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**Abstract.** The article considers the problem of predicting the parameters of the dynamics of changing quantitative and qualitative state of a fleet of special-purpose radio system samples. It is shown that applying analytical methods when modeling the processes of changing the quantitative and qualitative states of a fleet of special-purpose radio systems becomes extremely difficult or almost impossible. The dynamism and uncertainty of the initial data, a big number of factors that need to be taken into account, nonstationarity, nonlinearity and stochasticity of the processes, a big number and discrete nature of the variables cause almost irresistible difficulties in the development of a formalized analytical model.

To solve the problem of predicting the parameters of the dynamics of changing quantitative and qualitative states of a fleet of special-purpose radio system samples, it is proposed to use the agent approach in simulating discrete-event simulation of the dynamics of changing the state of complex organizational and technical systems. It will overcome the limitations of currently used analytical methods.

Using a formalized representation of the process of changing sample states and an agent approach to the simulation of complex organizational and technical systems, there is a developed multi-agent model that enables predicting parameters of the dynamics of changing quantitative and qualitative states of many samples of special-purpose radio systems based on simulating the operational stage of the life cycle of equipment samples, taking into account stochastic processes of changing the technical state and control action constraints for a specified time period.

The developed software package is based on the proposed model. The author proposes to use it when solving a wide range of problems. Firstly, the system is useful for operative determination of parameters of the dynamics of changing quantitative and qualitative states of a fleet of special-purpose radio system samples for specified control action constraints. Secondly, it can serve as a module of a decision support system for the justification of long-term programs and plans of program-targeted development of complex organizational and technical systems.

**Keywords:** special-purpose radio systems, forecasting, state change dynamics, simulation discrete-event modeling, agent model, software package.

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