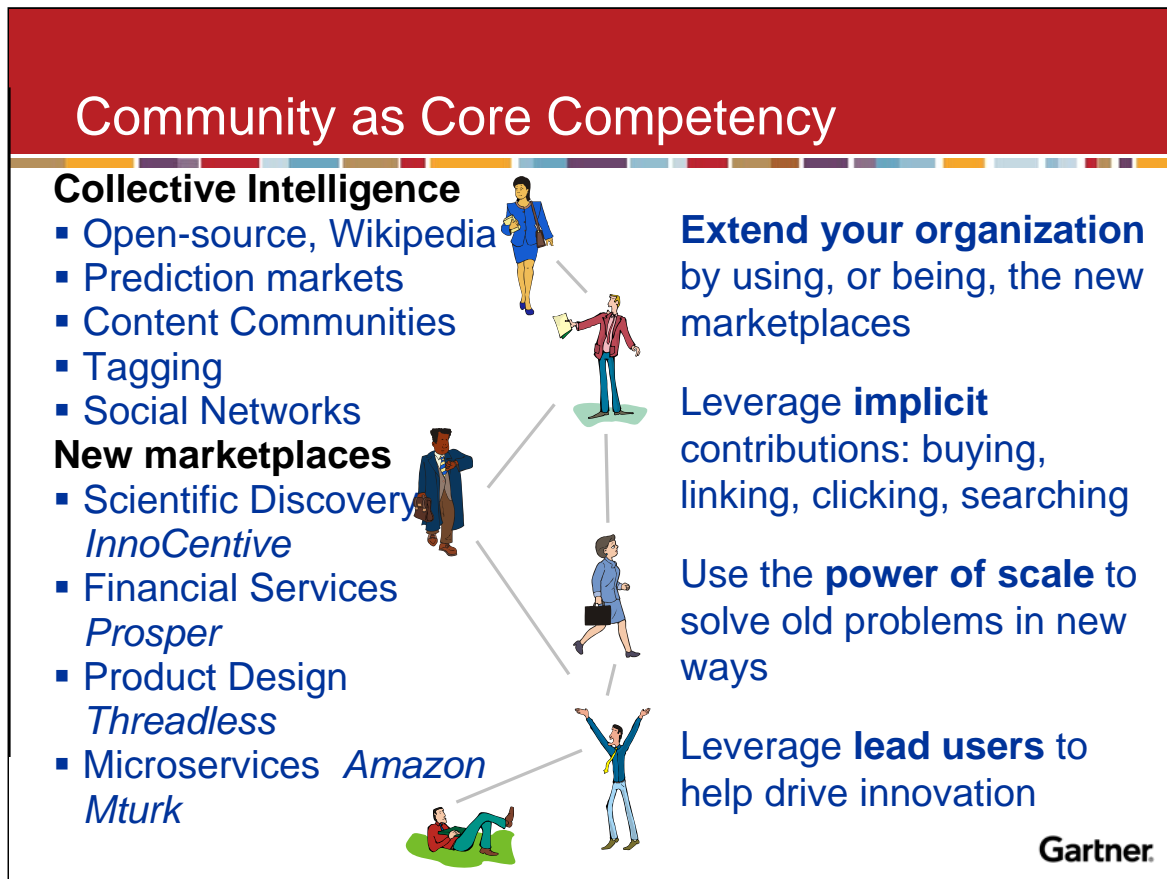
**Gartner.**

Microformats are an emerging set of XHTML-compatible elements and attributes that enables XHTML data to be viewed by people and understood by machines. They signal the beginning of the breakdown of the distinction between structured (tabular) and unstructured data (document). The reality is that documents contain microtables and tables contain microdocuments. This calls for data structures that work well with both paradigms.

*Strategic Imperative: Make change easier and more affordable by more stakeholders. Web services as naively implemented are easy to implement, but are no easier to change than traditional middleware interfaces.*

**2001 Strategic Planning Assumption:** By 2010, 70% of the population in developed nations will spend 10 times longer per day interacting with people in the e-world than in the physical one (0.6 probability).

**2006 Strategic Planning Assumption:** By 2015, more than 100 leading companies will have made or saved at least \$10 million due to collective intelligence (0.6 probability).



