Understanding Social Media: Accelerating Social Participation

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Interdisciplinary research community
- Computer Science & Info Studies
- Psych, Socio, Poli Sci & MITH

(www.cs.umd.edu/hcil)
26th Anniversary Symposium
May 28-29, 2008

www.cs.umd.edu/hcil
Design Issues

• Input devices & strategies
  • Keyboards, pointing devices, voice
  • Direct manipulation
  • Menus, forms, commands

• Output devices & formats
  • Screens, windows, color, sound
  • Text, tables, graphics
  • Instructions, messages, help

• Collaboration & Social Media

• Help, tutorials, training

• Search & Visualization
U.S. Library of Congress

- Scholars, Journalists, Citizens
- Teachers, Students
Visible Human Explorer (NLM)

- Doctors
- Surgeons
- Researchers
- Students
NASA Environmental Data

- Scientists
- Farmers
- Land planners
- Students
NSF Digital Government Initiative

- Find what you need
- Understand what you Find

Census, NCHS, BLS, EIA, NASS, SSA

www.ils.unc.edu/govstat/

FedStats
100M-pixels & more

Large displays for single users

infovis.cs.vt.edu/gigapixel
Treemap: Smartmoney MarketMap

www.smartmoney.com/marketmap
Market falls steeply Feb 27, 2007, with one exception
Market mixed, February 8, 2008
Energy & Technology up, Financial & Health Care down
Market rises 319 points, November 13, 2007, with 5 exceptions
Treemap: Business Intelligence
Treemap: Supply Chain
Treemap: NY Times – Car&Truck Sales

The past few years, Chrysler executives said they were following the lead of Toyota and Honda, focusing on vehicles that met the needs of their customers. But in American consumers turned away from large trucks and S.U.V.’s in 2009, Chrysler continued to chart out big vehicles, which are now sitting unsold at dealership across the country.

Chrysler Group

Trucks/SUV’s: 1.6 million
Cars: 0.5 million
Pickups, minivans and S.U.V.’s made up 75 percent of Chrysler’s sales, which total it vulnerable when consumers switched to cars.

General Motors

Trucks/SUV’s: 2.5 million
Cars: 1.6 million
G.M. introduced new versions of its large S.U.V.’s in late 2005, hoping they would bolster sales. Instead, sales of big vehicles were up when gas prices climbed. One of the few standouts was the Chevrolet HHR, new in 2006.

Ford

Trucks/SUV’s: 1.8 million
Cars: 1.1 million
Even the country’s best-selling vehicles, the F-150, dropped in 2006, with sales dropping 13 percent. One of Ford’s bright spots was the New Fusion sedan, which made its debut in late 2005 and sold well in its first full year.

Toyota

+12.2%
Trucks/SUV’s: 1.1 million
Cars: 0.5 million
Toyota rolled out a new version of the Sequoia, and once again it was the country’s best-selling SUV.

Crown sales also jumped along with gas prices. Toyota could not escape the decline in sales of sport utility vehicles like its Sequoia.

Honda

+3.2%
Trucks/SUV’s: 0.7 million
Cars: 0.9 million
Like the Crown, the small Honda Civic 4-door sold well. But the Accord couldn’t. So, June marked a new version to be released this year.

Nissan

+6.2%
Trucks/SUV’s: 0.5 million
Cars: 0.6 million

BMW

+4.7%
Trucks/SUV’s: 0.1 million
Cars: 0.3 million

Mercedes-Benz

+10.3%
Trucks/SUV’s: 0.1 million
Cars: 0.2 million

Mercedes-Benz, owned by DaimlerChrysler, had a comeback in 2006, thanks to a new version of its flagship S-Class. Both sales increased.
International Children’s Digital Library

Our Mission
We are a library that provides free access to children’s books from around the world. By ensuring access to books from many cultures and in diverse languages, we foster a love of reading, a readiness to learn, and a response to the challenges of world illiteracy.

We invite you to explore our growing library and learn how you can contribute to our efforts.

