



Foresight

A global infrastructure perspective

BIM is only the beginning

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Modern technologies support new ideas and relationships in the construction industry

Infrastructure projects – whether they are cubature building or linear projects, are complex endeavors. Such complexity results from a combination of several different challenges, very different in terms of their nature and origin.

First of all – engineering challenges. Design and implementation of engineering objects is an art. It requires knowledge of physical laws, mathematical abilities and spatial thinking. It requires designers and contractors to track information on new materials, applications and building techniques. Therefore, mistakes and errors are a natural challenge.

Second – challenges related to natural conditions. The execution of work is always associated with unexpected events. A different structure of the soil, than was indicated by the original study, elements of the infrastructure undergoing renovation which are discovered only during the construction works, other infrastructure which were not marked on the maps used for planning works, are all events that affect the implementation of infrastructure projects.

Third – social challenges. A lot of investment is delayed or even never completed, for reasons related to social

protests, protracted consultations with residents etc. Nowadays, the power of the individual and the voice of opposition has grown in comparison to the period 10 years ago. Higher awareness and social media allow one person to cause a huge wave that prevents the work – rightly or wrongly.

Fourth – challenges associated with competences. For years we have had the opportunity to work with investors, designers and contractors. Regardless of whether they are independent experts, or employees of large companies, we value highly the engineering expertise of these professionals. Their passion and commitment is always impressive. However, we often encounter the lack of an ability to understand contracts, identify the influence of different solutions or complications related with the schedule and project budget. Understanding that a plan of a project is not merely a list of technical tasks to perform but an entire complex reality of logistics, resources management (personnel and equipment) of controlling the prices of raw materials and understanding relations between project stakeholders. Our diagnosis in this area is confirmed by the heads of the largest construction companies (cf. report by KPMG entitled “[The state of the business environment of the construction sector in Poland](#)”).

BIM as an element of the 4.0 Industry for the construction sector.

BIM is a philosophy which combines information from all the four abovementioned perspectives. It links engineering information (plans and monitoring of current execution) with information about the updated schedule and budget. 3D modelling and combining planning documents with a real view (as shown below) allows for an effective cooperation of the investor, designer, engineer, contractor and subsequent infrastructure manager. Each of these professionals see the investment project differently, from the point of view of their needs.

The use of information technology enables the achievement of benefits from the BIM ideas. Working together on the same models and investment projects, using the same updated information about the time

as well as costs and expenses, is a way of solving the largest problem of the investors and contractors – the lack of mutual understanding and trust (cf. report by KPMG entitled “Global Construction Survey 2016”)

There is one other important aspect why BIM and new technologies are significant for the construction sector. The young generation of today’s students and entrants to job market expect to be able to connect to the world and communicate with the environment using smartphones and social media. Many sectors offer such tools to their employees. Whether these are tablet applications allowing remote work or signing contracts through banks (fintech), it is the world of the new generation. If the construction and infrastructure sectors want to attract talent, they have to become appealing, they have to become 4.0. The BIM philosophy and technology is a very good response to these needs.



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