ONTОLOGY-BASED PROBLEM SOLVING METHOD FOR DYNAMIC SCHEDULING IN AGILE MANUFACTURING

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Ybhg. Prof.,

LAPORAN AKHIR PENYELIDIKAN “ONTOLOGY-BASED PROBLEM SOLVING
METHOD FOR DYNAMIC SCHEDULING IN AGILE MANUFACTURING”

Merujuk kepada perkara di atas, bersama-sama ini disertakan 3 (tiga) naskah
Laporan Akhir Penyelidikan bertajuk “Ontology-based Problem Solving Method For
Dynamic Scheduling in Agile Manufacturing”.

Sekian, terima kasih.

Yang benar,

MUHAMMAD FIRDAUS BIN MUSTAPHA
Ketua
Projek Penyelidikan
4. Report

4.1 Executive Summary

Problems in scheduling have been getting a lot of attention among researchers, whereby different techniques and approaches have been implemented to solve the problems. Scheduling in manufacturing industry is one type of scheduling that can be defined as the allocation of jobs to resources over time by satisfying a set of constraints of various types simultaneously. Disturbances or changes such as arrival of new jobs, machines replacement, and job cancellation always occur in real manufacturing. In agile manufacturing (AM), arrival of new jobs depends on customer's order, in which the customer sometimes requests for the product to be produced urgently. Therefore, rescheduling is needed in order to include new jobs into the initial schedule.

Furthermore, scheduling system is required to incrementally and reactively generate and maintain the schedule in a dynamic environment. The main approach to maintain a schedule is by repairing or modifying the previous schedule in some ways. For that reason, this research intends to develop the algorithms of a scheduling ontology and problem-solving method (PSM) for dynamic scheduling in agile manufacturing environment. This research will apply the Task-Method-Domain-Application (TMDA) framework which has a clear separation between task, method, domain, and application. The advantage of using TMDA framework is that the algorithms can be easily modified. The scheduling ontology and PSM of this research will develop and test using benchmark data. The results of this research are the algorithms of scheduling that can be used to handle static and dynamic scheduling problems. The outcomes of this research can be benefited by SMI especially in Malaysia.