

W78 Conference report 2009

The joint conference for the 26th CIB W078 Conference on Managing IT in Construction and the International Conference on Managing Construction for Tomorrow (MC4T) was held in Istanbul, Turkey between 1 and 3 October 2009. This CIB W078 conference was organized under the sponsorship of Istanbul Technical University (ITU) in collaboration with CIB W078. The conference chair was Dr. Attila Dikbas and the organizing committee chair was Dr. Esin Ergen. The joint International Conference provided an opportunity to exchange experiences and ideas in a common location and consolidate on recent developments.

The joint conference of CIB W078 and MC4T saw 99 papers from 24 countries being presented. The organizers were pleased that the papers covered a wide variety of topics and were submitted by researchers from so many different countries. The papers reflect the latest developments, innovations and potential future directions on construction management and construction IT. The papers that were submitted to the conference went through a full review process. A panel of peers contributed to the selection and improvement of papers in the refereeing process.

The proceeding of the conference consists of two parts. Part I covers the papers and topics from the CIB W078 conference including:

- Model based management tools
- Communication and collaboration
- Data acquisition and storage
- Information and knowledge management
- Architectural design
- Managing IT strategies
- Building information modeling
- Visualization and simulation
- Sustainability

The papers in Part II, which covers the papers submitted to the MC4T conference, were placed into the following five categories:

- Construction industry competitiveness
- Innovative approaches in construction
- Best practices in international construction
- Health and safety
- Sustainable construction

In the opening session, the CIB W078 conference chair, Prof. Attila Dikbas, the rector of ITU, Prof. Muhammed Sahin, the dean of architecture department, Prof. Orhan Hacıhasanoğlu, and the CIB W078 coordinator, Prof. Robert Amor, gave speeches. The keynote speakers of the conference were Prof. Thomas Froese from the University of British Columbia, Prof. Stuart Green from Reading University, and Prof. Burcu Akinci from Carnegie Mellon University. In the first two days, three parallel sessions were

held (two sessions for CIB W078 and one session for MC4T) and in the last day, two parallel sessions were held for the CIB W078 conference.

The sponsors of the conference were ITU, TAV Construction, Agaoglu Construction, Vefa Group, Astas, Verus Interactive, Legrand and Technobee.

The list of papers and the conference program is attached as an appendix to this report.

CIB W078 meeting

The annual CIB W078 meeting was held on Wednesday 30 September, the afternoon prior to the start of the full conference. The conference programme promoted this meeting for all attendees of the conference, but as the attendance at the meeting was mostly from W078 members and not other conference delegates it was clear that many did not see the benefit of arriving earlier than the official start of the conference. However, the results of the discussion at the W078 meeting were able to be reported during the opening session on Thursday 1 October.

The initial agenda item was a discussion on potential chairs for future conferences and their location. For 2010 the meeting affirmed the 2008 decision to support a Construction IT track at the World Building Congress, but to also host a W78 conference later in the year outside of Europe in order to minimize the audience clash with EC-PPM. Prof Walid Thabet from Virginia Tech will be the chair of the 2010 conference which is being arranged for 16-18 November 2010 in Cairo, Egypt. There was an open invitation to align special tracks with the conference and subsequent to the W78 meeting a one day track on BIM and IFC has been organised for 19 November 2010. The preferred chair and location for the 2011 conference generated considerable discussion noting that while there appeared to be offers on the table from Spain, Ireland, Great Britain, Switzerland, and Luxembourg, the W78 meeting had not received a firm proposal from any of those potential chairs. Subsequently to the W78 meeting Alain Zarli from CSTB in France coordinated a possibility for a joint W78 and W102 conference for 2011 which drew majority support in a W78 email discussion and is now supported by W78 for 2011. For future years there is a tentative plan for 2012 to be in Lebanon, 2013 to be in South Korea, and 2014 to be held jointly with the ICCBE series in Florida, USA. Chairs have been identified for each of these potential locations and the W78 coordinator has been tasked with progressing plans with the proposed chairs for presentation at the 2010 W78 conference.

Reports were received for each of the work items on the W78 programme, though noting that the two new items on women in Construction IT and supporting young researchers had failed to gain traction at this conference. The meeting committed to ensuring that the 2010 conference included activities that would address these themes including the offer of development clinics for young academics and women who might also wish to attend. The Turkish hosts of this conference suggested the addition of a work item on developing industry links with W78. A fuller specification of what this would entail as a work item is to be developed following the conference. Prof Björk noted that the electronic publishing work item is now firmly established within W78 and CIB and could be removed from our programme of work. Prof Rebolj noted that the ITC@EDU workshops had not been consistently organised in the last few

years, but they are identifying a core committee to rejuvenate the series and to ensure closer to annual workshops are held. He did note that education is now well established as a theme in W78 (and other conference series) which is a sign of the success of this work item.