FEATURED BOOKS
Colorful illustrations with Jeanette Marin
May 8, 2006 Selected by Jeanette Marin, a student at the University of Maryland. Jeanette has three daughters.
Social media

Communication
- **Blogs**: Blogger, LiveJournal, TypePad, WordPress, V
- **Internet forums**: vBulletin, phpBB
- **Micro-blogging / Presence applications**: Twitter, Pownce, Jaiku
- **Social networking**: Bebo, Facebook, LinkedIn, MySpace, Orkut, Skyrock, Hi5
- **Social network aggregation**: FriendFeed, Youmeo
- **Events**: Upcoming, Eventful, Meetup.com
- **Discussion Groups**: Google Groups, Yahoo Groups, Windows Live Groups

Collaboration
- **Wikis**: Wikipedia, PBwiki, wetpaint
- **Social bookmarking** (or Social tagging): (Goldar & Huberman 2006). Delicious, StumbleUpon, Stumpledia, Google Reader, CiteULike
- **social news**: Digg, Mixx, Reddit
- **Opinion sites**: opinions, Yelp

Multimedia
- **Photo sharing**: Flickr, Zooomr, Photobucket, SmugMug
- **Video sharing**: YouTube, Vimeo, Reower
- **Art sharing**: deviantART
- **Livecasting**: Ustream.tv, Justin.tv, Skype
- **Audio and Music Sharing**: imeem, The Hype Machine, Last.fm, ccMixter

Reviews and Opinions
- **Product Reviews**: epinions.com, MouthShut.com
- **Q&A**: Yahoo Answers, WikiAnswers

Entertainment
- **Virtual worlds**: Second Life, The Sims Online
- **Online gaming**: World of Warcraft, EverQuest, Age of Conan, Spore (2008 video game)
- **Browser games**: OGame, Omerta, Travian, Hatnick
- **Game sharing**: Miniclip
Integrate Internet and mobile technologies:

• Residents report information
• Professionals disseminate instructions
• Resident-to-Resident assistance

Professionals in control while working with empowered residents

Shneiderman & Preece, Science (Feb. 16, 2007)
www.cs.umd.edu/hcil/911gov
Potential Advantages of CRGs

- Interoperability & scalability
- Survivability thru multiple communication channels
- Universal usability
- Trust based on social networks established before emergency
- Highly localized information

Philip Fei Wu (fwu@umd.edu), Jenny Preece, Yan Qu
Jen Golbeck, Ken Fleischmann, Paul T. Jaeger
How to motivate participation?

Disaster-related
• Reporting
• Response
• Recovery

What has been tried?
Reporting: Earthquakes & Storms

Did You Feel It?

Community Internet Intensity Maps

To view a map or report a felt earthquake, select your region from the map or the list below the map.

outsidetheUS

earthquake.usgs.gov/eqcenter/dyfi

HCIL

weather.kimt.com
Reporting: Abducted Children

The AMBER Alert Program is a voluntary partnership between law-enforcement agencies, broadcasters, transportation agencies, and the wireless industry, to activate an urgent bulletin in the most serious child-abduction cases. The goal of an AMBER Alert is to instantly galvanize the entire community to assist in the search for and the safe recovery of the child.

The information and statements contained on this official Department of Justice AMBER Alert website shall not be used for the purposes of advertising, nor to imply the endorsement or recommendation of the United States Government. Use of the AMBER Alert logo is subject to the Department of Justice legal policies and disclaimers regarding the use of DOJ seals and logos.
Reporting: Wildfires
Reporting: Wildfires
Response: Wildfires

nateritter

#sandiegofire Harris fire now 50 percent contained 08:21 AM October 27, 2007 from web

#sandiegofire Witch Creek fire now 60 percent contained 08:21 AM October 27, 2007 from web

#sandiegofire Rice Canyon fire now 80 percent contained 08:21 AM October 27, 2007 from web

@pinguino that's really cool. Thanks! 08:20 AM October 27, 2007 from web

#sandiegofire All Del Dios residents may return to their homes, county officials have announced. 08:19 AM October 27, 2007 from web

#sandiegofire 12,600 people are still without power, but that service has been restored for 76 percent of those who lost it 05:12 PM October 26, 2007 from web

#sandiegofire Residents who are approached by unlicensed contractors should report it to the District Attorney's Office at 1-800-316-7572 05:11 PM October 26, 2007 from web

#sandiegofire The Witch Creek fire is churning its way toward the rural town of Julian. 02:55 PM October 26, 2007 from web

