Catalyzing Community Efforts for Disaster Reporting, Response and Recovery

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Founding Director (1983-2000), Human-Computer Interaction Lab
Department of Computer Science &
Institute for Advanced Computer Studies
Interdisciplinary research community
- Computer Science & Info Studies
- Psych, Socio, Poli Sci & MITH

(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 & communities
- Manuals, tutorials, training
U.S. Library of Congress

American Memory
Historical Collections for the National Digital Library

- 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

HCIL
Treemap: Smartmoney MarketMap

www.smartmoney.com/marketmap
Integrate Internet and mobile technologies:

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

Professionals in control
while working with empowered residents


[www.cs.umd.edu/hcil/911gov](http://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?

• Reporting
• Response
• Recovery
How to motivate participation?

- Reporting
- Response
- Recovery

What could we do on the UMd campus?
1) Research Testbed

Design, implement, & evaluate:

• Technology alternatives: web & mobile
• Integration into existing emergency response
• Determinants of social participation
• Universal usability
• Resistance to attacks & rumors
• Scalability, survivability & privacy
Tuesday 9:14am
May 20, 2008
2) UM Survey of Emergency Communications

113 Grad Students, Faculty, Staff...

- Only 64% use text messaging
- SMS concerns: Cost, spam, usability
- Focus groups are being conducted
- Study of undergrads is underway
3) Alerts.umd.edu

- Web-based registration, cellphone alerts
- Monthly test messages
- One alert: car jacking
- Issue: Motivating registration
4) Typology of Emergency Events

<table>
<thead>
<tr>
<th>Physical/ Temporal</th>
<th>Personal</th>
<th>Community</th>
<th>Multi-Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sudden</td>
<td>Personal Crisis</td>
<td>Community Crisis</td>
<td>Disaster</td>
</tr>
<tr>
<td>Gradual</td>
<td>Personal Emergency</td>
<td>Community Emergency</td>
<td>Catastrophe</td>
</tr>
</tbody>
</table>
The ISCRAM Challenge

- Disturbing societal transformations
- Complex multi-disciplinary problems
- New research methods
Declining Social Capital (Putnam, 2000)

- Neighborhoods & education failing
- Economic & healthcare inequities
- Epidemics & pollution
- Accidents & natural disasters
- Terror threats
Restoring Social Capital

- City, county, state civic services
- Federal agencies
- Corporations
- Resident action for community efficacy
Social Media & Community

- Open Source, LINUX
- Wikipedia, Citizendium, Wikia
- Citizen Journalism, Democracy NOW
- Facebook, LinkedIn, MySpace
- Flickr, YouTube, Digg, del.icio.us
- Second Life
- Google Map Mashups
Emergency management (or disaster management) is the discipline of dealing with and avoiding risks.[1] It is a discipline that involves preparing for disaster before it happens, disaster response (e.g. emergency evacuation, quarantine, mass decontamination, etc.), as well as supporting, and rebuilding society after natural or human-made disasters have occurred. In general, any Emergency management is the continuous process by which all individuals, groups, and communities manage hazards in an effort to avoid or ameliorate the impact of disasters resulting from the hazards. Actions taken depend in part on perceptions of risk of those exposed.[2] Effective emergency management relies on thorough integration of emergency plans at all levels of government and non-government involvement. Activities at each level (individual, group, community) affect the other levels. It is common to place the responsibility for governmental emergency management with the institutions for civil defense or within the conventional structure of the emergency services. In the private sector, emergency management is sometimes referred to as business continuity planning.

Emergency Management is one of a number of terms which, since the end of the Cold War, have largely replaced Civil defense, whose original focus was protecting civilians from military attack. Modern thinking focuses on a more general intent to protect the civilian population from all types of threats.
After More than Six Years, Al Jazeera Cameraman Sami al-Haj Released from Guantanamo Bay

Arrested in Pakistan in December 2001, Sami al-Haj spent nearly six-and-a-half years at Guantanamo without charge or trial. He had been on a more than a year-long hunger strike to protest his imprisonment. We hear al-Haj’s first public remarks from his hospital bed in Sudan and speak to his brother, Asim al-Haj. [includes rush transcript]

Southern California Residents Gear Up for New Fight to Stop Secretive Expansion by Military Firm Blackwater

Just two months after local opposition thwarted its
Chicago Crime

A freely browsable database of crimes reported in Chicago.

Browse by: Crime type · Street · Date · Police district · ZIP code · Ward · Location · Route · City map

Crime map

More than 100 crimes were found — only the latest 100 are displayed. Narrow the list using the choices below.

Filter crimes

- All locations
- Assault
- All districts
- Nov. 2, 2005 to Aug. 29, 2007
- Midnight to Next midnight
- Update map

Crime classifications key

- Person
- Person (domestic)
- Property
- Property (domestic)
- Society
- Society (domestic)
Role Models & Inspirations

• Make good deeds visible
• Everyone is a role model
• Tell stories to celebrate local heroes
• Encourage generalized reciprocity
• Build community efficacy & social capital
How to motivate participation?