The new CIB priority theme of Integrated Design and Delivery Solutions (IDDS) was discussed at the meeting with participants noting the contributions that W78 is able to make in this area and reaffirming interest in helping develop this theme for CIB. Members noted the EU focus on sustainability and energy use and queried how this might link to IDDS, as their major goal is also to see the industry moving forward.

A number of smaller topics were considered by the meeting. This included further interest in moving forward on a W78 book in association with Taylor and Francis. A discussion on the use of the Yahoo email list server led to a recommendation to make it a closed list so the coordinator has to approve messages going out to members. This will ensure no spam reaches W78 members. The offer by Construction Innovation for a student prize was turned down due to its one-off nature. However, the meeting did suggest that free registration and a certificate be offered to the top student paper (and perhaps presentation) at future meetings.

CIB W078 & MC4T Conference Program

30 September	2:00 – 8:30 pm	Conference Registration
	5:00 – 6:30 pm	W078 Committee Meeting
	6:30 – 8:00 pm	<i>Ice Breaker Cocktail</i>
1 October	8:00 am – 5:00 pm	Conference Registration
	8:30 – 9:30 am	Opening Ceremony
	9:30 – 10:15 am	Keynote Speech-I <i>Prof. Thomas Froese</i> <i>The University of British Columbia</i>
	10:15 – 11:00 am	Keynote Speech-II <i>Prof. Stuart Green</i> <i>University of Reading</i>
	11:00 – 11:15 am	<i>Coffee Break</i>
	11:15 – 12:45 am	Paper Presentations (Parallel Sessions-1)
	12:45 – 2:00 pm	Lunch
	2:00 – 3:30 pm	Paper Presentations (Parallel Sessions-2)
	3:30 – 3:45 pm	<i>Coffee Break</i>
	3:45 – 5:15 pm	Paper Presentations (Parallel Sessions-3)
	6:00 – 8:30 pm	<i>Welcome Cocktail</i>
	2 October	8:30 – 9:15 am
9:15 – 9:30 am		<i>Coffee Break</i>
9:30 – 11:00 pm		Paper Presentations (Parallel Sessions-4)
11:00 – 11:15 am		<i>Coffee Break</i>
11:15 – 12:45 am		Paper Presentations (Parallel Sessions-5)
12:45 – 2:00 pm		Lunch
2:00 – 3:30 pm		Paper Presentations (Parallel Sessions-6)
3:30 – 3:45 pm		<i>Coffee Break</i>
3:45 – 5:15 pm		Paper Presentations (Parallel Sessions-7)
8:00 pm – 11:30 pm	<i>Conference Gala Dinner</i>	
3 October	9:00 – 10:30 am	Paper Presentations (Parallel Sessions-8) & REEB Workshop - Building a road map for research on ICT for energy-efficient buildings
	10:30 – 10:45 am	<i>Coffee Break</i>
	10:45 – 12:15 pm	Paper Presentations (Parallel Sessions-9)

12:15 – 2:00 pm

Lunch

Parallel Sessions

Parallel Sessions 1:

1 October, Thursday - 11:15 – 12:45 am

CIB W078 Session - Model Based Management Tools I

Session chair - Robert Amor

A unified construction project management area

D. Ye, T. Froese

Analyzing Capacity of BIM Tools to Support Data Use across Project Lifecycle

J. Lucas, W. Thabet, D. Bowman

An Integrated 3D Simulation Framework for Earthwork Processes

Y. Ji, A. Borrman, E. Rank, J. Wimmer, W. A. Günthner

A product/process model-based system to produce work instructions

C. Mourgues, M. Fischer

CIB W078 Session - Architectural Design

Session chair – Peter Katranuschkov

User driven innovative building design

P. Christiansson, K.B. Sørensen, K. G. Steffensen, K Svidt

Configuration with architectural objects in industrialised house-building

F. Wikberg, A. Ekholm, P. Jensen

Pattern Based 3D Modeling Environment

D. Chitchian, S.I. Sariyildiz

Redefinition of geometrical components to specify kinematically undetermined behaviour

H. Hofmeyer, F. Gelbal

MC4T Session – Construction industry competitiveness

Session chair – Zeynep Sözen

Public procurement of architectural and engineering services: fee and quality

J. Sporrang, J. Bröchner & A. Kadefors

The business potential of Turkish contractors in international construction industry

