Globalization and the Semantic Web 2.0: human contact and cultural and linguistic standardization

Par ***Djamila BENCHENNANE***
Department of the English Language, Faculty of Letters and Languages,
University Mustapha Stambouli, Mascara

Introduction

When talking about the Web 2.0 we refer to a query that may have as many answers as the number of people out there using the term. a whole new level of confusion seems to have set in. To help people understand the ideas behind buzzwords like Web 2.0 let's go through what exactly this term means and how they apply to your ecommerce business. The first implementation of the web represents the Web 1.0, which, according to Berners-Lee, could be considered the "read-only web." In other words, the early web allowed us to search for information and read it. There was very little in the way of user interaction or content contribution.

We intend to link Globalization and the Semantic Web 2.0 and explain how this has led to the development of societies thanks to the fact of surfing and being in touch with each other no matter how distances separate them. To conclude, we will then try to give some recommendations as far as the web 2.0 is concerned to provide surfers with tips on how to take benefits from using it .Since in the future, today's youth will be required to actively address economic, environmental, and cultural problems. In order to be active problem solvers, they should be

able to think with clarity, imagination, and empathy. Students can begin to think critically and globally in a world that, increasingly, will require a politically and socially active citizenry.

Shopping carts are Web 1.0

Shopping cart applications, which most ecommerce website owners employ in some shape or form, basically fall under the category of Web 1.0. The overall goal is to present products to potential customers, much as a catalog or a brochure does — only, with a website, you can also provide a method for anyone in the world to purchase products. The web provided a vector for exposure, and removed the geographical restrictions associated with a brick-and-mortar business.

Currently, we are seeing the infancy of the Web 2.0, or the "read-write" web if we stick to Berners-Lee's method of describing it. The newly-introduced ability to contribute content and interact with other web users has dramatically changed the landscape of the web in a short time. It has even more potential that we have yet to see. For example, just look at YouTube and MySpace, which rely on user submissions and the potential, becomes more clear. The Web 2.0 appears to be a welcome response to a demand by web users that they be more involved in what information is available to them.

General goals

Most website owners want the following: Their goal for a website was to establish an online presence and make their information available to anyone at any time. I like to call this "brick-and-mortar thinking applied to the web," and the web as a whole hasn't moved much beyond this stage yet. Shopping cart applications, which most ecommerce website owners employ in some shape or form, basically fall under the category

of Web 1.0. The overall goal is to present products to potential customers, much as a catalog or a brochure does — only, with a website, you can also provide a method for anyone in the world to purchase products. Currently, we are seeing the birth of the Web 2.0, or the "read-write" web if we stick to Berners-Lee's method of describing it. The newly-introduced ability to contribute content and interact with other web users has dramatically changed the landscape of the web in a short time. For example, if we glance at YouTube and MySpace, which rely on user submissions and the potenital becomes more clear. The Web 2.0 appears to be a welcome response to a demand by web users that they be more involved in what information is available to them. Now, it's important to realize that there are a staggering number of definitions of what constitutes a "Web 2.0 application."

For example, the perception exists that just because a website is built using a certain technology (like Ruby on Rails), or because it employs Ajax in its interface, it is a Web 2.0 application. From the general, bird's-eye view we are taking, this is not the case; our definition simply requires that users be able to interact with one another or contribute content. Developers, for example, have a much more rigid definition of Web 2.0 than average web users, and this can lead to confusion. This in turn leads us to the rumblings and mumblings we have begun to hear about Web 3.0, which seems to provide us with a guarantee that vague web-versioning nomenclature is here to stay. By extending Tim Berners-Lee's explanations, the Web 3.0 would be something akin to a "read-write-execute" web. However, this is difficult to envision in its abstract form, so let's take a look at two things I predict will form the basis of the Web 3.0 — semantic markup and web services. Semantic markup refers to the communication gap between human web users and computerized applications. One of the largest organizational

challenges of presenting information on the web is that web applications aren't able to provide context to data, and, therefore, can't really understand what is relevant and what is not. Through the use of some sort of semantic markup, or data interchange formats, data could be put in a form not only accessible to humans via natural language, but able to be understood and interpreted by software applications as well.

While it is still evolving, this notion — formatting data to be understood by software agents — leads to the "execute" portion of our definition, and provides a way to discuss web services.

