A multi-user tool for modeling and open routed simulation of object- or function oriented manufacturing systems

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abstract

Shorter product lifecycles, customer-oriented production and an increasing number of variants of the manufactured goods are characteristic for today's industries. In order to manufacture efficiently regarding time and costs, the importance of digitalisation of product and process planning is increasing. One well-known method for planning, safeguarding and improvement of production processes is material flow simulation.

Existing tools cannot keep pace with recently upcoming requirements. This dissertation develops a software solution, which covers especially the following new application areas:

1. synchronized, location independent multitasking during modeling and simulation of material flow models in an interactive, immersive and virtual environment
2. planning, evaluation and continuous improvement of all manufacturing processes, covering all areas of planning up to feedback during production control
3. cooperative planning within companies, virtual company networks or entire supply chains

In order to fulfill these requirements, the tool is based upon assumptions regarding the workflow of a simulation expert as well as an extensible description of the simulation models. As a result, the tool enriches the topic of material flow simulation developing a solution, which can realize new areas of application in practice as well as in research.