

## **DEVELOP OF RECONFIGURABLE MANUFACTURING PLANT**

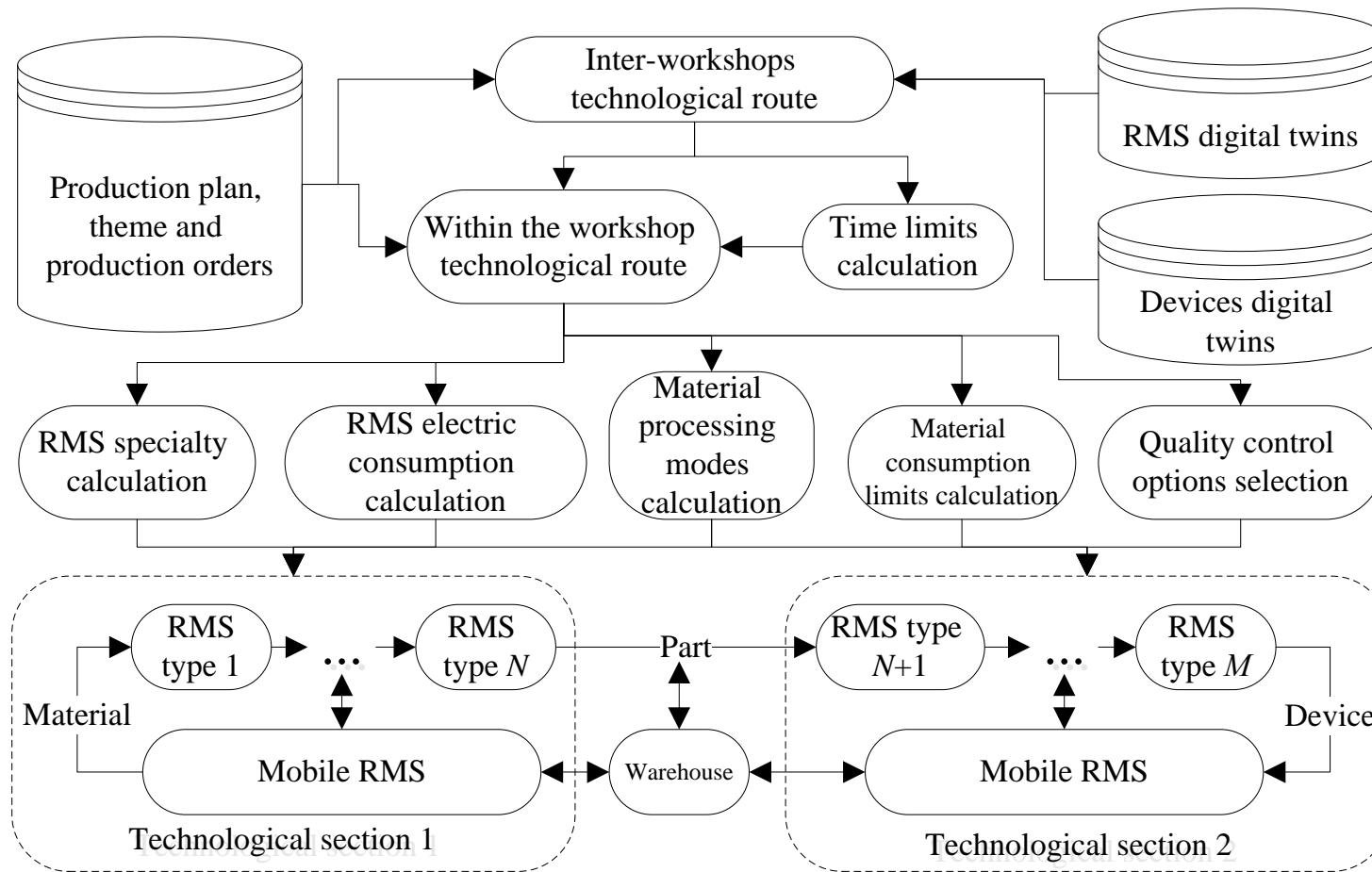
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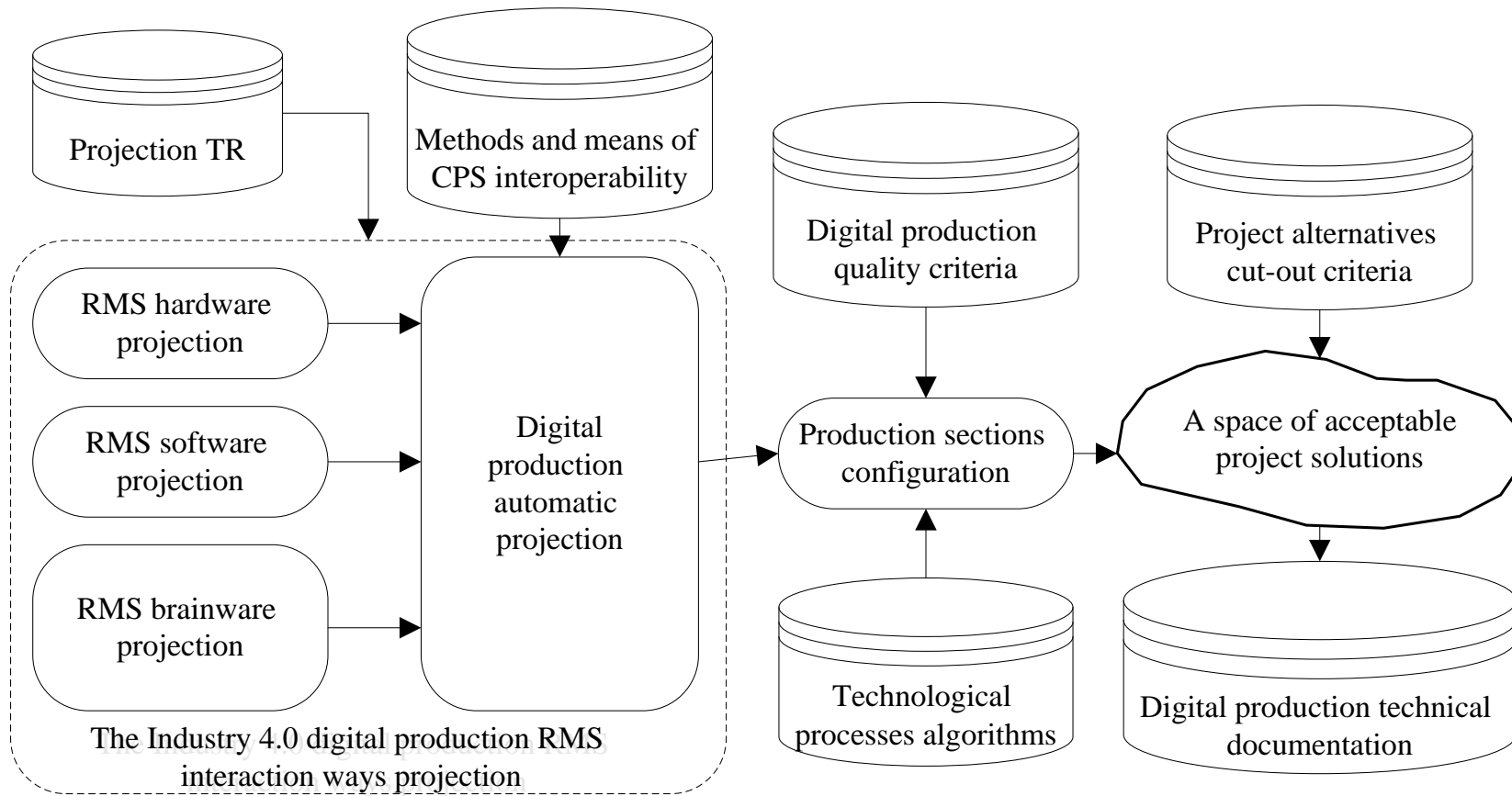
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A scientific problem is how to develop automatically self-reconfigurable manufacturing plant. Self-reconfigurable manufacturing plant is a set of detailed descriptions in the level of plant models reconfigurable manufacturing systems (RMS) and RMS connection structure, which is sufficient to develop technically a plant. Primary components are described, which are necessary to create specialized system of a self-reconfigurable manufacturing plant automatic developing, which is done in the software. There is a functional scheme of manufacturing process in automatic mode for a device in a plant. There is a functional scheme of the self-reconfigurable manufacturing plant automatic developing route equipped with RMS.



