One other problem with the book is the authors’ insistence on using Japanese terms to express concepts with perfectly legitimate English equivalents. For example, an *obeya* (“big room”) is a dedicated project room for a team that contains the team’s information about the process. In the United States, these are often called *war rooms* or *team rooms*. These rooms provide the team with shared workspace for meetings. Over the course of the project, the team covers the walls with visual displays of project information, including the team’s goals and objectives, metrics, schedule, sketches, drawings, and technical data. The space accelerates team decision making since the critical information that they need is consolidated in one highly visible location. It improves collaboration by providing a space for team members to work side by side. Visual planning techniques reduce the effort required to track project status and schedule.

Toyota has evolved this practice in new directions, but not so far that the English terms no longer apply. The authors’ continued use of Japanese contributes to the common misperception that Toyota’s systems are rooted in the Japanese culture and therefore cannot be implemented successfully outside of Japan. In reality, the authors describe how Toyota successfully transplanted these practices to its development centers outside of Japan, using English-speaking Japanese mentors to build competency in the Toyota development system in American and European engineers.

The entire book also assumes a familiarity with auto industry terms such as *body in white* that create unnecessary barriers for those in other industries. The authors could have included either a short introduction to automotive development or at least a glossary of auto industry terms to help their readers translate these ideas beyond the auto industry. A reader who is unfamiliar with the typical development life cycle for a new car model would sometimes have difficulty seeing just how far ahead Toyota is compared to its peers.

Despite these problems, this is the essential reference book for any company interested in lean product development as it is practiced at Toyota, the pioneering lean company. The authors have made every effort to create an accurate description of the Toyota development system that can serve as a reference for creating product development systems that deliver high performance in other companies and other industries. Every industry and every company will have to develop an interpretation of the Toyota development system that will work within its own environment.

References


Katherine Radeka
Whittier Consulting Group, Inc.

*Product Lifecycle Management: Driving the Next Generation of Lean Thinking*

In this book, Michael Grieves describes the emerging practice of product life-cycle management (PLM). PLM has shown benefits in the aerospace and automotive industries as an efficiency-promoting paradigm for complex, manufactured products. It is now being adopted in other industries including industrial goods, consumer packaged goods, and pharmaceuticals.

The book’s 11 chapters unfold in a logical manner. The first five chapters explain PLM and its context. The reader will learn the advantages PLM offers, its major components, and why organizations should consider adopting it. Chapters 6–8 cover activities from the beginning to end of a product’s life cycle from design until it is out the factory door. Chapters 9–11 address organizational adoption of PLM by considering short- and long-term costs and benefits, organizational readiness for PLM, and issues that must be addressed for PLM to reach its full potential.

Grieves evaluates several definitions of PLM and arrives at this: “PLM is an integrated, information-driven approach comprised of people, processes/practices, and technology to all aspects of a product’s life, from its design through manufacture, deployment and maintenance—culminating in the product’s removal from service and final disposal. By trading product information for wasted time, energy, and material across the entire organization and into the supply chain, PLM drives the next generation of lean thinking” (p. 39). Curiously, he does not consider marketing-oriented definitions such as the one in the PDMA glossary: “Changing the features and benefits of the product, elements of the marketing mix, and manufacturing operations over time to maximize the profits.
obtainable from the product over its lifecycle” (PDMA, 2006). This absence of a marketing view of PLM is a minor defect, as my surfing of the Web shows that entries describe PLM as a technology and process that is more consistent with Grieve’s definition. Given the number of vendors and offerings, it appears that there is much money to be made in providing PLM solutions, and solution providers have a natural prejudice in defining the PLM in terms of information technology.

PLM’s major benefit is improving the efficiency of the design, manufacture, support, and ultimate disposal of a product by creating and managing a virtual representation of a physical product. The rationale is replacing “expensive physical atoms” with “inexpensive information bits” (p. 2). The practical question for day-to-day implementation of PLM is this: Does the information presented in a given virtual representation have fidelity with respect to the physical item it represents? To assess these virtual representations, the author proposes several criteria. First, the “Grieves Visual Test” (pp. 18–19): If an observer observing the object on a video cannot tell the difference between a physical object and a virtual one, it passes. A second test, the “Grieves Performance Test” (p. 19), is more demanding. The observer can manipulate and test the object, and if the observer cannot tell difference on the video between the physical object and the virtual representation it passes. Manipulating an object in a computer provides opportunities to improve speed, to reduce waste, and to increase flexibility.

The start of the digital life cycle of PLM is collaborative product development, “an approach to capturing, organizing, coordinating, and/or controlling all aspects of product development information, including functional requirements, geometry, specification, characteristics, and manufacturing process in order to provide a common, shared view as product requirements are translated into a tangible product and to create a repository of product information to be used throughout the product lifecycle” (p. 161). Grieve states that PLM’s potentially greatest value is in capturing and managing product information after the product leaves the factor door. He provides examples in quality scrap production (e.g., a product that fails in use even though it meets the specification); product liability; warranty; quality improvement; usability; new revenue sources including product extensions; and services, repair, recycling, and disposal.

