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## Synergistic Approach to the Management of Transport Infrastructure Projects

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### Abstract

Uncertainty of social and economic processes increases in the current economic environment, which complicates management of the economic systems and leads to an increase in risks. Under similar conditions a search of new approaches and management principles ensuring increase in flexibility and competitiveness of transport infrastructure projects is necessary. A synergistic approach in the management of the complex projects is aimed at the innovative breakthrough and sustainable development of the economic systems taking into account the requirement of the maximum satisfaction of the market needs at coordination of resources. The article substantiates topicality of synergistic management of transport infrastructure projects for the innovative development and the possibility to get positive synergistic and complementary effects. The fundamentals of synergistic management are defined. A synergistic model of the sequential and interconnected actions of all participants of megaprojects presenting a system of instruments of elaboration and implementation of priorities of infrastructure projects and transport sphere programs is formed.

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*Keywords:* system; infrastructure project; synergistic management; transport infrastructure; synergistic effect

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### 1. Introduction

In the current economic environment, when the former economic development model exhausted its possibilities and it is necessary to carry out a transition (leap) to the entirely new (sixth) technological mode, project managers

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find out that their fundamental theories become inefficient, traditional models enabling to predict and control business have to be replaced by more organic judgments and a nonlinear trend of thinking. In such situation the necessity of forming effective management systems focused on resource-saving and innovative breakthrough by means of synergistic effects [Geraskina (2013)] increases. A synergistic approach focusing on the achievement of the given parameters of the project, synergistic and complementary effects because of phase and structural transformations in the system is distinguished at the modern stage of development within the project management concept. Generally speaking, something designed, constructed, functioning without synergistic effect makes no sense since in this case processing and use of resources happens not with multiplication, but with partial waste of their potentials. If the transport infrastructure project is focused on leadership, on breakthrough, on entry into the new technological space, it can be considered as synergistic.

## 2. Main text

Transport infrastructure is transportation lines, roads and highways; road interchanges and viaducts; overpass bridges and tunnels; railway and tram tracks, terminals, logistics centers and other constructions, devices and equipment ensuring transport operation during transportations of freights, passengers and baggage. Owing to its dual orientation (serves production and social spheres) the transport infrastructure defines not only the economic and ecological but also the social, esthetic and architectural value of the territory [Petrov (2014)]. The investment project of the transport infrastructure shall correspond to two directions of formation of the future sustainable society: on the one hand, the organization of its activity shall be innovative; on the other hand it shall be environmentally permissible being within limits of the bearing capacity of ecosystems [Meadows et al. (2012)]. The eco-economic contradiction is solved by formation of a new economic management model — sustainable economy based on the principles of synergistic management (efficiency, systemacity, coherence, convergence, etc.) [Geraskina (2013)].

From the authors' point of view, an infrastructure project is, firstly, an isolated activity type on creation of the unique engineering product [Petrov (2014)]; secondly, it is a time-limited purposeful modification of the separate system with the specified requirements to quality of the results, probable limits of resources consumption and specific organization of business processes. The main characteristics of infrastructure projects enable considering them as complex open economic and social systems capable of synergism:

- large investment and construction project (ICP) defining sustainable and balanced development of the territory assuming construction (reconstruction) or modernization of the infrastructure facilities;
- consists of several hundreds or thousands of works where the public and administrative authorities, several tens of companies are involved, there is a multichannel system of supply and sales of products;
- exerts a pronounced influence on the economic, social and ecological situation that stipulates the necessity of the state participation to define the project implementation conditions;
- technological complexity, uniqueness, innovation, organizational complexity, long term, increased risk;
- scale and technical (technological) complexity of the project taking into account the specific character of its implementation admits the possibility of its financing at the expense of various sources of funds;
- variety of the organizational and legal and financial interactions between numerous interdependent participants forming as a result the single organism of the project implementation created on the basis of the single scheme of its implementation (estimate).
- recoverability of investments for investors and creditors has a long-term nature, at the certain stage the scheme of substitution of some obligations following from the specific character of the project financing by other is applied (bearing a credit risk);
- a special company with a zero balance ("special purpose vehicle", SPV) is often created not to allow mixing of obligations and investments with respect to this project and other obligations of the third parties.

Transport infrastructure can be understood as functional and service subsystem which in the reproduction process influences the activity of behavior of the subjects of its economic system ensuring combination of their interests with the integrated development tasks and it can be considered as rather independent system with its own objectives [Kaltyrina (2005)]. Sharing the opinion of Asaul (2009) that "there are no real systems in the nature which are incapable of synergism, there are only matters of time, space and certain conditions", we consider it important to regard a transport infrastructure investment project as the synergistic system. We mean an open and non-equilibrium system

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