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# Free and Open Source Software for BIM Workflow of Steel Structure Design

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**Abstract :** The continuous new releases of free and open source software (FOSS) and the high costs of proprietary software - whose monopoly is characterized by closed codes and the low level of implementation and customization of software by end-users- impose a reflection on possible tools that can be chosen and adopted for the design and the representation of new steel constructions. The paper aims to show experimentation carried out to verify the actual potential and the effective applicability of FOSS supports to the BIM modeling of steel structures, particularly considering the goal of a possible workflow in order to achieve high level of development (LOD); allow effective interchange methods between different software. To this end, the examined software packages are those with open source or freeware licenses, in order to evaluate their use in architectural praxis. The test has primarily involved the experimentation of Freecad -the only Open Source software that allows a complete and integrated BIM workflow- and then the results have been compared with those of two proprietary software, Sketchup and TeklaBim Sight, which are released with a free version, but not usable for commercial purposes. The experiments carried out on Open Source, and freeware software was then compared with the outcomes that are obtained by two proprietary software, Sketchup Pro and Tekla Structure which has special modules particularly addressed to the design of steel structures. This evaluation has concerned different comparative criteria, that have been defined on the basis of categories related to the reliability, the efficiency, the potentiality, achievable LOD and user-friendliness of the analyzed software packages. In order to verify the actual outcomes of FOSS BIM for the steel structure projects, these results have been compared with a simulation related to a real case study and carried out with a proprietary software BIM modeling. Therefore, the same design theme, the project of a shelter of public space, has been developed using different software. Therefore the purpose of the contribution is to assess what are the developments and potentialities inherent in FOSS BIM, in order to estimate their effective applicability to professional practice, their limits and new fields of research they propose.

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