#sandiegofire Parts of Dehesa-Harbison open for reentry: All areas N of Willow Glen Dr, E of El Cajon, W of S Grade Rd & Tavern Rd, S of I-8 02:55 PM October 26, 2007 from web
Reporting: Local incidents

Watch Jefferson County
Online Neighborhood Watch in Jefferson County, WV

Showing 1-50 of 4015. [3783 incidents, 232 reports]

REPORT: ATV Complaint
ATV Complaint
Saturday Apr 12 2008 4:45pm
2 Dirt Bikes - No Helmets - Public Roads

REPORT: Suspicious Activity
Suspicious Activity
Wednesday Apr 9 2008 10:30pm
Public Nuisance/ Trespass

REPORT: Suspicious Activity
Suspicious Activity
Wednesday Apr 9 2008 Unknown
Credit Card Fraud with Mysterious Details

REPORT: ATV Complaint

NO LOCATION: AVAILABLE ATV Complaint
Saturday Apr 5 2008 2:00 p.m.
Dirt Motorcycles entering Campfire Girls area across from Mission Park

REPORT: Vandalism
Vandalism
Friday Apr 4 2008

watchjeffersoncounty.net
Response: Gov’t, NGOs, victims

SAHANA is a Free and Open Source Disaster Management system. It is a web based collaboration tool that addresses the common coordination problems during a disaster from finding missing people, managing aid, managing volunteers, tracking camps effectively between Government groups, the civil society (NGOs) and the victims themselves.

- Sahana Overview
- Screenshots
- Download and Install Sahana

SAHANA 0.6.2-stable released!

During this festive season, the Sahana community is proud to announce the release of Sahana 0.6.2-stable. Sahana is a disaster management system initiated after the devastating Asian Tsunami in 2004 and built around the concepts of modularized architecture and component based development. This stable release is another major and memorable achievement by the Sahana community marking the three year anniversary of Asian Tsunami.

New features include the much advanced security framework with auditing capabilities, dynamic language translation, web services, RSS facility, reporting, together with a usable AJAX enhanced interface. This release incorporates numerous bug fixes.

www.sahana.lk
sourceforge.net/projects/sahana/
Recovery: Connected Giving

katrinahelp.info

Citizen Action Team

Delivering help, real-time and on target.

*Who we are: We are an unaffiliated group of volunteers that have come together to provide supplies to the areas of the hurricane ravaged coastline. We are serving the least served areas affected by the hurricane. We are working directly with the shelter relief teams in areas such as Lafayette, Baton Rouge, Gulfport and now Hattiesburg. We are working directly with warehouse operations in Lafayette and Gulfport.*

We need

Volunteers:  
- to help with phone calling  
- to help with gathering operations  
- truck drivers for local pickups

Money:  
- for fuel  
- for tips  
- for rental trucks for local d

Real-Time Disaster Relief

citizenactionteam.org

(Torrey et al., HICSS2008)
Recovery: Connected Giving

Katrina’s Angels

A non-profit agency coordinating housing, jobs, and resources for the survivors of major natural disasters.

Welcome To The Home Of Katrina’s Angels

Hurricane Katrina shattered hundreds of thousands of lives across the Gulf Coast. In her wake, angels showed the way to dignity and hope...

That’s how we started...

Katrina’s Angels exists to support communities affected by disasters by offering solutions to unmet needs and enhancing the recovery process through resource pooling and information sharing.

Objectives:

Katrina’s Angels will:

- Provide structure and coordination of efforts to those on the ground following first response team efforts.
- Provide communication tools through its web sites, Katrina’s Angels.org and the Angels in Action Forum, where Katrina’s Angels maintains a publicly available, state sorted, resource library.
- Partner with service and resource organizations to foster cooperation and resource coordination.
- We will always strive to reduce duplication of effort, and to enhance efficiency through resource management and feedback.
- Maintain highly ethical practices and procedures for its volunteers and partner organizations.

http://www.katrinasangels.org
Recovery: I’m OK

Welcome to the American Red Cross Safe and Well Website. If you have been affected by a disaster, this website provides a way for you to register yourself as "safe and well." From a list of standard messages, you can select those that you want to communicate to your family members, letting them know of your well-being.

Concerned family and friends can search the list of those who have registered themselves as "safe and well." The results of a successful search will display a loved one’s First Name, Last Name, an "As of Date", and the "safe and well" messages selected.