Some views of Web 2.0

It's important to realize that there are a staggering number of definitions of what constitutes a "Web 2.0 application." For example, the perception exists that just because a website is built using a certain technology (like Ruby on Rails), or because it employs Ajax in its interface, it is a Web 2.0 application. From the general, bird's-eye view we are taking, this is not the case; our definition simply requires that users be able to interact with one another or contribute content. Developers, for example, have a much more rigid definition of Web 2.0 than average web users, and this can lead to confusion.

This in turn leads us to the rumblings and mumblings we have begun to hear about Web 3.0, which seems to provide us with a guarantee that vague web-versioning nomenclature is here to stay. By extending Tim Berners-Lee's explanations, the Web 3.0 would be something akin to a "read-write-execute" web. However, this is difficult to envision in its abstract form, so let's take a look at two things I predict will form the basis of the Web 3.0 — semantic markup and web services.

Semantic markup refers to the communication gap between human web users and computerized applications. One of the largest organizational challenges of presenting information on the web is that web applications aren't able to provide context to data, and, therefore, can't really understand what is relevant and what is not. Through the use of some sort of semantic markup, or data interchange formats, data could be put in a form not only accessible to humans via natural language, but able to be understood and interpreted by software applications as well.

While it is still evolving, this notion — formatting data to be understood by software agents — leads to the "execute" portion of our definition, and provides a way to discuss web services.

Some views of Web 3.0

A web service is a software system designed to support computer-to-computer interaction over the Internet. Web services are not new and usually take the form of an Application Programming Interface (API). The popular photography-sharing website Flickr provides a web service whereby developers can programmatically interface with Flickr to search for images. Currently, thousands of web services are available. However, in the context of Web 3.0, they take center stage. By combining a semantic markup and web services, the Web 3.0 promises the potential for applications that can speak to each other directly, and for broader searches for information through simpler interfaces.

What's important to understand, I think, is that the nomenclature with which we describe these differing philosophies should not be taken too seriously. Just because a website does not employ Web 2.0 features does not make it

obsolete. After all, a small ecommerce website trying to sell niche products may not have any business need for users to submit content or to be able to interact with each other.

Most importantly, you don't need to upgrade anything, get new software or anything like that. These are abstract ideas used to contemplate the challenges developers face on the web in addition to theories about how to address them. For example, Global Grids Web 2.0 and Globalization in Indiana University Informatics Colloquium January 12 2007 Geoffrey Fox Computer Science, discussed the role of Web 2.0 and Cyberinfrastructure (also called e-infrastructure and implemented by Grid technology) in a variety of global and globalization activities. These include the linking of researchers and data worldwide in many fields; new generations of digital libraries and tools like Google Scholar; study of ice-sheets at the poles and the dramatic impact of Global warming; the study of earthquakes across the Pacific ocean; the linking of apparel manufacturers in Asia to designers in different continents and the command and control system for the Department of Defense. Conversely Web 2.0 and Cyberinfrastructure are inherently democratic and support the broadening of communities involved in science and business They allow members of the Navajo Nation to participate in society and commerce from their homeland while many see this infrastructure as allowing broader participation in Science. We discuss recent efforts to implement these dreams!

Usefullness of Cyberinfrastructure

-It supports distributed science – data, people, and computers

-It Exploits Internet technology (Web2.0) adding (via Grid technology) management, security, supercomputers etc.

-It has two aspects: parallel – low latency (microseconds) between nodes and distributed – highish latency (milliseconds) between nodes

-Parallel needed to get high performance on individual 3D simulations, data analysis etc.; must decompose problem

-Distributed aspect integrates already distinct components

-Cyber infrastructure is in general a distributed collection of parallel systems

-Cyber infrastructure is made of services (usually Web services) that are "just" programs or data sources packaged for distributed access

- E-more or less anything and Cyber infrastructure

-'e-Science is about global collaboration in key areas of science, and the next generation of infrastructure that will enable it.' from its inventor John Taylor Director General of Research Councils UK, Office of Science and Technology

-e-Science is about developing tools and technologies that allow scientists to do 'faster, better or different' research

-Similarly e-Business captures an emerging view of corporations as dynamic virtual organizations linking employees, customers and stakeholders across the world.

-The growing use of outsourcing is one example

-The Grid or Web 2.0 (Enterprise 2.0) provides the information technology e-infrastructure for e-more or less anything.

-A deluge of data of unprecedented and inevitable size must be managed and understood.

-People (see Web 2.0), computers, data and instruments must be linked.

