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1. Introduction

“Web 2.0” is a vogue term which describes a trend in the use of the Internet that aims to enhance creativity, information sharing, and most notably, collaboration among users. These concepts have led to a fundamental shift towards open, flexible and participatory web-based communities and hosted services such as social networking sites, wikis, blogs, and folksonomies.

Web 2.0 applications have changed how people interact with the web. The communication and collaboration tools that empower individuals in their personal lives are now emerging in the workplace.

This paper includes a definition of Web 2.0 and its benefits, followed by a very holistic approach for its implementation.

2. What is Web 2.0?

The term “Web 2.0” was coined by O’Reilly Media in 2004 and refers to the second generation of Internet-based services such as social networking sites, wikis and communication tools that emphasize online collaboration and sharing among users. Tim O’Reilly summarized Web 2.0 thusly: “Web 2.0” is the business revolution in the computer industry caused by the move to the Internet as platform, and an attempt to understand the rules for success on that new platform. Principal among those rules is this: Build applications that harness network effects to get more people to use them.” In short, the foundation of Web 2.0 is collaboration.

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In the opening talk of the first Web 2.0 Conference, which was held on October 5-7,

2004, in San Francisco ^{1 2}, O’Reilly and John Battelle summarized what they saw as the themes of Web 2.0. They argued that the web had become a platform, with software above the level of a single device, leveraging the power of the “Long Tail,” and with data as a driving force.

[The phrase The Long Tail (as a proper noun with capitalized letters) was first coined by Chris Anderson in an October 2004 Wired magazine

Article ¹ to describe the niche strategy of businesses, such as Amazon.com or Netflix, that sell a large number of unique items in relatively small quantities.]

According to O’Reilly and Battelle, Web 2.0 is an architecture of participation, in which users can contribute website content and create network effects. Web 2.0 technologies tend to foster innovation in the assembly of systems and sites composed by pulling together features from distributed,

independent developers. This could be seen as a kind of “open source” or possibly “Agile” development process, consistent with an end to the traditional software adoption cycle, typified by the so-called “perpetual beta.”

O’Reilly provided examples of companies or products that embody these principles in his description of four levels in the hierarchy of Web 2.0-ness:

- **Level 3** applications, the most Web 2.0-oriented, only exist on the Internet, deriving their effectiveness from the inter-human connections and from the network effects that Web 2.0 make possible, and growing in effectiveness as people make more use of them, i.e. eBay, Craigslist, Wikipedia, del.icio.us, Skype, Dodgeball, and AdSense.
- **Level 2** applications can operate offline but gain advantages from going online, i.e. Flickr, which benefits from its shared photo database and from its community-generated tag database.
- **Level 1** applications operate offline but gain features online, i.e. Writely (now Google Docs & Spreadsheets) and iTunes (because of its music store portion).
- **Level 0** applications work as well offline as online, i.e. MapQuest, Yahoo! Local, and Google Maps (mapping applications using contributions from users to their advantage could rank as Level 2).
- **Non-web** applications like email, instant messaging, and the telephone fall outside the above hierarchy³.

The idea of Web 2.0 can also refer to a transition of some websites from isolated information silos to interlinked computing platforms that function as locally available software in the perception of the user. Web 2.0 also includes a social element where users generate and distribute content, often with freedom to share and reuse. This can result in a rise in the web’s economic value to businesses, as users can perform more activities online using the following applications:

Blogs

Blogs (a short form of the term “web log”) are websites that can be private, as in most cases, or for business purposes with regular entries of commentary, descriptions of events, or other material such as graphics or video. Many blogs provide commentary or news on a particular subject; others function as more personal online diaries. Readers’ ability to leave comments in an interactive format is an important part of many blogs.

