



2nd International Joint Conference on Innovative Solutions in Construction Engineering and Management: 16th Lithuanian-German-Polish colloquium and 6th meeting of EURO working group Operational Research in Sustainable Development and Civil Engineering 24 May- 2nd International Workshop on flexibility in sustainable construction, ORSDCE 2017, 24-26 April 2017, Poznan-Puszczykowo, Poland

## Innovative solutions in engineering of construction projects

Anna Sobotka<sup>a\*</sup>

<sup>a</sup> AGH University of Science and Technology, 30-059 Kraków, Al. Mickiewicza 30, Poland

---

### Abstract

The issue of innovation in engineering of construction projects (ECP) is considered. The nature of the ECP and the issue of application of innovations is multidimensional, therefore the problem ought to be considered in vertical and horizontal aspects. Attention was paid to the imperatives of innovation. The entire subject is considered in the context of Professor O. Kapliński's jubilee.

© 2017 The Authors. Published by Elsevier Ltd.  
Peer-review under responsibility of the scientific committee of ORSDCE 2017.

*Keywords:* engineering of construction projects, innovations, tendencies

### 1. Multidimensional character of the issue

The concept of engineering of construction projects (ECPs) embraces preparation, organisation, execution and operation of various construction systems within the framework of investment activities, i.e. a multitude of interdependent activities aimed at meeting the needs of the investor with respect to construction or the needs of the

---

\* Corresponding author. Tel.: +48 501287737.  
E-mail address: [sobotka@agh.edu.pl](mailto:sobotka@agh.edu.pl)

owner of a building.

The character of ECP is varied, ranging from design, engineering, through technology, economics, decision making, to organisational solutions and efficient management. Hence the concept of multidimensional nature of the engineering of construction projects. These issues have been well described, also in O. Kapliński’s publications [1].

This author introduced two concepts: multidimensionality in the vertical aspect and multidimensionality in the horizontal aspect. Thanks to these concepts, the importance of innovation in ECP is easier to grasp.

Multidimensionality of ECP issues in the **vertical aspect** may be viewed at three levels:

- macro (national economy, legislation, organisation of the investment process),
- meso (the company, venture)
- micro (construction processes).

A draft of the three levels is shown in Fig. 1. The effect of macro level on meso and micro levels is evident, while the reciprocal impact on the other side is negligible.

Multidimensionality of ESP in the **horizontal aspect** can be seen in terms of time dimension, sequences, decision making, and costing in the building's life cycle. It is a wide range of methods and problems, such as scheduling, discounting methods, sustainability certificates, EU Directives. Today, costing of a building in the horizontal aspect, or life-cycle cost (LCCA), is a paradigm of design, implementation and operation. It is important to meet the requirements of a nearly zero energy building ("nZEB").

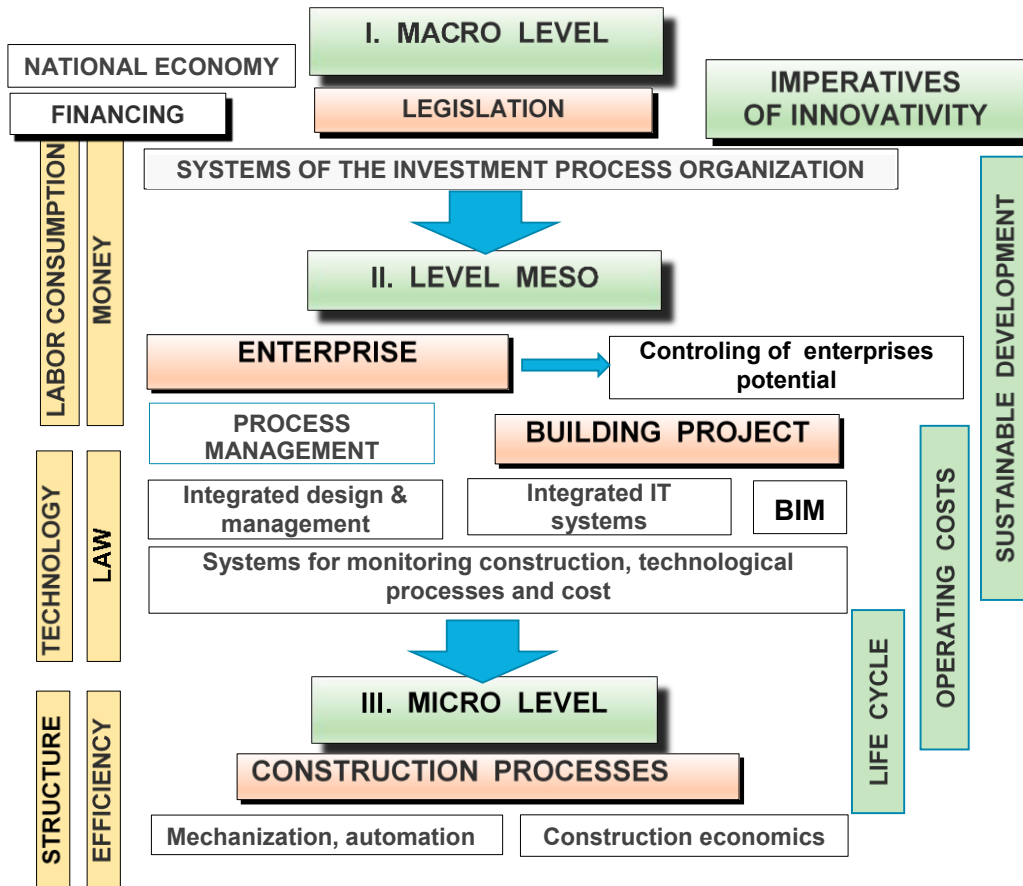


Fig. 1. Three-way division in engineering of construction projects. Imperatives of innovation (source: acc. O. Kapliński [1])

Download English Version:

<https://daneshyari.com/en/article/7226982>

Download Persian Version:

<https://daneshyari.com/article/7226982>

[Daneshyari.com](https://daneshyari.com)