-On demand assignment of experts, computers, networks and storage resources must be supported

-Virtual Observatory Astronomy Grid Integrate Experiments Radio Far-Infrared Visible Visible + X-ray Dust Map Galaxy Density Map

-Grid Capabilities for Science

-Open technologies for any large scale distributed system that is adopted by industry, many sciences and many countries (including UK, EU, USA, Asia)

-Security, Reliability, Management and state standards

-Service and messaging specifications

-User interfaces via portals and portlets virtualizing to desktops, email, PDA's etc.

-~20 TeraGrid Science Gateways (their name for portals)

-OGCE Portal technology effort led by Indiana

-Uniform approach to access distributed (super)computers supporting single (large) jobs and spawning lots of related jobs

-Data and meta-data architecture supporting real-time and archives as well as federation

-Links to Semantic web and annotation

-Grid (Web service) workflow with standards and several successful instantiations (such as Taverna and MyLead)

-Many Earth science grids including ESG (DoE), GEON, LEAD, SCEC, SERVO; LTER and NEON for Environment

-Old and New (Web 2.0) Community Tools

-e-mail and list-serves are oldest and best used

-Kazaa , Instant Messengers , Skype , Napster , BitTorrent for P2P Collaboration – text, audio-video conferencing, files

-MySpace, YouTube, Bebo, Hotornot, Facebook, or similar sites allow you to create (upload) community resources and share them; Friendster , LinkedIn create networks

-Writely , Wikis and Blogs are powerful specialized shared document systems

-Google Scholar tells you who has cited your papers while publisher sites tell you about co-authors

-Windows Live Academic Search has similar goals

-Note sharing resources creates (implicit) communities

-Social network tools study graphs to both define communities and extract their properties

-"Best Web 2.0 Sites" -- 2006

- Extracted from http://web2.wsj2.com/
- Social Networking
- Start Pages
- Social Bookmarking
- Peer Production News
- Social Media Sharing
- Online Storage (Computing)

-Why Web 2.0 is Useful

- Captures the incredible development of interactive Web sites enabling people to create and collaborate

- Web 2.0 v Grid I
  - Web 2.0 allows people to nurture the Internet Cloud and such people got Time's person of year award

- Platt in his Blog (courtesy Hinchcliffe http://web2.wsj2.com/the_state_of_web_20.htm) identifies key Web 2.0 features as:
  - The Web and all its connected devices as one global platform of reusable services and data
  - Data consumption and remixing from all sources, particularly user generated data
  - Continuous and seamless update of software and data , often very rapidly
  - Rich and interactive user interfaces
  - Architecture of participation that encourages user contribution
- Whereas Grids support Internet scale Distributed Services
  - Maybe Grids focus on (number of) Services (there aren't many scientists) and Web 2.0 focuses on number of People
  - But they are basically same!

-Web 2.0 v Grid II

- Web 2.0 has a set of major services like GoogleMaps or Flickr but the world is composing Mashups that make new composite services
  - End-point standards are set by end-point owners
  - Many different protocols covering a variety of de-facto standards

- Grids have a set of major software systems like Condor and Globus and a different world is extending with custom services and linking with workflow
- Popular Web 2.0 technologies are PHP, JavaScript , JSON , AJAX and REST with " Start Page " e.g. (Google Gadgets) interfaces
- Popular Grid technologies are Apache Axis, BPEL WSDL and SOAP with portlet interfaces
- Robustness of Grids demanded by the Enterprise ?
- Not so clear that Web 2.0 won't eventually dominate other application areas and with Enterprise 2.0 it's invading Grids

-Web 2.0 uses all types of Services

- Here a Gadget Mashup uses a 3 service workflow with a JavaScript Gadget Client

-The List of Web 2.0 API's

- Each site has API and its features
- Divided into broad categories
- Only a few used a lot (31 API's used in more than 10 mashups)
- RSS feed of new APIs

-Browser + Google Map API Cass County Map Server (OGC Web Map Server) Hamilton County Map Server (AutoDesk) Marion County Map Server (ESRI ArcIMS) Browser client fetches image tiles for the bounding box using Google Map API. Tile Server requests map tiles at all zoom levels with all layers. These are converted to uniform projection, indexed, and stored. Overlapping images are combined. Must provide adapters for

each Map Server type . The cache server fulfills Google map calls with cached tiles at the requested bounding box that fill the bounding box. Google Maps Server Tile Server Cache Server Adapter Adapter Adapter

- Google is more user friendly!
- The many Web 2.0 competitions is an interesting model for promoting development in the world-wide distributed collection of Web 2.0 developers
- I guess Web 2.0 model will win!

