

Emergency Management and the World Wide Web: Organizing Information Resources for the Digital Age

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Abstract

The Internet offers potentially great benefits to the emergency management community as a medium that can provide quality information resources 7 days a week/24 hours a day. Concern is growing that the emergency management field will have a glut of information, but a dearth of knowledge. Systematic efforts to select, digitize, and effectively present basic information and guidance are in their infancy.

Disaster-Central (www.disaster-central.com) is one example of a project aimed as providing a comprehensive, web-based portal and digital library for information on emergency, crisis, and risk management. The service would offer current, selective, and comprehensive information resources for emergency managers (public sector), business and enterprise contingency planners, and educators and students. Since the project is in the early development stage, this paper focuses on the need for the development of digital, on-line resources for practitioners and educators and for e-learning (or distance learning) in the near future. The author has identified some of the unmet informational needs of the emergency/ crisis/ risk management communities and the time pressures on the emergency management community. These include:

- X greater speed in information gathering and decision-making by practitioners;
- X new modes of doing research and professional writing for publication;
- X preference for obtaining resources and other professional support via the Internet (with access 7days/24 hours); and
- X plans for e-learning

The Internet holds great promise for education and training. But distance learning will succeed only if quality "distance resources" are made available to facilitate the learning process.

Introduction

For those engaged in the field of EM, two of the greatest challenges are (a) to better prepare practitioners by supplying them with a rich array of quality content and (b) to use new technology to make the education process more efficient, effective, and engaging. What makes emergency

management education so compelling is that traditional means of education and training could be improved with the judicious application of new telecommunications technology. But, both educators and practitioners will have to master simultaneously the subject matter and the use of new technology to upgrade their theoretical and practical knowledge.

As management guru Peter Drucker recently noted, "... the continuing professional education of adults is the No.1 growth industry in the next 30 years." He further noted that "education in general will be swept up in a paradigm shift that is both interactive and captivating to all students of all ages. Teachers become facilitators and make the most of the plethora of resources that will be at their disposal."¹

The EM field is relative new, and its foundation comes from practice. Traditional textbooks are few, many basic resources remain to be created, and the quantity and quality of first-rate professional education and training to date have been relatively thin. In recent years, the Federal Emergency Management Agency's (FEMA) Higher Education program has taken the lead in encouraging and supporting the spread of emergency management related courses in colleges and universities across the U.S. FEMA has stimulated the creation of higher education efforts by providing an outline of a core curriculum for emergency management and by supporting the development of several instructors guides for use by faculty new to emergency management. Nevertheless, even with this framework, faculty and students are struggling to identify and collect the substantive resources needed for effective education in the field. Since the public sector has not and cannot address all of the needs in this field, private enterprise can offer greater speed, flexibility, and variety in meeting user needs.

Disaster Central (DC) is a proposed new service intended to be a comprehensive, web-based portal and digital library for emergency, crisis, and risk management (abbreviated as EM). The project will feature a website, a prototype of which can be found at www.disaster-central.com, that will address some of the unmet informational needs of the emergency management community. It is intended to facilitate the processes of education, training, and self study in emergency management. The service will serve as a portal to a specially selected and organized set of digitized resources.

DC is not intended for use in an emergency response; it is expected that practitioners will use its resources while engaged in mitigation, preparedness, or recovery activities. Further, it is not intended to be the definitive source of information about unfolding disaster events, since some existing sites, such as those of the Red Cross and the UN Relief Web, already do that.

Need for Developing Digital Resources for E-Learning

With no hard data or information available about the topic, what follows are some personal observations and experiences with major changes underway in the emergency management

¹ Peter Drucker, *Sage Advice*, in **Business 2.0**; August 8, 2000

Community. These changes show the need for a new mindset, new approaches to education, and new modes of producing information resources.

The changes underway are as follows:

Emergency Management: A New Field of Study

- X A relatively new field of study at the Higher Education level.
- X Text books and other basic resources/references are seriously deficient.
- X Courses and resource materials vary greatly in quality and availability.

EM and Higher Education: Under Development

- X Faculty credentials and experience in the field vary enormously.
- X Curriculum development is a major, on-going task.
- X Due to lack of textbooks, heavy reliance on research reports and journal articles, both of which are notoriously hard to locate and access in a timely manner. (Can you locate copies of the proceedings of previous TIEMS annual conferences?)
- X The rush to distance learning adds new requirements and new pressures for both faculty and students, who need time and assistance to function effectively within the various new educational hybrids.

Publications and Publishers: This World is Changing Rapidly

- X **The nature of a basic document is changing** because of the WWW. (Almost anyone can mount a web site and post information/disinformation).
- X **The presentation and distribution of professional journals is changing**, with online subscriptions and browsing now possible.
- X **The mode of searching for literature is changing.** Online browsing, subscribing, purchasing of articles (with copyright permission) are now possible. A few publishers, such as Elsevier, have begun to aggressively market their products, now available in digital format. Also, some third parties offer journal indexing service. For example, firms like Ingenta, Infotrieve, and Emerald Insight.