E. Tas & P. Irlayici

Improving quality to ensure competitiveness by a change management system

G.O. Alptekin

A conceptual model to determine the role of suppliers in generalizing innovations in the construction industry

Y. Erbil & N. Akıncıtürk

Implications of culture in dispute resolution in international construction joint ventures

P. Ates & H. Giritli

Parallel Sessions 2:

1 October, Thursday- 2:00 – 3:30 pm

CIB W078 Session - Model Based Management Tools II

Session chair – Davood Chitchiann

Technical Challenges for Integrated Design and Delivery Solutions

R. W. Amor

A Declarative Approach to Cross-Domain Model Analysis

U. Hartmann, P. von Both

Lightweight Capture of As-Built Construction Information

E. W. East, N. Nisbet, J. Wix

Teaching Integrated Scope-Cost Methods with Model-based Tools

F. Peterson, M. Fischer and T. Wingate, O. Seppänen, T. Tutti, R. See

CIB W078 Session - Visualization and simulation I

Session chair – Walid Thabet

ForBAU – The virtual construction site project

A. Borrmann, Y. Ji, I.-C. Wu, M. Obergrießer, E. Rank, C. Klaubert, W. Günthner

Considering Quality Aspects for Construction Scheduling using Constraint-Based Simulation

U. Beisert, M. König, H.-J. Bargstädt

Using discrete-event simulation for process modeling: Case of work structuring of asphalt highway construction operations

G. Polat, Y. Buyuksaracoglu

Development of Hybrid Simulation and Genetic Algorithms System for Solving Complex Crew Allocation Problems

A. Al-Bazi, N. Dawood, Z. Khan

MC4T Session - Innovative approaches to construction I

Session chair – Jan Bröchner

The contemporary methods of Waqf land development in Malaysia

S. Mokhtar & M. Ibrahim

BIM implementation for an architectural practice

Y. Arayici, P. Coates, L. Koskela, M. Kagioglou, C. Usher & K. O'Reilly

Vocational language needs of European construction companies

E. Oral, P.M. Rogerson-Revell, J.P. Pantouvakis, M. Bechter, M. Oral, A. Kılıç, G. Mistikoglu, E. Erdis, O. Mistikoglu, S. Huskinson, V. Archou & A. Panas

A review of utilization of soft computing methods in construction management

S.U. Dikmen, O. Ates, R. Akbiyikli & M. Sonmez

Parallel Sessions 3

1 October, Thursday- 3:45 – 5:15 pm

CIB W078 Session - Model Based Management Tools III

Session chair - Per Christiansson

IFC Support for Model-based Scheduling

M. Weise, T. Liebich, J. Tulke, P. Bonsma

Extended model-based master scheduling for building projects using advanced line of balance

C.E. Firat, D. Arditi, J.P. Hämäläinen, J. Kiras

A Pattern-Based Approach for Facilitating Schedule Generation and Cost Analysis in Bridge Construction Projects
I.C. Wu, A. Borrmann, E. Rank, U. Beißert, M. König

Dynamic System Architecture for Energy Efficient Building Operation: A Case Study of Kiptas Residential Building
H.U. Gokce, K.U. Gokce, D. Browne, K. Menzel

CIB W078 Session - Visualization and simulation II

Session chair - Thomas Liebich

Utilizing 4D Technology in Supply Chain Management
J. Porkka, J. Kojima, K. Rainio, K. Kähkönen

Drawing Architecture using Manga Techniques
Y. Qu, M.A. Schnabel

An Innovative Approach for Generation of Virtual Construction Model and a Time Location Plan for Road Construction Projects
R. K. Shah, N. Dawood, J. Dean

Agent-Based Modeling of User Movements: A Case Study in a Museum Building
G. Cagdas

MC4T Session - Innovative approaches to construction II

Session chair – Begüm Sertyeşilşik

A model of leadership in architectural offices for tomorrow
E. Kasapoglu

Integrated learning in a virtual construction management services company (VCMSC)
W. Alsakini, J. Kiiras & P. Huovinen

A framework for analyzing the impact of operational coefficients on excavation productivity
A. Panas & J.P. Pantouvakis

Innovation value chain in construction
B. Ozorhon, C. Abbott & G. Aouad

Parallel Sessions 4

2 October, Friday - 9:30 – 11:00 pm

CIB W078 Session - Building Information Modeling I

Session chair – Charles Woodward

Automated construction schedule creation using project information model
A. Mrkela, D. Rebolj