Note the many competitions powering Web 2.0 Mashup Development

-Typical Google Gadget Structure

- … Lots of HTML and JavaScript </Content> </Module>

Portlets build User Interfaces by combining fragments in a standalone Java Server Google Gadgets build User Interfaces by combining fragments with JavaScript on the client Google Gadgets are an example of Start Page technology See http://blogs.zdnet.com/Hinchcliffe/?p=8

-So there is more or less no architecture difference between Grids and Web 2.0 and we will use e-infrastructure or Cyberinfrastructure to refer to either architecture We should bring Web 2.0 People capabilities to Grids (eScience, Enterprises) We should use robust Grid (motivated by Enterprise) technologies in Mashups See Enterprise 2.0 discussion at http://blogs.zdnet.com/Hinchcliffe /

-Grids/Web 2.0 enable distributed activities to be effective

- Enable Generalized Outsourcing – Enterprises can be split with components (centers of expertise) separated
    - Software is easiest as "all electronic" but also can link
    - Apparel Industry i.e. Manufacturing
    - Sports training
- Change model for Publishers and Libraries as current model where publishers own material fits poorly with technology as prevents innovative access
- Enable new communities to contribute to research, education and commerce
    - The advantages of R1 powerhouses with concentrated expertise are reduced by electronic linkage of distributed new contributors
    - The Navajo communities can be integrated and participate in global activities from their homeland
- Enable new generation of open powerful distributed systems supporting
    - Command and Control (Crisis Management in civilian application)
    - Study of impact of Global warming on polar regions
    - Integration of sensors and simulation for Earthquake prediction

- Much of the world's manufacturing industry is globalized and the apparel/textile industry is typical
- We are working with Hong Kong Textile Industry to link the Asian manufacturers with design/marketing/purchase functions elsewhere (USA, Europe)
- Need to exchange designs, available fabrics and discussions
- Good example of e-infrastructure enabling specialization in one geographical area to thrive
- Software and digital animation outsourcing are other good examples -eSports?
- YouTube illustrates asynchronous video sharing and video conferencing illustrates synchronous video sharing
- One can link trainers (or spectators) and athletes (exercisers) globally with real time video supporting video and text annotation
- Technically hard due to network issues and allowing real-time playing of annotated video
- Exploring with China and HPER
- Note IU could export coaching in Soccer, Basketball etc
- Example of e-infrastructure supporting geographically distributed specialization

-Semantic Scholars Grid Existing User Interface etc. Google Scholar Manuscript Central Science.gov Windows Live Academic Search Citeseer CMT Conference Management

Existing Document based Tools New Document-enhanced Research Tools Integration/ Enhancement User Interface Community Tools Generic Document Tools Export: RSS, Bibtex Endnote etc. CiteULike Connotea Del.icio.us Bibsonomy Biolicious PubChem PubMed Traditional Grid Cyberinfrastructure MySpace Web 2.0 MASHUP Web service Wrappers MyResearch Database Bibliographic Database

-Delicious Semantic Web/Grid

- http://del.icio.us purchased by Yahoo for ~$30M
- http://www.CiteULike.org
- http://www.connotea.org (Nature)
- Associate metadata with Bookmarks specified by URL's, DOI's (Digital Object Identifiers)
- Users add comments and keywords (called tags)
- Users are linked together into groups (communities)
- Information such as title and authors extracted automatically from some sites (PubMed, ACM, IEEE, Wiley etc.)
- Bibtex like additional information in CiteULike
- This is perhaps de facto Semantic Web – remarkable for its simplicity
- We built Mashup linking to del.icio.us, CiteULike, Connotea allowing exchange of tags between sites and between local repositories

- Repositories (MyResearch) also link to local sources (PubsOnline) and Google Scholar and Microsoft Academic Live

-Tags Download to Local System

-General Document Semantic Analysis

- Citeseer and Google Scholar scour the Internet and analyze documents for incidental metadata
  - Title , author and institution of documents
  - Citations with their own metadata allowing one to match to other documents
- These capabilities are sure to become more powerful and to be extended
  - Give " Citation Index " in real time
  - Tell you all authors of all papers that cite a paper that cites you etc. (Note it's a small world so don't go too far in link analysis)
  - Tell you all citations of all papers in a workshop
  - Helps journal editor by suggesting referees based on document analysis or by doing a "plagiarism" analysis by scoring comparison with other Internet documents

