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Vid.bb - web-based disaster relief 2.0

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Abstract

It has become evident to everyone in recent years that natural and man-made disasters have become more costly, in terms of lives, time, and resources. Many reasons are given for this, ranging from climate change to planetary cycles to the shift in population density from rural to more densely packed urban areas. All of these reasons seem valid, however none of them give a clear and definitive recourse to an emergency situation. It has become especially evident after this recent barrage of both natural and man-made disasters that more effective methods of dealing with crisis situations are an imperative. The way that various organizations and other well-intentioned people put up a new, separate web site cum database with each new crisis situation is counter productive and, essentially, a waste of time and effort at a time when every moment counts. Recent web development trends in collaborative web applications, streaming media, and asynchronous data transfer point to a different, more effective road to effective crisis response and information control. As it is becoming much easier to conceive of and build web applications that put to good use all of the human knowledge and networking power that is concentrated on the Internet today, it seems only natural that disaster relief be facilitated though the many rapidly maturing internet technologies such as AJAX and FlashCom. By applying lessons learned from collaborative, AJAX-driven applications like Flikr and other social software websites (12, p.22), communications to peripheral victims (those who are psychologically affected by the stress of not knowing where friends and family are) will improve substantially. In this project, a web-based, collaborative crisis response system, Vid.bb, has been conceived, conceptualized, and prototyped.

Purpose

In recent years, the world has seen a great number of catastrophic events occur, affecting numbers of people ranging from hundreds to hundreds of thousands. September 11th, the 2004 Indian Ocean Tsunami, Hurricane Katrina, the 2005 South Asia Earthquake, and others are all considered some of the worst disasters of the last century. Yet even as disasters seemingly get worse, disaster response (DR) stays largely the same. It is true that there have been a vast improvement in information circulation and response group coordination due to advances in wireless and information technologies but numerous gaps still exist. Chief among them is the difficulty in getting information to concerned people who live outside the immediately affected area.

We have also seen how concerned and socially conscious people have reacted to being left in the dark as to what is going on with a disaster's recovery effort, especially if there is a loved one involved. It seems as if, inevitably, people who care enough manage to find some way to find the information that they need or find some way to feel that they are helping, even from a distance.

One such case was September 11th. At ground zero in the immediate aftermath, first responders saw that old hierarchies and chains of command were no longer relevant. In his description of the World Trade Center Recovery Effort, Eugene Kim describes the actions of the impromptu recovery team leaders as Kenneth Holden and Michael Burton, two officials from New York's Department of Design and Construction, brought together the best people that they could find and created a working group of sorts to coordinate the many different aspects of the recovery effort. This reflected or presaged the open-source programming community's viewpoint that if you want to have something done do it yourself or, as they say, "scratch your own itch" (13, p.303).

This do-it-yourself attitude was also shown by some newscasts at the time. The news stations were broadcasting news from ground zero around the clock. Even in the immediate aftermath of such a tragedy there was only so much new information to report. At some point during some newscasts, stations would devote a segment to photographs of people who had been reported missing.

Even people with no connections to media broadcasters or other responders spontaneously created ways of looking for people. In certain places in the city, hundreds of fliers would be left to tell who was still missing and give a number where information could be left. There is much that can be learned from this spontaneous citizen response. In times of crisis, people are very resourceful and find creative ways to try to meet their needs. If multiple people with a similar problem are then put in the same room, ties can be formed and information shared.

As the importance of this type of network relationship has become more evident during the information age, the option of providing the tools to enable citizens to satisfy their own needs efficiently in place of spreading themselves even thinner by providing the services that are not the most important seems like a prudent course of action. This would be a serious strain lifted from authority's back, if only because it would leave much less room for criticism. Northrup and Thorson have stated that rather than promising

more services that they cannot provide, authorities should focus on those decisions that "deeply affect citizens" (15, p.2).

One of the promises of the Internet has been just this: that the populace will be able to do many things in place of the government or other authority. This prophecy has already shown itself to be true in some situations for many parts of the world. The U.N. recently released a study, '*Global E-Government Readiness Report* ,' (GEGRR) which attempts to measure various nations'/regions' progress toward "building a people-centered and inclusive information society, putting the potential of information and communication technologies at the service of development and addressing new challenges of the information society" (20, p.4).

While GEGRR did not include IT disaster response in its analysis, there has been some sort of web-based response seen in many recent DR efforts.

Characteristics of Emergency Response Information Systems

Attempts have already been made at developing online crisis response systems. Some are better than others but each effort has been made with an eye towards a different aspect of crisis response. There are some commonalities, however: nearly all of them address issues of communications and informational flow. Within this larger effort, systems have been developed for use both for professional relief workers and for public use.

Before examining specific models of disaster response systems, it will be helpful to outline the range of foci that crisis response systems can have. Yuan and Detlor's report, *Intelligent Mobile Crisis Response Systems* (7) offers a model for tasks, issues, and processes that should be addressed in planning a mobile technology response system. The tasks identified as critical to DR are:

1. Monitoring and Reporting – "Constantly monitor crisis-prone areas and quickly report to emergency centers**."**
2. Identification – "Quickly identify the nature and scope of the crisis and collect background information."
3. Notification – Rapidly select and contact the appropriate response team personnel
4. Organization – Swiftly establish response teams with appropriate roles and responsibilities
5. Operation – Efficiently support the coordination of tasks among response team workers
6. Assessment and Investigation – Judiciously assess the damage and investigate the major causes of the crisis"

As will be shown later, these tasks can also be applied to other types of CRS.

Previous Efforts

I. Hierarchical Communication tools

There are some CRSes whose focus has been generalized, making them applicable to any type of crisis; these systems tend to focus on facilitating communications flow and response protocols by reinforcing DR professional hierarchies. Some such Crisis Management (CM) tools include:

- **tmAlert™ -** http://www.tri-media.com/en/technologies/communications/ - This is a software-based tool for CM. Some of the issues that this system purports to manage are:

  - Improve response times when a crisis arises.
  - Coordinate response teams quickly.
  - Communicate with internal and external stakeholders.
  - Reduce post-crisis recovery time.
  - Reduce liability due to negligence.
  - Deliver a consistent message from a single source.
  - Limit damages to assets and reputation.

  (from http://www.tri-media.com/en/technologies/communications/alert_details.php)

  All of these abilities would seem to be qualities necessary for a more command-and-control approach to CM. Its main focus is on communications but seemingly from the point of view of a manager giving orders.

- **Crisis Response System** from *Remedy* – Similar to the previous system, this is another CM tool that reinforces hierarchical roles in DR – "Manage a crisis from start to finish, with all the alerts, bulletins and other actions required to deploy and control the situation. "

One especially useful feature of this tool is its use of satellite technology to circumvent possible problems with land-based systems, a probability for most natural and man-made disaster situations.

II. Web-based DR Knowledge Exchanges

In contrast to these two systems that enforce hierarchical control models, the most common type of DR tool in recent years is the web-based information aggregation point. Almost always database driven, these tools focus on providing information to the general public rather than only DR professionals. Within this more egalitarian category of DR system there are at least two further distinctions within the type of information provided: shared knowledge and victim tracking.

A. Shared Knowledge sites

The shared knowledge model can be useful to citizens, DR professionals, or even an academic

community. Their specialty is as information repositories or forums, where people can learn and share what they know.

Some sites following the shared-knowledge format include:

- **Disaster Recovery Journal** - http://www.drj.com/forums/ - This site is a fairly active forum for disaster response professionals, Forum members can ask questions about responding to disasters physically, economically, and psychologically.

- **Disaster help -** https://disasterhelp.gov/ - This site is a vast storehouse of DR knowledge for both DR professionals and citizens. "The Disaster Management initiative will use cutting-edge information technology to improve the delivery of disaster assistance information and services by creating a single Internet-based portal to serve the public's requirement for assistance, and the government's requirement to provide disaster information and services."

- **MIT alumni association** - https://alum.mit.edu/comments/View.dyn?id=363 - While this site might not traditionally or obviously be a site where one would go to find disaster knowledge, in response to Hurricane Katrina, MIT students and alumni started a thread to share ways to help victims of ("The focus should also be on the financing of the rebuilding of the Gulf Region. Sustainable financing could include the issuance of industrial development bonds…"), observations about ("One of the factors of the disaster of Katrina, is the type of constructions of houses and buildings, not well designed for a potential area of very strong winds, that is to say, it should be re-evaluated the structures, in ovoid form, with highly aerodynamic materials."), and possible solutions to problems created by ("Cons[t]ruct buildings like the floating casinos accept on dry ground. [T]hey could float up as flood waters rise") this disaster. While it hasn't been active for some time, the number and creativity of the ideas shared by posters at this site make it an exemplary example of the vast amount of knowledge and desire to help that exist out there.

B. Victim Tracking Sites

These sites tend to be very simple in their functionality. A basic Victim Tracking model is often a bulletin board where people with friends or loved ones in the affected region can post messages about people whom they are looking for. The next layer of functionality might be a site where disaster victims can leave location and/or contact information. In nearly all such sites, the information is stored in a relational database, which can be searched by people with missing relations. This type of victim tracking site also tends to be more temporary given the temporal nature of disaster recovery.

A few examples of victim tracking sites related to specific disasters include:

- **Hurricane Katrina Information** - http://hurricanekatrinainformation.com/database.html

- **New Jersey Hospital Administration 9-11 database** (out of service)

http://www.njha.com/njresponse/

- **Katrina Safe -** http://www.katrinasafe.com/Main.aspx **-** Redcross/Microsoft partnership - A victim knowledge database for names of people who are safe. Information it keeps includes: First Name, Last Name, Pre-Disaster City, Pre-Disaster State, As of, Relief Site, Current Location, Current City, Current State, Map, and Remove (name from database)

- **Katrina Survivor List -** http://www.gulfcoastnews.net/katrina/status.aspx - This site is exactly what the title suggests,a list of survivors. It is searchable by first name, last name, or city.

