

Emergency Management Education and ISCRAM

Murray Turoff

New Jersey Institute of Technology

Murray.turoff@gmail.com

For, in reality, the knowledge of an effect is nothing else than the acquisition of more perfect knowledge of its cause--Spinoza

ABSTRACT

This paper presents the author's viewpoints and insights into what should be a major activity for ISCRAM to insure a better future for Emergency Management in general. The overall recommendation is that ISCRAM as a professional society should be very actively involved in setting a standard for an Emergency Management degree program that provides a distinctive major in EMIS (Emergency Management Information Systems). The emphasis and conclusions in this paper are based largely upon the situation in the United States.

Keywords: Emergency Management Education; ISCRAM; University Degrees; Certification

INTRODUCTION AND BACKGROUND

It is interesting that we have a whole conference involving a professional area, Emergency Management, for which there is no professional organization responsible for proposing and maintaining a standard defining the subject matter that makes up the field or the suggested content of an appropriate degree program in this area. Even with the lack of any such standard, more than 70 plus U.S. degree programs in various aspects of Emergency Management and derivatives, such as "Terrorism," have been created since 9/11. ISCRAM, as a leader in the collaboration of EM professionals – both academics and practitioners – is in a position to develop these standards to ensure the highest quality education for those studying in the EM field. The objectives of this insight paper are to suggest what should be the major requirements and the major content areas of a degree program in Emergency Management as it relates to computing, and why ISCRAM is in an important position to contribute positively to the future of education in this area.

In the period from 1968-1973 I had the opportunity to design, develop, and manage Information Systems in the Office of Emergency Preparedness (OEP) of the U.S. President as a Civil Service Professional. Even in those days, the users were called Emergency Managers (EM) and they were individually assigned to take charge of any federally declared emergency and to command of all the resources necessary to deal with it. Some of them came from backgrounds in OSS (Office of Special Services) in World War II. In those days they could, under the power of a federal declaration of an emergency, command any federal organizations, resources, and employees (including the military) to do what was needed. Today Emergency Managers in the United States are typically treated as advisors and not often in real command and control positions. The first major application of our groupware oriented EMIS system (EMISARI) was the 1971 Wage-Price-Freeze (Hiltz & Turoff, Chapter 2, 1978; Turoff, et al. 2004b). OEP was never more than 400 professionals and users of EMISARI included the Director of OEP and every segment of the organization. The system was used for federal emergencies for 15 years after the author left OEP and moved to NJIT as an academic.

In businesses, "Emergency Managers" are typically titled "business continuity" experts. Unfortunately, this is not typically an occupation that leads to upper management. They have in the past often been asked to plan for the possibility of immediate disaster losses such as employees, space, and information system resources. However, the recent effects of worldwide disasters on supply chains has created a series of far more complex situations in a number of industries presenting correspondingly more complex challenges. The usual strategy of falling back on local governments and federal agencies for immediate help is highly inadequate in a major disaster.

In the Information Systems area, we were fortunate to develop in the past three decades the concept of Certified Information System Auditors who are responsible for determining how to secure an information system from attacks or poor security design. The more an organization depends upon its information systems for its primary

Proceedings of the 11th International ISCRAM Conference – University Park, Pennsylvania, USA, May 2014
S.R. Hiltz, M.S. Pfaff, L. Plotnick, and P.C. Shih, eds.

functions, the greater the respect for these professionals.

In the literature on EM, there has been some recognition that there is a need for Emergency Management Auditors (Turoff et al., 2004a; Canos, 2013). These would be professionals who would be able to determine, for various types of organizations, how well prepared they are for disaster and crisis risks common in their area and their operation. In the long run, this is the only way we can greatly increase serious investments in preparedness and mitigation in our society and/or in any country.

In the U.S., traditionally one could become an Emergency Manager after five years of related work experience. In 2010 the International Association of Emergency Managers (IAEM) upgraded this process to require a degree in Emergency Management. The heavy investment in the Emergency Management area and the change of the requirements for new certifications has led to a proliferation of degrees under a variety of names and different educational institutions from high school through doctoral programs, without any standard content. Therefore, it is difficult to assess the qualifications of graduates from these programs.

We will take a very brief look at the current variety of viewpoints on education in EM. After that, we will discuss the possibilities that exist for ISCRAM to make a significant contribution to this field, in the observations and conclusions section. It will become clear that practitioners have a wide range of different views and are sometimes confused by the lack of consistent information in this field of learning. The author offers in the conclusions some of his own viewpoints about what will eventually occur and how ISCRAM can help to speed up the process.

