

SYSTEM - DYNAMIC MODELLING IN MODERN RUSSIA

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The significant results within the framework of system dynamics are achieved now in many countries. In Russia, for example, the tools of system dynamics is successfully applied to economic, social and ecological problems in some universities of economic orientation, including the Economic Faculty of M.V. Lomonosov Moscow State University, S. Ordzhonikidze State University of Management (Moscow), G.V. Plekhanov Russian Academy of Economics (Moscow), Academy of National Economy under the Russian Government (Moscow), Moscow State University of Economics, Statistics and Informatics, Far East State University, Baikal Institute of Environmental Management of the Siberian Branch of the Russian Academy of Sciences etc. Besides the system dynamic tools are applied as important part of constituting situational centers in some Russian companies.

Alongside with the known international means of the visual modeling which were widespread in 90th. of XX centuries, such as Vensim (Ventana Systems, USA); Powersim (Powersim AS, Norway); Process Charter (Scitor, USA); Ithink (Stella) (High Performance Systems, USA); Extend BPR (Imagine That!, USA); ReThink (Gensym, USA), Simulink (Math Works, USA) etc., the following domestic means of visual modeling also were widespread in Russia: IMITAK (SUM, Moscow), FEYA (RAE, Moscow); PODSIM, RDO (Bauman Moscow State Technical University), DSIM (ENIMS, Moscow), PETRIS (Penza State University), STRATUM (Stratum Modeling Group, Perm); Pilgrim-2.1 (Megathrone, Russia; Keisy, Netherlands; EnitAS, Estonia) etc. Besides the following CASE-tools have widespread enough in Russia: BPWin and ERWin (Platinum Technology/Logic Works, USA), Designer/2000 (Oracle, USA); ARIS (IDS AG, Germany); SAP R/3 (SAP AG, Germany), Case Analytic (MacroProject, Moscow) etc.

Nevertheless, in many "classical" languages of visual system dynamic modeling now there are no the means, allowing to analyze spatially distributed data, and also to investigate the optimum control models (for example, Ramsey and others macroeconomic models of endogenous growth), for which it is important to find the program control trajectory and the appropriate trajectories for the variables describing state of the system. In technical languages of simulating modeling these limitations are overcome by programming necessary tools of the data and models analysis by means of high level programming languages, however, this way is not accessible to many humanitarian experts (such as economists, sociologists etc.). Therefore the decision of such problems with use of visual means of system dynamic modeling is more perspective. So the Moscow State University group of scientists under supervision of Vladimir Sidorenko created in 2000-2001 the educational version of software, which allows to design and analyze the system dynamic models with spatial dynamics and also to solve a set of problems connected with the optimum control theory (search of program control etc.) and games theory (search of game balance etc.). Some of the ideas were implemented into the GIS and system dynamics simulator "ECONET", which was presented in ISAGA-2000 Conference. The software is successfully used now within the following courses: "System dynamics", "Mathematical models in environmental economy", "Application of nonlinear dynamics tools and intellectual information technologies in economy".

KEY WORDS: cross country experience in system dynamics, system dynamics software.