- **Craigs List New Orleans – Lost and Found -** http://neworleans.craigslist.org/laf/ - This site is the simplest kind of message board. Although it seems very disorganized informationally (as people can list objects or people), it is still being used by people looking for victims of Hurricane Katrina. It can be assumed that the unrestricted nature of the site and the more extended, less bounded type of information that can be left give it more longevity.

- **Tsunami Locator -** http://www.tsunamilocator.com/ - (out of service)

- **Missing people -** http://missing.antalys.net/ - This site was a message board to list people missing after the Asian Tsunami. Now closed

- **Thailand's Official Tsunami and Disaster Center -** http://www.thaitsunami.com/ - this site is in Thai but it looks like a missing/found person database. It also has forms for official relief and recovery efforts.

C. International DR sites

There also exist a number of disaster victim knowledge web sites that have the capability of being used for multiple disasters. The benefits of a site that can be used for multiple DR efforts are twofold: 1) In the event of a natural or man-made disaster, victims and concerned relations can always know where to go 2) no one needs to wait for a person or organization to purchase server-space and build a victim knowledge management tool. These Victim tracking sites tend to be more "informationally" functional and conceptualized than the single crisis, disposable ones.

Some attempts at this kind of system include:

- **Disaster Victim Information exchange System (DVIS)** -
  https://www.nacec.org/DV3/DV3.cgi?1&si -
  This site seems to be attempting to expand the idea of web-based, knowledge sharing DR systems but it is still just a text database. There is still a barrier to the information; namely the method of accessing it. A downside to their business model includes the need for data entry volunteers.

- **Family Links Website -** http://www.familylinks.icrc.org/ -

The International Comitee of the Red Cross' multiple-crisis, victim knowledge management system. This seems to be one of the longest lasting and still has information from international crises from years ago. The site basically is a place where people can register missing loved ones or let people know where they are. One admirable aspect of it is that it places no barriers to leaving messages or searching for people..

- **Disastersearch.org** – Notable features of this site include:
  - Includes a broad array of DR services other than those ralating to victim location. Some of these services are: find shelter, find a helper, aid forms, employment board, and search for pets.
  - Is one of the few sites that gives the ability to search unidentified bodies using physical characteristics: hair, color, length, eye color, physical signs (tatoos, birthmarks), personal items (clothing, jewelry), etc. (See Appendix D to see a forum transcript that shows how images can be used.)

- **I-Mode Disaster Message Board -** http://www.nttdocomo.co.jp/english/info/disaster/ - This is an electronic bulletin board service created as preparation for a major calamity such as a high-magnitude earthquake. The bulletin enables i-mode subscribers in the disaster area to post messages to let loved ones know where they are. This service was created for a case where, in the event of a crisis situation, mobile call systems were either overloaded or down.

Shortcomings of current web-based disaster victim knowledge systems

The first thing one realizes when searching for web-based disaster victim knowledge systems (WeViKS) meant for victims and the people worried about them is that there is a super-abundance of them. There are just too many different ones to find and then wade through for any concerned relative or friend to manage it easily. Because it is such a simple matter (relatively speaking) to create a web-enabled database and provide access to it with a simple web page, when a serious natural or man-made disaster occurs, WeViKS become very common. This is problematic because it might have (and surely has) made it difficult for victims to know where to leave a message and for concerned people to know where to search.

There have been attempts to rectify this situation. One seemingly successful WeViKS is Family News Network of the ICRC. This site has victim databases for numerous disasters. For some disasters, many people have posted their current locations. For others there seem to be more messages of people in search of loved ones. Family News seems to be the current front-runner in *international* disaster victim knowledge (note: Due to the obvious language barriers in researching international sites, it is impossible for me to tell whether it is the national ones that are really collecting the most information).

In spite of its popularity, the Family News Network site has major limitations. For example, it allows users to search on victim names only. If someone searches for someone and that person has neither registered herself nor has anybody added a missing person record, then she is only presented with a list of

names that also begin with that letter. There is not much that one can do with a list of unfamiliar names.

The most comprehensive domestic WeViKS is surely DisasterSearch.org. The name search for this system scours not only victim names but also those listed as missing in other registered victims' records. Additionally, a search can be performed on someone's address. Another benefit is that DisasterSearch.org searches other databases like Family Network and Katrina Survivor List, in order to give its users more complete and useful information.

As has been seen, the number of different WeViKS out there can be baffling to those who need to quickly find reliable information on the location of their loved ones. On performing a search, the user may be confronted by row upon row of non-descript text to scan for a name that she recognizes. It is only moments before the text begins to look the same. Some last names are so common that it is very possible that a set of search results might come up with multiple identical or virtually indistinguishable names. Why is so much of a burden being placed on victims and their loved ones? While it has been around for centuries, text is a human construct. It seems odd that, even in this day and age with Internet technology having progressed so far and reaching more and more people every day, the burden of use still weighs heavily on disaster victims and those searching for them.

Vid.bb: Application Concept

While much of the scholarly and corporate work that has been done in the realm of disaster response does address the use of technology (in some the Internet even takes a pivotal role in relaying information to different parties), none of it takes advantage of the web's capacity to transmit more than just static facts and figures. Similarly, most WeViKS are nothing more than web-accessible databases.

Neither the privately nor the publicly-funded DR systems put to use any of the knowledge or know-how of the vast and powerful community of web users to help in the relief effort. Some may include email as an integral part of the communications strategy. There are even some systems that use the web as a central location where data can be entered, aggregated, processed, and viewed. Still, though, they remain all text, all the time.

The system discussed in this paper, Vid.bb (short for Video bulletin board), attempts to make WeViKS more user-friendly and searchable by including non-textual data alongside the written data. It is impossible to be sure that every searcher will have the correct information (spelling of names, correct addresses or phone number, etc). It is even overly restrictive to assume that people will only want to search for people whose personal information they have at the ready. By offering people the option of searching through several criteria, it is more likely that they will find their desired information faster.

The idea behind the system presented here is as follows (see model Appendix A, fig 1):

Vid.bb is a three-pronged WeViKS: on-site data-collection, web-based victim knowledge management system (WeViKS), and group-coordinated civilian response.

I. On-site data collection

In the immediate aftermath of a serious crisis situation, many people will be displaced from their homes. In response, numerous relief organizations will set up relief efforts in the affected area. When the victims of said crisis have nowhere else to go, they will go to these areas. Aid workers at these centers who are in possession of the necessary technology – a laptop, a webcam, and some manner of Internet connection, whether it be land-based (if ground communications lines have not been cut) or satellite based – will set up a station where displaced people will come. With each victim, the worker will video-record him or her giving a short (45 – 120 second) message.

Aid workers will have a general script to which the victims should stick that will cover the same basic personal data that typical WeViKS cover, – name, former residence, current location – and information that is more sporadically covered by current systems, – other missing people. Because of the video element, additional information will also be covered – current health, how the person's health was affected by the disaster, how their property was affected, how family members were affected, other people with whom they had had contact post-crisis, current living conditions, their story of what happened to them during the disaster, a message that they wanted to "broadcast," the person or people

whom they hope would see the message, and plans for the immediate future.

II. WeViKS

After recording a video, it would be uploaded to the web-site server. Once uploaded, it would be available on the site; just a video with the victim's identity wrapped up in the image and her message wrapped up in the audio track. An obvious concern over such a setup might be that search engines aren't capable of handling such a system, wherein it would be expected to affordably analyze a video and extract all of the information in the victim's message. What good is a video if there is no metadata about it? Who on earth would have time, in the midst of an emergency situation, to enter all of this seemingly trivial information?

Herein lies the second major element that truly separates Vid.bb from other WeViKS. The information about the disaster victims will be entered via the efforts of the site's visitors. Using the technologies of Web 2.0, the collaborative web, an international community of volunteers will be what makes the site work.

III. Group-coordinated civilian response

The third tier of Vid.bb disaster response, again, relies on the site users but applies the collective knowledge of the community back to helping the victims. In this third tier, users would take the information sent from relief camps (videos), mix it with the collective knowledge of the Vid.bb community (via forums), and hopefully result in tangible action either in the form of more directed monetary aid or actual physical volunteer work. With this kind of communal approach, many victims can be helped sooner, problems can be caught sooner, and relief response can be applied more effectively.

That is quite a claim. What makes me believe that Vid.bb will really be a successful WeViKS while there have been so many others before it? Said simply, multi-user collaborative knowledge facilitating technologies.

What makes Vid.bb different

Over the past couple of years, the Internet has become more than static information being sent and/or waiting to be viewed. Developments in broadband communications have made it possible for more web-facilitated communication that comes closer to reaching its full potential to occur. By, "the full potential [of human communications]" I mean that it is not only a name or sentence-long message that is being communicated but also identity, feelings, condition, mood, and much more. There is far more that can be read in a person's posture, facial expression, and general bearing than even the most expressive of emoticons could show (~ :P). Vid.bb harnesses these capabilities and puts them to use in a meaningful way.

In the article, *Brain Candy*, Malcolm Gladwell quotes author Stephen Johnson discussing the viewing habits of people today. He says that even while watching something as seemingly mundane as a reality show, "…the part of our brain that monitors the emotional lives of the people around us—the part that tracks subtle shifts in intonation and gesture and facial expression—scrutinizes the action on the screen, looking for clues…**"** (24) If people could watch videos of disaster victims telling their stories or sending a message to friends and relatives, it could cause all sort of reactions: sadness, recall, pity, motivation… altruism.

The system that I have developed, Vid.bb, aims to harness all of the emotion, motivation, and good will that exists in the immediate aftermath of a serious disaster. Watching video messages of people actually affected will allow people to better identify with, assess, and respond to actual crisis situations with the immediacy of the Internet and efficiency of Web 2.0, the collaborative web. The way it would allow this is by including a video message from every disaster victim who posted to the web-based bulletin board. Then rather than running out and throwing money to humanitarian organizations, whether they be disreputable places or not, reputable foundations could partner up with Vid.bb and use the same videos to funnel funds directly to areas of need.

