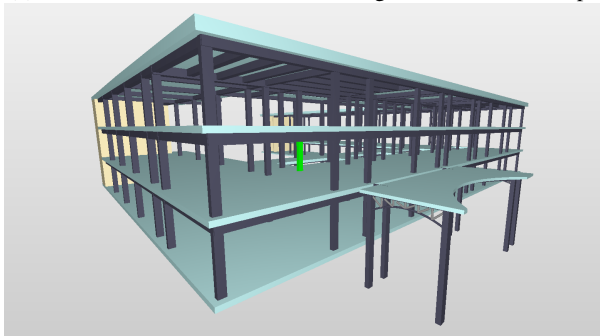(a) Column node selection with all its geometric relationships

(b) Column selection in BIM model

Figure 6. Column component inspection in (a) graph and (b) model.

in the Built Environment, 5:100039, 2021. ISSN 2666-1659. doi:10.1016/j.dibe.2020.100039.

[5] Frédéric Bosché. Automated recognition of 3d cad model objects in laser scans and calculation of as-built dimensions for dimensional compliance control in construction. *Advanced Engineering Informatics*, 24(1):107–118, 2010. ISSN 1474-0346. doi:10.1016/j.aei.2009.08.006. Informatics for cognitive robots.

[6] M.-K. Kim, Q. Wang, J.-W. Park, J.C.P. Cheng, H. Sohn, and C.-C. Chang. Automated dimensional quality assurance of full-scale precast concrete elements using laser scanning and bim. *Automation in Construction*, 72:102–114, 2016. doi:10.1016/j.autcon.2016.08.035.

[7] Changmin Kim, Hyojoo Son, and Changwan Kim.

Automated construction progress measurement using a 4d building information model and 3d data. *Automation in Construction*, 31:75–82, 2013. ISSN 0926-5805. doi:10.1016/j.autcon.2012.11.041.

[8] Maarten Bassier, Stan Vincke, Heinder De Winter, and Maarten Vergauwen. Drift invariant metric quality control of construction sites using bim and point cloud data. *ISPRS International Journal of Geo-Information*, 9(9), 2020. ISSN 2220-9964. doi:10.3390/ijgi9090545. URL https://www.mdpi.com/2220-9964/9/9/545.

[9] Construction-phase digital twin model: Cogito. On-line: https://cogito-project.eu/, Accessed: 09/02/2022.

[10] J. Zhang and N. M. El-Gohary. *Automated Extraction of Information from Building Information Models into a Semantic Logic-Based Representation*, pages 173–180. ASCE, 2015. doi:10.1061/9780784479247.022.

[11] Jiansong Zhang and Nora M. El-Gohary. Semantic-based logic representation and reasoning for automated regulatory compliance checking. *Journal of Computing in Civil Engineering*, 31(1):04016037, 2017. doi:10.1061/(ASCE)CP.1943-5487.0000583.

[12] European Committee for Standardization. EN 1090-2 - Execution of steel structures and aluminium structures. Technical requirements for steel structures. Standard, CEN, 2018.

[13] buildingSMART. Industry foundation classes (ifc). On-line: https://www.buildingsmart.org/standards/bsi-standards/industry-foundation-classes/, Accessed: 17/02/2022.

[14] Autodesk. Revit sample project files. On-line: https://knowledge.autodesk.com/support/revit/getting-started/caas/CloudHelp/cloudhelp/2022/ENU/Revit-GetStarted/files/GUID-61EF2F22-3A1F-4317-B925-1E85F138BE88-htm.html, Accessed: 12/02/2022.

[15] Mathieu Bastian, Sebastien Heymann, and Mathieu Jacomy. Gephi: An open source software for exploring and manipulating networks. In *International AAAI Conference on Weblogs and Social Media*, 2009. URL http://www.aaai.org/ocs/index.php/ICWSM/09/paper/view/154.