

New aspects of interdisciplinary cooperation based on OPEN BIM platform

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| Forum topics | <input type="checkbox"/> Energy in 21st Century | <input type="checkbox"/> Cultural Heritage in Digital World |
| | <input type="checkbox"/> Engineering Capacity Building | <input type="checkbox"/> Disaster Risk Management & Governance for Resilient Communities |
| | <input checked="" type="checkbox"/> Construction 4.0 | <input checked="" type="checkbox"/> BIM Lifecycle, Facility & Asset Management |

Abstract: (250 to 500 words: for each heading use the bullet points or narrative - the submission including graphics should not exceed one page)

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| Problems - Issues / Challenges-Needs | BIM is advancing the AEC industry, enabling project teams to work more efficiently through digitalization of design and build workflows. The increase in BIM design and construction technology tools is demanding more from the engineering workflow making collaboration amongst all project partners more complicated and difficult to manage efficiently. Multi-disciplinary project teams now organize the design and build process by bringing together their respective models for coordination, issue tracking, and clash detection; however, this primarily has benefitted architectural design and construction workflows. Structural engineering design and build workflows are more complicated, and as project teams modify their respective models, structural engineers must maintain not only the structural model but also the analysis model. Existing engineering exchange formats are difficult to edit, incomplete, and most importantly do not meet the needs of customers. Structural designers, modelers, and detailers spend a significant amount of time and resources maintaining their analytical and structural models as projects progress from conceptual design to the construction site. |
| Solutions - Methods / Results - Findings | At the center of Digital Structures is Allplan's Bimplus, a cloud based model server with object-oriented data storage, where multiple structural and analysis models can be stored semantically. Through this central place, a common data environment, both the structural modeling and analysis applications can be connected with no loss of data or clumsy file transfers needed during the design process. Unlike most collaboration platforms where data is only stored and visualized as an aggregated model, Bimplus uses intelligent linking of the applications to connect different model information. Nemetschek embraces OpenBIM and the common data environment is made available to 3th party applications through IFC and an Open API. In an effort to improve the structural design and analysis industry the digital structures team is developing a new Structural Analysis Format (SAF) that makes the improved workflow process open to all applications. Our thorough investigation has shown that there is not a real standard in this domain. Although we support IFC for structural analysis modeling, it is limited in functionality and doesn't meet the requirements of engineer's daily workflows. Engineers need something convenient, editable, and user-friendly, that's why we chose to create the SAF format in the spreadsheet format. Almost every engineer uses spreadsheets in their daily workflows and we find it a natural format for their needs. We hope it will be adopted by the industry. |
| Novelty - Value / Relevance to ... | We understand that structural engineering workflows are complicated, and engineers need something to help them streamline their BIM processes. We aim to bring real BIM for engineers to the AEC industry and enable project teams to work more efficiently through digitalization. |
| Forum statement | ... |

Keywords: (up to 5 keywords)

OpenBIM; Support of digitization; Digital Structures