That point jumps to one not immediately obvious benefit of a video message board. If numerous videos from specific relief camps were all showing evidence of the same or similar issues, it could be an early indicator of problems that were starting to pop up in crowded aid camps or relief centers. Through analysis of the video messages, common complaints, needs, or themes could help the aid organizations and workers focus efforts and strengths where they were most needed.

There are a vast range of feelings, messages, emotions and intentions that can be deciphered by watching the human face. In another of his articles, "The Naked Face", Gladwell explores the studies of psychologist Paul Ekman who catalogued the entire range of expressons that were possible from the human facial muscles (21). One of his most surprising findings was that, when people from different cultures saw the same pictures of the same facial expressions, they virtually all had the same interpretation of what the person in the picture was feeling.

Which speaks to another possible benefit of an international video message board. If people were using pictures to identify loved ones, then language might not make quite as much of a difference. In situations where disaster struck an area where there were a number of foreign nationals, Vid.bb would be an international "one stop shop" for disaster victims. The distinction of what country the victim was from or language the person spoke would not need to be immediately hard- (or hand-) coded into the record. This type of distinction would make itself evident in short order.

Collective Intelligence

Some truly visionary people have realized that the web is not only about the information contained in the billions of pages that exist on it but it is also about the communities of knowledge. It is through this knowledge that Vid.bb will make use of the Internet to become a more fully organic communications

system. It uses the information-transmitting power of the web and the collective intelligence of the netizen populace to make disaster recovery a more fully distributed process. As has been proven in the examples of websites like Wikipedia, Flickr, and popular video games like EverQuest, the Sims, and others, the number of web users who have managed to fall into or form their own form of society, whether civil or not, is vast. (12, pp. 21-23)

This "collective web" is not a particularly new phenomenon. It is a natural result of the evolution of the Internet. The progression of informational flows on the Internet started as a more closed, academician realm but opened itself to commerce, This lead Internet "hot-topics" to go from personal web pages to blogs to web news syndication to podcasting to file sharing to where we are today: a more open, collective sharing of knowledge. "Where blogs unleashed one- and two- way conversations with the world, the 'wiki' [a system for writing documents collectively] represents a collaborative cocktail party." (12, p.20)

In conjuction with the Internet opening the information sluices of society, the world of software development has progressed similarly. The earliest software was designed for academics and governments, then for commercial interests. This was followed by shareware and freeware, which much like blogs, was still created by an individual or small group. (41) The programming world made a huge leap forward with the development of and large-scale adoption of the Java language. Java allowed programs to be written once and run on different platforms. By granting developers the ability to not worry about what system their program would work on and by making the code library free to anyone, this promoted code reuse, which in turn, promoted programming standards and collaboration. From this movement has sprung most recently, an even larger movement called simply 'open source'.

Now not even confined only to Java, this movement has gained strength and reputation by opening up software development to anyone who has the time, energy, and knowledge to contribute. As can be assumed given the need for files to be transferred between programmers living in different parts of the globe, the Open Source movement is also inextricably linked to and made possible by the Internet.

This world of free and freely offered information is that for which Vid.bb was concieved and at least three distinct aspects of it are planned to utilize user knowledge: 1) to both keep the site functioning and up to date 2) to implement improvements in its technical and visual make up 3) to form a network of "unaffiliated volunteers".

Staying Up-to-date

As described earlier, each video message left by a displaced person would informationally contain far more data points than any existing WeViKS. (A list of these pieces of data is given in Appendix A.) It would take serious time and effort if all of this information were to be entered by only traditional, formally registered volunteers. If there were too many other pressing duties for the volunteers, Data entry for a WeViKS would surely make video analysis – something that would seem like data entry to cause skeptical DR managers - one of the first things to get skipped. However, if this video analysis were

entrusted to a critical mass of well meaning netizens, using the most current AJAX based programming techniques, it could be completed quickly and efficiently.

There are issues as to what it would take to attract a community of online volunteers

There is also a question as to how we could be sure that correct information were being entered. It is true that collaborative systems such as the photo-sharing site Flickr successfully manage to handle multiple users updating information associated with data objects (photos in its case). Most of the information that is being entered into it, though, is not of such a serious nature. In a critique of another community-knowledge based website, Wikipedia, Denning et al list many of the risks of basing a website on user contributed content (4). The following list describes each of their concerns and explains how it will or will not affect Vid.bb:

- **Accuracy**: "You cannot be sure which information is accurate and which is not. Misinformation has a negative value…"
- **Motives**: "You cannot know the motives of the contributors to an article. They may be altruists, political or commercial opportunists, practical jokers, or even vandals."
- **Uncertain Expertise**: "Some contributors exceed their expertise and supply speculations, rumors, hearsay, or incorrect information…"
- **Volatility**: "Contributions and corrections may be negated by future contributors…"
- **Coverage**: "Voluntary contributions largely represent the interests and knowledge of a self-selected set of contributors...."
- **Sources**: "Many articles do not cite independent sources…"

"Accuracy" would play the biggest part in making Vid.bb a widely used and reputable international WeViKS. In order for people to think of a site first as the place to look for disaster victims, it must be useful, timely and accurate. In order to ensure that the most accurate information is on the site, a reputation system has been added.

Much research has been done on the importance of trust in strengthening successful virtual communities. A system that many contemporary web communities use is based on users developing a reputation based on the feedback of other users and via an automated system. For these purposes, reputation is defined as, "an expectation about an agent's behavior based on information about or observations of its past behavior." (28, p.3)

A simple model for dynamically building and quantitatively keeping track of a contributor's reputation has been developed for managing changes to video information:

1. All users or "volunteers" would have an assigned trust rating. Non-registered volunteers would have a trust score of zero. When volunteers first register they would have a score of one. Administrator volunteers, those with a score of at least ten.
2. Anyone (any score) can add information to new or unreviewed videos.
3. Only registered volunteers can change entries added by other users.

4. Volunteers can only change entries of those with lower scores.
5. If a volunteer tries to change information entered by someone with a higher score, they are presented with a Dispute form and must enter their reason for disputing. Dispute forms are sent to the original poster where they can carry out corrections on their own or an administrator would.
6. If the disputer is right and the change is made, that volunteer gets a predetermined number of reputation points. The person who had originally entered that piece of information does not loose points.
7. *Long* periods of inactivity would also result in a small loss of reputation points.

"Motivation" is the next concern with collaborative authoring where the concern is that some people might just be adding content for somehow selfish reasons. With Vid.bb, though, it is difficult to see how a malintentioned person could use the reputation for any kind of personal gain other than self-satisfaction. If, however, the system were somehow being abused, moderators would have final say in whether a user's actions were harmful to the Vid.bb community and mission. If abuses were recognized, administrators would have the ability to subtract reputation points from or, in the most egregious cases, expel users. As mentioned, though, it is difficult to see how people with bad intentions could benefit from providing faulty information.

"Volatility" is something of a concern but it should be negated by the reputation rankings and edit entry functionality of the system.

"Coverage," and "Sources" would not apply to the video review part of Vid.bb. "Uncertain Expertise" would not either but it would apply to the forum section of the site.

For Wikipedia, Denning says that the effects from the above issues, "can pollute enough information to undermine trust in the work as a whole." (4) For Vid.bb, though, while still relevant, it does not appear that they will cause much of a problem.

Collaborative Improvements

One of the most impressive examples of collaborative computing is the open source programming community's use of the Internet to facilitate multi-developer programming. This type of collaborative work has succeeded in allowing for the development of fully functional computer applications of every manner. From traditional software such as browsers (i.e.: Firefox and Opera) to e-mail clients (i.e.: Thunderbird), to audio editing software (i.e.: Audacity), to image editing software (i.e.: GIMP, ImageMagick), to… you name it… there has probably been an open source project to make it.

It is believed that if site code were made available to developers, in a site such as sourceforge.com, for instance, development could progress more quickly. Also, innovative solutions to problems might be more easily found if there were more people working on it, all of them seeing things from a different angle. Money would not be an issue because for open source programmers, the main thing that makes

them want to do the best they can is *reputation*.

For them, though, reputation is not a score kept by a computer. Reputation is kept track of in terms of accumulated accomplishments and celebrated achievements. In this context, the motivation for working on the site without compensation should not cause concern about what the programmer's motivation is. This is mainly because it is pretty much a given that for a great many, the reason people work on open-source projects without any prearranged contract for compensation is that they are participating for personal gain, especially in terms of their ego. For programmers, "ego gratification is important because it stems from peer recognition. Peer recognition is important because it creates a reputation. "A reputation as a great programmer is monetizable -- in the form of job offers, privileged access to venture capital, etc." (33, p.21)

With an active community of open-source developers working on the programming end of Vid.bb, New advances and continual optimization will be one of the things that keep the site user-friendly and make it the obvious choice for WeViKS.

Coordinating Unaffiliated Volunteers

A third foreseeable way that Vid.bb will use the knowledge of its users is through its forums. It can be seen, as made obvious by many web communities of every sort that have been built, that denizens of the net participating in an online community will want and use net forums to add an extra dimension of participation to their time spent at and contributing to a website. Because of this, a discussion forum has been added to the Vid.bb.

The forum threads in the prototype include a thread for news and developments from each active crisis, threads for people who have been inspired to go to the actual crisis location and help someone seen on Vid.bb, threads that give ways for people to help from a distance, threads of instructions for how to use Vid.bb, and threads giving other sites that give other types of information relating to disasters and disaster preparedness.

The second group of threads, *Plan – Coordinate*, meant for use by people planning on going to the crisis center, is the second part to the video messages. The first part is where victims leave the message. This second part is where someone knows the video subject, hears her message, and responds by going to the relief camp to pick up the victim.

In this type of situation where the video messages were not being broadcast live, there would always be the possibility that there might have been a change in subject status between the time it was recorded and the time viewed. The forums would be a way for anyone who wanted to help a victim by going to a disaster site or some other means to post their intentions, This would be a way to either make sure that no one else had already gone to help, or that the victim hadn't already been moved to another camp, or even to see if anyone else needed something taken to or brought back from the relief camp. This would break down barriers between crisis victims and the general populace, something that could be a big help to

disaster relief efforts.