Technology has enabled many new types of communities, as well as new ways for communities to collaborate, which in turn has created new sources of information and new styles of creation. Organizations can take advantage of technology-enabled communities by:

- Extending their enterprise boundaries to new sources of talent, even for their core competencies — for example, through "bounty" sites, such as InnoCentive and TopCoder
- Using networked collective intelligence to leverage small contributions from a broad community of motivated, self-selecting contributors
- Taking advantage of the massive scale of worldwide network connectivity to trigger new approaches to difficult problems
- Identifying and leveraging "lead users" (see "Democratizing Innovation" by Eric von Hippel) who can contribute in a major way to design innovation.

*Action Item: Take advantage of new types of community interaction that can extend your enterprise and its creative processes.*

### Case Studies

# Lessons Learned: Two Contrasting Experiences With the Participatory Web

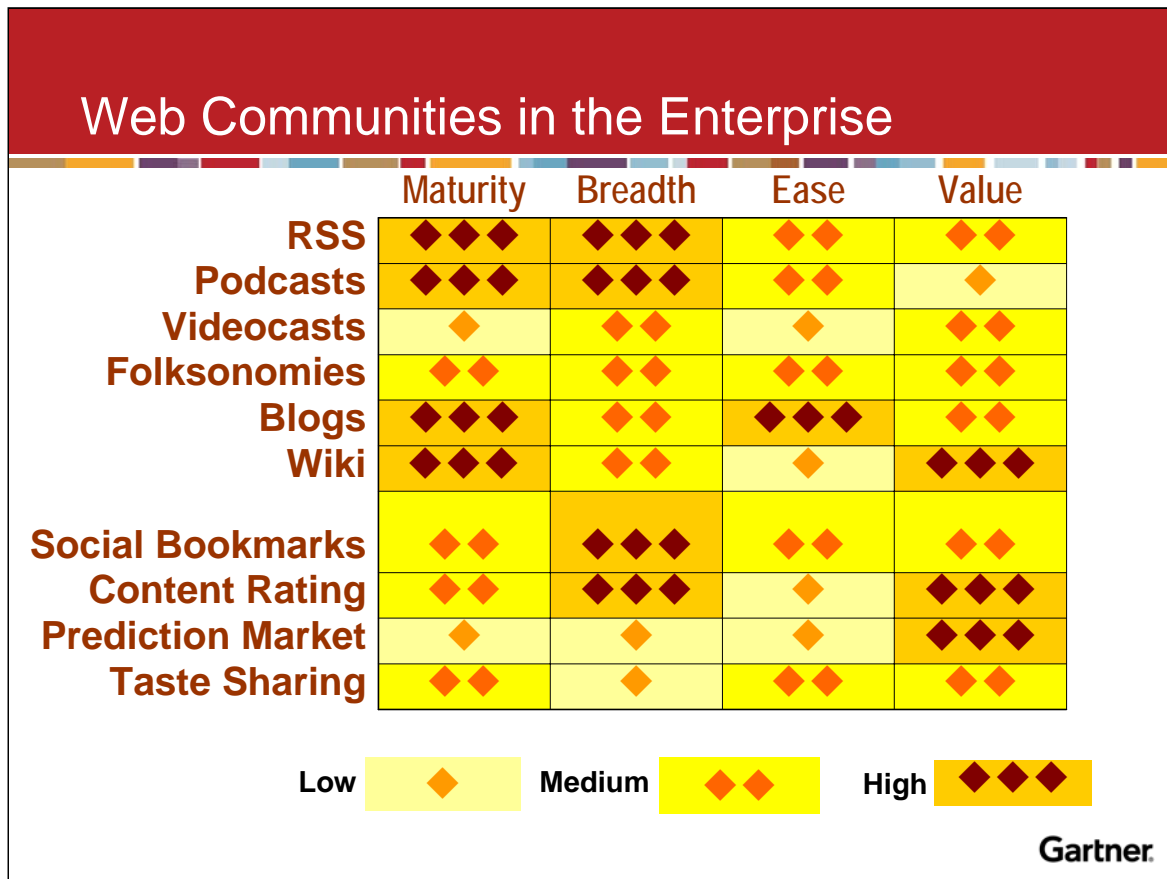
	<h2>LA Times</h2> <p>The case of the aborted 'Wikitorial'</p> <p><b>Goal:</b> Engage readers; increase visibility</p> <p><b>Approach:</b> Enable users to "rewrite" editorials via a wiki</p> <p><b>Result:</b> Experiment halted within days after the site was virtually "mobbed"</p>	<h2>BBC Backstage</h2> <p><i>"Use Our Stuff to Build Your Stuff"</i></p> <p><b>Goal:</b> To encourage innovation and tap into new talent</p> <p><b>Approach:</b> Enable any noncommercial use of some BBC content (news, travel, weather, etc.) in new applications</p> <p><b>Result:</b> A steady stream of new and innovative ways to interact with and display BBC's content</p>	
<div><b>Lessons Learned:</b><ul style="list-style-type: none"><li>- Expect conflict and plan to deal with it</li><li>- Provide stewardship until social controls prove adequate</li><li>- Pick activities that can benefit from refinement and reach consensus</li><li>- Prepare for misuse and vandalism</li><li>- Discourage anonymity</li><li>- Less control means more participation</li></ul></div> <div><b>Gartner.</b></div>			

