SINGLE OBJECTIVE CRITERIA FOR SELECTION OF MANUFACTURING METHOD

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ABSTRACT

In order to improve the manufacturing cycle more than 110 manufacturing processes have been proposed. The objectives aimed at and the functions focused on by these processes vary. The process should be able to meet daily production requirement, which at the same time should utilize full capacity of the machine and its tooling and should reduce to a minimum idle operator and idle machine time and must provide the maximum utilization of minimum amount of material. The process should be flexible enough to accommodate reasonable changes in design. This poses a great challenge to a manager in selection of effective and economical manufacturing process. Different organizations have different objectives and based on their specific requirement they deploy suitable process conforming to their objective. Based on their needs, the weights assigned to the objectives vary. Today's business scenario is highly competitive, complex and dynamic in nature which demands strategic planning meeting the challenges of changing time. In this paper we have made an attempt to enable the end user a quick selection of appropriate manufacturing method based on a single objective. A tool is developed for the purpose which provides two different types of interfaces to an end user. One interface is GUI based which is user friendly and provides a simple drag and drop operation for the selection of manufacturing methods based on a single objective and a method classification. The second method is command-line interface enabling the end user to query the database using Manufacturing Query Language (MQL) designed by us. Parse tree is developed and text parsing is used for parsing the query. The query language is designed for the manufacturing domain and renders the end user free from the intricacies involved in SQL syntax involving filtering, joins etc. MQL currently comprises of few commands which can be queried by the end user for the selection of manufacturing methods based on a single objective and a method classification. It is subject to future enhancements. Our current work focuses on a single objective. It is an idealistic scenario where a single objective defines the selection of manufacturing method. In real situations multi objective criteria is required for the purpose. Nevertheless this is our first attempt towards development of such tool and our future work involves modification of the tool and parser to take account of multiple objectives and functions.

KEYWORDS: Class Method, Formal Grammar, Manufacturing Objective, Manufacturing Query Language, Parser