Forum use is not new in DR. One system, OEP EMISARI and companion PREMIS (the Delphi system), is one system with forum-like capabilities. It is an Emergency Management Information System designed to allow a group of 20-30 experts to work collaboratively at mitigating dire situations. However, the Delphi system took a much more top-down approach

As it is now, DR professionals generally react to a crisis situation using a pre-existing recovery plan that is then adapted for the specific situation (8, p.4). These plans, in most cases, rarely address a system for coordinating or utilizing the help of unaffiliated volunteers effectively. These plans tend to assign fairly strict roles to DR personnel and may not address unaffiliated volunteers at all. (8, p.4)

As Turoff states, though, “roles can be planned but whoever steps into a given role at a given moment defies any attempt to prescribe ahead the composition of the response team or the individual responsibilities.” (, p 29) With the Vid.bb forums acting as a nexus for concerned, motivated, and presumably socially conscious people, certain DR roles could be made much more informal, the bulletin board participants forming their own social network and duties. Additionally, everyone would benefit if the DR professionals monitored this particular thread, also, as they could let people know what help they did not need or maybe even if certain victims were still there.

There really is no sure way to determine every way that the forums would be used or even what results might occur from their use. “Social organization… is essentially an emergent property that comes from the network’s geometry - a natural pattern to which organisms adapt.” (31) Perhaps trusting the emergent patterns of behavior in a network of do-gooders will complicate things, perhaps it will make relief efforts proceed that much quicker. It is hard to predict what will happen when the free flowing information from the web promotes real-world action but it shouldn’t be hard to predict what will happen if more people see a problem and all decide to help make it better.

Vid.bb – System Structure

The technological/informational structure of the Vid.bb "suite" has two main parts: the mobile recording platform & interface and the web-based information access point. Each part, in turn, is made up of multiple hardware and/or software components. The following section describes the different technologies used in the prototype version, and offers a description of parts not yet prototyped.

Mobile recording platform & interface

The recording interface that is used by Vid.bb aid workers is very simple, both visually and technologically. In terms of hardware, the recording platform is made up of three components: A laptop, a webcam, and some sort of Internet connectivity. For the prototype recording system a laptop with 1.70 GHz Intel Pentium M and 512 MB of RAM, running an Apache server (v. 2.0.55) was used. Videos were captured with an ordinary, logitech webcam connected via USB. In a DR situation the most likely Internet connectivity would be through a satellite connection. Depending on the service provider and the geographic location of the DR center, this connection would most likely require additional hardware as dictated by the Mobile ISP (see Appendix B, fig 1).

The prototype video recording application was built using Flash 8 and FlashComm Developer Edition. The videos are recorded and stored as flash video files (.flv), which can be viewed in the flash player. According to some reports, most people (over 90%) already have the Flash Player installed and won't need to download a plugin before watching the video (34).

The recording platform's interface was stripped down to its barest essentials to make sure that it placed as little cognitive burden on the Vid.bb relief worker as possible. Just record and play buttons. It was decided that for this type of situation, simplicity would be the best policy.

Adding text entry fields was considered and then decided against for one main reason: simplicity. The crowds of displaced people and the amount of confusion in relief camps in the immediate aftermath of any kind of disaster must be overwhelming. The environment would stay this way, too, for some time. In some cases, it could be an all day commitment once a recording station were to be set up and word spreads that people can broadcast a message for their family or friends. The last thing that the Vid.bb representative should have to worry about in addition to directing the recordee' message, handling the technology, and staying aware of all of the people around her is transcribing each message.

> "People in Emergencies are working 14 to 18 hour days and have no tolerance or time for things unrelated to dealing with the crisis" (6)

Another reason why text entry at the time of recording was decided against is that there is no way to predict what language affected people will speak, especially if the crisis area is located in a tourist area or if the crisis affected multiple regions, such as was the case with the 2004 Indian Ocean earthquake. In the chaos of a relief camp it may also be difficult to hear or understand someone without having to ask them

to repeat themselves.

Another feature of the prototype recording system is that rather than requiring a constant connection to a remote FlashComm server, the FlashComm server is on the local server (laptop hard drive). With FlashComm on the local server, video messages would be saved directly to the laptop hardrive. After a pre-determined number of videos had been recorded or when there was a lull in the action, the videos would then need to be uploaded to the Vid.bb server via satellite Internet connection. Once the file upload had completed, the videos would immediately (depending on any server lag-time) be accessible for anyone on the Vid.bb website to view or edit.

Web access point

As one of the main concepts behind Vid.bb is to make it an open-source project that other web developers can contribute to, the majority of the web technologies used in the prototype's development are widely used, open-source projects themselves: PHP and MySQL. The only proprietary part of its back-end is the technology behind the videos: FlashPlayer and flv formatted videos. The main restriction to using these two components is that neither can be reverse engineered to produce a similar product.

The thinking behind the informational structure of the website was to give users as many ways as possible to find who they are looking for. Visitors are unknowingly lead down a path that has them gradually narrow down their search. The first three searches available to a user from the main page are, search by crisis, location (of disaster), and video id (see Appendix C, fig. 1). Since videos from many crises will be in the database, one of these searches must be performed first. Determining the crisis is the most important piece of information to begin to narrow down the search, next to the video id. Obviously if the video id is known, no search is necessary.

After the crisis is determined, the user arrives at a screen where the most recent and most recently edited videos are displayed (Appendix C, fig. 3). From this page, the next level of search (by personal information (name, former home location, or physical attributes), relief center, by date, or some other piece of information) would narrow down the result set even further.

Each result would also display a thumbnail of the video, the name of the subject (if recorded), and the subject's current location. The thumbnails would let the person scan the results for a particular face. Scanning thumbnails un this way would mean that even if the searcher was only looking for one particular person, she might find other friends or acquaintances. In a case like that, even if the searcher could not offer any direct help, she could notify someone who was able to using a "send this link" e-mail notification. (see section on Notification)

When a user clicks on a video thumbnail, she is taken to the individual video information page (Appendix C, fig. 4). These video information pages are where the volunteers would review videos and add descriptive data. These pages are meant to be AJAX driven where users would just click on the text field to be changed, enter new or edit old text, and that piece of information

would be sent to a page that worked in the background and updated the database while the user continued working. This seamless interaction with no page refresh is a hallmark of asynchronous web interaction. In Vid.bb, it is one of the characteristics that will make the experience of virtual volunteering easier technically. An easy-to-use interface would have to be a requirement especially since reviewing stories from disaster victims would be emotionally draining.

Notification – staying informed with less commitment: RSS, email subscription, forum reply notification

Another quality of this system that would help make it accessible is that, in addition to the e-mail notification mentioned above, Vid.bb would also make use of other information reporting and dissemination technologies in line with the email "pass it on" service mentioned above. Vid.bb would also make use of e-mail and rss to allow users and volunteers to stay informed of new videos, edited information, or even people mentioned in videos. These technologies could also be used to keep people in touch with the remote relief effort, to stay informed of the progress of the on-location relief effort, and to monitor crisis situation abatement.

Appearance search reasoning

It may seem politically incorrect to include visual factors such as skin tone and weight but, as this is a video search, it makes perfect sense and, ultimately, is one of the biggest things that differentiates Vid.bb from other disaster victim databases.

Information display

Given the amount of data that will be contained on Vid.bb, it needs to be able to efficiently store, sort, access, and display information. The most important thing is to keep the site's main functionality areas, video search, forum, and collaborative development (content creation not included), accessible from the right pages and only accessing the relevant data.

Home page

On entering the home page for the first time (or for a user who has blocked cookies), the home screen would have a list of the sites different pages, categorized by their purported use: search, respond, contribute, learn, and support (Appendix C, fig 1). If a site visitor had been to the site before and their cookie had not expired (see Next Steps: User/Contributor Persistence), she would be taken to the main page of the specific crisis that she had searched (see following section). Generally, each crisis main page would have various types of videos from the specific crisis.

Main crisis page

The main crisis page would have three rows of videos, each row only showing videos that fell into a

specific category: most recently viewed (assuming that the user had searched the site before), most recently edited, most recently added) (Appendix C, fig 2). The "most recently added" category would there only on a visitor's first time to the site because having the 10 most recent would not necessarily be an effective grouping. This is because the first few days of a DR could see a huge number of new videos, making the "10 most recent" effectively become "recorded in the last hour". Using this scheme, during the peak of DR most of the videos would never be in the "most recent videos" section for more than an hour or two. After that, especially given that (estimating that during peak recording times) new videos could be made as quickly as twelve every hour, videos that had been marked as "new" only an hour past would no longer have that distinction (Note: this design is in the development phase. The current design has only two columns: most recently added and most recently edited (Appendix C, fig 3).

One alternative would be displaying a random selection of videos for every user that visited the site. With that set up there would be the trade off that for every person seeing a new set of faces there could be a user who had seen a face that they recognized but did not visit the actual video information page for whatever reason. Then, trying to return to that page to find that video, would find a completely new set of faces. Definitely a one in a thousand chance, but one of the main reasons for including images or videos of victims is that chance; that person who just happened to visit the site to see what it was all about and saw their mother's best friend from college. It might seem far-fetched, but that kind of experience is what the new generation of web sites is all about – running into a beloved toy that you had forgotten about (ebay), that chance encounter with someone who longs to do the same things that you have always wanted to do (43things), finding that house in just the right place (housingmaps.com), or displaying quantitative site data geographically (clustrmaps.com) – finding new ways to conceptualize, visualize, use, and make usable any and every kind of information.

A better scheme would be to keep track of viewer history and display the last ten videos that were viewed. Other groupings could include most recently edited, and a row of randomly chosen videos.

Location & personal characteristics search

The search by location and personal characteristics pages were designed to be more image based for users who, for whatever reason, prefer not to read.