I found the first half of the book more insightful than the second half, but someone who was implementing PLM might better like the second half. I particularly liked Grieves’s framework for characterizing work as processes, practices, and art (pp. 20–5). Grieves says that “the hallmark of a process is that it can be fully scripted or coded” (p. 20). A process is a conversion of “well-defined inputs” that deterministically produces “specific consistent outputs” (ibid.). Contrasted with mechanistic nature of process, art is an individual, fuzzy work endeavor, and Grieves cites large complex sales and advertising campaigns and some forms of casting and grinding as examples of more artistic processes. Often people cannot fully explain their activities, judgments, and objectives. Such individuals work in the realm of tacit knowledge of the technology and the organization and thus make subjective determinations of how well the outputs match the desired goals of the system. Because of many managers’ discomfort with the fuzziness, organizations invest considerable resources to convert art to more rational, predictable work routines. Practice straddles the space between process and art. Grieves writes, “With practices, inputs are pretty well defined, as are the outputs” (p. 21). What is not well defined is the amount of “judgment and experience of past actions that go into the outputs” (ibid.). Whereas processes are reasonably controlled, practices cannot be appropriately understood without understanding the context in which decision takes place. The distinction between process and practice is important because managers blame inconsistent performance on processes. Grieves writes, “When we talk about practices, we usually want them to be processes, because processes are much neater and better defined than practices” (p. 22). However, the problem is that managers are misguidedly trying to automate a practice. Grieves prescribes a strategy of moving “practices to processes by making tacit information explicit” (p. 24). Accomplishing this frees up people to concentrate on practices, where they can uniquely consider the context and can apply their judgment. Finally, organizations should use PLM to “enable and facilitate practices to make them more productive” by presenting “the right information when it is needed” (pp. 24–5). If managers can absorb and apply this distinction, they have gained an important insight for improving product development and management.

Overall, this book convinces me that the product development and management is now getting the tools to move closer to the ideal of holistic management of products. PLM has promise to make tremendous impact on the operations and the strategies of
organizations, especially those involving complex, manufactured products. However, it will require a substantial investment and run into many of the same obstacles as other cross-functional, enterprise-wide change efforts. This book makes a thoughtful contribution to the literature and deserves a place on the bookshelf.

Reference

Greg Githens
Catalyst Management Consulting LLC

Leading Project Teams: An Introduction to the Basics of Project Management and Project Team Leadership

One of the keys to successful new product development (NPD) is having effective project team leaders. Yet many people, on being named to lead their first project team, feel like they are drowning in the many demands and details that team leadership requires. Think of this book as a life preserver for these people. It covers the basics of both the task- and the people-oriented aspects of the assignment and is a valuable resource for both new and experienced project team leaders. The book can also be used as a training manual.

The book is not specifically focused on NPD projects, but its more general approach is applicable to NPD. In the introduction, Anthony Cobb adopts the Project Management Institute's definition of a project as “a temporary endeavor undertaken to create a unique product, service, or result” (p. 3). He then discusses the fundamentals of projects as they relate to this definition, giving as the defining characteristics of projects that they are unique and temporary. The basic parameters of a project are scope, costs, and time. The author gives equal, but separate, weight to the two major dimensions of leadership: the task dimension and the social-psychological one.

The book developed out of Cobb's college and graduate school teaching and so is organized as a textbook. Each chapter begins with an overview and ends with a summary, review questions, exercises, and endnotes. Most chapters include a helpful checklist of questions a team leader should be asking when carrying out the activities of the project phase being discussed. For example, the project initiation checklist asks, “What is the mission or purpose of this project? What are the key project objectives?” (p. 29).

Before getting into the mechanics of running a team, Cobb spends an entire chapter on the critical subject of determining the direction and initial specifications of a project. He goes beyond the usual mission statement, objectives, and deliverables to consider the need to identify and to understand the requirements of the numerous official and unofficial stakeholders in a project. Here he discusses the potential political issues that can arise from conflicting concepts of the project’s mission. He emphasizes the importance of determining the project scope, budget, and deadlines in advance. Finally, he recommends that a preliminary project plan and a written project charter be developed and agreed to prior to the actual project launch.

In the next two chapters, Cobb gets into the details of developing work breakdown structures and project schedules and of using these to control the progress of a project. The concepts are explained clearly in a generic way that does not rely on a single method or software product. He compares and discusses the basic methods of Gantt charts, critical path method (CPM), and program evaluation and review technique (PERT), and he defines the individual components of schedules, such as dependencies and milestones. Cobb then gives a more detailed example of how to develop a work breakdown structure and project schedule using Gantt charts. Because the focus is on the fundamentals, these chapters should be supplemented by additional training in the specific methods used at a particular company, but the necessary background to allow someone to learn such methods rapidly is here. One confusing inclusion is a passing reference to earned value analysis (EVA), to which he later devotes an eight-page appendix before concluding that EVA has a number of problems that limit its usefulness.

Having covered the basic mechanics of running a project, Cobb then turns to the more people-oriented subject of developing project teams. Unlike some team leadership books that focus on team building as an end in itself, the author discusses how team development should be driven by the nature of the project and the specific needs of the project team members. He points out that in many cases, the same