

**ELECTRONIC NETWORKING AND DATA COMMUNICATIONS  
FOR DISASTER RELIEF MANAGEMENT: use in the International  
Federation of Red Cross and Red Crescent Societies**

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**ABSTRACT**

This paper discusses the development of a worldwide communications network for the International Federation of Red Cross and Red Crescent Societies in Geneva. It describes the work to be carried out by the Federation in connection with a Canadian government grant for \$2.7 (Can) million, to establish a global Red Cross/Red Crescent network for disaster management linking national societies and the Federation's delegations. The plan is to set up pilot projects in disaster-prone regions concentrating initially on Africa, Asia, Ex-Yugoslavia and the Caucasus region, focusing on both information management and data communications questions. One essential aspect of the project will be undertaking a needs analysis study to determine which specific types of information are required for the disaster relief effort. The data communications work of the project concerns the development of a telecommunications network linking national societies and delegations to facilitate electronic mail and the access to information in the Secretariat in Geneva and regionally. The use of computer based messaging systems including cc:Mail and Internet based e-mail systems is described as well as the World Wide Web. The Federation is a global organization made up of 169 national societies around the world which assist some 9 million people annually through its operations. Most national societies are in developing countries with unique infrastructure challenges, which have to be overcome to ensure reliable communications for disaster relief, the Federation's principal mandate.

## **Electronic networking and data communications for disaster relief management : use in the International Federation of Red Cross and Red Crescent Societies.**

Over the past half century, communications in the International Federation of Red Cross and Red Crescent Societies, as in other humanitarian organizations, were mainly concerned with radio, telephone and telex services. Telecommunications delegates (the Federation term for experts working in field operations) were frequently radio amateurs or former military personnel who had been trained primarily in radio communications. This pattern of activity has changed dramatically in the last ten years with the availability of computers and the growth of the telecommunications industry.

The International Federation of Red Cross and Red Crescent Societies is made up of 169 national societies around the world, with a coordinating Secretariat in Geneva. Its mandate relates specifically to disaster relief, and the overall vision is to reduce human suffering. The Secretariat employs some 270 people in Geneva and has more than 400 delegates and 1500 local staff in the field. National societies can call on the Federation Secretariat for help in the event of a disaster. The Secretariat then launches an international appeal to other national societies and coordinates the people, money and materials that are donated. Since its foundation in 1919, the Federation has launched more than 800 international appeals of this type. The use of information technology and networking is recognised as a significant asset in improving disaster management for the Federation in both the Secretariat and national societies, most of which are in developing countries.

The national societies themselves have supported the concept of developing better information systems and are committed to progress in this regard. The Beijing Declaration produced at the IVth Asia and Pacific Regional Conference of Red Cross and Red Crescent Societies in May 1993 declares that: "it is imperative that national societies pay increased attention to regional and national resource sharing and improved organisation and information systems, to guarantee a secure and sustainable resource base".<sup>1</sup>

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<sup>1</sup> The Beijing Declaration. Geneva: International Federation of Red Cross and Red Crescent Societies, IVth Asia and Pacific Regional Conference of Red Cross and Red Crescent Societies, 1993.

### Canadian grant for the development of a global network

In January 1996 the Federation received a \$ 2.7 million (Canadian) grant from the Canadian International Development Agency (CIDA) thus providing the financial foundation for the establishment of a global Red Cross/Red Crescent network linking the Secretariat, national societies and the Federation's delegations. This two-year grant focuses on building information management capacity within these organizations, in addition to ensuring reliable telecommunications tools, to increase the ability of the Federation as a whole to communicate and cooperate more efficiently and expediently in the case of disaster. Although this grant is for a two year period, it was recognized that this would take three to five years to accomplish. While most national societies in the North have relatively good technological tools, national societies in the South are usually poorly equipped and often have limited resources. Several national societies, largely from Nordic countries, have contributed financially to this project, and will draw on the expertise the Federation has developed over the last few years to take advantage of Internet and "Intranet" services (*internal* organization-wide use of private information and network services) to extend public awareness of their activities and facilitate cooperation among national societies. The main focus of the project, however, is on improving the use of information and telecommunications tools in developing countries. Since most Federation delegations and the majority of all national societies are in developing countries, it is essential to develop a communications strategy which could easily be implemented in these areas.