Foundation / Business Model

Since the functions of the system exist in both the civilian and the DR professional realm (whether NGO or government), Vid.bb would technically be a Civil Society Organization (CSO). Civil society is basically the organizations and processes that help to keep a population functioning and healthy. Wikipedia states it like this:

> *Civil society* refers to the arena of uncoerced collective action around shared interests, purposes and values. In theory, its institutional forms are distinct from those of the state, family and

> market, though in practice, the boundaries between state, civil society, family and market are often complex, blurred and negotiated. Civil society commonly embraces a diversity of spaces, actors and institutional forms, varying in their degree of formality, autonomy and power.
>
> (from http://en.wikipedia.org/wiki/Civil_society)

As stated earlier, Vid.bb was conceived of to be a not-for-profit *international* crisis knowledge center. Thus, as with most non-profits and non-governmental organizations, funding would come from a variety of sources: governments, corporations, private donations, even other non profits. Governments would pay for the services provided and for the benefit of having human factors taken care of more efficiently through a distributed network of volunteers. Corporations would make donations to gain positive public exposure and for tax benefits. Private citizens would make donations for altruistic reasons and for tax-benefits. Finally, other NPs could also pay Vid.bb for its web-services provided and phase out their own WeViKS, basically outsourcing their web-based relief work and focusing their efforts on prevention, ground based relief operations, fundraising, and the other many duties that they may provide.

Vid.bb as an organization would have four separate divisions. All fund-raising would be done by one arm of Vid.bb, the Vid.bb Foundation. Site development and planning would be done by another, made up largely of open-source developers: the Vid.bb Group. Web-relief-site technicians, or Vid.bb Workers, would do all on-site operations. Finally, there would need to be a directing board to analyze efforts and help plan future development.

A more practical, or even realistic business model for Vid.bb would be to license out the core web application to other DR organizations. This would require much less overhead, both financially and in terms of manpower. With governments and more established DR organizations using Vid.bb and paying some sort of service fee it would do the following:

1. Free Vid.bb from the never-ending search for funding.
2. Give Vid.bb access to an already established pool of volunteers to use as Vid.bb aid camp representatives.
3. Cut down on administrative costs by requiring fewer paid employees.
4. Cut down on costs by requiring less of a physical infrastructure, namely recording platform hardware.

Ground Operations

Vid.bb Workers would have one of the most critical jobs in the organization. If they were not at the camps and relief centers collecting messages, then there could be too many things that could go wrong for the video message system to work effectively. Some things that could go wrong are:

1. Video subjects would go over their allotted time limit. Exceeding the time limit would 1) increase the amount of server space and bandwidth needed, possibly making hosting costs prohibitive.

2. Subjects would stay on one subject for too long or stray from the recommended data points to be mentioned, thus not giving enough relevant, useful information to make it useful for searchers.
3. Given the hectic nature of a relief camp immediately after a disaster occurs (Appendix D, Fig 1), certain victims might not want to wait their turn or follw any rules given.
4. A problem with the equipment might occur.

With a single trained technician or relief team member, none of these possible situations would be as much of a problem since there would be an intermediary there to guide the action and work out any problems. Typical duties for a Vid.bb technician would involve arriving at the camp and setting up, recording people who came to the recording station, and uploading videos. If there were ever lulls in the action, she might help other aid workers. The Vid.bb aid worker could also report DR effort/crisis center conditions to the Vid.bb forum, or anything else that seemed appropriate at the time. Also, she would troubleshoot any technical problems that came up with hardware or software for the recording platform.

As an alternative to this intermediary-controlled recording system, the concept for a self-contained recording unit has also been developed for certain situations. (Appendix B, fig. 3). This system would be a self-contained unit that unit would be transported into close proximity of the relief camp. The relief center could not be too remote as this stand-alone recording unit would to be transported to the location somehow and set up in a relatively clear, open area such as a parking lot or field. At this station, victims could leave messages by following a simple set of instructions and the unit would take care of all of the necessary moderating activities. There are problems in that there would be nothing to keep a person from leaving multiple messages in a single day, nobody to coach the victim in leaving appropriate information, nobody to set up or fix the machine it if anything went wrong. The use of this kind of device, though, is something that would come further in the future, after more statistics of usage patterns had been collected for multiple recovery situations.

Thoughts on rules/guidelines for leaving messages

To prevent abuse of the system and keep Vid.bb a credible resource, certain guidelines as to leaving messages would need to be adhered to.

- While it would be undesirable to completely block out any human factors of the messages (i.e. visible emotions: frustration, sorrow, anger, etc.), some guidelines would surely need to be given in order to prevent abuse of the system. One such situation to avoid would be having people requesting money or leaving direct requests for items. Another type of message to avoid would be from those with a purpose or motive different from the goals of the Vid.bb site – for example, using the site for advertising or a means of free promotion.

- While the purpose of the video message board is to let victims let others know where they are and what has happened to them, it is unfortunately possible that the messages might give various types of predators an obvious source of targets. Safeguards would have to be put in place to ensure that the most vulnerable people (children and the elderly for the most part) would not be taken advantage of.

- Some predetermined limit would need to be set as to the number of times or the frequency with which victims could leave messages.

The most serious issues of letting users leave video messages is, how would their privacy be ensured? Knowing how many stories are heard after a major disaster like Hurricane Katrina or the 2004 South Asia Earthquake, it would be naïve to think that predators won't try to use information gained on Vid.bb to take advantage of defenseless victims. (32) A model that has been used in past WeViKS is to keep victim information private is that victims give their phone number and people who want to find them, enter that phone number to search for them. Another possibility is that victims who didn't want to make their video(s) public could give phone numbers of people who they want to have access. Then when a searcher went to the site they would just enter their own phone number. With this system, victims could give multiple phone numbers to broaden the chance of someone finding the message.

With both of these attempts to add security, though, there is a problem of human memory. Especially nowadays with cellular address books and PDAs, people rely more and more on technology to remember important numbers for them. In a crisis situation, it is not likely that a palm pilot would be the first thing someone grabs when the crisis hits. There is also the fact that people often know more people (or know the phone numbers of more people) closer to where they live, especially in developing regions. In these cases the people whom they are closest to may have been affected by the disaster also.

Next Steps

There is still much development work to be done before even the prototype is fully functional. These are some of the next steps that are planned for the devlopment of Vid.bb.

Register Vid.bb on Sourceforge or other open source community

As it currently exists, Vid.bb is a proof-of-concept site: a tool to help people visualize the Vid.bb idea. Because of this, there are some parts of it that are not as functional as they could be. The open-source community has both the knowledge and resources (distributed) to improve the system immensely. As is the case with all OS projects, there needs to be some sort of oversight as to set the direction of development, assure quality, and make sure that no conflicts (code-wise) occur. Before a well-organized group of developers and designers can come together, though, there are a few areas that need to be more fully planned out to ensure success (35):

1. **Access to the code and to all previous versions**
   Those who want to participate in an OS project should be able to find all of the code and "code history" (previous versions) easily.

2. **Communications within the community.**
   Members of the community should be able to easily communicate ideas and issue amongst each other, especially since project contributors will most likely be in different parts of the world.

3. **Access to fixes and patches**
   One of the most important parts of Most OS projects is the use of some sort of version control system. Content Version System (CVS) and Subversion (SVN) are two of the most widely used. "CVS is a version-control system that is easily used in a decentralized environment, and of course it's open-source." (35) A CVS simplifies the complex matter of having multiple people in different locations working on the same code.

4. **All code should be well documented.**
   This is another especially important part to open source because of the transitory nature of some developers. One week a person may work on a module every day and the next week she may not. It is important that other people know exactly what the first coder was thinking when she wrote it.

5. **A system for bug reporting should be established early on**
   There should be one place where all problems with and major changes to the system are documented.

User/Contributor Persistence

Vid.bb is designed to have a large amount of functionality while keeping simplicity as a primary concern. A key component of the site's usability, which will enable Vid.bb to be adopted as the international

WeViKS of choice, is that users should be able to find the information that they want and not be confronted with information that doesn't fit their task. To that end, every piece of functionality ought not be available from every page. While this may seem counterintuitive to some, usability does not necessarily mean that one can do everything from every page, or at least certain actions should be more apparent than others. This *guided functionality* is a key part to many contemporary web sites.

The Initial crisis chosen by a user should be stored as a session variable or in a cookie. Thereafter, every search would automatically include the crisis as a search criterion, which would remove repetitive steps for those searching for loved ones.

Volunteer data-manager history and information should also remain persistent. When logged in, volunteers would not automatically be taken to the last crisis visited. Instead, volunteers would always be taken to the crisis choice page. This is mainly due to the facts that registered volunteers might not always want to cover the same crisis, or because their efforts might be needed somewhere else. Consequently, they should have easy access to the crisis choice page. Once successfully logged in, volunteers would be taken to a special entry page. On this page, new and unreviewed videos would be listed so volunteers wouldn't have to waste time searching for them. The volunteer control panel could also keep track of disputes and facilitate their response.

Internationalization

> *Localization (L10n)* – the process of translating a web site or piece of software into a country or region's native language and sensibilities. This includes making it conform to cultural/regional norms, which might include direction of text (whether read from left to right, right-to-left, or even, more rarely, top-to-bottom), color/image choice, language/phrasal usage, date formatting, etc.
>
> *Internationalization (i18n)* – the process of developing software applications/web sites so that they can be localized easily.
> (40)

As has been previously discussed, Vid.bb is meant to be used in all major disaster situations, regardless of location. This being the case, the site will have to be internationalized so that it can be easily made accessible to people in all countries. While often time-consuming, internationalization is an integral part of the plan for Vid.bb. When one considers the number of countries (191-193 depending on who you ask (*cite* 42)) and then the number of languages in the world (6,912 (http://www.ethnologue.com/)), the localization process appears that it will be positively grueling. However, if Vidbb.org is to be accepted as the information center for disaster victims, will need to be localized for each if it.

A concept that was taken into account in the design of the prototype is that of *glocalization*.

