

Table of contents

<i>Preface</i>	<i>XIII</i>
<i>Organisation</i>	<i>XV</i>
 <i>Keynote papers</i>	
Integration directions	3
<i>G. Augenbroe</i>	
Early lessons from deployment of IFC compatible software	9
<i>V. Bazjanac</i>	
Metaphors for knowledge capture, sharing and reuse	17
<i>R. Fruchter</i>	
European collaborative R&D projects related to the "Smart organisation". A first evaluation of activities and implications for construction	27
<i>E. Filos</i>	
Harmonization of the IST research and development for the European construction industry: The ICCI project	33
<i>A. Zarli, P. Katranuschkov, Ž. Turk, Y. Rezgui & A.S. Kazi</i>	
 <i>Virtual enterprise environments</i>	
Virtual enterprise reference architecture and methodology	43
<i>A.S. Kazi & M. Hannus</i>	
Virtual environments for the AEC sector — the Divercity experience	49
<i>R. Soubra, M. Marache, P. Christiansson, J.O. Skjaerbaek & L. Da Dalto</i>	
Applicability of e-work models in materials management automation systems	57
<i>D. Castro-Lacouture & M.J. Skibniewski</i>	
Inter-enterprise information management in dynamic construction enterprises	65
<i>A.S. Kazi, Y. Rezgui, A. Zarli & M. Jokela</i>	
Product model management in construction virtual environments	73
<i>A.S. Kazi, O. Nummelin, E. Huittinen & M. Hannus</i>	
Benefits of using product and process model data in project management	79
<i>C. Kuhne & C. Leistner</i>	
 <i>eBusiness</i>	
Assessment of e-business implementation in the US construction industry	87
<i>I. Flood, R.R.A. Issa & G. Caglasin</i>	

A prototype system for material procurement management based on the SCOR and CPFR models <i>R.R.A. Issa, I. Flood & A. Jiang</i>	95
Can the ECOS platform contribute to e-business interoperability in AEC? <i>M. Borrás, R. Goncalves, J. Vidagan, P. Maló & A. Steiger-Garçao</i>	103
Harmonization of standards and eBusiness technology for the AEC industrial sector <i>R. Jardim-Goncalves, A. Steiger-Garçao, A. Llambrich & M. Martinez</i>	109
The benefits of contractual support for ICTs <i>C.D. Carter, T.M. Hassan, M.A. Shelbourn & A.N. Baldwin</i>	115
Future aspects of industrial vertical markets <i>R. Delina, M. Grohol & A. Lavrin</i>	121
Developing electronic models to support Internet bidding <i>M. Ekström & H.C. Björnsson</i>	123
Internet based simulation of the resource requirement of buildings <i>F. Neuberg, E. Rank, C. Ekkerlein & M. Faulstich</i>	125
Capabilities of utilisation of information systems in facilities management <i>M. Naaranoja</i>	133
A unified environment for life cycle cost analysis for construction products <i>T.E. El-Diraby</i>	135
e-Infrastructure: an interoperable GIS system for infrastructure decision making <i>T.E. El-Diraby</i>	139
IT to support cooperation in supply-chain management strategies <i>M. Allegra, A.Z.P. Vitrano & G. Fulantelli</i>	143
<i>Construction management</i>	
A model-based process component approach for construction project management <i>V. Karhu</i>	147
State of the art of implementing new technologies for the management of construction projects in Spain <i>M. Casals, N. Forcada & X. Roca</i>	153
VEWA: value engineering web-based application <i>C.W.F. Che Wan Putra & B.K. Ho</i>	159
Guidelines for implementing web based models for construction management, the lack <i>N. Forcada, F. Peñaranda & X. Roca</i>	165
Construction project management tool <i>M. Casals, M. Calvet & N. Forcada</i>	167
Construction project management: a new concept dedicated to the small- and medium-sized enterprises <i>B. Otjacques & P. Post</i>	171
<i>Simulation and planning</i>	
Next generation of construction planning and control system: The LEWIS approach <i>E. Sriprasert & N. Dawood</i>	175
Integration of genetic algorithms and simulation for stockyard layout planning <i>R. Marasini & N. Dawood</i>	183
Process approach to production management in a construction company <i>A. Sobotka, S. Biruk & P. Jaskowski</i>	187
A simulation tool for multi-perspective site layout analysis <i>H. Tawfik, T. Fernando & R.A. Aspin</i>	193