Check-mate: Automatic constraint checking of IFC models
R. Niemeijer, B. de Vries, J. Beetz

Developing a multidisciplinary process view on IFC standardization
M. Laakso

An Assessment of Building Information Modeling Value and Use
B. Becerik-Gerber & S. Rice

CIB W078 Session - Information and knowledge management I

Session chair - Jesus de la Garza

Ontology-based Dynamic Process Support on the Example of Defect Management

P. Katranuschkov, K. Rybenko & R. J. Scherer

A web-based system for quality inspection and defect management of industrial building construction

N. Forcada, E. Margalida, A. Fuertes, M. Casals, M. Gangolells, X. Roca, M. Macarulla

Analysis of Building Performance Data for Energy-Efficient Building Operation

A. Ahmed, J. Ploennigs, Y. Gao, K. Menzel

Building Product Catalogues on the Semantic Web

J. Beetz, B. de Vries

MC4T Session - Best practices in international construction I

Session chair – Ahmad Hadavi

Construction and development: analyzing the construction sector in Turkey and EU countries

B. Ilhan & H. Yaman

Recent trends in tall building design

A. Sev & A. Ozgen

An effective site organization structure for fast-track construction projects

S.U. Dikmen & R. Akbiyikli

Convergence of construction costs in the single European market

C. Langston & R. Best

Parallel Session 5

2 October, Friday - 11:15 – 12:45 am

CIB W078 Session - Building Information Modeling II

Session chair – Thomas Froese

Modelling of buildings and projects with utility assessment

Č. Jarský

Maintenance Scheduling based on the Analysis of Building Performance Data

H.U. Gokce, P. Stack, K.U. Gokce, K. Menzel

Software architecture for mobile mixed reality and 4D BIM interaction

M. Hakkarainen, C. Woodward, K. Rainio

BIM to CAFM: An Investigation of Adapting a Building Information Model to a Legacy Computer Aided Facility Management

O. Ozaner, M. J. Clayton, C. Nome

CIB W078 Session - Information and knowledge management II

Session chair – Burcu Akinci

Specifications for a Social and Technical Environment for Improving Design Process Communication

R. Senescu, J.R. Haymaker

Assessing organizational semiotics for IT systems design: improving information exchange processes across construction project stakeholders

W. Collinge, C.F. Harty, K. Liu, Y. Tang

BPM-driven Construction Client Requirements Change Management

A.K. Jallow, P. Demian, A.N. Baldwin, C.J. Anumba

Foundation for development of computable rules
E. Hjelseth

MC4T Session - Best practices in international construction II

Session chair – Ümit Dikmen

Factors influencing rent arrears in public housing in Malaysia: a proposed research framework and methodology
N. A. Salleh, N. A. Yusof & A. G. Salleh

Better informed decisions through evidence-based design
R. Codinhoto, S. Wu & M. Kagioglou

Exploring the Issues for Future of Construction IT
B. Erdogan, C. Abbott & G. Aouad

Creating a digital SME community in the Irish construction industry
A.V. Hore, R.P. West & A. Redmond

Parallel Session 6

2 October, Friday - 2:00 – 3:30 pm

CIB W078 Session - Data acquisition and storage

Session chair – Nashwan Dawood

A comparative study on the use of laser scanners for construction quality control and progress monitoring purposes
G. Atasoy, P. Tang & B. Akinci

Improving highway asset management with RFID technology
J. de la Garza, N. J. Yates, C. A. Arrington

Assessing the Need for Storing Data on Radio Frequency Identification (RFID) Tags
E. Ergen, G. Guven

Leveraging Materials Tracking Technology to Improve Industrial Project Performance
D. Grau, C. H. Caldas, C.T. Haas, P.M. Goodrum, J. Gong

CIB W078 Session - Information and knowledge management III

Session chair - Janne Porkka

Creating new ways of learning in architecture and building: MACE Project
A. Fuertes, M. Casals, N. Forcada, M. Gangolells, X. Roca

Interoperability Challenges of an Engineering Software Provider
T. Rácz, Thomas Olofsson

Implementation of the Methodology for Semi-Automatic Building Energy Performance Simulation
V. Bazjanac

A Data-Warehouse Architecture supporting Energy Management of Buildings
H.U. Gokce, Y. Wang, K.U. Gokce, K. Menzel

MC4T Session - Health and safety

Session chair – William Swan

The dynamic model of the cyclical style of safety management
T. Chinda

An investigation of Turkish construction workers' knowledge on health and safety practices