Effective Research and Writing: An Elusive Goal

A. Students/Faculty

- X **The characteristics of effective writing are changing**, as documents originally in print now get digitized and prepared for use on the WWW
- X **Means of accessing information and the literature search process are changing.** To do it efficiently and effectively, one needs to use techniques different from those of a few years ago.
- X **New guidelines are needed for evaluating and citing websites.** Assessments should be made re accuracy, authority, objectivity, currency, and coverage of the online resources and the help to do so must be provided by educators and librarians. Documentation of non-permanent web sites is also a problem.
- X **Traditional intermediaries, such as qualified, experienced, and specialized reference librarians, either do not exist or function differently for the WWW.**
- X **Many students are not using the campus libraries or specialized libraries.** Even for traditional classroom courses, they rely heavily on the WWW, rather than traditional (hard copy) resources at university libraries. The coming of e-learning will greatly accelerate this trend and probably lead to new problems regarding preparation of quality research papers.

B. Practitioners in EM

- X **Gradually are adopting new means of accessing information in emergency management**, especially via the Internet -- including using search engines, digitized documents, web sites of government agencies and professional associations for quality information and accessing digitized versions of documents, data, and maps. In the U.S. State and local governments often, but not always, are much slower adopters of new technology (hardware and software) than the federal government and the private sectors.
- X **Increasingly are using the Internet for all four phases of emergency management** (preparedness, response, recovery and mitigation).
- X **Want greater speed and flexibility for learning and decision-making.** No longer are people satisfied with 9-5 hours five days a week. Emergency managers in particular want access to resources 24/7, both for international disaster assistance (corporate and public sector) and support of new distance learning techniques.
- X **Show preference for acquiring full-text documents and other professional support resources via the Internet.** Not only is efficient document retrieval possible, so are document exchanges among colleagues or counterparts who may be thousands of miles apart.

Observations/Recommendations

X **WWW is here to stay; we need to use it more effectively.**

Whether good or bad, online resources are relied on heavily if not exclusively by some students. Some students assume if the facts are not available online they do not exist. (From personal experience, I perceive the unfortunate outcome of heavy reliance on the Internet resources available presently in the EM field is a decline in the quality of student research papers.)

X **The demand side is active and growing, but the supply of high quality, authoritative materials is lagging badly and needs cultivation.**

More quality resources need to be put online. Some means of assuring a permanent archives of key documents needs to be found. This is the area in which the help of the participants at TIEMS is sought.

A personal guess is that less than 20 percent of major research-related documents that exist in hazards/EM field are available in digitized format.

X **The private and non-profit sectors should play a major role,** since the federal government (in the U.S.) cannot and probably will not address the above mentioned needs.

* **The Internet could be the scaffolding of some major new constructs** in emergency management field generally and in the education and training area specifically.

Some intermediate measures exist, such as intranet systems used for individual courses at some U.S. universities; e.g., GWU uses Prometheus and a commercial system called Blackboard is used at many other universities. These systems are very limited, however, since they are developed individually by a faculty member for a single course and can be used only at one university.

Meanwhile both the education and practice of emergency management will move ahead, with or without the best resources and knowledge.

Disaster Central: Innovation in Digital Resource Development

The DC project was conceived as a lively, up-to date web site containing timely news, substantive resources, and digitized versions of key reference documents. DC also plans to revise existing public domain materials to make them more user friendly. **Disaster Central** will be a sophisticated portal site that will support many communities of interest with many unique features:

- X **One-Stop Information Shopping:** The site will be a central portal for a variety of informational resources from a wide array of resources. Moreover, it will be a structured knowledge base, not just a catch-all collection of information.
- X **Quality Content:** The content will be selective and will feature serious, quality information. The service will be focused, in-depth, and comprehensive. The resources envisioned, together with other forms of guidance and assistance, will be essential to support distance learning.
- X **Focus on Users:** The site will specifically target three main user groups: emergency management practitioners, business and enterprise crisis planners, and educators/students. Materials will be categorized and presented by topic.
- X **New Content or Link to Existing Quality Content** information for use by practitioners, planners, faculty and students, who may continue to use the Disaster Central website when they engage in either professional employment or voluntary service in their communities.
- X **Personal Contacts and Exchanges** to foster interactive discussion using mechanisms such as threaded discussion, chat function, and virtual conferencing. **DC** will take advantage of features and functions that exist in other crisis and emergency management websites that have a virtual forum mechanism in place.
- X **Available at All Times:** This online gateway will be available 24/7. All users, including those in rural or remote locations, will have access to a vast array of assets previously available only at a few specialized university libraries. The information assets features would be available to users in many countries.

Prototype Site

The existing prototype web site (www.disaster-central.com) displays some of the envisioned capabilities. When developed, the site will offer unique, innovative, state-of-the-art features for the crisis, disaster and risk management communities. A more powerful server, as well as a substantial amount of new programming, will be needed to create the all-important information databases. Although the content and mechanics of the site will change in the future as additional resources become available for the project. The prototype demonstrates the proposed organizational framework, the categories of coverage, and the focus on three main user groups.

DC will guide users to existing quality information via the Internet (in full text to the extent possible) and to specially created digital versions of selected content not readily available in that format. The service will create a structured knowledge base, including a selective array of quality content documents regarding crisis/emergency information.

