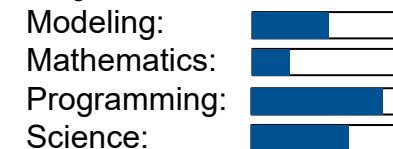


Interactive IFC-to-Graph Viewer for Construction Process Logic and Robot Execution

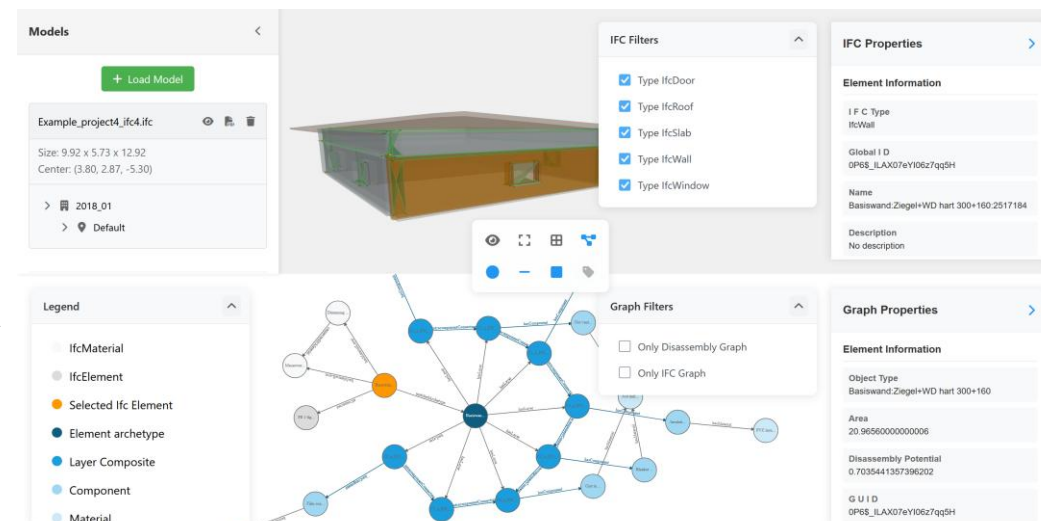
Task
This project aims to create an interactive web viewer to visualize construction tasks and the building elements they refer to in support of the Information Backbone for Robotic Construction [1]. Two main parts will be visualized: (1) a **graph** that links (IFC) building elements to construction tasks, and (2) a **Behaviour Tree** that represents these steps into a robot-executable control structure [2].

Project Characteristics



General Instructions:

- Underlying data is read-only: you do not need to change the graph structure or the Behavior Tree definitions.
- Provide **cross-linking** between views [3]: selecting an element in the 3D model highlights it in the graph and shows the related Behavior Tree subtree (and vice versa).
- Focus on usability: make it easy to explore, search, filter and understand the data
- Support inspection: clicking any node should show its key properties and parameters
- Deliver a working demo and documentation (how to run it, example walkthrough, limitations).



[3]] Emmenegger, P., & Forth, K. (2025). *IFC and Neo4j Viewer* [source code]. Retrieved from <https://github.com/cea-ethz/disassembly-graph-viewer>

[1] Wrabel, T., Esser, S., & Borrmann, A. (2026). A Framework Architecture for the Information Backbone for Robotic Construction. In *43rd Proceedings of the International Symposium on Automation and Robotics in Construction (ISARC)*. Submitted manuscript, under review.

[2] Brinkhoff, M., Esser, S., & Borrmann, A. (2026). An Integrated Product–Process Representation for Deriving Robotic Task Structures using Graph Transformations. In *43rd Proceedings of the International Symposium on Automation and Robotics in Construction (ISARC)*. Submitted manuscript, under review.