



## FOREWORD

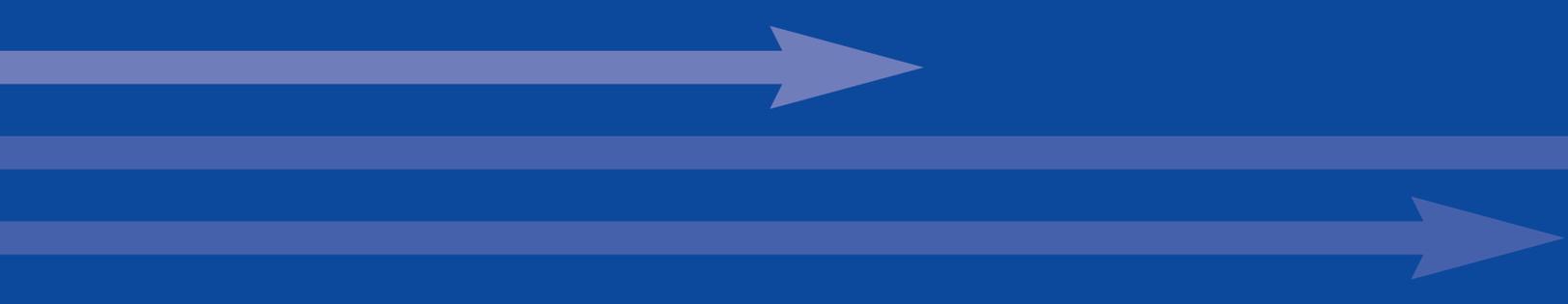
When we launched *Learning to See* (LTS) in the summer of 1998 as the first publication of the Lean Enterprise Institute (LEI), we urged readers to start down a path toward perfect operational processes by mapping the value stream for each product family. We pointed out that mapping could be done at many levels — from a single process within a manufacturing facility to the complete path from raw materials to the customer. We suggested that the best place to start is with the flow of information and materials within the walls of a single plant.

In drawing a typical plant-level map, we almost always see great opportunities for introducing continuous flow by moving isolated processing steps together to create compact cells. In *Creating Continuous Flow*, the second LEI publication, launched in the summer of 2001, we asked Mike Rother and Rick Harris to focus on the process level. They described in detail how lean thinkers aggregate disconnected processing steps into compact cells with truly continuous flow.

As with LTS, we have been delighted with the response to *Creating Continuous Flow*, which has sold more than 11,000 copies and now is being translated into multiple languages. However, progress in introducing lean methods on one dimension often exposes new problems on other dimensions. Recently, as we have looked at firms introducing continuous-flow cells, we've noted that output from their cells still is uneven. Some simple investigation shows the reason: The flow of necessary materials to the cells is erratic and occasionally material delivery fails.

In biological terms, the metabolism of the cell now is right but the supply of nutrients still is a problem. So how can you create a circulatory system to take full advantage of your carefully created areas of continuous flow (including traditional assembly lines) while also meeting the needs of other production activities still in batch mode? The methods are not mysterious. Toyota and its affiliated companies pioneered them years ago. However, we've found that to understand and apply them most managers, engineers, and materials specialists need a friendly sensei (teacher) to walk them through a step-by-step implementation process that focuses their vision and targets their actions.

To fill this need we are now publishing this sequel to Mike Rother and Rick Harris' *Creating Continuous Flow*. In it we move from performance at the individual cell level to the material-handling system for the whole organism (in this case an entire facility) as Rick Harris, Chris Harris, and Earl Wilson take your hand and lead the way in *Making Materials Flow*.



If you're implementing the concepts presented in *Creating Continuous Flow*, you're already familiar with Rick, a veteran of the shop floor as a manager in assembly at Toyota Motor Manufacturing Kentucky (TMMK) in Georgetown, KY. Chris and Earl, though, may be new names. Chris — Rick's son — is one of a new generation of Lean Thinkers and was indoctrinated on the assembly line at TMMK. Earl, who has been helping companies get lean for the past seven years, was a materials manager for Johnson Controls Inc., Georgetown, KY, where he learned the Toyota Production System by supplying Toyota.

Each step the authors present — developing an accurate database on parts in the facility, setting up a purchased-parts market, establishing a material-delivery route, and developing the information links that connect the production cells to the purchased-parts market — builds on the step before and leads to a more competitive production process that also is more satisfying to those who operate it.

We warned in our Introduction to *Creating Continuous Flow* that creating cells is harder than simply drawing maps. And we must warn here that creating and sustaining the rigorous material-flow system described in the pages ahead is an even larger challenge because more people and processes are involved over larger areas. It's hard work, and you will make mistakes as you get started. But the benefits for your business are enormous, and all of the knowledge you need is summarized here.

Given the nature of your challenge, we are particularly anxious to hear about your successes and your difficulties and to connect you with the Lean Community at [www.lean.org](http://www.lean.org). We also need to hear your suggestions for improving *Making Materials Flow*. Please send them to: [mmf@lean.org](mailto:mmf@lean.org)

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