Regarding the selection of content the project team and a project advisory committee, will make the decisions about content to be included, featured, or recommended. They also will review and revise existing content in an effort to screen documents included with regard to quality and timeliness. Since the WWW is essentially unregulated, it is not possible to attest to the quality and validity of documents available at other sites. It is anticipated, however, that the documents offered by DC and maintained on its server, will mainly be documents issued by government agencies and reputable professional associations as well as journal articles and research reports that have been peer reviewed.

The interactive capabilities of DC will enable discussions and exchanges. All forms of resources will be included: documents (books, periodicals, journal articles); CD-ROMS; maps, charts and graphics, and audio/visual products; WWW links; and others. These will be organized by user groups and presented by topic.

Initially DC will obtain as much non-copyrighted material as possible from government-sponsored sources and non-profit journals, and later obtain copyright permissions for published texts. For example, DC has received a positive reception from the editors of three major journals regarding free access to articles in their back issues, namely: (1) **International Journal of Mass Emergencies and Disasters**, (2) **Australian Journal of Emergency Management**, and (3) **Canadian Journal of Emergency Management**. These and other articles would be arranged and indexed by topic and by user, rather than simply listed chronologically, in order to promote their utility.

Increasingly, certain publishers and authors are making their books accessible in digital format, and these works would be included in the DC site. Examples of excellent, high quality resources are the books published by the United National University Press and The U.S. National Academy of Science/ Joseph Henry Press.²

Finally many professional associations, such as the Earthquake Engineering Research Institute, American Meteorological Society, and Association of State Floodplain Managers offer useful professional documents, which could be linked or referenced at no cost. Again they would be indexed by topic and arrayed by user group to facilitate their use.

User Groups

It is estimated that the most likely users will be:

- (1) **Educators and Trainers:** In June of 2000, FEMA identified 66 U.S. colleges and

² The George Washington University, Institute for Crisis, Disaster and Risk Management has compiled a comprehensive list of recommended web links for resources and for full-text documents. URL: <http://www.gwu.edu/gelman/guides/sciences/crisis.html>

universities that offered courses in emergency management and 47 states with a program in place. It is assumed that faculty and students in both classroom and distance learning courses will be potential users, along with trainers, instructors and practitioners in state agencies and in larger companies.

(2) **Researchers**

(3) **Public Practitioners:**

- X State and local officials
- X Federal officials, especially the federal regional offices.

(4) **Business/Enterprise Executives:** Consultants and contractors in emergency management and those engaged in business continuity planning, hazards analysis, and risk management.

(5) **Self Study:** Many publicly and privately employed risk managers, public safety directors, and other practitioners want to keep up with new research, developments and trends, but are not pursuing academic credits or degrees.

(6) **International Users:** It is expected that English-speaking persons engaged in any of the above fields may also be potential users.

Finally, the proposed **Disaster Central** project is just one means of offering informational services in the emergency management field. Another mechanism is to assemble and organize emergency management resources on a CD-ROM, as been done in a product called **EM-Assist**, which is not yet commercially available.

Growing Demand for Distance Learning.

Until now, it has been difficult to obtain hard copies of the specialized resources essential to emergency management. Only a few specialized libraries, such as those at the Universities of Colorado and Delaware, maintain an extensive collection of such documents, and they do not lend copies of the documents. New sources, such as web-based resources, CD-ROMs, and videos, are springing up every day. Users will somehow have to determine what resources are available, which ones are of appropriate quality and content, and then how to access the best resources.

Currently educators and administrators at colleges and universities with EM programs are under increased pressure to introduce distance learning. This demand is coming from potential students, who perceive that new mode as more convenient and desirable, and from some university administrators who want to reach a student body outside the commuting range of their institutions.

Both faculty and students engaged in distance learning will have an even greater need for the proposed web-based resources than those in a traditional classroom. In either teaching

environment, for faculty members developing courses in EM one of the most pressing needs is how to assemble and organize digital resources for their students to use. The DC project would make a wealth of resources available to people in suburban, rural, and remote locations. In short, distance learning will only succeed if "distance resources" are available to facilitate the learning process.

Cultivating New Sources of Digitized Documents and Knowledge Bases

Since most of the attendees at TIEMS 2001 have key roles in their respective organizations and governments, the author would like to ask them some questions. The author needs the support and assistance of professionals in the field, such as those represented here, and would like to have you think about ways to generate and/or preserve key research reports and other valuable resources for the coming digital generation.

- X Can you or your organization help supply products that will provide users with online access to existing quality information (in full text, to the extent possible).
- X Will you or your office be creating digitized versions of valuable content and making such material readily available?
- * Who in your organization makes the decisions about what hard copy resources are worth having and worth digitizing?
- * Are you or your office contributing to meeting the needs of users who need not only digitized documents but also digital knowledge bases of crisis/emergency information?
- * Are you one of the people who will move in to fill this void, with what information, and how soon?

The answers to these questions are critically important, since improved online access to quality resources in emergency management could have positive outcomes for facilitating both national and international disaster assistance and for supporting distance learning.

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Author Biography

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