

## BIM - The process of modern civil engineering

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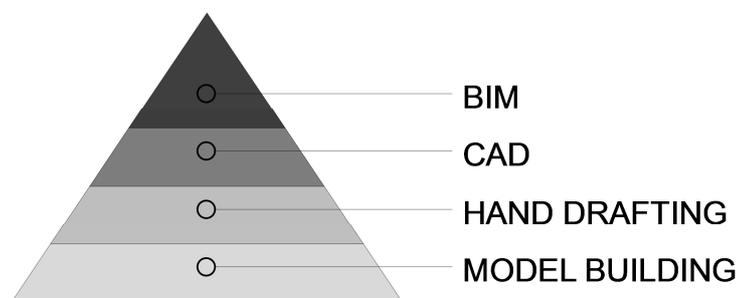
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**Abstract.** BIM (Building Information Model) as a process (in the world) is known since the seventies, but with increasing pressure from investors to reduce construction costs can assume its massive use. On large construction sites, it could not be managed without it in the future. Next post in the basic range analyzes the current situation of the use of BIM at home and abroad, in the use of options in modern architecture and also indicates which methods to streamline the current design activity.

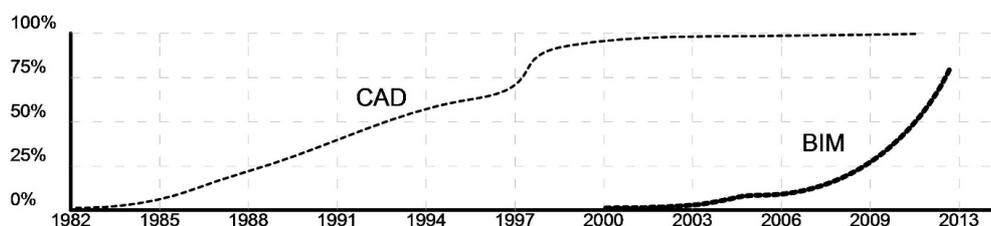
### Introduction

Technological advances in the field of technical coordination and simulation provides a new method in construction (BIM, Building Information Modeling), which will improve process safety, quality and ultimately efficiency.

In developed countries, which have a high level technologic development of these methods are already in place and have a firm foothold among users but also in legislation



*Fig.1 BIM is built on the solid foundation that we have built previous technology building [1]*

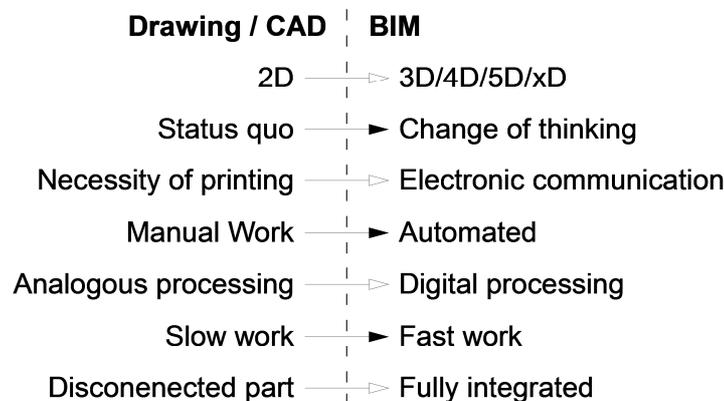


*Fig. 2 The process of adopting a new way of working in the UK / USA. BIM has been adopted here twice faster than CAD in their time. [1]*

### BIM - Process

Today, BIM is perceived only as a software (mainly due to advertising campaigns software companies). However, BIM is to be seen not only as a software, but as an integrated process. (Fig.3) On the other side application of the ideas principle of building information modeling in construction practice would not recorded such progress, not to be innovation in information technology, a software or hardware.

For Building Information Modeling (BIM), is often wrongly considered to be himself 3D model of the building. You need to have to realize that BIM is essentially a package of data, which may involve all relevant information throughout the building life cycle, from design, construction, management of buildings, renovations to its demolition. 3D model is only one of many possible ways interpretation of this information. For the designer is a 3D model undoubtedly useful function, but other participants in the construction process may be interested of different interpreted information.



*Fig.3 Process changes Cad vs.Bim [1] [3]*

For example, an investor apart from the appearance of the building, will be interested the overall construction costs, construction schedule, drawing resources during construction. But structural engineer needs data necessary for static calculation.

It is also important to mention the fact that, the information in this database must contribute all participants in the construction process. BIM is based on the cooperation each construction processes if the one of the elements of these processes refused to share the information generated by him so this method will not work. The transition to BIM (building information modeling) will place new demands on the knowledge of all participants of the construction process throughout the life cycle of buildings. This transition is often compared to the transition from the drawing board to design by computer (CAD).

Long term stagnant work productivity in construction compels different actors enforce change also in such conservative field such as construction (other fields of human activities knew how more effectively utilize automation technology, than fields related to the construction).

