Session Report:

INNOVATIVE TECHNOLOGY AND R&D II

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Prof. Hyun-Moo Koh

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Why E-commerce is a Small Impact Compared to Other Technology Revolutions Coming to Engineering and Construction
by Mr. John Voeller

Web-Based Geographic Information System Support to Disaster Response
by Prof. William E. Roper

Application of Optical Fiber Sensors to Strain and Temperature Monitoring of a Full Scale Bridge
by Prof. Kuo-Chun Chang, Dr. Yun-bin Lin,
Dr. Jenn-Chuan Chern and Dr. Chih-Liang Pan

Overview of Korean R&D in Construction Technology
by Dr. Sung-Wan Hong

Mr. John Voeller

Prof. William E. Roper

Prof. Kuo-Chun Chang

Dr. Sung-Wan Hong

1 Overview

This report records the highlight of the presentations and discussions held at the second of the twin sessions titled Innovative Technology and R&D. The four papers submitted for the discussion at this session are as follows:

"Why E-commerce is a Small Impact Compared to Other Technology Revolutions Coming to Engineering and Construction," by Mr. John Voeller from Black and Veatch;

"Web-Based Geographic Information System Support to Disaster Response," by Prof. William E. Roper from George Washington University;

"Application of Optical Fiber Sensors to Strain and Temperature Monitoring of a Full Scale Bridge," by Prof. Kuo-Chun Chang, Dr. Yun-bin Lin, Dr. Jenn-Chuan Chern and Dr. Chih-Liang Pan from National Taiwan University; and

"Overview of Korean R&D in Construction Technology," by Dr. Sung-Wan Hong from Korea Institute of Construction Technology

Unfortunately, Mr. Voeller, the author of the first paper, was not able to attend the conference due to his medical emergence. Nonetheless his paper raised an additional dimension that is important when considering the implication of recent IT development in the context of construction industry, and his contribution is highly appreciated.

2 Highlights of the Papers/Presentations

Why E-commerce is a Small Impact Compared to Other Technology Revolutions Coming to Engineering and Construction

The furor over e-commerce has distracted many companies from the many other elements of technology that might provide equal or greater benefit or cause equal or greater competitive threat. Many have spent several years worth of discretionary budget chasing something that was technologically feasible, but had too many legal, cultural and functional problems to succeed. This presentation discussed twenty-five technologies that will impact the construction industry, its suppliers and clients in the next decade that should be under continuing examination by all parties. Emphasis was placed on balance in the research and investment perspective in any organization and the danger of being misled by the hype of the media and the avarice of the vendors.

Web-Based Geographic Information System Support to Disaster Response

We heard from Professor Roper about potential use of Web based geospatial analysis to improve disaster response management. Although this involves many new technologies that are unfamiliar to ordinary civil engineers, such as hyperspectral imagery, digital multispectral video, radar imaging

system, photogeologic anaysis, ans so on, and although it is required to overcome some technical shortcomings that still inhibit optimal decision making for disaster management, he showed that Web-based geospatial analysis has great potential by providing Web Mapping Test-bed demonstration of hurricane scenario. As he wrote in his paper, indeed we were stimulated by his presentation to think about systematic consideration of the information technology and information processing requirements associated with disaster management.

Application of Optical Fiber Sensors to Strain and Temperature Monitoring of a Full Scale Bridge

Professor Chang shared with us their valuable research results on the performance characteristics of optical fiber sensors in strain, temperature and crack measurements. Although their long-term reliability has to be proven further, Prof. Chang showed that they have several advantages over conventional sensors, such as light weight, small sized, and geometrically flexible, resistance to fatigue, and so on. These were also demonstrated by field monitoring of a full-scale highway bridge.

Overview of Korean R&D in Construction Technology

Dr. Hong first reviewed briefly the history of construction industry of Korea, the nation which was believed to be very successful in overseas construction in the Mideast and Southeast Asia in the 1970s until early 1980's, and then critically appraised the current status of construction R&D programs. He addressed that, while the national R&D programs have focused mainly on leading-edge technologies, the construction R&D has emphasized mainly on incremental, specific, immediate, trouble-shooting, and small process innovations, and thus need to develop a strategy toward innovations in construction technology. Dr. Hong also proposed a concept of product innovation which produces a qualitatively superior output from a given amount of input resources.

3 Conclusion

Recently, we have seen an enormous growth in the area of information technology and telecommunication in the form of powerful and specialized software, stronger and reliable hardware platforms, faster and efficient intranet and internet networks. Industry leaders of today who fail to adopt these changes can end up as laggards of tomorrow. As a result, it is hard to find a single industry or sector that directly or indirectly has not witnessed the impacts of these technologies – civil engineering and construction firms are no exceptions.

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