An architecture for agile shop floor control systems

Changes in markets and global business trends affect the manufacturing environment in infinite ways. These changes have brought about the need for a paradigm shift to reassess the manner in which manufacturing systems are developed and operated. New theories and concepts present solutions to enable manufacturing systems to accommodate the increasing dynamic characteristics of the manufacturing environment. Regarding these new concepts, specifically holonic manufacturing systems, there are many aspects that should be considered. One of the aspects is the manufacturing system and its control, commonly known as shop floor control. This paper presents the Holonic Multi-cell Control System (HoMuCS) architecture that allows for design and development of holonic shop floor control systems. The HoMuCS is a shop floor control system which is sometimes referred to as a manufacturing execution system that is inherently agile. This agility is achieved through two performance parameters: operational agility, allowing for operational change; and structural agility, allowing for structural changes and reconfiguration.

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