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UNDERDETERMINED MODEL TECHNOLOGY FOR MANUFACTURING AND ECONOMIC SYSTEMS MODELING

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One of the main problems in the manufacturing and economic computer models development is incomplete and underdetermined data. The capabilities of the modern modeling tools are limited by the possibilities of traditional mathematical apparatus. The qualitative new level of modeling can be achieved by using intellectual information technologies. The web-based system for manufacturing and economic systems modeling was developed by the authors. It is based on the underdetermined models technology (developed in Russian Research Institute of Artificial Intelligence).

Many limitations of the traditional modeling approach are removed. A problem is represented in the form of a model (not an algorithm), in this case using of underdetermined data is possible, there are no inputs and outputs, it is easy to solve inverse problems.

The base technologies of this computer system are the underdetermined models technology, Web-technologies and the virtual reality technology (for the visualization of computation results). The integration of underdetermined models and Web-technologies ensures multi-user remote access to the computational core of the system, processing and saving information on the server, and also using accessible data from the Web and the integration with other software. After the registration in the system user can start developing, exploring and computing of models via Internet (Intranet), The system gives an opportunity for collaborative working with complex models. Users can develop some parts of a complex model, which then associates these parts together.

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