Many organizations are working with the American Red Cross to provide families a variety of services and tools to communicate with loved ones during times of emergency. In addition to using this website, also consider the services offered by the agencies listed on the Service Partners page.

# of Registrations – Last 24 Hours: 1
# of Registrations – Since 01/01/2006: 4962
Recovery: Memorials

- Community response to emergencies
- 2007 CA wildfire
- Virginia Tech tragedy

Wikipedia "has emerged as the clearinghouse for detailed information on the event." (NY Times)

- University of Maryland emergency response systems
- Typical Incident Command System
- UMD Alerts notification system
How to motivate participation?

Disaster-related
- Reporting
- Response
- Recovery

Is there a theory to start from?
Motivations of residents

- Fear, imminent threat
  (Rogers, 1975)
- Revenge, response to tragedy, guilt
  (Hanson, 2008)
- Theory of public-service motivation
  (Perry, 2000)
- Egoism, altruism, collectivism, principlism
  (Batson, Ahmad & Tseng, 2002)
Stages of participation

Wikipedia & Reporting sites

- Reader
- First-time Contributor
  (Legitimate Peripheral Participation)
- Returning Contributor
- Frequent Contributor

Preece, Nonnecke & Andrews, CHB2004
Forte & Bruckman, SIGGROUP2005; Hanson, 2008
Vassileva, 2002, 2005; Ling et al., JCMC 2005; Rashid et al., CHI2006
E-Commerce Social Media
From Reader to Leader: Motivating Technology-Mediated Social Participation

Preece & Shneiderman, AIS Trans. Human-Computer Interaction1 (1), July 2009
aisel.aisnet.org/thci/vol1/iss1/5/
Design for Activities

• Awareness → Reader

• User-generated content → Contributor
  • Make impact visible & recognition

• Email discussions → Collaborator
  • Ambitious projects & reputation

• Policy & mentoring → Leader
# Motivating Readers

<table>
<thead>
<tr>
<th>Usability</th>
<th>Sociability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interesting &amp; relevant content presented in attractive, well-organized layouts</td>
<td>Encouragement by friends, family, respected authorities, advertising</td>
</tr>
<tr>
<td>Frequently updated content with highlighting to encourage return visits</td>
<td>Repeated visibility in online, print, television, other media</td>
</tr>
<tr>
<td>Support for newcomers: tutorials, animated demos, FAQs, help, mentors, contacts</td>
<td>Understandable norms &amp; policies</td>
</tr>
<tr>
<td>Clear navigation paths → sense of mastery and control</td>
<td>Sense of belonging: recognition of familiar people &amp; activities</td>
</tr>
<tr>
<td>Universal usability: novice/expert, small/large display, slow/fast network, multilingual, support for users with disabilities</td>
<td>Charismatic leaders with visionary goals</td>
</tr>
<tr>
<td>Interface design features to support reading, browsing, searching, sharing</td>
<td>Safety &amp; privacy</td>
</tr>
</tbody>
</table>
## Motivating Contributors

<table>
<thead>
<tr>
<th>Usability</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Low threshold interfaces to encourage small contributions (no login)</td>
<td>Support for legitimate peripheral participation</td>
</tr>
<tr>
<td>High ceiling interfaces that allow large frequent contributions</td>
<td>Chance to build reputation over time while performing satisfying tasks</td>
</tr>
<tr>
<td>Visibility for users’ contributions &amp; impact - aggregated over time</td>
<td>Recognition for the highest quality &amp; quantity of contributions</td>
</tr>
<tr>
<td>Visibility of ratings &amp; comments</td>
<td>Recognition of a person’s specific expertise</td>
</tr>
<tr>
<td>Tools to undo vandalism, limit malicious users, control pornography &amp; libel</td>
<td>Policies &amp; norms for contributions</td>
</tr>
</tbody>
</table>
## Motivating Collaborators