> *Glocalization* - The creation or distribution of products or services intended for a global or transregional market, but customized to suit local laws or culture.
>
> (from http://encyclopedia.thefreedictionary.com/Glocalization)

As the word glocalization (gloc8n) is a portmanteau of L10n and globalization (g11n), it carries part of the meaning of each but still remains distinct. While g11n implies the use of a universally accepted design and language, with gloc8n, the idea is to keep the site structure and design the same for different places or as similar as possible but include some localization, especially language.

An example of effecive gloc8n is the classified site, www.kijiji.com. Used in 11 different countries/markets, kijiji sites all use the same basic template with the text and graphics all localized into the regional language. Additionally, the classified service business model is one that can easily be transferred across different markets and is understood fairly well in the various regions.

An example of less effective glocalization is www.craigslist.com. Like kijiji, it is also a classified site that uses a template across different regions. However, absolutely no localization has been done. Neither language nor formatting has been changed. The detrimental effect on site usage can be seen by comparing the number of listings left in the non-localized site to those in the localized site. For example, for Barcelona's version of each, the version in Spanish (kijiji) has 6,826 ads in the jobs section while craigslist only lists 108. For personal ads, the Spanish version has 22,300 while craigslist has merely 160. In order for a site to develop the trust of a region's populace, it can't be perceived as a foreign entity. At least it should appear to be respecting regional differences rather than forcing everyone to become conform to unpreferrential manners of communication.

Just as it is incredibly difficult, if not impossible, to predict when disasters will occur, the same goes for knowing where one will happen. In 2004, close to 36% of the world's online population used english as their preferred language while 64% used another (around 37% European (non-english) languages and about 27% asian languages) (from http://global-reach.biz/globstats/index.php3). These statistics help show that web gloc8n truly is one of the most important next steps that needs to happen for Vid.bb.

Other Technological Possibilities

There are also a number of other possibilities for future developments. Some of them may seem far-fetched, but judging by research that has been done in these areas and web projects that are already underway, they may be closer to being reality than one might think.

- **Video (photo) Recognition technolog**y - Salient object detection techniques could be used to automatically fill in descriptive data (skin, eyes, facial characteristics, etc.). Riya.com is one project working with photo recognition technology and image object recognition technologies. (39)
- **Audio Recognition technology** – This wouldn't be possible for quite a while, but with voice recognition technology, all video analysis could be automated. Of course this would negate many of the benefits of having actual users be able to pick up on facial expressions and tonal inflection. It could however be helpful in cases where few volunteers were helping.
- **Geographic location** – Iconic representation of victim location could be displayed on a map.. This would be fairly easy if locational information was entered correctly by the volunteer community, if global positioning were located in the recording platform, or if videos were given a

locational signature when uploaded to the server.

- **Milk-carton-style advertising** - Make another RSS feed so that web site owners could include video thumbnails on their site similar to milk carton 'missing' photos except the opposite; rather than saying, "have you seen this person" (this person is missing), messages would say, "do you recognize this person," (this person was found).

FIN

As with many contemporary web applications, the possibilities that exist for Vid.bb as an internationally accepted, web-based, disaster victim knowledge system and even as a collaborative community disaster mitigation tool are exciting. By taking advantage of a large community of generous web-users and harnessing their strength using the power of AJAX and other technologies, it could give rise to a new generation of socially conscious sites. These sites would promote real-world action through on-line connection making and facilitation of communication.

As time progresses, the line between reality and the world of information has become fainter and fainter but never truly disappeared. Through the use of Vid.bb and boundary-blurring systems like it, the line between the online world and the physical world will become fainter still as actors from the two sides interact, plan, and collaborate. A common criticism of the Internet is that it doesn't provide any benefit to underprivileged peoples or underdeveloped nations. With collaborative sites like Vid.bb that blur geographic boundaries and accentuate the commonality of human fragility, perhaps this divide between people and nations will finally be bridged by sympathy for one's fellow man.

Note: as of the completion of this paper, only some of the ideas described in this paper have been implemented in the web prototype (http://vidbb.org). Development of the system, though, is ongoing, especially if this project is taken up by the open source community and championed by a visionary funder.

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Appendix A – Video Message Data Points

This list gives the information that people leaving messages should start each video with. After covering the points listed in bold below,

- **Name:**
- **Previous residence:** (Location where you lived before the crisis)
- **Currently residing:** (where you are currently staying)
    - **Country** (if different from ground zero of disaster)
    - **City, state/province:**

Optional info: the following information is meant only to give an idea of some types of information that one can leave.

- **Phone contact** – currently improperly assumed to be relief center phone. Will be changed.
- **Current health**
- **How disaster affected your health**
- **How the disaster affected your house/property**
- **Information about how other members of your family are**
- **Information about family, friends, or other people that you know about**
- **Short story of what happened to you**
- **Message for anyone who sees the video**
- **Who the message is meant for**
- **Any other needs you have**
- **Plans for the immediate future**

"Embedded" info: these data elements are those that would be programmatically associated with a video database record.

- **Relief center / camp:** the recording platform could be set up to automatically "tag" videos at the time of recording. Another possibility is that relief camp information could be included at the time of upload.
    - **Relief center phone** -
    - **Relief center location**

- **Other video messages victim has left** – This information would show if the subject had left more other videos. Could be helpful in tracking transitory victims or keeping track of effectiveness of relief effort.
- **Last fields to be edited** – Allows for a record of every edit made and the changed value. This will make it possible for disputed changes to be reversed. The administrator would have the ultimate say over changed values – of course, mods would most likely not have enough time to check every changed value. Possibly 'contested' and 'locked' columns should be added. Locked would mean that someone who presumably knew the video subject, would confirm that this info (i.e.: name, address) is correct. There are all sorts of problems with this, first of which is human fallibility and the inevitability of error.
    - **Edit date** – keeps track of date that each edit occurs
    - **Field edited by** – This field is used for programmatically tallying volunteers' reputation score.

Inherent info: these data are descriptive of the message subject. The capability also exists or nearly

exists to make these data automatically recorded but there are other reasons to keep it so that it has to be updated by users (see *Other Possibilities*).

- **build**
- **hair color**
- **hair length**
- **skin tone**
- **eye color**

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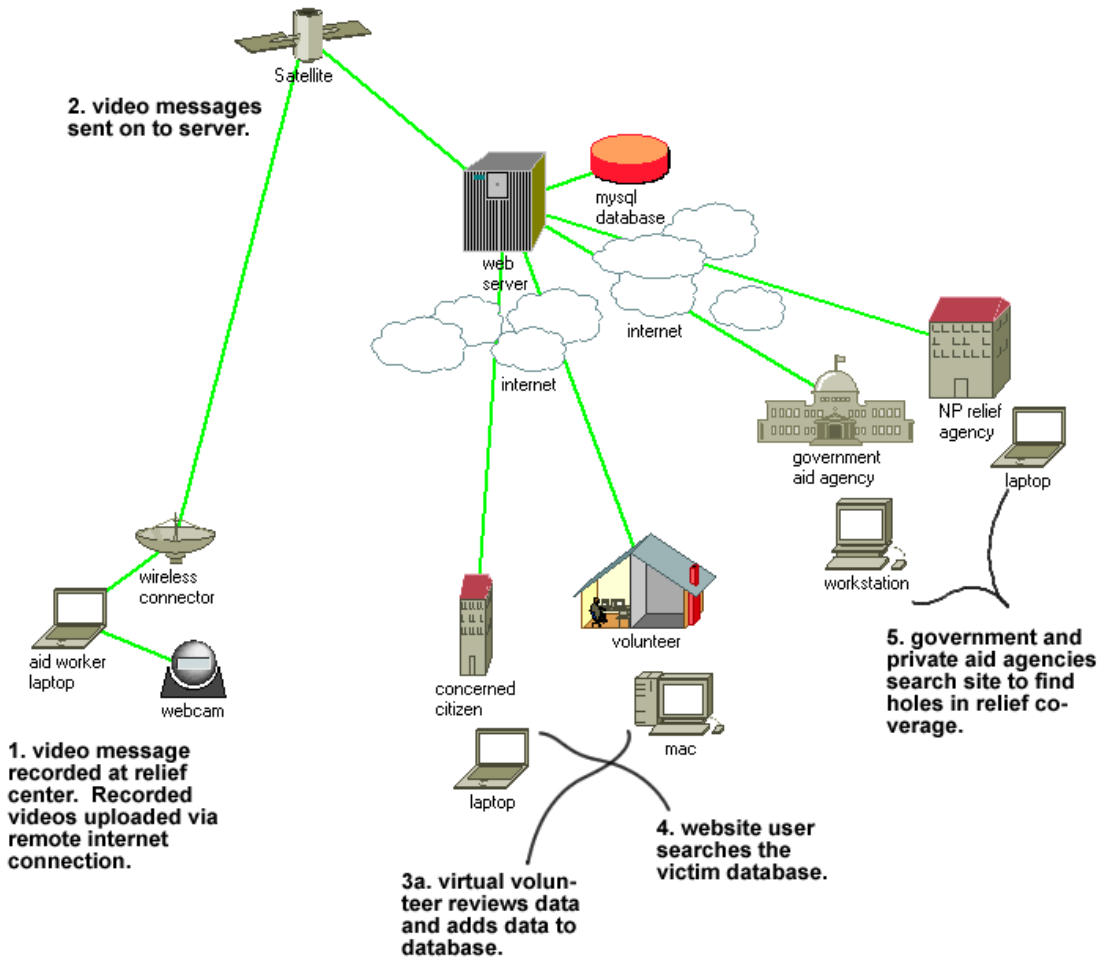
fig. 1 - Vid.bb Network/Information Transfer Model - This diagram show a high-level model of the flow of information on Vid.bb.