**Figure 1.** Device manufacturing process functional scheme using advanced technologies in the reconfigurable plants.



**Figure 2.** Functional scheme of the solution project problem developing reconfigurable plant.

Complicated technical systems automatized projection is an actual direction today to prepare specialists in high educative companies. The Industrial automatizing is modern education tendency, where students learn flexible production technologies, which have some practical application in a self-reconfigurable plants.

The primary problems, which the self-reconfigurable plants realize is the theoretical synthesis and automatic RMSs practical realization problem, which are used in a plants to manufacture an device. A perspective approach to solve RMS configuration synthesis is based on the project solutions structure and parameters optimization methods, which help the plant designers to define the best project options, which then must be realized in practice.

To justify the plant structure and enter its parameter vector it is necessary to describe in the mathematical level the RMS loading which complete inside the workshop and inter-workshop routes of the device manufacturing and documentation circulation and parts being manufactured in the plant. Self-reconfiguration plant brainware is the artificial intelligence algorithms base functioning in the cloud as a part of the plant computerized control system.

The hierarchy approach to create the self-reconfigurable plant structure explains the application of the technical and economical parameters space basis transformation methods into plant synthesis project procedures. In the hierarchy different levels it is reasonable to divide the parameter space into a group of significant variables and a group of secondary parameters, which can be neglected in the current hierarchy level of the plant.

A group of reconfigurable plants relevant parameters is the project coordinate system where each project solution is represented as a vector, which describes a hodograph in the project time. A measure of hodograph proximity shows the designer the indication of similarity for each project solution to select plant structure from the technical task requirements. The best project solution must be found in the target function extremum, which use the similarity indication as an optimization parameter.