Tapping into the potential of Webwide collaboration needs to be done with care. The two cases here illustrate two contrasting experiences. In a short-lived experiment, the Los Angeles Times withdrew its offer to readers to enable them to "rewrite" editorials via a wiki (or wikitorial) after salacious content was posted on the site. Today, invective and hyperbole run strong, but anonymous posts, blogs, online reviews and mail bombs are the chosen tools for many.

In another experiment called BBC Backstage, the BBC enabled some BBC content to be accessed through standard protocols, such as RSS, and "remixed" in new noncommercial applications. Dozens of applications have appeared that demonstrate innovative uses of BBC's content (such as autolinking stories to Wikipedia entries and overlaying traffic information on Google maps — which also is experimenting with open APIs).

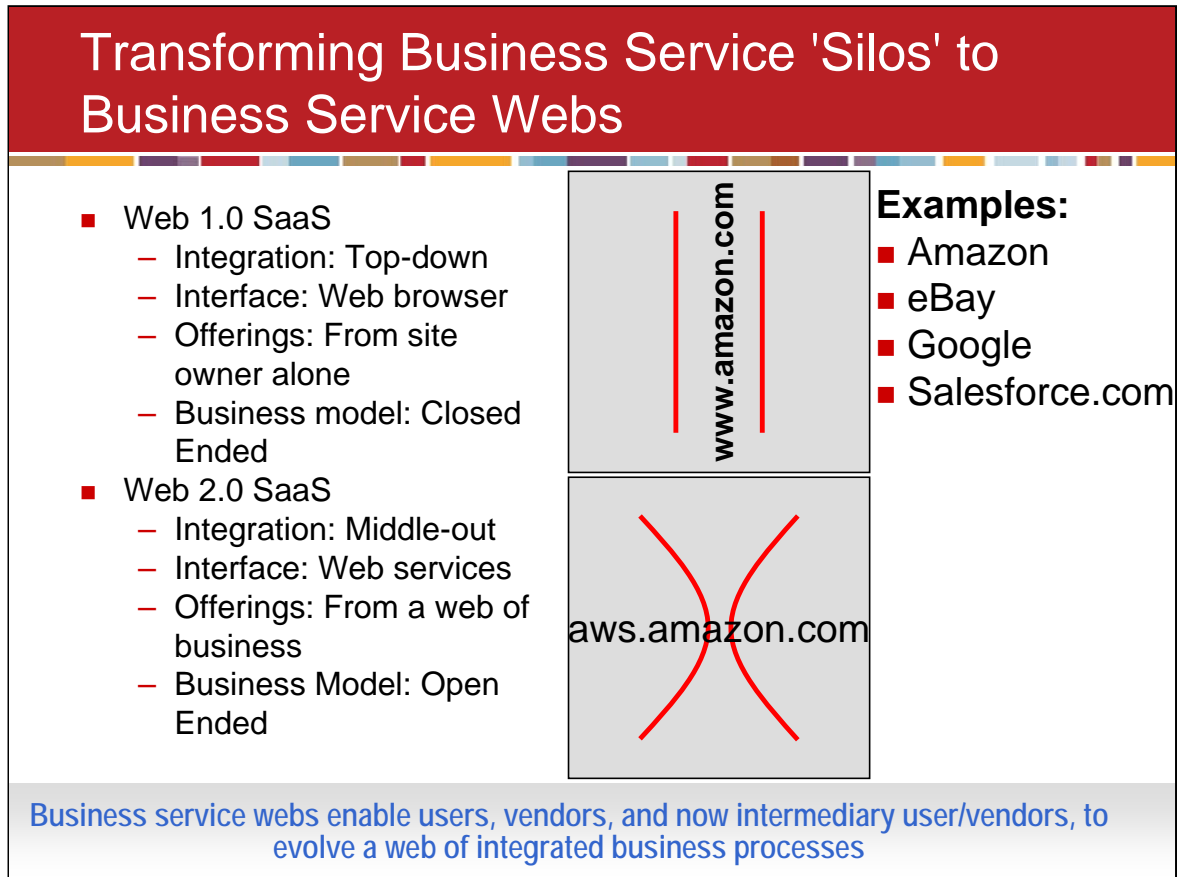
In both cases, loosening control resulted in more participation. One failed, but the other succeeded in anticipating and planning for contingencies, and in channelling the creative energy towards a meaningful end.





