1. Record Nr. UNINA9910299162903321

Titolo	Building Information Modeling : Technology Foundations and Industry Practice / / edited by André Borrmann, Markus König, Christian Koch, Jakob Beetz
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-319-92862-7
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (XXV, 584 p. 297 illus., 230 illus. in color.)
Disciplina	620.00420285
Soggetti	Computer-aided engineering Civil engineering Architecture Computers, Special purpose Computer-Aided Engineering (CAD, CAE) and Design Civil Engineering Architecture, general Special Purpose and Application-Based Systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1 Building Information Modeling – Why? What? How? -- 2 Principles of Geometric Modeling -- 3 Data modeling -- 4 Process modeling -- 5 Industry Foundation Classes – A standardized data model for the vendor-neutral exchange of digital building models -- 6 Process-based definition of model content -- 7 IFC certification of BIM software -- 8 Structured vocabularies in construction: Classifications, taxonomies and ontologies -- 9 COBie – A specification for the Construction Operations Building Information Exchange -- 10 Linked Data -- 11 Modeling cities and landscapes in 3D with CityGML -- 12 BIM programming -- 13 BIM Project Management -- 14 Collaborative Data Management -- 15 Common Data Environment -- 16 BIM Manager -- 17 Integrating BIM in Construction Contracts -- 18 BIM-based design coordination -- 19 BIM for structural engineering -- 20 BIM for energy analysis -- 21 BIM for construction safety and health --

22 BIM-based Code Compliance Checking -- 23 BIM-based Quantity Take-Off -- 24 Building surveying for as-built modeling -- 25 BIM in industrial prefabrication for construction -- 26 BIM for 3D printing in construction -- 27 BIM-based production systems -- 28 BIM-based progress monitoring -- 29 BIM in the Operation of Buildings -- 30 BIM at HOCHTIEF Solutions -- 31 Arup’s digital future: the path to BIM -- 32 BIM at OBERMEYER Planen + Beraten -- 33 BIM at Hilti -- 34 BIM at STRABAG -- 35 Conclusions and Outlook.

Sommario/riassunto

Building Information Modeling (BIM) refers to the consistent and continuous use of digital information throughout the entire lifecycle of a built facility, including its design, construction and operation. In order to exploit BIM methods to their full potential, a fundamental grasp of their key principles and applications is essential. Accordingly, this book combines discussions of theoretical foundations with reports from the industry on currently applied best practices. The book’s content is divided into six parts: Part I discusses the technological basics of BIM and addresses computational methods for the geometric and semantic modeling of buildings, as well as methods for process modeling. Next, Part II covers the important aspect of the interoperability of BIM software products and describes in detail the standardized data format Industry Foundation Classes. It presents the different classification systems, discusses the data format CityGML for describing 3D city models and COBie for handing over data to clients, and also provides an overview of BIM programming tools and interfaces. Part III is dedicated to the philosophy, organization and technical implementation of BIM-based collaboration, and discusses the impact on legal issues including construction contracts. In turn, Part IV covers a wide range of BIM use cases in the different lifecycle phases of a built facility, including the use of BIM for design coordination, structural analysis, energy analysis, code compliance checking, quantity take-off, prefabrication, progress monitoring and operation. In Part V, a number of design and construction companies report on the current state of BIM adoption in connection with actual BIM projects, and discuss the approach pursued for the shift toward BIM, including the hurdles taken. Lastly, Part VI summarizes the book’s content and provides an outlook on future developments. The book was written both for professionals using or programming such tools, and for students in Architecture and Construction Engineering programs.