Simulation of concrete batch plant production <i>Z. Orłowski</i>	199
4D modelling of precast concrete building constructions <i>A. Rönneblad & T. Olofsson</i>	203
Visual simulation in the construction of buildings <i>P.G. Henriques & A.Z. Sampaio</i>	209
<i>Process modelling</i>	
Exchanges of process information between software tools in construction — the PSL language <i>A.F. Cutting-Decelle, G.T. Tesfagaber, A.N. Baldwin, C.J. Anumba & N.M. Bouchlaghem</i>	215
Comprehensible process models — a case study on the communication of process models <i>A. Lundgren</i>	223
Process models as a base for communication in revitalization projects <i>D.G. Beer</i>	231
On modelling of the building process by a computer expert system <i>A. Jarský</i>	237
Are workflow management systems useful for collaborative engineering? <i>A. Kokoszka, K. Siekierska, N. Quang Trung, P. Fraś & A. Pawlak</i>	245
Workflow process views <i>Y. Zhu & G. Augenbroe</i>	253
Process modelling of validation and product lifecycles <i>S.V. Lord, H. Aleem, T.J. McCarthy & P.N. Sharratt</i>	261
<i>Conceptual modelling</i>	
An engineering ontology framework as advanced user gateway to IFC model data <i>P. Katranuschkov, A. Gehre & R.J. Scherer</i>	269
Using ontologies for intelligent information retrieval in an e-commerce application case study <i>L.A.S. Eulalia, E.S. Moreira, H. Rozenfeld & A.P.L.F. Carvalho</i>	277
Dynamic information consistency checking in the requirements analysis phase of data modeling <i>G. Lee, R. Sacks, C.M. Eastman</i>	285
From rough to final designs by incremental set-inclusion of properties <i>A. Eir & A. Ekholm</i>	293
Serving building product information with design knowledge servers <i>S. Fridqvist & J.P. van Leeuwen</i>	301
Using grammars for collaborative design: an experiment and impacts on industry practice <i>J.P. Duarte</i>	307
Development and exploration of conceptual building function-to-form relationships <i>R.A. Aspin & T. Fernando</i>	313
<i>Project data management</i>	
The application of an integrated information modelling system for the construction industry <i>A.G. Kimmance, C.J. Anumba, A.N. Baldwin & D. Bouchlaghem</i>	319
Current use of EDM systems in the Finnish construction industry <i>M. Bäckblom & B.-C. Björk</i>	331
An eDocument approach for improving communication in AEC projects <i>K. Zreik, R. Stouffs, B. Tunçer, S. Ozsariyildiz & M.R. Beheshti</i>	335

Principles and strategies for applying data warehouse technology to construction industry <i>J.-K. Lee & H.-S. Lee</i>	343
A performance-based approach for product selection from e-catalogues <i>S. Jain & G. Augenbroe</i>	353
VIRCON: a proposal for critical space analysis in construction planning <i>S. North & G.M. Winch</i>	359
<i>Standard models</i>	
Overview of IFC model server framework <i>Y. Adachi</i>	367
Mapping IFC versions <i>R.W. Amor & C. W. Ge</i>	373
Structural analysis extension for the next IFC release <i>M. Weise, P. Katranuschkov & T. Liebich</i>	379
From LexiCon to XTD <i>K. Woestenenk</i>	387
The bcXML prototype: the eConstruct approach supporting eCommerce in the building and construction industry <i>C. Lima, J. Stephens & M. Böhms</i>	393
BcXML enabled VR project information front-ends <i>R. van Rees, R. Beheshti & F. Tolman</i>	401
<i>Product models</i>	
Product and process integration for 4D visualisation at construction site level: A Uniclass-driven approach <i>N. Dawood, E. Sriprasert, Z. Mallasi & B. Hobbs</i>	409
An integrated product and process model for steel framed buildings <i>W. T. Tizani, D. Ruikar & R. Smith</i>	417
Integration of product life cycle knowledge in CAD <i>W. Skarka</i>	421
Unification as a standardization tool in the design of information systems and a unified project model: MITOS <i>A. Kanoglu & K. Ercoskun</i>	427
Intelligent structural modeling — technological watch and proof of concept <i>J.P. Rammant & M. Novak</i>	431
Intelligent data management in building design process <i>R. Žiūrienė & L. Čiupaila</i>	433
An information portal for the house building sector in TMAD <i>S. Pereira, A. Costa, L. Ramos, E. Rodrigues, J. Faustino, J. Vieira & A. Paiva</i>	435
Role of design characteristics in the development of simple flats in Jakarta <i>S. Kosasih</i>	437
<i>Geometric models</i>	
Remote collaborative virtual walkthroughs utilizing 3D game technology <i>M.F. Shiratuddin & W. Thabet</i>	441
Interactive 3D environment an Internet <i>R. Gole</i>	447

