

1. Record Nr.	UNINA9910337467603321
Titolo	Advances in Informatics and Computing in Civil and Construction Engineering : Proceedings of the 35th CIB W78 2018 Conference: IT in Design, Construction, and Management // edited by Ivan Mutis, Timo Hartmann
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
ISBN	3-030-00220-9
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (886 pages) : illustrations
Disciplina	624.068 624.1
Soggetti	Buildings - Design and construction Data mining Buildings - Repair and reconstruction Buildings - Maintenance Computer-aided engineering Lightweight construction Building, Iron and steel Construction industry - Management Building Construction and Design Data Mining and Knowledge Discovery Building Repair and Maintenance Computer-Aided Engineering (CAD, CAE) and Design Light-weight Construction, Steel and Timber Construction Construction Management
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Part. I. Information Integration and Informatics -- Barriers of Automated BIM Use: Examining Factors of Project Delivery -- Simulation of construction processes as a link between BIM models and construction progression on-site -- In search of sustainable design patterns: Combining data mining and semantic analysis on disparate

building data -- The role of Knowledge-based Information on BIM for Built Heritage -- Heritage Building Information Modelling (HBIM): A review of published case studies -- Next generation of transportation infrastructure management: Fusion of Intelligent Transportation Systems (ITS) and Bridge Information Modeling (BriM) -- Blockchain in the construction sector: a socio-technical systems framework for the construction industry -- Formalized Knowledge Representation to Support Integrated Planning of Highway Projects -- An Automated Layer Classification Method for Converting CAD drawings to 3D BIM Models -- Defining Levels of Development for 4D Simulation of Major Capital Construction Projects -- Modularized BIM Data Validation Framework Integrating Visual Programming Language with LegalRuleML -- Coupling between a Building Spatial Design Optimisation Toolbox and BouwConnect BIM -- Reusability and Its Limitations of Modules of Existing BIM Data Exchange Requirements for New MVDs -- Employment of Semantic Web technologies for capturing comprehensive parametric building models -- BIM Coordination oriented to Facility Management -- OpenBIM Based IVE Ontology: an ontological approach to improve interoperability for Virtual Reality Applications -- BIM and Through-Life Information Management: A Systems Engineering Perspective -- A lean design management process based on planning the Level of Detail in BIM-based design -- Part 2. Cyber-Human-Systems -- The BIMbot A Cognitive Assistant in the BIM room -- Perceived Productivity Effects of Mobile ICT in Construction Projects -- Mobile EEG-based Workers' Stress Recognition by Applying Deep Neural Network -- Feasibility of Wearable Electromyography (EMG) to Assess Construction Workers' Muscle Fatigue -- Tacit knowledge: how can we capture it? -- Inside the Collective Mind: Features Extraction to Support Automated Design Space Explorations -- Detecting falls-from-height with wearable sensors and reducing consequences of occupational fall accidents leveraging IoT -- Using Augmented Reality to Facilitate Construction Site Activities -- Semantic frame-based information extraction from utility regulatory documents to support compliance checking -- Ontology-based Semantic Retrieval of Energy Consumption Management -- Visualisation of risk information in BIM to support risk mitigation and communication: case studies -- Team interactions in digitally-mediated design meetings -- User perceptions of and needs for smart home technology in South Africa -- Seamless integration of multi-touch table and immersive VR for collaborative design - a real-world case of designing healthcare environments -- Development and Usability Testing of a Panoramic Augmented Reality Environment for Fall Hazard Safety Training -- The Negative Effects of Mobile ICT on Productivity in Indian Construction Projects -- Augmented reality combined with location-based management system to improve the construction process, quality control and information flow -- Workflow in Virtual Reality too Development for AEC Industry -- Implementation of Augmented Reality Throughout the Lifecycle of Construction Projects -- Challenges around integrating collaborative immersive technologies into a large infrastructure engineering project -- Part 3. Computer Support in Design and Construction -- Cyber Security Management Framework for a Cloud- based BIM Computing Model -- A System for Early Detection of Maintainability Issues using BIM -- Towards automated analysis of ambiguity in modular construction contract documents (a qualitative & quantitative study) -- Adopting Parametric Construction Analysis in Integrated Design Teams -- Integrating BIM, Optimization and a multi-criteria decision-making method in Building Design Process -- A BIM-based decision support system for building maintenance -- Structural