Disaster-related

• Reporting
• Response
• Recovery

What has been tried?
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.
Reporting: Abducted Children

www.ncmec.org
www.missingkids.com

AMBER Alert
America's Missing: Broadcast Emergency Response

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.

See Active AMBER Alerts

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.

www.amberalert.gov
Reporting: Wildfires
Reporting: Wildfires
Reporting: Local incidents

Watch Jefferson County
Online Neighborhood Watch in Jefferson County, WV

File a Report  Discussion  Resources  Contact  About

Police Logs - All Offense
Watch Reports - All Reports

Within ___ miles of  Save as

Show Saved Searches

Showing 1-50 of 4015. (3783 incidents, 232 reports)

Next >>

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

REPORT: ATV Complaint
ATV Complaint
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: Wildfires

nateritter

#sandiegofire Harris fire now 50 percent contained 06:21 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 1-800-315-7672 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 & Tave... 02:55 PM October 26, 2007 from web
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/
Response: Coordinating Professionals
Recovery: Connected Giving

KatrinaHelp | Mirror

Access
- This wiki is actively monitored for spam and abuse.
- Except for a few active pages (listed below), pages are protected.
- If you wish to edit a protected page, please contact us.
- All new pages will be protected or removed.

Jobs Offered
- March 18, 2007 - Skilled Tradesmen Needed
- Dec 24, 2006 - Local Craftsmen/Tradesmen
- Sept 20, 2006 - Sell fabrics from home

Delivering help, real-time and on target.

Citizen Action Team

Volunteers:
- to help with phone calling
- to help with gathering operations
- for local pickup

Money:
- for fuel
- for tips

Real-Time Disaster Relief

(HCIL, HICSS2008)
Recovery: Connected Giving

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, KatrinasAngels.org and the Angels in Action Forum,
- 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

Providing Safe and Well Information

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
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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
• Contributor (Legitimate Peripheral Participation)
• Leading Contributor
• Leader (Admin, Bureaucrat, Steward)

(Preece, Nonnecke & Andrews, CHB2004; Forte & Bruckman, SIGGROUP2005; Hanson, 2008)
Strategies for managers

Charismatic leader & bottom-up initiatives

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

• Appeal to special skills & uniqueness

• Engage existing groups

• Public call to action
Design for Activities

Implement software & real-world efforts

• Promote awareness
• Encourage participation
• Make impact visible
• Recognize contributions

(Vassileva, 2002, 2005; Ling et al., JCMC 2005; Rashid et al., CHI2006)
# Activities and Relationship Table (ART)

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Activities</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Awareness</td>
</tr>
<tr>
<td>1-to-1</td>
<td></td>
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<tr>
<td>Family &amp; Friends</td>
<td></td>
</tr>
<tr>
<td>Colleagues &amp; Neighbors</td>
<td></td>
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<tr>
<td>Citizenry &amp; Markets</td>
<td></td>
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What new scientific methods are needed?
Interdisciplinary Challenges

• Modern problems are complex
• Solutions require multiple disciplines
• Laboratory studies have limited relevance
• Natural sciences are not sufficient
UN Millennium Development Goals

• Eradicate extreme poverty and hunger
• Achieve universal primary education
• Promote gender equality and empower women
• Reduce child mortality
• Improve maternal health
• Combat HIV/AIDS, malaria and other diseases
• Ensure environmental sustainability
• Develop a global partnership for development

To be achieved by 2015

What are the Millennium Development Goals?

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...
Historic Transformation

- Existing sciences have reached limits: *The End of Science: Facing the Limits of Knowledge in the Twilight of the Scientific Age*, John Horgan
- End of Physics
- End of Computer Science
- *End of History*, Francis Fukuyama
Science 1.0

- Reductionist
- Controlled Experiments
- Replicability
- Laboratory
- Natural World
Science 1.0 + Science 2.0

- Reductionist → Integrated
- Controlled Experiments → Case Studies
- Replicability → Validity
- Laboratory → Situated
- Natural World → Made World
<table>
<thead>
<tr>
<th>Science 1.0</th>
<th>+</th>
<th>Science 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reductionist</td>
<td>→</td>
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<tr>
<td>• Natural World</td>
<td>→</td>
<td>Made World</td>
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<tr>
<td>• Hypothesis Testing</td>
<td>→</td>
<td>Hypothesis Testing</td>
</tr>
<tr>
<td>• Predictive Theories</td>
<td>→</td>
<td>Predictive Theories</td>
</tr>
<tr>
<td>• Replications</td>
<td>→</td>
<td>Replications</td>
</tr>
</tbody>
</table>
Science 2.0 Emerges

Interdisciplinary study of the made world

Socially embedded
Bringing closer together
- theory & practice
- basic & applied research

New research directions
(Emerson, Dewey, James, Simon, Berners-Lee,
... and many of you!)
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

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- Difficult to attain all our goals
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- Shift public policy
  - National Institutes for Collaboration
  - National Initiative for Building Community
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Let’s roll!
25th Anniversary Symposium
May 29-30, 2008

www.cs.umd.edu/hcil