

**EMERGENCY AND POVERTY RELIEF EXPERTFINDER**  
**Position Paper Submitted to the 1st Expert-finder Workshop,**  
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## **Abstract**

Emergency Relief Coordination Efforts are increasingly Internet based. In addition to systemic, structural, cultural, political and policy obstacles that inhibit the effective and seamless coordination of emergency relief operations, there are some practical, technical limitations to the information and communication models that need to be overcome. **In this introductory paper, we acknowledge such problems, but limit the discussion and scope of work to the technical domain, concentrating on the development of an embedded semantic framework that can be woven into the net and used by teams of volunteers to coordinate help and synch up with each other.** *Assumption:* Properly developed and applied technology can increase transparency of information and improve information flow and communication, therefore, can have an impact on social behaviours, It is believed that once reliable and trustworthy tools become available and people start to adopt them, new relationships based on trust and sharing of goals and resources will be facilitated.

In this paper we propose that there are several ways that Expert-finder can be developed and applied successfully to **foster communication and coordination among different, distributed teams during emergency relief operations, irrespective of their affiliation and denomination**, and take this first workshop call for papers as an opportunity to invite interested parties in the humanitarian technology community to take part and collaborate in future effort to harmonise conceptual and semantic references as a step towards resolution of conflicts and imperfect communication flow.

## **Background**

In the last couple of years there have been world scale **natural disasters** of epic proportions. The tsunami of December 2005, hurricane Katrina, a massive earthquake in Pakistan, and the most recent Java Indonesia humanitarian crisis, are some examples, but **ongoing poverty and lack of access to economic resources** are endemic, widespread and plague large sections of the world population. In recent years the emergence of Internet based technology and telecommunication infrastructure has been welcomed by the humanitarian operations community as a promise that the distribution of resource allocation and increase the speed and efficiency of operations could be facilitated by supporting the real time exchange of information of emergency and poverty alleviation programmes. In practice, however, the Internet is still largely used by the media businesses to broadcast 'one way' communication (news and pictures) which ultimately promote the concentration of donations and resources in the political hands of a few highly bureaucratic organisations, The web is not yet leveraged in its full potential as network to can **provide transparency, information verification and real time data support to help the coordination and optimization of emergency and poverty relief operations** by heterogeneous agents and on a distributed basis.

It is believed that there are sufficient efforts and programs already in place at global level to help address many imbalances and inefficiencies in the flow of resources, but the lack of an efficient information and communication model is preventing optimization, accountability and ultimately 'efficiency' to take place and result in effective synergy among all the resource providers..

### **1) What current research or applications relevant to the ExpertFinder idea are you pursuing?**

Given the launch of the ExpertFinder, which main aim is about defining vocabulary extensions and best practices to annotate online resources with adequate semantic metadata to find experts on particular topics, we see the initiative, properly developed and adapted to the Humanitarian Operations domain, to be a **great opportunity highly suitable to be applied in the emergency and poverty relief fields, by creating semantic structures that can enable organisations involved in the humanitarian activities**, to leverage the benefits delivered by Social Networking and Semantic Web technologies. Some efforts have already started in that direction, with a few examples listed at the end of this paper, but the lack of cohesion of purpose within the humanitarian community, as well as the lack of a cohesive information model and ontology of reference for the field, is inhibiting new technology adoption in the sector, therefore it is preventing the reaping of the benefits from the adoption of new technologies, namely more accurate, transparent and efficient information in support

of relief operations.

## 2) What future plans or vision do you share with ExpertFinder?

In order to support the automation and harmonization of information of humanitarian field, it is necessary to **overcome the semantic and conceptual gaps that distort and inhibit information flow**, therefore create obstacles to communication among workers in the field. It is believed that participation of the emergency relief community in the ExpertFinder initiative is **a step towards starting harmonization**. Expertfinder initiative has the potential to be applied very usefully in helping to harness the huge potential of the **Internet as unlimited pool of resources for humanitarian projects**, by automating the aggregation and matching of relief information thanks to the combined use of 'tagging' and matching functionality. By embedding tags of code into online resources, either ad hoc during emergencies and or as standard components of humanitarian organizations' information infrastructures (dedicated pages of online websites), humanitarian data indexes can be created and update in real time, and made available as information for operations management.

