Problems of Construction R & D in Japan

April 19-21, 2010

Sydney, Australia

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TOPICS

- Construction Robots
- IMS (Intelligent Manufacturing Systems)
- CALS/EC
- BIM (Building Information Modeling)


SHIMZU


SMART SYSTEM
RC
RC

Construction Robots / Construction Automation

Objectives

- Reduce Construction Manpower
- Improve Construction Quality
- Shorten Construction Period

Problem of Construction Robot / Automation

- Developed mainly by General Contractors
- Priority on Productivity
- Design Restriction, NOT Flexible
- Increase Construction Cost
- Building Owners and Architects are NOT Interesting

IMS (Intelligent Manufacturing System)

- International Joint Research Project Organized by Japanese Government for Future Manufacturing Systems, Started around 1990
- Japan, EU, USA, and Other Countries Join as a matter of form
- About 70 Large Manufacturing Companies Join in Japan
- Large General Contractors Participated in the Program, Watching Future Construction Systems

Fruits of IMS

- Experience about International Joint Research for Future Production Systems
- Many kinds of Production Concepts Applicable to Production Lines
- Post Mass Production Paradigm
- Decentralized Network Systems
- For Construction Systems, Some Interesting Ideas about Production Systems

Problems of IMS from the View Point of Construction

- Construction Technologies Developed in IMS are NOT so Realistic, Too Futuristic
- General Contractors Carried Out the Research, but Sub-contractors do NOT Enjoyed so much

What is CALS? (Definition)

- Computer Aided Logistics Support
- Computer aided Acquisition and Logistic Support
- Continuous Acquisition and Life-cycle Support
- Commerce At Light Speed

Construction CALS/EC in Japan

- Original Idea of CALS Came from Logistic Strategy in US Defence
- Private Sectors Applied the CALS in the World
- National R & D Project Organized by MLIT from 1990 in Japan

Fruits of CALS

- Electronic Delivery (Electronic Documentaion)
- Electronic Bidding System
- CAD Data Exchange System
- Many Good Applications in Civil Engineering Works
- Applications in Building Works are Limited

Problems in Construction CALS/ES

- Government and General Contractors are very much Interesting
- But, Architects do NOT Enjoy
- Design Works are Costly Comparing with Fee

What is going on about BIM?

- IAI-Japan is Eager to Promote
- 3D-CAD & Simulation Soft Vendors are Enthusiastic to Sell their Products
- Few Architects are Interesting
- Some General Contractors are Interesting
- Government is Hesitate to Apply Entirely
- Government has to change their Administration Systems

Problems of BIM in Japan

- Players (Government, Architects, Contractors, etc.) are NOT Harmonized very much
- Information about Good Examples are NOT Open
- Owners and Contractors don’t Like to Disclose Project Information
- They Tend to Enjoy Exclusive Situation

Conclusion for Future R & D

- Cooperation between All Players
- Competition is Essential for Active R & D
- Balance between Cooperation & Competition
- It is very Difficult to Get Balance Inside of the Country
- Foreign Countries Movements are Important
- It is the Significance of ICIS

Thank you for your attention

- Questions

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