CIB W78 25TH INTERNATIONAL CONFERENCE ON INFORMATION TECHNOLOGY
Improving the Management of Construction Projects Through IT adoption

15 - 17 July 2008
Santiago, Chile

EDITOR:
Leonardo Birkmoller

ORGANIZED BY:
Department of Construction Engineering and Management
Faculty of Engineering
Universidad de Talca

Center for Integrated Facility Engineering (CIFE)
Stanford University
FOREWORD

I am glad to present the proceedings of the CIB W78 25th International Conference on Information technology in Construction.

The CIB (International Council for Research and Innovation in Building and Construction) Workgroup 78 (W78) in its process of increasing the connectivity and interdependence of the world’s leading institutions, academics and practitioners researching about IT in Construction, has made it possible to carry out by the first time in Latin America the CIB W78 annual conference and meeting. Fulfilling in this way the main objectives of CIB W78:

• To foster, encourage and promote research and development in the application of integrated IT throughout the life-cycle of the design, construction and occupancy of buildings and related facilities
• To proactively encourage the use of IT in Construction through the demonstration of capabilities developed in collaborative research projects
• To organize international cooperation in such activities and to promote the communication of these activities and their results

The conference theme -Improving the management of construction projects through IT adoption- gathered researchers from around the world that during three days of sessions presented and discussed high quality papers. These papers are presented in these proceedings as a way to contribute to technological advances oriented to lead to exploit the potential of information technology in the construction industry worldwide.

Leonardo Rischoffler
CIB W78 2008
Conference Chair
INDEX

KEYNOTE PRESENTATIONS

15
THE RETURN ON INVESTMENT OF VIRTUAL DESIGN AND CONSTRUCTION: EXAMPLES SHOWING TACTICAL AND STRATEGIC CONSIDERATIONS
Dr. Martin Fischer

16

20
APPLICATION OF VIRTUAL DESIGN AND CONSTRUCTION TECHNOLOGIES ON INFRASTRUCTURE PROJECTS
Dr. Mike Williams

21

22
INNOVATIVE COMPUTING AND INFORMATION TECHNOLOGIES FOR ADVANCING THE CONSTRUCTION INDUSTRY: FROM CONSTRUCTIONSCHEDULING AND COST OPTIMIZATION TO SMART STRUCTURES OF THE FUTURE
Hujjat Adiri

23

I. BUILDING INFORMATION MODELING

CASE STUDIES: EVALUATING BUILDING INFORMATION MODELING IMPACT ON UNITED STATES ARMY CORPS OF ENGINEERS CONSTRUCTION
Patrick C. Snerrum, Raja R.A. Sure

31

40
CAD-BIM REQUIREMENTS FOR MASONRY DESIGN PROCESS OF CONCRETE BLOCKS
Sabet, Sajjad, Ayres Filho, Cesar, Arana, Fabrícia, Beber, Michelle

48
A BETTER BIM: IDEAS FROM OTHER INDUSTRIES
Robert Amos

54
A CONTEXT-ADAPTIVE BUILDING INFORMATION MODEL FOR REAL-TIME STRUCTURAL ANALYSIS IN A DISASTER MANAGEMENT SYSTEM
Ridiger Schütz, Thomas Bernoulli, Thomas Weidacker, Ulrich Walden

63
BUILDING INFORMATION MODELING DEMYSTIFIED: DOES IT MAKE BUSINESS SENSE TO ADOPT BIM?
Guilermo Aranda-Mena, John Crawford, Agustin Chevez, Thomas Froese

77
TOWARDS METHODOLOGY FOR HARMONIZATION OF SEMANTICALLY DIFFERENT BIMs
Andrej Taran, Darijel Bobulj

II. PRODUCT AND PROCESS MODELING

A PROCESS MODEL FOR CONSTRUCTION SYNCHRONISATION USING TIME-SPACE PLANNING METHODS AND FIELD FORCE AUTOMATION
Hikaru Norberg and Thomas Olofsson

91

DEVELOPMENT OF 5D CAD BASED WORK PROCESS MODEL FOR AGED-HOUSING REVAMP PROJECTS
Hue-Sang Chu, Kyungri Kim, Dong-Wooshin

103
III. COLLABORATIVE ENGINEERING AND DESIGN

ALIGNING INTERESTS KEY TO DEVELOPING TRUST IN DEPLOYING COLLABORATIVE TECHNOLOGIES IN CONSTRUCTION
D. Zappa, Raja K.A. Suu

INTERACTIVE VISUALISATION AS A POWERFUL DECISION SUPPORT TOOL FOR CONCEPTUAL DESIGN
Yaqub Rafiq, Martin Beck, and Neil Hughes

BUILDING DESIGN COORDINATION: COMPARING 2D AND 3D METHODS
Eduardo Toledo Santos, PhD, Rita Cristina Ferreita, M.Sc.