Online integration of 3D architectural design <i>Y. Luo</i>	453
Taking-off and 3D data modeling from 2D CAD data <i>W. Kim, P.-Y. Jung, J.Y. Park & H.-S. Lee</i>	457
Solid modeling as a basis of co-operative planning in structural engineering <i>R. Romberg, A. Düster & E. Rank</i>	459
The problems of modeling and rendering of the realistic complex scenes <i>R. V. Malcheva, Y.E. Korotin & A. Chute</i>	461
Highway geometric modeling method by curvature and gradient functions <i>K. Makanae</i>	463
 <i>Conformance checking</i>	
Speeding-up the building plan approval — the Singapore e-plan checking project offers automatic plan checking based on IFC <i>T. Liebich, J. Wix, J. Forester & Z. Qi</i>	467
A normative product model for integrated conformance checking of design standards in the building industry <i>I.A. Santos, F. Hernández-Rodríguez & G. Bravo-Aranda</i>	473
Knowledge based checking of building designs, based on digital regulations <i>E. Pascual, R. Vankeisbelck & A. Zarli</i>	481
A product model and a structural detail checking system for Performance specification-based construction order <i>N. Yabuki, M. Furukawa, T. Yamashita & T. Yokota</i>	487
 <i>Collaborative engineering</i>	
Distributed process coordination for collaborative design <i>M. Cumming</i>	493
Managing knowledge navigation in design with mixed-initiative dialogue <i>S. Datta</i>	501
Intelligent modeling for cooperative engineering <i>I.S. Sariyildiz, R. Stouffs & Ö. Ciftcioglu</i>	509
Human-computer interaction: a cognitive intervention approach <i>P. Clarke</i>	517
Web-based situated communication model for construction management <i>S. C. Shih & T.W. Chang</i>	523
Modelling the 'online' information seeking patterns of construction industry professionals <i>S. Shaaban, J. McKechnie & S. Lockley</i>	529
 <i>Concurrent engineering</i>	
Multi-project, multi-user, multi-services integration: the ISTforCE integration approach <i>P. Katranuschkov, R.J. Scherer & Ž. Turk</i>	539
A personal planning approach for the integration and coordination of multi-project process information <i>M. Keller, R.J. Scherer & K. Menzel</i>	549
User-centred multi-project model access <i>A. Gehre, P. Katranuschkov & R.J. Scherer</i>	555
Virtual testing laboratory on the web <i>J. Červenka & P. Braniš</i>	561

E-commerce and engineering consulting services <i>M. Mangini & F. Pelli</i>	567
Use of ISTforCE concurrent engineering services platform - a case study in conceptual structural design <i>M. Eisfeld, R.J. Scherer & J. Červenka</i>	573
 <i>Web services</i>	
Web service integration in AEC supply chain management <i>J.U. Min & H.C. Björnsson</i>	579
WebSpec: web services and XML vocabulary for specifications in construction <i>G. Gudnason</i>	585
Computer integrated construction at the services level - first experiences <i>T. Cerovsek, I. Kovacic & Ž. Turk</i>	593
UDDI for a manufactured product brokering service <i>G. Cope & R. W. Amor</i>	603
Designing distributed component-based finite element software <i>M. Dolenc & J. Duhovnik</i>	609
A service collaboration platform for the construction industry <i>T. Järvinen & K. Lassila</i>	617
EPIC — a transaction based integration system for building construction <i>H. Lu, R.R.A. Issa & R. Chow</i>	619
 <i>Mobile computing</i>	
The COSMOS integrated IT solution at railway and motorway construction sites — a case study <i>A. Meissner, I. Mathes, L. Baxevanaki, G. Dore & C. Branki</i>	623
Context-sensitive process and data management on mobile devices <i>K. Menzel, K. Eisenblätter, M Keller & R.J. Scherer</i>	627
Satellite-based remote multi-project reporting and controlling in construction industry applying IFCs and XML standardization <i>H. Boehling</i>	635
Mobile product models <i>D. Rebolj, N. Čuš-Babič, A. Tibaut, A. Magdič & M. Radosavljevič</i>	637
3D visualization using the pocket PC <i>M.F. Shiratuddin, J.L. Perdomo & W. Thabet</i>	639
 <i>Knowledge management</i>	
European research for smart organisations - a winning formula? <i>M.A. Shelbourn, T.M. Hassan, C.D. Carter & M. Hannus</i>	645
The e-CKMI: the e-COGNOS infrastructure to support KM in the construction industry <i>C. Lima & A. Zarli, M. Bourdeau, M. Wetherill & Y. Rezgui</i>	655
Obstructions to knowledge sharing in construction: the salesman dilemma <i>T. Andersen & F. Madsen</i>	663
SciX: open repository for scientific information exchange and value added publication services for the construction industry <i>G. Gudnason, B.-C. Björk & Ž. Turk</i>	667
Knowledge sharing and creating through asynchronous distributed system based on web technology <i>B. Shao, S. Ogata, I. Kobayashi & Y. Hoshino</i>	673

Using the Internet to transfer knowledge an concrete durability: improving and fostering knowledge exchange	679
<i>I.L. Kondratova & I. Goldfarb</i>	
Constructing collective knowledge	685
<i>A. Tibaut, D. Rebolj, N. Čuš-Babič, A. Magdič & M. Radosavljevič</i>	
 <i>Education</i>	
Models and metaphors for content organisation and content presentation	689
<i>K. Menzel, S.-E. Schapke, T. Eisenreich & C. Otto</i>	
Educating AEC professionals for e-construction	697
<i>J.M. Kamara & R.J. Watson</i>	
E-learning as a basis of e-business in AEC	703
<i>M. Casals, N. Forcada & F. Peñaranda</i>	
euroCADcrete, a computer aided learning tool for education in reinforced concrete	705
<i>R. Weener</i>	
An application of the object-oriented approach in the engineering education	711
<i>D. Tzanev</i>	
Internet technology in the remote engineer education systems	713
<i>R. V. Koloskov, V.A. Shakhnov & A.I. Vlasov</i>	
 <i>Author index</i>	 715