## 3) What practical obstacles or research challenges are to be overcome to make ExpertFinder vision come real? There are innumerable problems that need to be addressed to achieve the vision of the Internet as an optimal medium for conveying disaster and emergency information. Although the root of the problem is of political nature, against which mere technologists are powerless, a **sound, open and transparent information infrastructure can help boost human solidarity and promote a culture of trust and collaboration at humanitarian level**. Among the main challenges we identify:

- The lack of an agreed 'universal' semantic standard for data exchange, sufficiently robust and flexible to support different levels and degrees of adoption and customization by different agents without impacting its validity and efficacy
- Assuming an optimal data exchange format can be formalized, the difficulty in promoting acceptance of innovation among the more conservative large organizations which effectively still hold control over large portions of international resources.
- Limitations in the ability to support data exchange while protecting privacy.
- Need to create a validation and disclosure authorization mechanisms for the gathered data and information

Online Projects in support of emergency crises have recently adopted FOAF based protocols (see PFIF/SFIF below) yet it is believed that FOAF itself may not be suitable to support privacy and other person data in situations of emergency, and may require some modifications.

The purpose at this stage of our current project is therefore

- 1) evaluate the suitability of FOAF as a displaced person finding scheme during emergency, and provide FOAF modifications accordingly (or alternative schema)
- 2) evaluate the suitability of FOAF as a relief and emergency expert finder scheme

### Current scope

At this present, initial stage, the project scope is: **evaluating the suitability of Expert-finder model/schema to be used as part of an information protocol to be included in peer 2 peer network architectures deployed in support of emergency and poverty relief operations**, aimed to automate the identification, communication, coordination, interlinking and harmonization of individuals, organisations and public institutions via the use of online agents (humans and machines). Our working prototype that we intend to test the schema on is already in beta version, On **www.p2paid.org**

**Long term contribution: Ontology for Emergency** In the long term, this work will contribute to the **emergence of a public ontology for emergency and relief**. Different organisations already adopt internally agreed conceptual frameworks to define their ontology, but being these 'walled' representations of realities, fail to validate the first criteria for internet based, open and web based applications: They do not adhere to **open standards**, as they are designed to work only as a function of a closed system. There challenges towards developing an open ontology for emergency and relief are enormous and of complex nature, and the long term scope of our project intends to make a contribution and start an active community towards it.

**WORK IN PROGRESS:** Several open source initiatives have already been started over recent years that either leverage the principles of semantic network above, or have identified the need for a semantic layer to ensure robustness over open distributed networks such as the Internet. The author of this paper, in collaboration with is actively taking part and where necessary sponsoring several related projects, including:

**PFIF/SFIF (people finder and shelter finder information schema)**

During Hurricane Katrina an RDF schema to match and export people data in xml format PFIF (see [www.zesty.ca/pfif](http://www.zesty.ca/pfif)) was started. One of the authors, Peter Mika, thinks that although the initial schemas were inadequate knowledge representations, given that they were created without planning and in a short time frame (2 hours), given proper planning FOAF can be modified successfully to meet people (and humanitarian experts) finding needs, facilitating the reuse of existing components, e.g. social network or geographic visualizations, smushers etc. and making such links available to humanitarian networks. Peter says ‘During Katrina Since the PFIF schema was given however (the data was already in PFIF), I first translated the XML Schema to RDF with some minor cleanup in the process (getting rid of the most ugly things). This was done with XSLT. I then provided a bridge-vocabulary to FOAF. Basically, how certain PFIF properties correspond to FOAF properties. <http://prauw.cs.vu.nl:8080/pfif/>’