FUTURE INTEGRATED DESIGN ENVIRONMENTS
Per Christensson, Kjeld Svad, Kristian Birch Sorensen

COOPERATIVE DIGITAL STUDIO HT-SUPPORTED COOPERATION FOR AEC STUDENTS
Sylvain Kabicki, Jean-Claude Bringon, Pierre Leclercq

IV. IT ADOPTION / IMPLEMENTATION

UNDERSTANDING ADOPTION AND USE OF ICT IN CONSTRUCTION PROJECTS THROUGH THE LENS OF CONTEXT, ACTORS AND TECHNOLOGY
Henrik C.J. Lindstorm, Mattias Jacobsson

ASSESSING INDIVIDUALS’ RESISTANCE TO IT IMPLEMENTATION IN THE AEC INDUSTRY
Kirsten A. Davis

COST DATABASE SYSTEM APPLIED TO REFURBISHMENT OF SOCIAL HOUSING IN BRAZILIAN CONTEXT
Sérgio Leal Ferreira, Guilherme Kanashia Tanabe

REQUIREMENTS ON 3D BUILDING INFORMATION MODELS AND ELECTRONIC COMMUNICATION – EXPERIENCES FROM AN ARCHITECTURAL COMPETITION
Kjeld Svad, Per Christianson

BARRIERS OR CONSTRAINTS? A REVIEW OF DEVELOPMENT ISSUES AS THEY APPLY TO CONSTRUCTION IT
Kathryn Davies

V. VISUALIZATION AND VIRTUAL REALITY (VR)

AN EVALUATION SCHEME FOR TWO SAFETY TRAINING APPLICATIONS
Johan Lucas, Pooms Worlikor, Waldal Thabet

VI. e-BUSINESS, e-GOVERNMENT AND e-CONSTRUCTION

CITA: A COLLABORATIVE ICT STANDARDS MODEL FOR THE IRISH CONSTRUCTION INDUSTRY
A.V. Horne, R.P. West

POSSIBLE BENEFITS OF WEB 2.0 TO CONSTRUCTION INDUSTRY
Robert Kline, Marek Dolonec, Ziga Turk

ELECTRONIC TENDERING: DELIVERING BUSINESS EFFICIENCIES FOR THE IRISH CONSTRUCTION INDUSTRY
R.P. West, A.V. Horne, L. O’Connell

IMPACT OF E-GOVERNMENT ON FEDERAL FACILITY DELIVERY
E. William East

EFFECTIVE SEMANTIC WEB-BASED SOLUTIONS FOR CIVIL ENGINEERING
Tamer E. El-Omoudy, Sherif Kamwesy

VII. CONSTRUCTION MANAGEMENT

INTEGRATING TRUST CONCEPTS IN A DASHBOARD INTENDED FOR THE BUILDING CONSTRUCTION COORDINATOR
Anne Guerrero, Gilles Habib, Sylvain Kohlici

A VISION FOR A FRAMEWORK TO SUPPORT MANAGEMENT OF AND LEARNING FROM CONSTRUCTION PROBLEMS
Teek Elkhawas, Frank Boskamp

CHANGE MANAGEMENT IN CONSTRUCTION PROJECTS
 Qi Hua, Weiming Shen, Joseph Neelamkavil, Rui Thomas
VIII. OTHER THEMES

CONCURRENT ENGINEERING IN EDUCATIONAL PROJECTS:
CASE STUDY SNARTÖBERGET
Gustav Jansson, Helena Johansson

TOWARDS LINKING VIRTUAL MODELS WITH PHYSICAL OBJECTS IN CONSTRUCTION USING RFID:
REVIEW OF ONTOLOGIES
Kristian Dich Svendsen, Per Christiansson, Kjeld Svild, Kim Jacobsen, Thomas Simoni

REDUCING COMPLEXITY OF CUSTOMIZED PREFABRICATED BUILDINGS THROUGH MODULARIZATION
AND IT SUPPORT
Patrik Jensen, Thomas Olofsson, Marcus Sandberg, Linus Malmgren

RELATIONSHIPS BETWEEN ON-SITE RFID TAGS – OPPORTUNITIES, BENEFITS AND CHALLENGES
Reza Shiffafi and Frank Buchkamp

THE INTEROPERABILITY ACT FOR ENCOMPASING SEMANTICS IN CONSTRUCTION DOCUMENTS
Ivan Matis, Raja R.A. Iona