The plan is to set up pilot projects in disaster-prone regions. It was decided to concentrate initially on Africa, Asia, former Yugoslavia and the Caucasus. Workshops will be organized with national societies in these areas to provide training on communications and information management techniques. Other workshops will be organized during scheduled Federation events. Feasibility studies and plans will be developed for these meetings, examining the requirements, existing information infrastructure and specific problem areas. Follow-up sessions will be conducted with individual national societies and delegations.

The development of the network, which is in process, involves two major areas of activity:

- information management
- data communications

The information management part of the networking process focuses on the continued development of Federation databases, information collection and services vital to effective

cooperation in disaster management. At present, much of this work is being carried out by the Secretariat, but the goal is for regional information collection to take place in national societies and Federation delegations so that more accurate, up-to-date and operational information can be gathered. The emphasis is on collecting and making accessible substantive information essential in disaster response and for the coordination of work with national societies. Wherever possible use is made of standard software packages and existing applications developed by other organizations.

The Federation works closely with national societies in developing their own infrastructure and capabilities. The project funded by CIDA aims to work toward:

- better administration of disaster response
- better reporting
- better disaster preparedness
- increased know-how on communications and information systems management within national societies
- global information sharing for the Federation

One essential module of the project focuses on undertaking a needs analysis study concerning which *specific types of information* are required for the disaster relief effort. It will be necessary to ensure that this information, which is largely found in the field, is systematically organized and collected. Research methods are being examined in order to determine the most efficient and accurate way of identifying key information that has to be systematized. Workshops will be held with desk officers (Secretariat staff responsible for a specific geographic area), delegates (Federation term for staff in the field) and disaster relief experts, initially in Geneva, to determine actual needs in different types of disaster situations. Eventually new systems applications, adapted specifically for field work, will be developed as a result of this work. The Federation also aims to provide a package of information in electronic form to delegates before they arrive on the disaster scene. Some of this information including Federation policies, procedures and country-specific information such as maps could be made available on CD-ROMs. Expert systems might be developed to facilitate the collection and analysis of information. In-country communications in developing countries, however, need to be improved to make this practicable.

The data communications work of this project focuses on the development of a telecommunications network linking the Secretariat, national societies and delegations. It covers electronic mail and the access to information, regionally and in the Secretariat, other sources available, and the use of this information.

Plans will be developed with national societies and delegations, working with counterpart staff. The project involves staff from national societies working as "staff on loan". Guidelines will be developed outlining : shared objectives; the methods to be used; timing of installations; information to be accessed; local, national, and regional institutions and experts to take part in the project; clarification of roles; and procedures to maintain the system once it was set up.

The need for the regular collection and dissemination of information for disaster management is part of this process and is key to facilitating the work of a relief operation. The Federation's plans to develop a telecommunications network using the Internet and a matrix of other telecommunications systems, to link national societies and delegations is aimed at making this information available quickly and easily.

### **Background and experience in communications**

This project follows an earlier one, also funded by CIDA, called LISN (Library and Information Services Network), which involved the upgrading of computer facilities, the creation of specialized databases and the setting up of an Information Resource Centre and Information Systems Department. This resulted in the development of better and more technological tools and information services for the Federation and the recruitment of key computer and telecommunications staff. Information materials were produced and meetings organized within the framework of the project to bring national societies closer together to cooperate in the area of information technology. This information campaign resulted in a greater awareness of what communications and information management can do in the area of disaster management and generally for the growth of national societies.

The use of information technology and networking was recognized as a significant method of improving disaster management for the Federation in the late 1980's, and in 1991 the Federation invited the Annenberg Washington Program (the Program) in Communications Policy Studies of Northwestern University to undertake a study on communications for the Federation concerning disaster relief. The Program had sponsored various activities associated with international disaster communications and published *Communication When It's Needed Most: How New Technology Could Help in Sudden Disasters* in May 1989. Dale N. Hatfield undertook the study on the Federation's use of communications in response to disasters. He conducted a series of interviews with key Federation personnel in the Secretariat, examined communications facilities, reviewed relevant documents and prepared a

report (1992) entitled: *Disaster Communications and Information Management in the International Federation of Red Cross and Red Crescent Societies: A Strategic Assessment.* <sup>2</sup>

In the area of needs assessment, the report suggested that an "international Movement wide-area data communications network (WAN) with associated local computer resources would allow quicker and more efficient location of qualified and available personnel." <sup>3</sup> As the identification of experts and qualified people, mostly from national societies in the developed world is essential in any needs assessment exercise, the report suggested that this may provide a quicker way of locating qualified personnel a key component to disaster response.

