



Preface Special Issue on Monozukuri (Manufacturing)

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Today, amid the diversification and fluidization of customer needs, the ability to provide products that satisfy those needs in a prompt and flexible manner and at an appropriate level of quality has become a major challenge for manufacturers. To meet this challenge, it is important that all processes from upstream to downstream be digitized on the basis of a human-centric concept. The objective is to enhance verification capabilities in the product design and manufacturing stages and to optimize Monozukuri (Japanese way of manufacturing) and the entire supply chain.

Fujitsu aims to achieve an “interconnected Monozukuri environment (development—procurement—manufacturing—operation)” that merges information and communications technology (ICT) with the Fujitsu Production System (FJPS), which serves as the basis of Monozukuri. To this end, we are developing and enhancing technologies, tools, and operation techniques and rolling them out at in-house development and production sites under an initiative called “smart Monozukuri.”

For example, we are constructing a development environment to support design work through learning functions and the accumulation of design know-how. We are also creating a navigation system for detecting signs of manufacturing defects or problems through data analysis throughout the production cycle and for controlling the production line in real time. Moreover, we are advancing the use of ICT to shorten the production preparation time at production site and the use of robot control and dynamic production allocation on production lines to enable flexible responses to changes and fluctuations. These efforts are expected to lead to dramatic improvements in quality, lead-time, and productivity throughout the Monozukuri process.

In this special issue, we introduce revolutionary changes that are taking place in the world of Monozukuri and some practical examples, including (1) an “Engineering Cloud” that integrates and manages diverse know-how in Monozukuri and places all design information (tools, standards, libraries, design data, etc.) in the cloud to provide a secure development environment, (2) innovative development processes through a company-wide Flexible Technical Computing Platform (FTCP) development environment that supports a range of tasks from

product planning to design and analysis, (3) innovative production processes to facilitate human-machine harmonization and achieve efficient production lines, and (4) digital innovation toward smart Monozukuri as the next-generation Monozukuri envisioned by Fujitsu.

Through smart Monozukuri, Fujitsu aims to construct an ecosystem throughout the world of Monozukuri in collaboration with its customers and automated-machinery/robot manufacturers. In this way, we intend to provide an especially imaginative basis for creating new value.