behaviour analysis and optimisation, integrating MATLAB with Autodesk Robot -- An Assessment of BIM-CAREM against the Selected BIM Capability Assessment Models -- Towards a BIM-agile method in architectural design: assessment of a pedagogical experiment -- A Generalized Adaptive Framework for Automating Design Review Process: Technical Principles -- An integrated simulation-based approach for considering effects of weather on formwork removal time -- Exploring Future Stakeholder Feedback on Performance-based Design across the Virtuality Continuum -- A BIM Based Simulation Framework for Fire Evacuation Planning -- Do We Look? An Eye-Tracking Study of Architectural Features in Building Design -- Developing a Framework of a Multi-objective and Multi-Criteria Based Approach for Integration of LCA-LCC and Dynamic Analysis in Industrialized Multi-Storey Timber Construction -- Collective decision-making with 4D BIM: Collaboration group persona study -- Post-Occupancy Evaluation parameters in Multi-Objective Optimization-based design process -- Social Paradigms in Contemporary Airport Design -- A method for facilitating 4D modeling by automating task information generation and mapping -- Part 4. Intelligent Autonomous Systems -- An autonomous Thermal Scanning System with which to Obtain 3D Thermal Models of Buildings -- Productivity Improvement in the Construction Industry: A Case Study of Mechanization in Singapore -- Automated Building Information Models Reconstruction using 2D Mechanical Drawings -- Architectural Symmetry Detection from 3D Urban Point Clouds: A Derivative-Free Optimization (DFO) approach -- Sequential Pattern Analyses of Damages on Bridge Elements for Preventive Maintenance -- Sound Event Recognition-Based Classification Model for Automated Emergency Detection in Indoor Environment -- Improved Window Detection in Facade Images -- Path Planning of LiDAR-equipped UAV for Bridge Inspection Considering Potential Locations of Defects -- Automatic Annotation of Web Images for Domain-Specific Crack Classification -- A Machine Learning Approach for Compliance Checking-Specific Semantic Role Labeling of Building Code Sentences -- Requirement Text Detection from Contract Packages to Support Project Definition Determination -- In Search of Open and Practical Language-Driven BIM-based Automated Rule Checking Systems -- Image-based Localization for Facilitating Construction Field Reporting on Mobile Devices -- Towards an Automated Asphalt Paving Construction Inspection Operation -- Computer vision and deep learning for real-time pavement distress detection -- A Flight Simulator for Unmanned Aerial Vehicle Flights Over Construction Job Sites -- Bridge Inspection using Bridge Information Modeling (BrIM) and Unmanned Aerial Vehicles (UAVs) -- Part 5. Cyber-Physical-Systems -- Comparison Between Current Methods of Indoor Network Analysis for Emergency Response Through BIM-GIS Integration -- Instrumentation and Data Collection Methodology to Enhance Productivity in Construction Sites Using Embedded Systems and IoT Technologies -- A cyber-physical middleware platform for buildings in smart cities -- A Framework for CPS-based Real-time Mobile Crane Operations -- Drive towards real-time reasoning of building performance: Development of a live, cloud-based system -- Bayesian Network Modeling of Airport Runway Incursion Occurring Processes for Predictive Accident Control -- A Low Cost System For Monitoring Tower Crane Productivity Cycles Combining Inertial Measurement Units, Load Cells and Lora Networks -- The interface of a BIM-IoT prototype for Energy Consumption Monitoring -- Predicting Energy Consumption of Office Buildings: A Hybrid Machine Learning-Based Approach -- Part 6. Computing and Innovations for

Design Sustainable Buildings and Infrastructure -- Thermal Performance Assessment of Curtain Walls of Fully Operational Buildings Using Infrared Thermography and Unmanned Aerial Vehicles -- BIM and Lean-Business Process Reengineering for Energy Management Optimization of Existing Buildings -- Geographic Information Systems (GIS) based visual analytics framework for highway project performance evaluation -- Usage of Interface Management in adaptive reuse of buildings -- Semantic Enrichment of As-is BIMs for Building Energy Simulation -- Proof of Concept for a BIM-based Material Passport -- Learning from Class-Imbalanced Bridge and Weather Data for Supporting Bridge Deterioration Prediction -- Machine-Learning-Based Model for Supporting Energy Performance Benchmarking for Office Buildings -- Occupants Behavior-based Design Study Using BIM-GIS Integration: An Alternative Design Approach for Architects -- Standardisation of Whole Life Cost estimation for early design decision-making utilising Building Information Modelling -- Data Model Centered Road Maintenance Support System Using Mobile Device -- Ontology-based Semantic Modeling of Disaster Resilient Construction Operations: Towards a Knowledge-based Decision Support System -- A methodology for real-time 3D visualization of asphalt thermal behavior during road construction -- Eliminating Building and Construction Waste with Computer-Aided Manufacturing and Prefabrication -- A methodological proposal for risk analysis in the construction of tunnels -- Technology Alternatives for Workplace Safety Risk Mitigation in Construction: Exploratory Study -- Part 7. Education, Training, and Learning with Technologies -- BIM4VET, towards BIM training recommendation for AEC professionals -- Teaching effective collaborative information delivery and management in response to a BIM mandate -- A Story of Online Construction Masters' Project: Is An Active Online Independent Study Course Possible? -- Lessons learned from a multi-year initiative to integrate data-dri.

Sommario/riassunto

This proceedings volume chronicles the papers presented at the 35th CIB W78 2018 Conference: IT in Design, Construction, and Management, held in Chicago, IL, USA, in October 2018. The theme of the conference focused on fostering, encouraging, and promoting research and development in the application of integrated information technology (IT) throughout the life-cycle of the design, construction, and occupancy of buildings and related facilities. The CIB – International Council for Research and Innovation in Building Construction – was established in 1953 as an association whose objectives were to stimulate and facilitate international cooperation and information exchange between governmental research institutes in the building and construction sector, with an emphasis on those institutes engaged in technical fields of research. The conference brought together more than 200 scholars from 40 countries, who presented the innovative concepts and methods featured in this collection of papers. Some of the papers' topics included the following:

- Virtual, augmented, and mixed reality
- Visualization and simulation
- Communication and collaboration informatics
- Sensor data interpretation
- Situation awareness and sensing technologies
- Mobile computing
- Geometric and parametric modeling
- Building information modeling (BIM)
- 4-D/n-D modeling
- Computer-enhanced engineering design
- Design and decision support systems
- Ontologies and reasoning for civil and construction engineering
- Semantic modeling in the AEC industry
- Product and process modeling
- Data acquisition, analysis, and storage.