Appendix B – Recording Platform

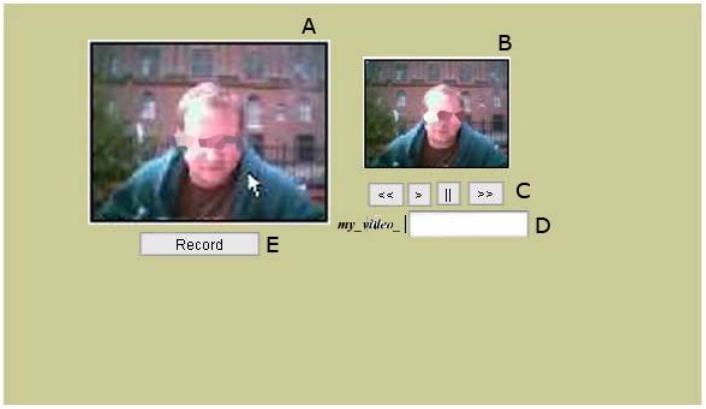
Figure 1 - Mobile Internet Systems - two available satelite Internet access points that might be used with the recording platform.

Regional BGAN provides mobile internet connectivity within 99 different countries. (http://www.traderock.com/rbganportable internetsatelliteweb.html)

iNetVu™ has a number of features that make it a good choice for even the most remote regions.

(http://www.lamit.ro/mobile-two-way-satellite-internet.htm)

Figure 2 – Aid-Worker-Run Recording Platform Interface



A. **Current camera viewfinder –** shows what camera is seeing
B. **Playback screen**
C. **Replay control buttons**
D. **Playback selection** – for selecting video to playback - only used if subject records more than one take
E. **Record button**

The aid-worker recording platform interface has only five controls. This is to make things as simple as possible for the aid worker as the relief camp would be a very busy environment.

Figure 3 – Stand-Alone Recording Platform Interface

The interface for the laptop version is slightly different. It doesn't have the location indicator (A), timer (C), prompts (D-F), or screen keyboard (I). The only added feature is that it has a second, smaller videoscreen for video playback.

A. **Crisis location graphic –** location of crisis would also be embedded into video file.

B. **Video viewfinder / preview screen** – only one playback screen here so as not to confuse non-technically savvy

C. **Timer graphic** – in the stand-alone unit, this would make sure that users don't make their message too long

D. **Prompt to enter name**

E. **Record button**

F. **Approve video button**

G. Replay control buttons

H. **Text-entry field** – for video subject's name

I. **Touch-screen keyboard** – The challenge to this is customizing the keyboard interface for different locales

J. **Hidden camera**

Appendix C – Web Interface

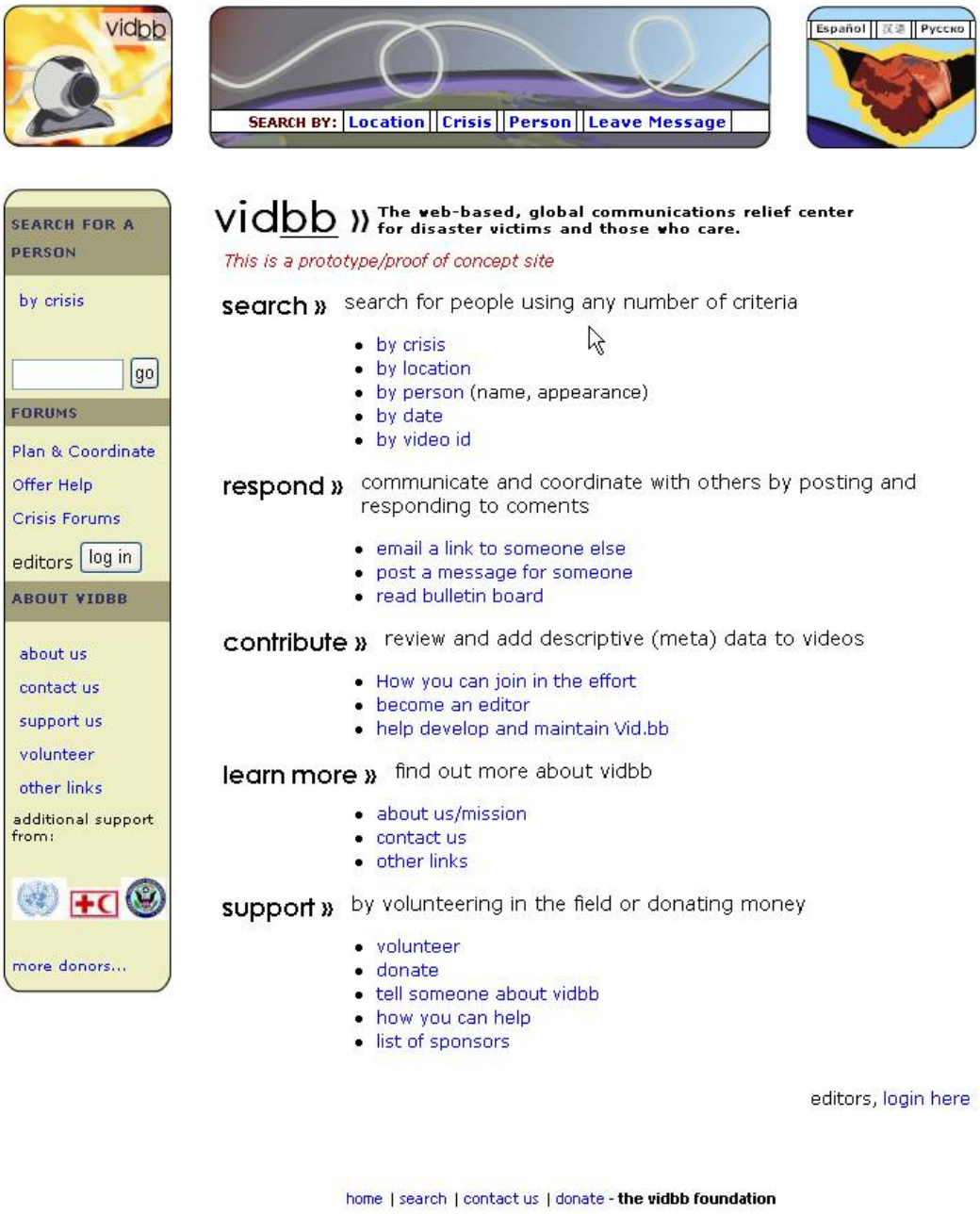


Figure 1- Vid.bb template with home page information in the content area. – the framing navigation bars would be on every page.

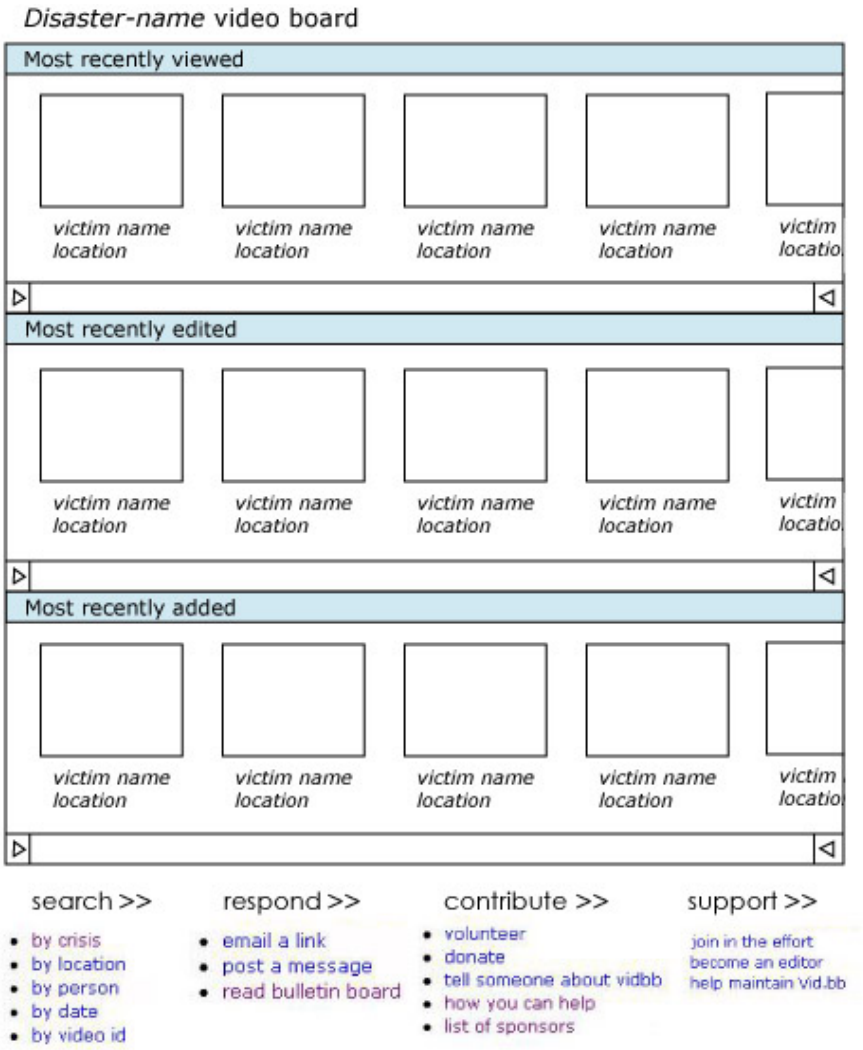


Figure 2- Preferred version for the main crisis introduction page – Menus below video thumbnail rows would all be disaster specific.