In 1994, the Federation launched a project to link all Federation personnel in the Secretariat to the Internet for e-mail services and by early 1995 this was completed. The Federation also encouraged other national societies to link to the Internet and local service providers were identified to facilitate this process. While a number of national societies (in 1996, 26) have access to the Internet, the human resource personnel in these societies, usually do not although this is changing as Internet services are frequently now being networked within these organizations. However, identification of appropriate delegates from national societies for use in field assignments is still largely being undertaken by telephone and fax.

The use of High Frequency (HF) links using PACTOR - a radio modem for data transmission - to connect to e-mail services in Geneva is used widely in remote locations. This service was put into practice in 1994 and has been used successfully, especially during the Rwanda crisis, to send situation reports (sitreps) and specific requests for assistance. Early in 1996, the Rwanda delegation in Kigali installed cc:Mail Mobile which has facilitated its communication links with Geneva. In addition to improved radio communications, the Federation has explored the use of non-synchronous, low-earth orbit satellites (LEOs), that could provide continuous communications coverage over the earth's surface, but to date has not made any specific decisions on this technology. The Hatfield report recommended the use of LEOs stating that : "*Because of their very low altitude, communication to small, handheld, low-power subscriber units can bypass the characteristic propagation delay associated with traditional synchronous satellites. Since LEO satellites can be launched at*

<sup>2</sup> D. N. Hatfield. *Disaster communications and information management in the International Federation of Red Cross and Red Crescent Societies: A strategic assessment.* Washington, D.C.: The Annenberg Washington Program, Communications Policy Studies, Northwestern University, 1992.

<sup>3</sup> Hatfield. p.4.

*significantly less cost than conventional satellites, such systems might someday be ideal for disaster communications applications, permitting direct voice, data and image communications between handheld units in the field and almost any other location."*<sup>4</sup>

However, VSAT technology would provide more extensive coverage and is a solution that is being planned by the United Nations specialized agencies with the lead of the UN's High Commissioner for Refugees (UNHCR), which has indicated that it would seek a partnership arrangement to make this rather expensive solution feasible. The Federation has therefore decided to follow this development, but also explore the use of its own low cost VSAT systems. It is already also making extensive use of INMARSAT satellite services for remote locations.

### **The growth of electronic mail and the development of the Federation's network**

Electronic mail in the Secretariat has been used since 1989 as a solution to improving the flow of information within the organization, initially this was done using an AS/400 Officevision program which was replaced by the Lotus product, cc:Mail (which is part of the organization-wide standard office package, the Lotus SmartSuite). It also began using the Internet in 1993 as one of the major carriers for the Federation, providing a low-cost solution and one that is accessible in a large number of countries around the world. Toward the end of 1995, however, it became apparent that a number of the Federation's delegations had increasing difficulties in identifying reliable local Internet service providers in some developing countries, mostly in Africa and South Asia. This led to the more extensive use of cc:Mail in delegations through a variety of telecommunications links, although the Federation has continued its policy of encouraging the use of the Internet in national societies in developing countries as a cost effective communications method. In the humanitarian assistance field, the Federation has a lead in encouraging and supporting this venture. The Federation is aware of the necessity of using telecommunications and information systems in a strategic manner and sees this area as a competitive advantage amongst humanitarian organizations to ensure more effective and efficient delivery of humanitarian aid.

The CIDA grant provided in 1991 mentioned above, provided the financial resources to develop an information systems infrastructure necessary to be able to carry out this work and laid the foundation for the work which has begun this year with the new CIDA project, to extend this expertise to the field and develop an information handling capacity in both Federation delegations and national societies.

<sup>4</sup> Ibid. p.17.

The Federation began to actively implement plans to develop a network linking national societies and delegations in 1995 in order for these societies to take advantage of the information collections, databases and services that had been set up under the LISN project. The long-range goal is to extend electronic mail connectivity eventually to most national societies, to field operations and delegations. The aim is to enhance existing channels of communication, providing options that would be cheaper, faster or more reliable than fax, telephone or telex, and make the most economical use of expensive links such as by satellite or international phone calls. The network would enable the exchange of electronic documents, allowing work online and permitting access to remote information resources.<sup>5</sup>

Where possible, e-mail connectivity is integrated with local networks and implemented using locally supported technology. Federation guidelines<sup>6</sup> are used to ensure that certain criteria are covered such as reliability, support and training available. Officially, within the Federation, e-mail is an *informal* means of communication and is used in the similar context of using a telephone. The Federation's electronic mail guidelines state that staff should not use e-mail to undertake contractual, legal or financial obligations, or accept it as confirming an obligation from another individual or organization.