IEWS AND IMPRESSIONS OF PRACTITIONERS ON EDUCATION

There have been many online discussions by practitioners devoted to education and to employment in part or in the whole. I have collected fragments of discussions that begin to expose the wide range of views in that community. These discussions gradually disappear as they age. I have removed anything that might indicate identification of the writer. Most of the comments come from LinkedIn Groups over the past year. Each group may trigger one to ten new short discussion posts in a few days. Each discussion is usually on a very specific topic. The LinkedIn groups I have been following are:

1. Emergency Managers Global Forum 9,745 members
2. Disaster & Emergency Management 11,531 members
3. Emergency Management and Homeland Security Professionals 12,512 members
4. Crisis, Emergency & Disaster Recovery Professionals 14,010 members
5. International Association of Emergency Managers 2,242 members
6. Emergency Managers Weekly Report 2,921 members

I have collected an appendix to this paper which is six pages of anonymous quotes from many of the above discussions which deal with education and employment. Space limitations do not allow me to include them in this short paper. I will gladly send (via email) this document as an attachment to anyone who desires to see it. The diversity of views is very significant including a proposal for a high school major in Emergency Management. I, for one, do not believe there should be a Bachelors degree in Emergency Management, only minors in other disciplines. The Master level is where the degree should be.

THE LEVEL AND TYPES OF EDUCATIONAL PROGRAM

FEMA has a definition, vision, mission, and principles of Emergency Management at: http://www.training.fema.gov/EMIWeb/edu/docs/emprinciples/0907_176%20EM%20Principles12x18v2f%20Johnson%20%28w-o%20draft%29.pdf#! Parts of the above are often quoted in various discussions without identifying this source. The following is the FEMA list of degrees and associated material: <http://www.training.fema.gov/EMIWeb/edu/collegelist/>

It has in depth much more information in the column on the left side. There is a section of papers by faculty who have tried to review the programs and/or to justify their content. There is one section of papers done by students to show samples of work. If one is interested in this area and the wide range of types of degrees this is the best site I know of to get information from a variety of sources. FEMA has been sponsoring yearly meetings of academics on the subject of education and many papers generated by those meetings appear in the different information categories. This database does not list certificate programs.

The Disaster Science Fellowship Program site is a simple list of Master-level and Doctoral-level Emergency Management (and related) programs from around the world. Similar to the FEMA Higher Education list, it provides the ACTUAL links to the University's program web site rather than just a document file. There appears to be an academic committee in Australia that reviews educational standards in EM. http://emergencymanagementdegree.info/?goback=.gde_4846522_member_270373278#

We are moving from the outcrop of operational experience in public safety and military underpinnings and are moving toward a profession and practitioner education program. If we think of any of the professions, we see a core base of knowledge coupled with a specialty. Do we think any less of an MD if they specialize in pediatrics, emergency medicine, cancer research, etc.? No, because we know that before specializing they were taught the core body of knowledge.

In all 100 academic institutions were identified as delivering Master's Degree level courses, with the majority of courses being located in the United States of America (USA) (n=53), the United Kingdom (n=8), Australia (n=7), New Zealand (n=3) and India (n=3). The majority of the programs result in the awarding of a Master of Science (n=47), followed by a Master of Arts (n=11) or a Master of Public Administration (9). This result reflects the view that: "emergency management is the scientific study of how humans and their institutions interact and cope with hazards, vulnerabilities, and resulting events and consequences." (Research Standards Focus Group: Implementing Research Standards in Emergency Management Higher Education, <http://training.fema.gov/emiweb.edu>)

The Homeland Security educational category is the most dominant degree program (n=121) but it focuses on a range of terrorism-related subjects which is reflective of the importance of this issue to USA. The high number of programs within the USA causes a bias in this topic category when compared to the rest of the world, which has a greater focus on natural disasters and humanitarianism (n=36).

New degrees in homeland security and emergency management face the same obstacles as the emerging criminal justice programs did a half century ago. Part of the problem is that many recognize that current degree programs are very diverse without a common body of knowledge taught. A few are really great programs, some are mediocre, and the rest need some major work. A different way of viewing this is that Homeland Security captures a greater range of subjects relating to human induced disasters, whereas the broader international approach has a greater focus on natural disasters.

To review the "standard list" of certification, that is where IAEM (the EM professional society) comes into play. Check out the CEM Self-Assessment Tool at the following website:
<http://www.iaem.com/page.cfm?p=certification/getting-started>

EXAMPLES OF CONFLICTING TRENDS AND VARIETIES OF VIEWPOINTS

The Emergency Management Magazine (<http://www.emergencymgmt.com/>) has a growing number of articles on Education and jobs in Emergency Management. Here is one relevant quote from each of six recent articles about EM education and employment:

"In 1996, just two programs in emergency management existed. By 2006, nearly 150 higher education programs in emergency management were listed on FEMA's website, including certificate programs. As of 2012, there were approximately 50 two-year programs and a similar number of four-year programs with emergency management-related titles alone" (Walsh, 2013).

