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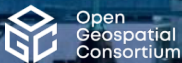
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A Procedural Prototype for BIM-based Fire Safety Review in Building Permitting

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Building permit authorities face increasing workloads due to inconsistent or incomplete submissions and the rising complexity of fire safety requirements. While Building Information Modelling (BIM) has been partially adopted in fire protection – mainly during design and construction phases – its application in early permitting stages remains largely unexplored, particularly in Switzerland, where BIM-based submissions are not yet practiced. This study investigates the feasibility of integrating BIM into the fire safety review process through a procedural prototype developed within a permitting case study. The study contributes a modular structure for information requirements, a proposed extension of the IFC schema, and conceptual visualization elements to enhance human–machine interaction in regulatory checking. The prototype implements automated rule sets for formal and technical compliance and defines structured information requirements aligned with Swiss fire protection standards. During testing, the initially comprehensive information model proved overly demanding, reflecting the ambition for automation across all possible fire safety concepts. In response, a modular structure was developed to balance automation potential with practical applicability, representing a transferable contribution that could be adopted by other permitting authorities seeking to advance digital review processes. Findings indicate that, under current conditions, visual and software-assisted checking offers a more applicable approach than automated checking. The study demonstrates the procedural feasibility of BIM-based fire safety review in a permitting context, while acknowledging that its conclusions are based on a single case and therefore limited in generalizability. Nonetheless, the results represent a novel step toward advancing BIM-based permitting practices in Switzerland beyond fire protection.