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Bacterial optimization and complex swarm-simulation modeling of innovative projects' promotion into the regions[1]

The optimization task solution of promoting innovative projects into the regions with using of a complex simulation model and included modules of bacterial optimization is considered below. As the object of research, the process of forming an innovative cluster was chosen. The complex model is implemented in the modeling system «Actor Pilgrim» with the implementation of the common virtual time, spatial and financial dynamics (money, financial instruments). The simulation results are tied to topographic information of different scales.

Keywords: simulation modeling, actor-network theory, artificial life, bacterial optimization, economic engineering, innovative project, economic process.

Intoduction

Creating new methods of engineering and computer modeling to optimize the economic development projects becomes an urgent task [1]. The innovative projects to create the new energy sources (for example, helio-power plants based on semiconductor elements, whose production technologies are gradually becoming cheaper), to develop the electricity and pipeline networks to provide with energy and energy carriers, to create the new technological production systems that were not previously available in Russia, for the import substitution program implementation, are of particular importance. At the same time, new methods are created to solve these essentially engineering tasks.

Features of innovative project promotion in the regions

The conducted studies of the innovative development level of the Russian regions have shown a significant gap between the federal subjects. For example, the rating of innovative regions carried out by the Ministry of Economic Development bases on 29 indicators, which reflect: scientific research; innovation practice; innovative activity of regions; socio-economic conditions. The group of innovators, whose index value is at least 140% of the average for Russia, includes 11 subjects of the Russian Federation (Moscow, St. Petersburg and Tatarstan are leaders).

In the rating «Innovative Business in Russian Regions» leaders are the same three subjects. Now the biggest funds are invested in large scientific and industrial centers (first of all, in science cities), which have been engaged in the high technology development since the Soviet period. At the same time, support is vitally necessary for less innovative regions, since the creation and implementation of leading solutions in their spe-

Simulation ▷▷ Actor modeling