"A new high school in New York City that integrates emergency management into core curriculum could produce the next generation of emergency managers while helping professionalize the field" (Pitman 2013).

"The National Emergency Management Association's 2012 Biennial Report revealed that 30 states have certification programs for emergency management personnel, an increase from 23 states in 2010" (Pitman, 2012).

"Emergency management's evolution as a profession has included the development of professional certifications like the Certified Emergency Manager (CEM). But professionals disagree about how useful the certification is to individuals and to the profession" (Steen, 2012).

"Emergency management is a growing profession and is projected to continue growing at a rate of 20 percent or more, according to O*NET Online (created for the U.S. Department of Labor), which rates emergency management specialists as a "bright outlook occupation" in the labor market. "Right now, emergency management is a really competitive environment. There are not a lot of jobs and qualified people," said Lucien Canton, a private consultant with 30 years of experience in local and federal government" (McEwen, 2011.)

"For years, career public safety officers have filled the role of emergency manager. But as emergency management continues to establish itself as a profession, the different skill sets being introduced in college programs have created a stark dividing line between the old guard and the new." (Heaton, 2013).

CONCLUSIONS, OBSERVATIONS, RECOMMENDATIONS

There have also been a few proposals for a high school emergency management major. While it might be useful to have some elective courses in both undergraduate programs and even high school I do not personally feel any young student should be encouraged to take a degree in Emergency Management or any of the derivative programs at the Bachelor level and certainly not at the high school level. The first reason is that a college student should first get a bachelor's degree in one of the core areas like Management, a Social or Physical science, Engineering, etc., as EM is an interdisciplinary domain and knowledge in other areas is crucial for success in the field. Those current practitioners with no degree at all are the ones that have been going into the undergraduate degrees in EM, but that source will run out. The other significant reason for not doing an undergraduate degree in EM is that Emergency Management is a highly interdisciplinary field with contributions from a great many fields. There is going to be filtering out and considerable pressure to create high quality programs with appeal for industry and well as governments because:

1. Disasters are becoming more frequent and more severe.
2. There is not going to be as much federal money going into the field in the U.S. as occurred after 9/11.
3. Students should get a bachelor's degree in a field that contributes to EM with a chance to minor in EM.
4. It is at the Master's level that people can major in EM with a chance to continue some graduate work in one of the related fields while concentrating on the EM applications of their Bachelor studies.

I feel there are at least six primary fields needed to support master's level degrees in Emergency Management:

1. Social and Management sciences, Public Administration, and Journalism,
2. Information Systems and Computing area,
3. Engineering, Construction, and Physical Science
4. Public Health, Biology and Medical
5. Geology, Weather, Environment, and Maritime Studies
6. Criminal Justice and Security

Every one of the disciplines above could have one or more courses of interest to EM (e.g. hazardous materials from Chemistry). One suspects in the long run this is how stable high quality Emergency Management programs will evolve. When it comes to jobs, the student with a supporting undergraduate degree and a Masters in EM will have the best chance of a good job and be able to adapt to an area of endeavor that is becoming increasingly complex and will need increasingly talented people. The future Emergency Management group in any local area will have to deal with all phases of the process and not just the response process. At some point, we will have evolved Emergency Manager Auditors in governments, industry, and service organizations. In an undergraduate degree, students should be able to take a minor in EM and in a Masters; they should be able to take Masters Electives in their original core bachelor's area. They should also be able to go into a doctorate combining EM with their core area and hopefully more universities will have worked out the barriers to interdisciplinary research.

IAEM in the US has made no effort to set any standards for what EM degree programs should teach. In most scientific fields and professional fields such as Engineering there are professional societies that take an active effort to set standards, update them regularly, and provide trained professionals from academia the ability to inspect programs in certain multi-year periods to see if they are maintaining the standard for what should be taught in that professional field. In our area of Emergency Management Information Systems, they are (in the U.S.) the Computer Society of IEEE, the Association for Computing Machinery (ACM), and the Association for Information Systems (AIS,) all which contribute to standards in various areas of Computing. In principle, there is nothing that prevents us from developing an educational college standard for ISCRAM that concentrates on Information Systems and developing an effort in collaboration with one or more of the above Computing Societies for the standards of Masters and doctoral degrees in Emergency Management Information Systems (U.S. Candidates: ACM, AIS, IEEE CS).