G. Arslan & S. Kivrak

Construction accident in relation to safety factor in design – a proposed model

A. C. Ahmad, I. Bahari, M. F. M. Zain, A. Jaafar & O. M. Piah

Organizational structure of health and safety management system: a case study in Turkey

R. Akbıyıklı, S.U. Dikmen, D. Eaton & S. Korkmaz

Parallel Session 7

2 October, Friday - 3:45 – 5:15 pm

CIB W078 Session - Managing IT strategies I

Session chair - Vlademir Bazjanac

Business-driven IT Strategy in Multi-Business and Multi-National Companies

R. Myllymäki

The Drivers and Barriers for the Development and Applications of Project Collaboration Systems in the Chinese Construction Industry

Z. Ren, T. M. Hassan, F. Yang

Influences on the adoption of BPM/BIM: an Australian perspective

G. Brewer, T. Gajendran, C. Beard

Progression in IT adoption and stage of IT maturity in the construction sector of Singapore

B. H. Goh

CIB W078 Session - Information and Knowledge management IV

Session chair - Bill East

Classification of Building Element Functions

K. A. Joergensen

Factors Affecting the Learning Process of Professionals in Architectural Design Firms

G.B. Ozturk-Barlak, D. Arditi, H.M. Gunaydin, S. Kale, I.Yitmen

Characterizing the Non-Value-Added Relocation of Non-Bulk Components on Storage Yards

D. Grau

Developing a forecasting model for the prediction of inflation rates for use in life cycle cost analysis

T.Celik, Y. Baalousha, F. Ibisevic

Identification of Reusable Information in Construction Firms

Z.L. Ma, N. Lu

MC4T Session - Sustainable Construction

Session chair – Gül Polat

Comparative review of widely used building environmental assessment tools and suggestions for developing countries

A. Sev

Causes of materials waste in the Palestinian construction industry

A. Enshassi1, S. El-Moghany, P. E. Mayer & J. Zimmermann

Conflicting Sustainable Development Drivers and Client Interventions: A Case Study of the Elevate SME Supply Chain

W. Swan, R. Stewart & N. Naimuddin

Parallel Session 8

3 October, Saturday - 9:00 – 10:30 am

CIB W078 Session - Managing IT Strategies II

Session chair – David Grau

Cultural analysis for ICT integration: A single case study analysis of a construction project

T. Gajendran, G. Brewer

A Theoretical and Practical Assessment of Open Source Development and Dissemination of Construction IT Solutions

T. Hartmann, N. Hartmann

Factors Supporting Information and Communication Technologies on Construction Projects

D. Zuppa & R.R.A. Issa

A case study on the strategic impact of information technology in the Turkish construction industry

P. Irlayici, E. Tas

CIB W078 Session - Communication and collaboration

Session chair - Nuria FORCADA

Engineering communication - current view on past and future

R. Klinc, M. Dolenc, Ž. Tur

The Future Scenario of Creating a Digital SME Community in the Irish Construction Industry

A. Hore, R.P. West, A. Redmond

Designing IT services for the construction industry. Towards a selection methodology for validation techniques.

A. Guerriero, L. Johannsen, S. Kubicki

Semantic tags for collaboration in construction formalized within a social network framework

I. Mutis

REEB Workshop - Building a road map for research on ICT for energy-efficient buildings

Session chair - Raimar Scherer

Parallel Session 9

3 October, Saturday - 10:45 – 12:15 pm

CIB W078 Session - Managing IT strategies III

Session chair – Timo Hartmann

Exploring Context-Awareness in the construction logistics services delivery

B. Omar, S. Abu Hassan, T. Ballal

A review of the artificial intelligence applications in construction dispute resolution

D. Ilter, A. Dikbas

Business Benefits Framework of Enterprise Systems in Construction: An Exploratory Factor Analysis

O. Tatari, M.J. Skibniewski

The impact of information technology in facilitating communication and collaboration in Libyan public organisations- a literature review

S. Bezweek, C. O. Egbu

CIB W078 & MC4T Session – Sustainability

Session chair - Ivan Mutis

Enabling sustainability through SOA within the A/E/C-FM domain

A. Dikbas, P. Ercoskun, K. Ercoskun

A concept for IT-supported carbon neutral renovation

H. Yin, M. Otreba, L. Allan, K. Menzel

ICT for energy efficiency: The case for smart buildings

J. Ye, T. M. Hassan, C. D. Carter, A. Zarli

Predicting the significance of environmental issues in construction operations

G. Polat & Y. Tatar