**SAHANA.LK**

Sahana open source team has developed different modules (2005) handling different situations of emergency, and is releasing them free to download on the internet. Given the bazaar nature of development, the highly distributed nature of the teams, and limited familiarity with semantic and knowledge engineering fields of the developers to date, little attention has been paid to semantic consistency, causing system design flaws that pose a high risk in life critical situations and prevent the system from being optimized for data exchange. The developer teams have recently accepted the importance of metadata, data import export, xml schemas and have finally accepted that Ontology is relevant and important to ensure the robustness of Sahana modules. Semantic layer for Sahana has been started by the author of this paper in August 2006 with various contributions to the discussion group and wiki (see Sahana wiki) and is currently being included in future stages of development and future releases of the Sahana platform. [www.sahana.lk](http://www.sahana.lk)

**REFERENCES:** 1) Preece, J. and Diane Maloney-Krichmar (2003) Online Communities. In J. Jacko and A. Sears, A. (Eds.) *Handbook of Human-Computer Interaction*, Lawrence Erlbaum Associates Inc. Publishers. Mahwah: NJ. 596-620. 2) Wood, Donna J., and Barbara Gray. “Toward a Comprehensive Theory of Collaboration.” *Journal of Applied Behavioral Science*, Vol. 27, No. 2, 1991, pp.139-162. 3) Patrick Barkham, 2004a. “Frantic search switches to cyberspace as old methods fail,” *The Guardian* (29 December), at <http://www.guardian.co.uk/tsunami/story/0,15671,1380495,00.html>, accessed 24 April 2006 4) Patrick Barkham, 2004b. “The tsunami bloggers have their day,” *The Hindu* (30 December), at <http://www.thehindu.com/2004/12/30/stories/2004123001672200.htm>, accessed 24 April 2006. 5) David Geilhufe, “Personal history of the Katrina PeopleFinder Project PART I,” at <http://socialsource.blogspot.com/2005/10/personal-history-of-katrina.html>, accessed on 10 February 2006. 6) KatrinaHelp, at <http://katrinahelp.info>, accessed on 10 February 2006 7) Paula di Maio, “Tsunami help blog, developers notes: Experiences and lessons learned,” (February 2005), at <http://www.content-wire.com/Custom/Documents/DocumentItem/TSUNAMIHELP%20NOTES.pdf?CFID=194652&CFTOKEN=84579784>, accessed on 10 February 2006. 8) Ethan Zuckerman, “Recovery 2.0 — thoughts on what worked and failed on PeopleFinder so far,” [weblog entry.] *My Heart's in Accra*: Ethan Zuckerman's musings on Africa, international development and hacking the media, at <http://www.ethanzuckerman.com/blog/?p=170>, accessed on 10 February 2006. 9) *Architecture of the World Wide Web*. First Edition. (2004). Retrieved April 15, 2006, from <http://www.w3.org/TR/2004/PR-webarch-20041105/> 10) Bechhofer, S. and Horrocks, I. (2003). The WonderWeb Ontology Language Layer. IST Project 2001-33052. WonderWeb: Ontology Infrastructure for the Semantic Web. 10) Berners-Lee, T., Hendler, J., Lassila, O. (2001). The Semantic Web, *Scientific American*, 284 (5), 34-43. 11) Building the Europe of Knowledge. (2006) Proposal for a Decision of the European Parliament and the Council Commission of the European Communities. Retrieved April 20, 2006, from [http://ica.cordis.lu/documents/documentslibrary/2461\\_EN.pdf/](http://ica.cordis.lu/documents/documentslibrary/2461_EN.pdf/)

**BIOGRAPHY:** Paola Di Maio is a software engineer and information systems analyst and designer. She holds a Msc in Information systems, and works as a lecturer and researcher for international academic and private firms. A former journalist and reporter, she works as research projects evaluator for the European Commission. In her spare time volunteers time to build information models for humanitarian projects. In August 2006 she started taking steps towards she started an Ontology Framework for Humanitarian Operations, p2paid.org, and contributed to tsunami, Katrina and sahana.lk projects