### Usability

<table>
<thead>
<tr>
<th>Ways to locate relevant &amp; competent individuals to form collaborations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmosphere of empathy &amp; trust that promotes belonging to the community &amp; willingness to work within groups to produce something larger</td>
</tr>
<tr>
<td>Tools to collaborate: communicate within groups, schedule projects, assign tasks, share work products, request assistance</td>
</tr>
<tr>
<td>Altruism: a desire to support the community, desire to give back, willingness to reciprocate</td>
</tr>
<tr>
<td>Visible recognition collaborators, e.g. authorship, citations, links, acknowledgements</td>
</tr>
<tr>
<td>Ways to develop a reputation for themselves &amp; their collaborators; develop &amp; maintain status within group</td>
</tr>
<tr>
<td>Ways to resolve differences (e.g. voting), mediate disputes &amp; deal with unhelpful collaborators</td>
</tr>
<tr>
<td>Respect for status within the community</td>
</tr>
</tbody>
</table>
## Motivating Leaders

<table>
<thead>
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<th>Sociability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaders are given higher visibility &amp; their efforts are highlighted, sometimes with historical narratives, special tributes, or rewards</td>
<td>Leadership is valued and given an honored position &amp; expected to meet expectations</td>
</tr>
<tr>
<td>Leaders are given special powers, e.g. to promote agendas, expend resources, or limit malicious users</td>
<td>Respect is offered for helping others &amp; dealing with problems</td>
</tr>
<tr>
<td>Mentorship efforts are visibly celebrated, e.g. with comments from mentees</td>
<td>Mentors are cultivated &amp; encouraged</td>
</tr>
</tbody>
</table>
From Reader to Leader: Motivating Technology-Mediated Social Participation

Preece & Shneiderman, AIS Trans. Human-Computer Interaction1 (1), July 2009
aisel.aisnet.org/thci/vol1/iss1/5/
Strategies for managers

Charismatic leader & bottom-up initiatives

• Personal contact, viral marketing, 1-to-1

• Appeal to special skills & uniqueness

• Engage existing groups

• Seed activities to get started
Challenges to success

• Ensuring privacy protection
• Coping with misleading rumors
• Limiting malicious attacks
• Providing high reliability
• Delivering Universal Usability
• Resolving conflict within the community
SocialAction

- Focused on integrating statistics & visualization
- 4 case studies, 4-8 weeks
  (journalist, bibliometrician, terrorist analyst, organizational analyst)
- Identified desired features, gave strong positive feedback about benefits of integration

Perer & Shneiderman, CHI 2008
NodeXL: Network Overview for Discovery & Exploration in Excel

www.codeplex.com/nodexl
NodeXL: Network Overview for Discovery & Exploration in Excel

www.codeplex.com/nodexl
Interdisciplinary Challenges

- Modern problems are complex
- Solutions require multiple disciplines
- Laboratory studies have limited relevance
- Natural sciences are not sufficient
The eight Millennium Development Goals (MDGs) – which range from halving extreme poverty to halting the spread of HIV/AIDS and providing universal primary education, all by the target date of 2015 – form a blueprint agreed to by all the world’s countries and all the world’s leading development institutions. They have galvanized unprecedented efforts to meet the needs of the world’s poorest.

“We will have time to reach the Millennium Development Goals – worldwide and in most, or even all, individual countries – but only if we break with business as usual. We cannot win overnight. Success will require sustained action across the entire decade between now and the deadline. It takes time to train the teachers, nurses and engineers; to build the roads, schools and hospitals; to grow the small and large businesses able to create the jobs and income needed. So we must start now. And we must more than double global development assistance...
Short Range Goals

• Validate benefits of new designs

• Move from observational & experimental to interventional

• Rapid refinements of designs

• Benefits to users
Long Range Goals

• Harness Collaboration
  • Pair-wise
  • Small Team
  • Larger Group
  • Social Creativity
Long Range Goals

• Harness Collaboration
  • Pair-wise
  • Small Team
  • Larger Group
  • Social Creativity

Measure giga-collabs and peta-contribs
Long Range Goals

• Understand dynamics of
  • Trust
  • Empathy
  • Responsibility
  • Privacy
  • Etc.
Road ahead

• Much work to be done
• Difficult to attain all our goals
• But we can make important contributions
Road ahead

• Much work to be done
• Difficult to attain all our goals
• But we can make important contributions

• Shift public policy
  • National Institutes for Collaboration
  • National Initiative for Social Participation
Road ahead

- Much work to be done
- Difficult to attain all our goals
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- Shift public policy
  - National Institutes for Collaboration
  - National Initiative for Social Participation

Let’s roll!
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www.cs.umd.edu/hcil