All factors are focused on use of the target applications within the enterprise as opposed to use on the public Web. **Maturity:** The extent to which the tools and applications are mature enough for safe and effective use within the enterprise. Highest marks are provided where the capability integrates or interoperates with existing enterprise systems (e.g., enterprise content management) and security models. Lowest marks are given to external hosted services (e.g., an external web site providing hosted wiki services) that do not provide explicit capabilities to isolate, protect and manage corporate data separately. General market maturity factors (tool stability and capability, vendor viability, etc.) are also considered. **Breadth of Impact:** This criteria refers to the number of people in an organization that are likely to be impacted by a particular application. It mainly looks at the number of people that would use the capability either explicitly or as a embedded and hidden capability in an enterprise system. **Ease:** The ease of deployment and use of the applications as well as the ease with which the application can be integrating into an enterprise environment. This includes technical integration (e.g., links to existing content management systems, access security models, etc.) as well as cultural integration (e.g., enabling or supporting user adoption and use). **Value:** The potential impact the application is likely to have on business activity. This includes improved productivity and decision support for either task or knowledge workers. Value that is indirect or of little economic value generates a low rating. Value that is clear and direct but of moderate economic value generates a medium rating. High impact is value that is clear, direct and of significant economic impact. The ratings reflect an overall evaluation. More detailed scores would consider specific industry, user and use factors.



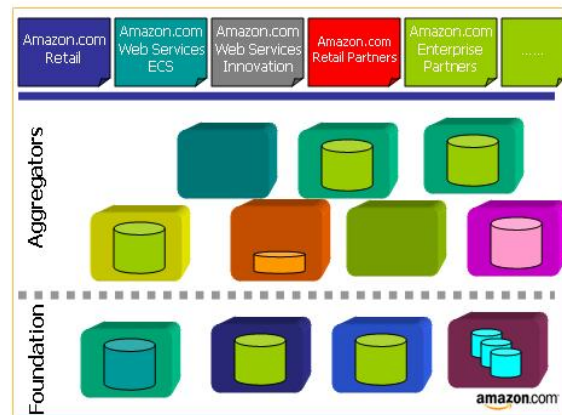


#### Key Attributes of Business Service Webs:

- **Multiple Revenue Streams** — Traditional: tangible product sale; New: pricing models (usage, subscription, derivative/commission, revenue sharing), advertising models (impression, intent, conversion), micropayments.
- **A Web of Business Services** — Web as a business application platform (syndication of content/capabilities); Get into use of syndication schemes, advertising etc. to generate revenue; Concept is more integrative than traditional supplier model; Users and vendors evolve a web of integrated business processes.
- **Open Business models** — Allows a high degree of mashup/reuse of capabilities that enable others to create new offerings ("collaborative offerings"); Delivering business process as a service to be remixed (the business side of mashup).
- **Continuous Innovation & collaborative offerings** — Continually looking for areas where you can get out of things that are not central to your value proposition, differentiation, or competitive advantage, and adding new things that are.

### Example: Amazon's Business Service Web

- Retail partners - Integration at the data level
  - Individual Sellers
  - Merchants
- Enterprise retail partners — Integration at the services level
  - Web Site Hosting & Discovery
  - Item Management
  - Ordering
  - Fulfillment
  - Customer Service
- Associates — Consuming Amazon Data & Services
  - Amazon.com E-Commerce Web Services
- Internet Innovation Services
  - Elastic Compute Cloud, Simple Storage, Simple Queue Service



**Gartner.**

Amazon has completely architected its systems around SOA to enable it to become the services "platform" for a web of third-party applications. The diagram on the right shows the layered SOA that Amazon has built out during the past few years. Listed here are the different categories of services that Amazon offers.