A priority is to create a critical mass of national societies using e-mail in order to benefit from practical experience and shape future policy. Those national societies which had available expertise locally are encouraged to work with local e-mail networks. The guidelines also recommend that the e-mail system (or the software that is used with it) should support a standard for file attachments called MIME (Multipurpose Internet Mail Extensions). This facilitates sending and receiving word-processed documents, spreadsheets and other documents. The guidelines also explain the use of an Internet-style e-mail address and suggested address standards.

The Internet is being used for e-mail communication by about twenty-six national societies and over thirty-five Federation delegations. Very often communications within a country are difficult or impossible while connections to Geneva are still feasible. In ex-Yugoslavia, delegations have used the Internet e-mail links to maintain communications between them, frequently as the one of the only methods possible, in addition to radio. The

<sup>5</sup> J. Mortimer. *Strategy for telecommunications*. Geneva: International Federation of Red Cross and Red Crescent Societies, 1994, p.3

<sup>6</sup> *Electronic mail: Guidelines for use by national societies and Federation delegations*. Geneva: International Federation of Red Cross and Red Crescent Societies, 1995.



Federation assists in the early stages of connectivity by identifying and contacting local experts and service providers and providing assistance when necessary. Over the last few months, however, there has been an increase in the use of cc:Mail in delegations because, as noted earlier, of the difficulty of locating reliable local service providers for the use of the Internet. Delegates and traveling Secretariat staff are enthusiastic about the use of cc:Mail largely because it is integrated into the Lotus SmartSuite, the software package they have been trained to use and which is available in all delegations. The main advantages to the users, particularly Federation delegates, are having a common and familiar environment within which to work regardless of location, and the capability of dealing with all the file types and attachments frequently used without special procedures, software or complications. This is essential for field staff often working under difficult and stressful conditions. There is a recognition, however, that this will change as e-mail becomes more widely accepted as a normal part of business communications.

Once established the e-mail communications have rapidly become indispensable. In Bangladesh, ex-Yugoslavia and Nairobi delegations, e-mail has largely supplanted fax for communications between Federation delegations and Geneva. Where communications are problematic, e-mail provides a valuable alternative. Recent examples have included Kuala Lumpur, Malaysia; Phnom Penh, Cambodia; and Bishkek, Kyrgyzstan. E-mail is being used to improve continuity as delegates are posted to new locations, and to coordinate shared work, for example in collaboration between the Federation's Disaster and Refugee Policy Department and contributors on sections of the *World Disaster Report*, one of the Federation's key publications.<sup>7</sup>

#### **Use of the World Wide Web**

In 1995, the Federation began to provide information on the World Wide Web in order to improve access to information about the Red Cross and Red Crescent Movement, such as situation reports on Federation relief operations, appeals, national society directory information, press releases, and connections to a growing range of services on disaster-related issues. Since the World Wide Web can only be used by people with direct connections to the Internet, and to avoid cutting off those who currently have only e-mail access, the same information will be available through mail servers. Delegates and officials in national societies can write e-mail messages requesting information, and these servers send the requested information back by e-mail.

<sup>7</sup> *LISN Project: Status report*. Geneva: International Federation of Red Cross and Red Crescent Societies, 1995, p.2.

In addition to the public server, a World Wide Web server was set up by the Information Resource Centre which supplies information only to the Secretariat, as an easy, "user-friendly" way to access information. It has facilitated the organization of internal information such as the minutes of the Federation's Management Group, and has helped to keep staff informed of new materials, publications and services available. The Centre is planning to provide access to its bibliographic database, and a policy and doctrine database, using this facility. Since Federation staff are accustomed to a Windows environment, it is anticipated that the World Wide Web service will facilitate the searching of these databases, which are at present running under DOS.

There is wealth of information available through the Internet which is of use to the Federation, including disaster management databases, weather maps, and reports from other relief organisations. The Information Resource Centre is the focal point for identifying this information and making it accessible to Federation staff in the Secretariat, in delegations and in national societies. The Centre staff therefore need to follow closely the priorities and concerns of the Federation to ensure that relevant data is selected and to check with other staff who are experts in particular fields before making certain sources available.

