

A Flexible and Intelligent Production System for Process Planning and Enterprise Performance Optimization

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Abstract. Many companies have been expending considerable efforts to continuously improve manufacturing processes to ensure their competitiveness and remain in the market. Value Stream Mapping is a strategic tool that makes it possible to visualize the macro of production to assist in planning and decision-making. It is a process mapping that considers the workflow of a product from the arrival of the raw material to the result that is delivered to the customer. Despite the benefits this tool has provided to organizations, the time for its development is still very high, as its data is still filled manually, allowing its analysis to be error-prone. Digital technologies have brought several improvements to the methods and tools of organizations. With the goal of obtaining contributions to engineering through transdisciplinary approaches to decision support tools and methods, therefore, this study will present the development of a dynamic web application using data analytics and machine learning to visualize, identify bottlenecks, predict, and update data in current and future state mappings. Intelligent systems tend to eliminate the routine activities of engineering, so this application will allow engineers and technicians to dedicate more time to dedicate themselves exclusively to activities that require a more challenging level of managerial decision-making.

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