

Mobile decision support system for disaster mitigation environment

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Information plays a critical role to facilitate making right decisions especially to response the disasters. With the rapid development in sensing and communication technologies, collecting and transferring a great amount of data is not critical as usual. However, it becomes more challenging to organize and distribute the rich information to the decision-makers to support timely and high-quality decisions. In this research, we proposed a framework D-Cloud to deal with the problems. In D-Cloud, information is tailored to a predefined image format (D-Info). The images with unified layout enhance the usability of the information. Decision-makers can browse, compare and interpret the information in a short amount of time and with less effort. D-Cloud includes a cloud-computing environment, which allows users to synchronously and asynchronously retrieve the information using varied mobile devices. With the local memory cache in the device, the users can always refer to the latest information even without the Internet connection. We implemented a D-Cloud viewer in iPad to demonstrate the working processes and demonstrate to three experienced decision-makers who have participated in the disaster response processes. From their feedbacks, we found that D-Cloud is superior to the traditional decision-support systems. It can provide more robust services during tough circumstances and can serve as more versatile roles using different devices. In short, we have preliminarily verified the feasibility of using D-Cloud in disaster response. Future researchers may follow the work to implement a more complete system support timely disaster responses.

Biography

Dr. Shih-Chung (Jessy) Kang, PhD graduate of Stanford University, currently works in department of civil engineering at National Taiwan University (NTU) as an associate professor. He is also an adjunct researcher in center of weather climate and disaster center at NTU. His specialty is visualization, robotics and human computer interaction and has led multiple projects designing information systems for disaster mitigation for Taiwan Water Resources Agency and National Science Council of Taiwan. Dr. Kang is also the editor of International Journal of Visualization in Engineering published by Springer from 2013.

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