Wikis

A wiki is a collection of web pages designed to enable anyone who accesses them to contribute or modify content, using a simplified markup language^{4 5}. Wikis are often used to create collaborative websites and to power community websites. The collaborative encyclopedia Wikipedia is one of the best-known wikis⁵. Wikis are used in business to provide intranets and Knowledge Management systems. Ward Cunningham, developer of the first wiki software, WikiWikiWeb, originally described it as “the simplest online database that could possibly work.”⁶

Really Simple Syndications, RSSs

RSS is a family of web feed formats used to publish frequently updated content such as blog entries, news headlines, and podcasts in a standardized format ⁷. An RSS document (which

is called a “feed,” “web feed,” ⁸ or “channel”) contains either a summary of content from an associated website or the full text. RSS makes it possible for people to keep up with websites in an automated manner that can be piped into special programs or filtered displays ⁸.

Mashup

A mashup is a web application that combines data from more than one source into a single integrated tool. For example, using cartographic data from Google Maps to add location information to real estate data, thus creating a new and distinct web service that was not originally provided by either source.

Folksonomy(ies)

Folksonomy (also known as collaborative tagging, social classification, social indexing, and social tagging) is the practice and method of collaboratively creating and managing tags to annotate and categorize content. In contrast to traditional subject indexing, metadata is generated not only by experts but also by creators and consumers of the content. Usually, freely chosen keywords are used instead of a controlled vocabulary ⁹.

3. Is Web 2.0 Really Different?

Many of the ideas of Web 2.0 were implemented on networked systems well before the term Web 2.0 appeared. If you have used LinkedIn, Amazon, Netflix, and Flickr, and collaborative tools such as Lotus Notes and Lotus Dominos, you will probably find familiar concepts in Web 2.0. For this very reason, the critics argue that Web 2.0 does not represent a new version of the World Wide Web at all, but merely continues to use so-called “Web 1.0” technologies and concepts. However, businesses will also find much that is new, and that familiar tools and concepts are applied with greater impact on the business and bottom-line results, which will lead to satisfied clients and, eventually, increased shareholders’ value.

4. Why is Web 2.0 Important?

Some businesses have truly mastered the implementation of Web 2.0 technologies and therefore have delighted their clients and increased value for their shareholders.

Depending upon the type of business, Web 2.0 can have various benefits, e.g.:

- **Increased Revenues**
Businesses can harness the collective capability of collaboration and self organization to spur innovation, enhance growth, and drive dramatic improvements in productivity that can increase

revenues, reduce time to market, improve marketing ROI, and lead to better and faster development of products and services.

- **Reduced Costs**
The ability to leverage massive communication and collaboration capabilities at low cost across millions of global users is attractive to many businesses due to self service applications for customers, employees, and partners.
- **Improved Online Experience for end users**
Rich Internet application techniques such as AJAX, Adobe Flash, Flex, Java, Silverlight, and Curl have evolved due to Web 2.0, improving user experience in browser-based applications. The technologies allow a web page to request an update for a part of its content, and to alter that part in the browser without refreshing the entire page at the same time.

5. Implementation Approach

Despite the benefits of Web 2.0, few businesses have been agile enough to upgrade their systems to reap these benefits. Many more have the potential to reap the benefits; for a successful implementation of Web 2.0, use the following holistic and pragmatic approach.

- Customer Needs
- Management Commitment
- Fact-Based Decisions
- Process is the Engine
- Collaboration
- Perfection
- Manage Risks
- Open Standards and Agility
- Innovation

5.1. Emphasize Customer Needs



Businesses often write mission statements promising to “meet or exceed customer expectations and requirements” but fail to understand their customers’ expectations or even their requirements.

To successfully implement Web 2.0, a business must understand its customers’ needs, meet those needs, and exceed their expectations. Measuring performance begins with the customer, and improvements are defined by the impact on customer satisfaction, eventually increasing the shareholders’ value.

5.2. Seek Senior Management Commitment



Businesses rely on senior management. No program can be implemented without their support, particularly not Web 2.0, which can be messy, frustrating, and difficult to implement. It can raise concerns of security, privacy, and intellectual property.

Therefore, senior management must establish a unity of purpose, believe in the benefits of Web 2.0, set the direction for the successful implementation of Web 2.0, and create an environment that encourages people to achieve this objective.