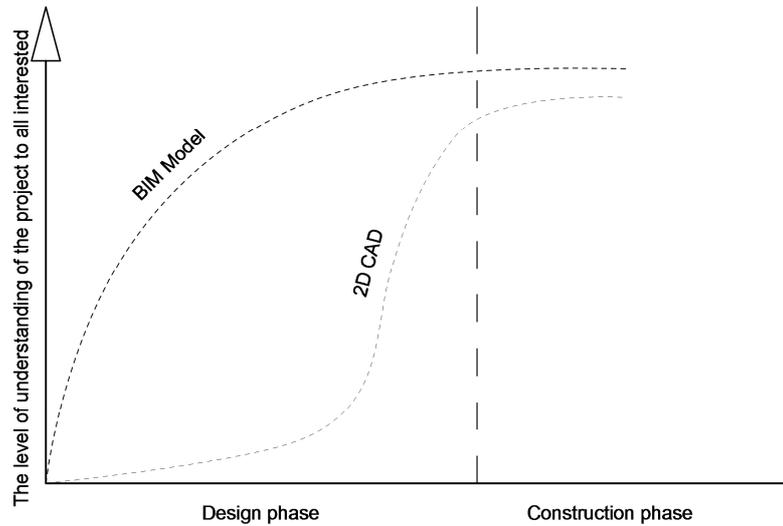


Fig.4 Effectivity to understand a BIM project [3]

**BIM team-tool**

The work associated with the transfer of documents from one phase to another are formed large demands on the proportion of human (manual) workforce mainly because the necessary data transformations.

BIM is precisely the a tool that tries to unite all the unnecessary data transfers (printing, translation of documents, etc.) to facilitate and implement in one place (Fig.5). Between participants is then exchanged only just a BIM model. Additional properties BIM is an extension of the model into the production phase, including typing, visualization of production, transportation and storage, including all descriptive data including history materials, their physical, technical and economic characteristics, elements, work, renovation, their cost and time and technological obtain the sources claim for their analysis from different perspectives (eg cost, time, abilities recycling or health).

All of these possibilities us will greatly facilitate and streamline the work, which results in the subsequent cheapening of production.( Fig.6)

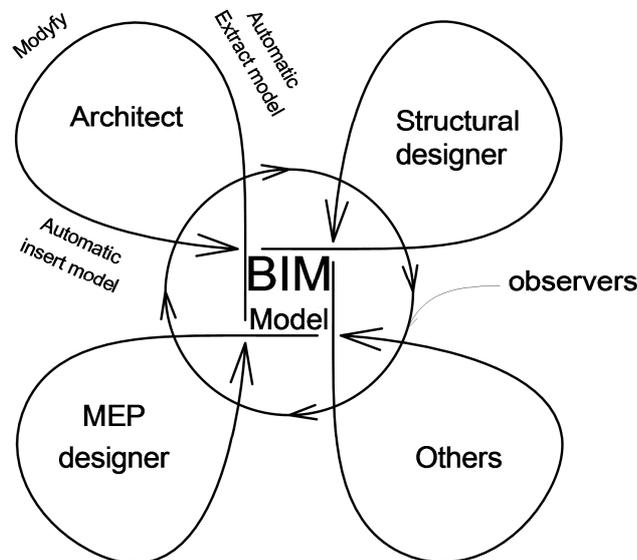


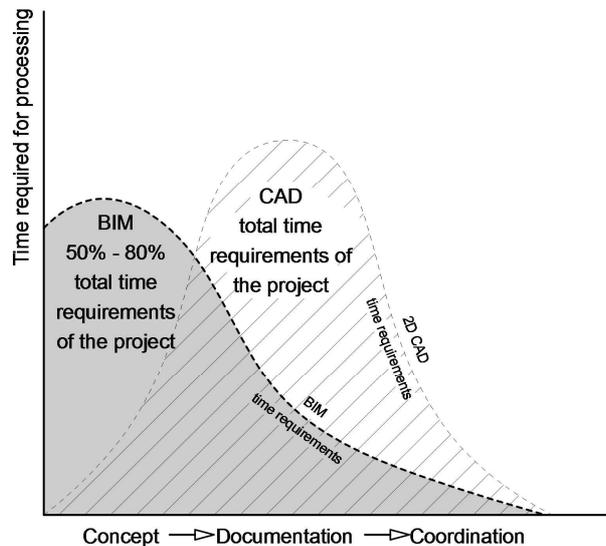
Fig.5 Optimal way to work in BIM model – the same model work all in real time. [1]

## Conclusion

These days on the market is already enough effective tools for meeting the principle of work of BIM. However, as was pointed out in the introduction, BIM is all about taste work together. The cooperation of all participants in the construction process, the sharing of data and information within a specific project. Setting this cooperation will not be easy, as well as be easy adoption of the new methods BIM introduced into the system work functioning design offices. However, as the examples from Finland, Sweden, Norway, Denmark, the Netherlands and the UK (*Fig. 2*), so it is not much of a problem.

The more so because in these countries BIM enforced at the same time at the legislative level, and its use is often already part of the law on public procurement, which undoubtedly leads to greater transparency, after which, moreover, are increasingly calling even in our latitudes. (*Fig. 4*)

This paper can be seen as an introduction to further research articles possibilities of use of BIM in other sectors of the construction industry.



*Fig.6 Comparison of time requirements work in CAD vs. BIM [3]*

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