In the Information Systems and computing area, some of the key skills and knowledge the Emergency Management professionals need include (Turoff et al, 2004b; Van deWalle, Turoff, Hiltz, 2010):

1. Evaluation of Information Systems to determine their ability to fit the application of computers to all the many phases of EM from planning, to training, to detection, to preparedness, to response, through recovery—integration of the total system.
2. Evaluation of the interface design and ease of use so anyone can handle an important job with only a few hours of emergency instruction.
3. Evaluation of the methods used to supply aids for decision making and collaboration across many involved organizations and diverse professionals seeking to solve complex problems involving collaboration in a timely manner.

4. Setting up the organizing, networking, and communications, to allow the participation of any professionals or groups who are needed at any time and the active participation of any members of the community that need to be involved.
5. Being able to provide all the collaborative decision support and model building needed to support all the phases (planning to recovery) of EM as an integrated system.
6. Developing collaboration processes among thousands of professionals for a very unpredictable set of complex problems that may occur in a major disaster.
7. Developing or promoting development of intelligent aids to dealing with uncertainty, incomplete information, and time constraints in group decision making.
8. Being able to design requirements for new software to be incorporated into development contracts or efforts.

Besides the masters level programs there has to be an opportunity for outstanding students to be able to decide to go on to a doctorate in collaboration with any department or departments that are primary components in the research the student wishes to undertake. It is very difficult at most universities to get true interdisciplinary degree programs but it will be a necessary requirement for outstanding Emergency Management degrees in the future.

It would be ideal for ISCRAM to form a committee devoted to setting a standard for a master's degree in Emergency Management Information Systems and to seek some collaboration with various Computing Societies.

It could be Master's in EM with a major concentration in Information Systems or visa versa. It would include a number of courses that are already in the existing standard for Information Systems. My hope is that ISCRAM will put together a committee of interested professionals in the computing field who have worked in EM applications and some practitioners with experience in trying to utilize effectively information systems to work on creating a standard requirement for an Emergency Management Information Systems Master's degree. The committee should also seek cooperation with some the current computing professional societies concerned with Information Systems. I welcome contact from anyone interested in such an effort.

ACKNOWLEDGEMENTS: My thanks to Linda Plotnick and Starr Roxanne Hiltz for their editorial contributions.

REFERENCES

1. Canos, J. H., Improving emergency plans with SAGA, *Technological Forecasting and Social Change*, 2013, (80:9) 1868-1877.
2. Heaton, B., Are Emergency Management Graduates Finding Jobs? November 08, 2013; *Emergency Management Magazine*
3. Hiltz, S. R., & Turoff, M., *The Network Nation: Human Communication via Computer*, 1978 Addison Wesley, reprinted 1993 MIT press.
4. McEwen, V.L., Dueling Degrees: Emergency management vs. Homeland Security, November 29, 2012, <http://www.emergencymgmt.com/training/Dueling-Degrees-Emergency-Management-Homeland-Security.html>
5. McEwen, V. L., What You Should Know About Emergency Management Degrees; January 14, 2011; *Emergency Management Magazine*.
6. Pitman, E., Does the Future of Emergency Management Lie in a High School? August 29, 2013; *Emergency Management Magazine*.
7. Pitman, E., State-Run Certification Adds to the Field's Professionalization; October 01, 2012; *Emergency Management Magazine*.
8. Steen, M., Professionals Debate the Need for Emergency Management Certification, March 28, 2012; *Emergency Management Magazine*.
9. Turoff, M., Chumer, M., Hiltz, R., Klashner, Robb, Alles, Michael, Vasarhelyi, M., Kogan, A., Assuring Homeland Security: Continuous Monitoring, Control, and Assurance of Emergency Preparedness, Lead article for a special issue on Emergency Preparedness for JITTA, Volume 6, Number 3, Fall 2004a, 1-24.
10. Turoff, M., Chumer, M., Van de Walle, B., Yao, X., The Design of a Dynamic Emergency Response Management Information System (DERMIS), *Journal of Information Technology Theory and Application (JITTA)*, Volume 5, Number 4, Summer, 2004b, pp. 1-36. (<http://www.jitta.org>)
11. Van de Walle, B., Turoff, M. and Hiltz, S. R. eds. *Information Systems for Emergency Management*, Armonk, NY: M.E. Sharpe Inc., 2010.
12. Walsh, G. E., Where Do Emergency Management Programs Fit on the Campus? October 08, 2013; *Emergency Management Magazine*.

Proceedings of the 11th International ISCRAM Conference – University Park, Pennsylvania, USA, May 2014
S.R. Hiltz, M.S. Pfaff, L. Plotnick, and P.C. Shih, eds.