5.3. Make Decisions Based on Facts



While many business decisions are based on intuitions and assumptions, businesses perform better when their decisions are based on facts. Therefore, business should start a Web 2.0 initiative after carefully conducting a Market and Competitive Analysis and defining the Web 2.0 business model based on facts specific to their business.

5.4. Process is the Engine of Success



Mastering processes is not just essential, but is also a way to build competitive advantage. Processes should not be confined to a specific functional area; rather, processes should be analyzed and designed based on the overall Web 2.0 business model (i.e. process within functional silos versus cross functional boundaries).

Process can be the engine of success in designing new products and services, measuring performance, improving efficiency and customer satisfaction, or even operating the business with the new Web 2.0 business model.

Businesses should also define the process to integrate a set of applications that enable a plug and play experience from the moment of installation, resulting in a lower total cost of ownership. Furthermore, a common user interface between applications and a common navigation menu will contribute to lower support and training costs and higher adoption by the end user community.

5.5. Strive for Collaboration

Before Web 2.0 can successfully provide collaboration among various users and communities, businesses must strive to collaborate with their partners, vendors, and other stakeholders for a successful implementation. People are more willing to collaborate once they learn how their roles fit into the “big picture” and can recognize and measure the interdependence of activities in all parts of a process. To encourage this behavior, people should be recognized and rewarded not only for the success of their roles and activities but also how well they understand the big picture and collaborate with others for the overall success of the organization.

5.6. Strive for Perfection



No organization will ever get closer to perfection without initiating new ideas and approaches – which always involves risks. If people see possible ways (improved service, lower cost, or new capabilities) to get closer to perfection but are too afraid of the consequences of the mistakes, they will never try. Managers should be educated in risk management and encouraged to take calculated risks to get closer to perfect. This is never ending cycle for agile businesses.

5.7. Manage Risks



Businesses must use a structured approach to manage uncertainty through risk assessment, develop strategies to manage it, and mitigate risk using managerial resources.

The objective of risk management is to reduce different risks related to a pre-selected domain to the level accepted by the organization. It may refer to numerous types of threats caused by environment, technology, humans, businesses, and politics. On the other hand, it involves all means available to a risk management entity (person, staff, and organization).

Software applications should be fully tested, supported and integrated with the existing infrastructure. Ideally, software applications will be built for and certified on the hardware upon which they will operate. Finally, the application must come from a trusted vendor with a network of trained, local support resources.

To succeed in an enterprise, a Web 2.0 application must include enterprise-grade security controls, including group-, user-, and role-based access functionality along with standards-based (JOSSO) single sign-on capabilities. Businesses should require multi-platform single sign-on with reverse proxy support, and it should all be available from a centrally managed and certified administration console.

The most scalable and reliable Web 2.0 software solutions should be selected to ensure that the software can scale to support thousands of concurrent internal and external users.

5.8. Strive for Open Standards and Agility

Businesses must strive to adopt open standards and should consider lightweight business models enabled by the syndication of content and service and by the ease of pick-up by early adopters¹⁰. As a result, businesses will not only have enormous potential to allow more rapid and much less expensive implementation of Web 2.0, but also the consequent ability to find solutions with the right information in the right place at the right time.

5.9. Strive for Innovation



Web 2.0 offers more than mere look and feel and heavy reliance on AJAX as it is exhibited on some Web 2.0 websites. Web 2.0 offers an innovative Freemium business model with the idea that core basic services are given away for free, in order to build a large user base by word-of-mouth marketing. Premium service would then be offered for a price. You should also strive for innovation in your businesses to identify or create completely new products or services that you can offer free of charge to your clients, with minimum additional cost to your business.

6. Conclusion

Web 2.0 enhances creativity, information sharing, and, most notably, collaboration among users. Businesses that have mastered the art of Web 2.0 have successfully delighted their clients and increased the value for their shareholders.

The implementation approach we have suggested should help you to add simplicity, sense, and speed to the process, allowing you to exploit first-mover advantages while they are available.



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