Since one of the most important roles for the Federation is the coordination of disaster relief at the international level, the reporting process is key, especially when both bilateral and multilateral assistance is involved. The reporting process involves the provision of up-to-date information from the disaster operation or delegation to the desk officer and others in the Disaster Relief and Operations Co-ordination Division, to help them to make the necessary decisions about additional delegates required, as well as supplies, and equipment. These reports (sitreps) are essential for decision-making and are made available on the Internet through the Federation's Web server in Geneva. It is obvious, therefore, that the sitrep is an essential information source that serves a variety of purposes and is a major candidate to be disseminated through the Federation's use of the World Wide Web.

#### **Issues and constraints in the use of electronic networking**

Communications play an important role in working more effectively together as a Federation with national societies for common concerns, principles and values. Facilitating links with national societies and delegations is a first step in reaching this goal and the use of electronic networking will assist in the process. However, the technologies alone will not resolve all the issues. As mentioned earlier, the Federation has to take a close look at what information *should* be disseminated and how its collection and organization can be

systematized. This will be an essential part of this venture. Given the range of telecommunications and computing technologies available which are evolving rapidly, and the broad range of requirements for delegations and national societies, a matrix approach to computer based messaging systems is the most appropriate. There is no single system or technology which can answer all needs. The following are some of the options:

- proprietary centralized and distributed mail systems including cc:Mail
- Internet based mailer systems
- public or private store and forward systems
- host based mail systems running on a Federation computer in Geneva or on a wide variety of hosts around the world
- combinations or variations on the options above<sup>8</sup>

Currently the Federation has made specific choices which will be reviewed on a regular basis. The main choice for computer based messaging within the Secretariat and delegations is cc:Mail. The Internet is used to provide global access and connectivity to the Secretariat's cc:Mail service both for sending and receiving messages.

The overall goals of the use of electronic networking are to:

- increase the speed of communications
- facilitate communications from difficult areas
- improve response times
- decrease costs
- provide better access to key information sources
- disseminate information about the Federation more widely
- enhance communications with organizations outside the Federation<sup>9</sup>

These objectives must be within reach in order to make the investment this development will involve a worthwhile one. It is also essential that the work in this area helps the Federation to reach its overall goal of *improving the situation of the most vulnerable*.

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<sup>8</sup> J. Black. *Computer based messaging for the field: a project approach to implementation for the International Federation of Red Cross and Red Crescent Societies*, January 1996, p. 7.

<sup>9</sup> *Proposal for the development of a global network for disaster management*. Geneva: International Federation of Red Cross and Red Crescent Societies, 1995, p.3.

10 Encouraging the use of new communication tools, the Internet, and the wealth of information resources available through it could result in information overload, a problem Federation staff are already facing. Facilitating access to constituents, other organizations and a host of people around the world also increases the need for organizational procedures for administrative questions and highlights the questions of accountability, confidentiality, and security.<sup>10</sup> As with any new service or system, there are certain constraints and risks involved. An enormous amount of time, expertise and resources will be required to develop the necessary infrastructure within national societies and delegations, not only for those in developing countries. This involves careful planning, marketing of the strategy, clear goals, and years of work.

Information access and communications capability can be critical to the success of relief operations and for the safety and security of Federation staff involved. Advanced telecommunications are valuable tools in relief operations, however, they must be reliable or they will be considered worse than useless. They also have to be less complex than those in the past to allow use by staff whose main skills are in other fields. For time-critical applications, kits are available which offer a range of communications options (voice, fax, e-mail). Telecommunications delegates will continue to be required, but a combination of more simple solutions and training for field staff should focus their involvement on difficult and complex tasks (requirements are also increasing).<sup>11</sup>

The right information and rapid communications can save peoples' lives. The Federation is articulating its role and responsibility in this area more assertively, and is emphasising the development of an appropriate infrastructure to be able to manage this work more efficiently and effectively. The linking of national societies and delegations through the use of computer based messaging systems is one aspect of this development. Better communication links will also facilitate the coordination of relief aid among the humanitarian community. It is essential that the network be used to send, receive and access substantive, operational information as well as administrative and routine correspondence. Only if it is perceived as providing essential material and data, will national societies and delegations see it as an added-value to their usual forms of communication.

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<sup>10</sup> L. Stoddart. *The use of the Internet in the development of a global network for disaster management for the International Federation of Red Cross and Red Crescent Societies*. London: Aslib, Program, vol. 29, no.3, July 1995, p. 282.

<sup>11</sup> Stoddart. p. 283.