-Domain Specific Semantic Document Analysis

- It is natural to develop core document Services such as those used in Citeseer/Google Scholar

but applied to "your" documents of interest that may not have been processed yet

- As just submitted to a conference perhaps

- These tools can help form useful lists such as authors of all cited or submitted papers to a journal
- OSCAR3 (from Peter Murray-Rust's group at Cambridge) augments the application independent "core" metadata (Title, authors, institutions, Citations) with a list of all chemical terms
  - This tool is a Service that can be applied to "your" document or to a set of documents harvested in some fashion
  - Luis Rocha has developed related ideas for Biology
  - Other fields have natural application specific metadata and OSCAR like tools can be developed for them

Conclusion and Recommendations

To conclude, we will then try to give some recommendations as far as the web 2.0 is concerned to provide surfers with tips on how to take benefits from using it .Since in the future, today's youth will be required to actively address economic, environmental, and cultural problems.

In order to be active problem solvers, they should be able to think with clarity, imagination, and empathy. students can begin to think critically and globally in a world that, increasingly, will require a politically and socially active citizenry.

We advise surfers to use web 2.0 moderately so as not to rely too much on the net to avoid losing one's thinking. It is advisable to surf without neglecting clarity and imagination; as students, they should think critically and globally.

References

1. Banks, J. (2004). Teaching for social justice, diversity, and citizenship in a global world. *Educational Forum*, 68 (4), 296-305.
2. Bourdieu, P. (1998). *Acts of resistance: Against the tyranny of the market*. New York: New Press.
3. Bigelow, B., & Peterson, B. (2002). *Rethinking globalization: Teaching for justice in an unjust world*. Milwaukee, Wisconsin: Rethinking Schools, Ltd. Online component retrieved August 7, 2007 from the World Wide Web at http://www.rethinkingschools.org/publication/rg/RGIntro.shtml
4. Clarke, K. M., & Thomas, D. A., Eds. (2006). *Globalization and ace: Transformations in the cultural production of blackness*. Raleigh/Durham, NC: Duke University Press.
5. Coppola, E. M. (2004). *Powering up: Learning to teach well with technology*. New York: Teachers College Press.
6. DuBois, W.E.B. (1946). *The world and Africa: An inquiry into the part which Africa has played in world history*. New York: International Publishers.
7. Eco, U. (1979). *The role of the reader*. Bloomington, IN: Indiana University Press.
8. Friedman, T. (2005). *The World is flat: A brief history of the twenty-first century*. New York: Farrow, Straus & Giroux.
9. Jay, P. (2000). Globalization and the postcolonial condition, Modern Language Association, December 2000. Retrieved August 7, 2007 from the World Wide Web at http://home.comcast.net/~jay.paul/pc.htm
10. Kress, G. (2003). *Literacy in the new media age*. New York, NY: Routledge.
11. Lakoff, G. (2004). *Don't think of an elephant!* White River Junction, VT: Chelsea Green Publishing.
12. Lipman, P. (2000). Bush's education plan, globalization, and the politics of race. *Cultural Logic*, 4 (1). Retrieved August 7,

2007 from the World Wide Web at http://clogic.eserver.org/4-1/lipman.html

13. Luke, A., & Carrington, V. (2002/2003). Globalisation, literacy, and curriculum practice. In R. Fisher, M. Lewis, & G. Brooks, Eds. *Language and literacy in action*. London: Routledge/Falmer.

14. Peirce, C. S. (1998). *The essential Peirce: Selected philosophical writings*. Edited by the Peirce Edition Project. Bloomington, IN: Indiana University Press.

15. Ribble, M., & Bailey, G. (2007). *Digital citizenship in schools*. Eugene, OR: International Society for Technology in Education.

16. Shadbolt, N., Berners-Lee, T., & Hall, W. (2006, May/June). Semantic web revisited. *Systems*, 21(3), 96-102. Retrieved June 8, 2007 from the World Wide Web at http://eprints.ecs.soton.ac.uk/12614/01/Semantic_Web_Revisited.pdf

17. Smith, M. K. (2002) "Globalization and the incorporation of education." *The Encyclopedia of informal education*. Retrieved August 7, 2007 from the World Wide Web at http://www.infed.org/biblio/globalization_and_education.htm

18. United Nations International Commission on International Migration. (2005). *Migration in an interconnected world: New directions for action*. New York: United Nations Publications.