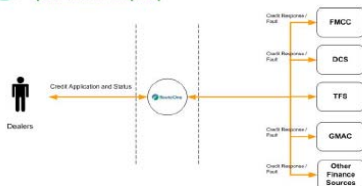
- Salesforce.com as a web services platform: <http://www.itwriting.com/blog/?postid=471>
- Why over 40% of Salesforce.com's traffic is Web Services:  
[http://www.cfry.net/blog/spikes/archives/2006/07/why\\_over\\_40\\_of.html](http://www.cfry.net/blog/spikes/archives/2006/07/why_over_40_of.html)
- DreamForce '06: <http://www.salesforce.com/conference>

Note how Salesforce.com now places AppExchange at the center of its architecture. This signals its shift in thinking from being a closed architecture built on only by Salesforce.com to being an open-ended architecture being built on by a growing Web of participants.

© 2006 Gartner, Inc. and/or its affiliates. All rights reserved. Reproduction and distribution of this publication in any form without prior written permission is forbidden. The information contained herein has been obtained from sources believed to be reliable. Gartner disclaims all warranties as to the accuracy, completeness or adequacy of such information. Gartner shall have no liability for errors, omissions or inadequacies in the information contained herein or for interpretations thereof. The reader assumes sole responsibility for the selection of these materials to achieve its intended results. The opinions expressed herein are subject to change without notice.

### Example: RouteOne

#### XS40 Customer Example



"DataPower's XS40 delivers the performance required for comprehensive XML security functions, meaning that we will not have to sacrifice performance for protection."

Joel Gruber  
RouteOne CIO



- ❑ Links 22,000 auto dealerships to financing sources
  - ❑ Loan application secured with no performance degradation
  - ❑ Encryption at the field level
  - ❑ Digital signature/verification
  - ❑ Strong auditing and non-repudiation functions
  - ❑ DataPower outperformed nearest competitor by a factor of 15



Copyright 2003 DataPower, confidential

16

**Business-defined Services**

**XML documents not objects**

**SOAP as an envelope not a binding**

**WSDL for descriptions not code generation**

**BPEL to orchestrate services**

**Gartner.**

RouteOne's primary hardware configuration uses Sun Servers, running the Solaris Operating System. For system reliability, security, and dependability, RouteOne primary hardware also includes Cisco routers, switches, load balancers, and firewalls. The solution architecture of the system is designed for maximum reliability and functionality, utilizing: Browser-based J2EE technologies; Service-oriented architecture; High availability design and industry best practices; Offsite hosting, n+1 configurations in dual sites

Key components include:

- JAVA J2EE
- IBM HTTP Apache Server
- IBM Websphere
- Sun SeeBeyond – Messaging and Integration Services
- Sun Java System Access Manager
- Oracle Database
- Hyperion Portal and Reports
- DataPower XS40

### Conclusions

- ✓ **While Web 2.0 is a major implementation trend among emerging Web-based businesses, it is only a major investigatory trend among traditional enterprises**
- ✓ **Enterprises are beginning to understand that Web 2.0, WOA and SOA are not technologies one buys, but design principles one applies; and Web design principles are gaining momentum**
  - ✓ Move business volatility into data and technology stability into code.
  - ✓ Understand trade-offs between domain-specific languages and domain-neutral ones.
  - ✓ Empower stakeholders with the freedom to responsibly use, study, copy and change the system.
  - ✓ Embrace consumers as an integral part of the application and content development process.
  - ✓ Embrace Web mashups as the model to create composite enterprise applications and opportunistic user applications.
- ✓ **The Web continues to grow as an opportunity and threat to traditional enterprises**

**Gartner.**

Web-based businesses see themselves as different from and competitive with traditional enterprises in terms of business models, community interactions via the Web and technical architectures. These businesses and the evolution of the public internet will have deep and profound impact on traditional enterprises. Companies must understand these implications across technology, community and business model dimensions. Successful companies will apply lessons learned to enhance and evolve existing enterprise models while looking for threats/opportunities emerging from the pure-Web world.

Keep three basic concepts in mind when moving to WOA: Less is more, simpler is better, and easy beats hard.

---

---

**This is the end of this presentation. Click any where to continue.**