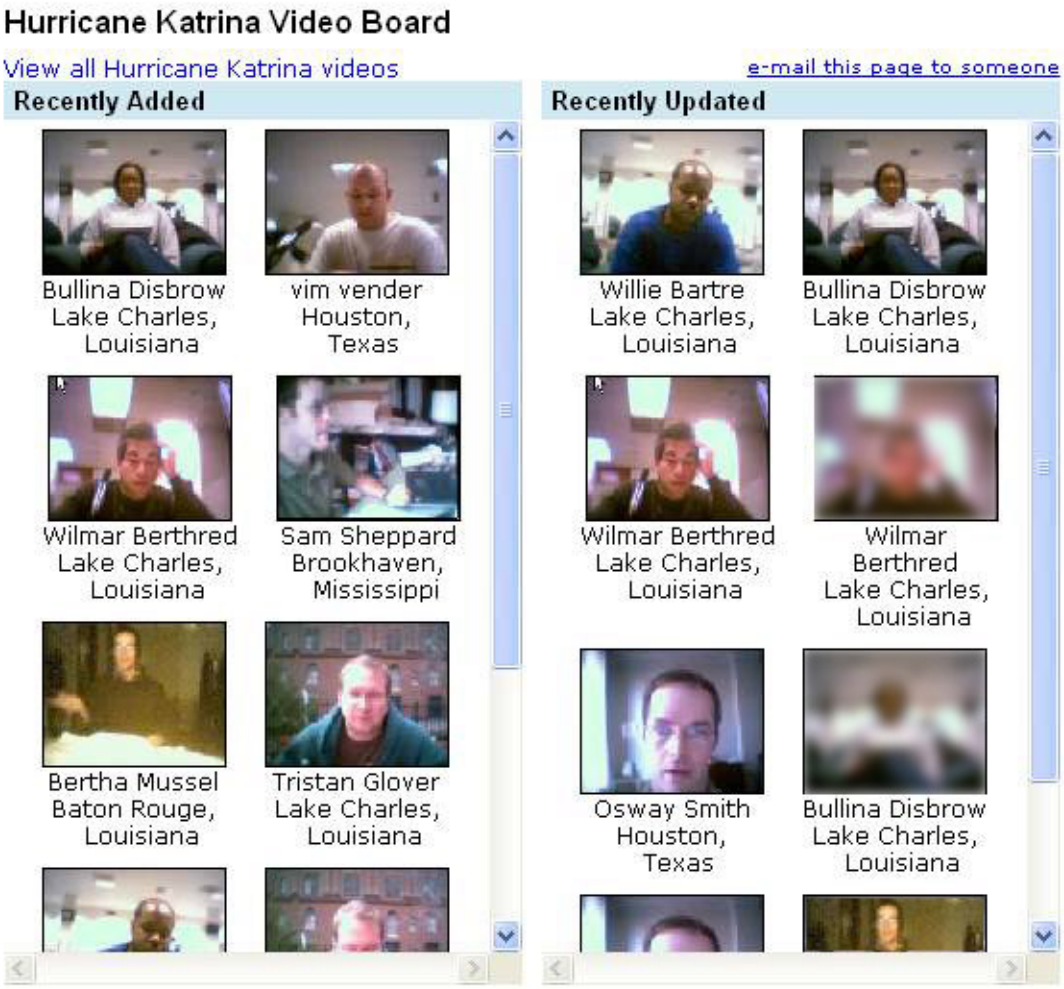


Figure 3- Version 2 of the main crisis introduction page. – This is the version that the Vid.bb prototype uses.

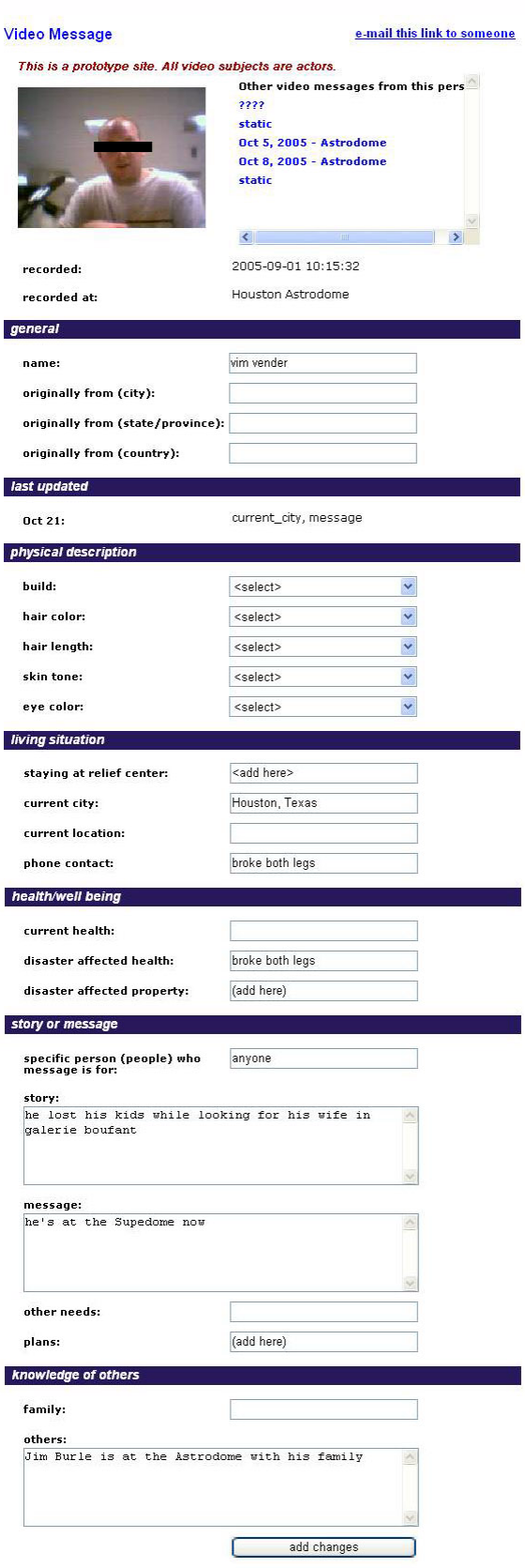


Figure 1- Individual video pages have room for all of the information points in the recommended script. (Appendix A).

Victim information is grouped by:

- Subject video information (including other videos by this person, personal information (name, home address, etc.), video edit, physical charictaristics, curren living conditions, health, brosdcasted message, and lnowledge of other people affected by the disaster).

The most notable feature of this page is that all data elements can be dynamically updated via AJAX technologies (not yet implemented in the prototype).

Appendix D – Misc.

Figure 1

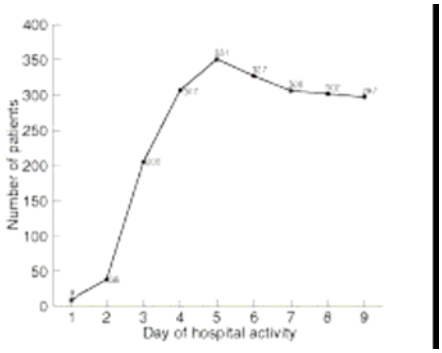


Fig 1, Relief camp usage – chart showing a typical population level in disaster aid centers in post-disaster areas. from (36, p.105).

Forum discussion from http://www.p-h-u-k-e-t.com/forum/ - This forum transcript gives some idea of how images can be used to help concerned people.

*Laila Poste*d: Jan 2 2005, 10:17 PM
I'm really unsure where I should post this. But I've been looking at the pictures for a long time now and the resemblence is most certainly there. I was looking for another person, when I came across this pic than reminded me of a woman I had seen on the missing site in VG. (Norway)
This is the picture of missing Britt-Unni Jacobsen.
http://interaktiv.vg.no/spesial/flodbolgen/SISTE.html
And the picture I found.
http://202.129.16.17/view.php?PictureID=DSCNO492
I didn't wanna rush into contacting family and so on, as long as I'm not totally sure. But does anyone else see the resemblence?
Sorry if this post offend anyone.

Angel Posted: Jan 2 2005, 10:41 PM
it does look a bit like her but I´m not sure

rockymtn Posted: Jan 2 2005, 10:47 PM
Angel,
I really don't think it is her. If you enlarge the first picture, you can see that her nose is totally different. I know there was someone else searching for his mother, and described her as having dark red hair. She was missing from Khao Lak. Here's his post. Maybe her?
http://www.p-h-u-k-e-t.com/forum/index.php?showtopic=4660

MiaJ Posted: Jan 2 2005, 10:59 PM
Laila,
I would sent a mail to the the persons adress that search for her.
IF it isn´t her, at least you did your best.
Its better to hear "no its not her", then not knowing if they ever will find their loved ones.
I think it looks a lot like the missing person.
/Mia

*Laila Poste*d: Jan 2 2005, 11:17 PM
> *QUOTE (MiaJ @ Jan 2 2005, 10:59 PM)*
> *Laila,*
> *I think it looks a lot like the missing person.*
> */Mia*

That is true. I just don't dare sending the mail in case they get mad and annoyed at me for interfering.

Vitamina Posted: Jan 2 2005, 11:19 PM
No i don't think it is her.

Vitamina Posted: Jan 2 2005, 11:25 PM
sorry i lookt at the wrong name,, and yes it may be the same person..

Helpboard Posted: Jan 2 2005, 11:27 PM
If you try to make some small measurements, nose length, space between tip of nose and bridge of nose, space between top of forehead (roughly) and top of eyebrows, chin and bottom lips etc. It is sometimes easier to tell.
The woman in the morgue picture seems to have a slightly receding chin (where the bone is, not where the skin is loose under her chin) whereas the woman in the newspaper picture has more of a dimple.
The cheek bones of the woman in the morgue are a little higher than the woman in the newspaper (tip of nose to cheek bone, corner of lip to cheek bone.)
And so, I don't really think it's her.
It's so difficult to be sure though, isn't it?

MiaJ Posted: Jan 2 2005, 11:31 PM
> *QUOTE - That is true. I just don't dare sending the mail in case they get mad and annoyed at me for interf*ering.

The only reason we do this is that the relatives will find the persons they are looking for.
If it feels unpleasant, send at mail to UD or to the newspaper that has the missing photo.
/Mia

lestagirl Posted: Jan 3 2005, 03:49 AM
I think it looks like her.

aussie_girl Posted: Jan 3 2005, 04:03 AM

I think it could be her.
Yet really is hard to tell.
Laila send to mail at UD, if feel uncomfortable about sending to the family.

Rockymtn*: I don't think it can be the woman.As mother was described as wearing a black swimming costume at the time.*