## **Kuang-hua Hsiung**

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**Kuang-hua Hsiung** is the Commissioner of the Taipei City Fire Department, also serving as the Executive Director of SFPE Taiwan Chapter. As a distinguished Associate Professor at the Graduate School of Fire Science and Technology, Central Police University (C.P.U), he received his Ph.D degree from the School of Building Construction, University of Florida in U.S.A. at 1992, and has published a large amount of papers on



different related fields of study. For instance, on 29<sup>th</sup> September 1999, he had published The Records of the USAID, US&R Task Force to Attend the 921 Earthquake Search & Rescue Operations. In 2001, he was invited to participate in 2002 Asia Oceania Symposium on Information Technology and Strategy for Earthquake Disaster Reduction in Tokyo, and presented the paper Overview and Analysis of the Disaster Information Management for Emergency Response of Local Government- Lessons Learned from 921 Chi-Chi Earthquake. In addition, he has also contributed to the research related to Tunnel Disaster Prevention and Emergency Reaction and Standard Operation Procedures in recent years, which the emergency response plan of the longest tunnel (the total length is 12.5 kilometer) in Taiwan was referred to his report. From all the above displays the fact that he has made much effort in his researches and has put these researches into practice to help improve the safety of the general public. Under the leadership of Dr. Hsiung, Make Taipei a Safer City - Strengthen the Disaster Prevention Networks project by Taipei City Fire Department was honored to receive the "Executive Yuan Quality Service Award" in 2009.

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## The Needs and Challenges of Disaster Reduction for Taipei City

The Geological conditions of Taipei city are unfavorable; having main river streams stretching through the basin, sloping fields taking up the 55% of total land area (including residential buildings on slopes) and plain area that is highly developed (whilst high concentration of rainfall), the potentiality of soil and water disaster has become more and more severe. Moreover, Taipei as the heart of politics, economy and culture of Taiwan, its traffic system is maturely webbed, yet it is facing problems such as aging society and foreign caretakers regarding its social structure. When facing extremely grave disasters, it would be affected in a wide spectrum, thus its ability to function properly after disasters has become a challenge that awaits the test of time.

Recent years the Taipei city government has gradually completed the installment of several disaster prevention software and hardware, yet due to the growth in scale of power of natural disasters, and as the citizen's tolerance for disaster has abated, the benchmark of demand towards a governments' disaster relief capability has risen. Meanwhile we are fronting the impact of an information explosion era, and therefore to accurately and immediately react and process information has become a great challenge on disaster prevention and relief for local governments. And to overcome the aforementioned difficulties, we are working on a few measures and systems:

1. *Natural Disaster Computer Simulation Training System*: We have been developing a distributed multi-layer training system, rebuilding the "real" situation of disaster scene according to different disaster scale levels, scenario conditions, development of disaster, time sequence and role of participants to conduct integrated training, strengthening the scenario decision capability of commanding officers.

2. Emergency rescue heterogeneous communication network : The Taipei City EOC previously relied mostly on 119 voice report system to transmit data, but since its

amalgamation with the 1999 citizen hotline from 2008, it has been able to effectively distinguish between emergent and non-emergent sources of case reports. Also considering the widespread of wireless heterogeneous internet, the wireless internet integrated emergency rescue system should be adapted.

3. Construct disaster GOC for vulnerable areas : The city government can use Group Outbound Call (GOC) to increase the efficiency of mobility of government disaster relief units by ten times, and it can expand its services in the future, providing emergency alert of vulnerable areas.

4. Develop radio channel, digital and integrated VoIP function exclusively to disaster prevention : Currently the emergency rescue radio channels are used by the police, fire, medical, and military units separately, but because of each department's uniqueness, these channels cannot be connected. It would resolve the problem of not being able to communicate between channels, and no back up channel, by establishing a radio channel exclusive to disaster relief and meanwhile all departments should digitalize its radio system and integrate it with internet VoIP.

5. Advance disaster on-site visual transmission quality : Taipei city currently has disaster scene on-site inspection visual transmission system (via Wifi, 3.5G, and Satellite), but due to different hardware conditions of telecom companies, the quality may vary from time to time. We would wish to see the development of the integrated mobile-networks module, so it may become one of the most economically effective visual transmission methods.

6. *Cross-department immediate disaster information gathering system* : In the future we will integrate the Police department's new "security electronic wall" surveillance system, enabling immediate visual access of disasters, providing the disaster response center commander with more reference

7. *Disaster prevention info based on the needs of general public* : The electronic media is prosper in our country, in addition, internet users tend to transport disaster news via BBS, twitter, plurk and facebook; it has the merit of alacrity, yet more or less causes the problems of overlap in information and difficulty to distinguish the credibility of source and context. Thus, we suggest developing disaster prevention information based on the publics' needs, and commission NGOs and NPOs to assist governments in processing the gathered information in order to elevate the efficiency and efficacy of disaster relief.

8. *Disaster Warning Radio System* : Imitating the national alerting system (J-alert) that Japan has been aggressively constructing within their nation, we will be constructing digital radio broadcast and monitoring poles in high potential of danger areas, which provides alerting broadcasts and two-way calling system.

9. *Promote proactive mitigation measures* : Some old building communities, not only affect the development of the city area as a whole, but also lack in safety and disaster resistance. Therefore, Taipei city will encourage "mid/low-rise old buildings" to be reconstructed through incentive plans. On the other hand, to abate the risk level of disaster, we suggest to publicize sensitive environment information, strengthen environment evaluation and monitor/maintenance mechanism, produce more elaborate disaster prevention maps, and to continuously promote disaster prevention insurance system.

10. Increase the recovery ability of government and the general public : When severe disasters occur, while the government manpower, resource, tap water, electricity, traffic system and roads, and all other life maintain systems are struck or defected, in order to ensure the continuing operation of public sectors or important facilities, the emergency respond measures must establish an order of different priorities so that the limited resources can be utilized most effectively.