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What is This?
Is Planning a Strategic Requirement for CE Success?

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1. Introduction

Many progressive companies are interested in maintaining a competitive edge in the world marketplace and in producing high quality products. They would like to do this at a lower net cost of production than their competitors. One easy way to increase one's productivity or efficiency is to squeeze more out of the current system. This often boils down to either working harder than before or automating some of the manual tasks rather than working differently. Automation of tasks to some may also mean repeating the same mistakes but doing it more often and more quickly.

Knowing what information is required or what task to perform is one sixth of this battle. How this information or task squeezes more out of the current system. This often boils down to either working harder than before or automating some of the manual tasks rather than working differently. Knowing what information is required or what task to perform is one sixth of this battle. How this information or task satisfies the corporate goals is the second one-sixth piece. The remaining pieces are:

- Who makes up the team? Who needs it?
- Why this technique or process will not work? Why is this information needed?
- When is the optimum time (to do it)?
- Where are the right places to use this? Where will this information be used?

In Figure 1, though parts are equally divided, in practice one piece will be more important than others. “Who needs it” facilitates smooth communication and “why this information is needed” determines how valuable it is to a person, team, or organization. “Where this information will be used” determines the right place, “When to do it” denotes the right time and is the contributing factor to meeting fast-to-market or concurrency goals. By knowing what we do today and how we do it, we will be in a better position to identify bottlenecks and barriers in the current system and possibly improve operations, if opportunities arise.

2. Strategic Product/Process Planning (SP³)

Strategic Product/Process Planning (SP³) is a concept often used to accomplish many “lean” production goals. In some organizations, “process improvement” is often perceived as an after-thought—a functional service to be called upon periodically for productivity improvement [9]. In such companies, process is viewed closely with “work force productivity improvement (continuous process improvement) or organizational restructuring (reordering of tasks).” Others who have paid more attention have concerned themselves with “process restructuring.” Process restructuring is often targeted toward causing piecewise or one-at-a-time im-
Editorial

Improvements due to an incremental or add-on approach of continuous improvement in manufacturing process, product quality, etc. However, the perception is clearly different in companies following lean production principles. In those companies, SP3 is seen as a pervasive set of renovation activities that form the lifeblood of the company’s regenerating profit potential. SP3 is a renovation approach that critically examines those six pieces of the battle, rethinks them, and then redesigns the mission-critical “products, processes, and services” within an organization.

A question often asked is “if the design process is to be changed, what would be an appropriate approach to product design?” The answer is not very difficult. Figure 2 illustrates the pattern of resources that are spent in product’s definition, design, and redesign phases for both British and Japanese companies [10]. The British pattern (mirrored in the USA) is one where meager resources are committed to the definition/design phases (17%), compared to what is ultimately spent in the redesign phase (50%). For example, some firms take people off projects/tasks that are just starting up and move them to projects/activities that are already in late. The result is that they are always in a fire-fighting mode; there is never time to do less important things.

Figure 1. Questions assessing the improvement needs.

Figure 2. An example pattern of product development efforts (a) Best British Company, (b) Best Japanese Company.

(a) Best British Company

(b) Best Japanese Company

Figures quoted are time spent in percent for the development of small ships compared with Japanese competition
Source: Wilson and Greaves, Mechatronic Systems
Trent Hull, Canadian Supplier Institute, Mississauga, Ontario, Canada

Results in Putting Maximum
Amount of Effort during Redesign

Consumes Minimum Amount
of Effort During Redesign

Minimizing Time
During Definition

Maximizing Care
During Definition

Design & Developmental Cycle Time

Release to
Manufacture

Design & Developmental Cycle Time

Release to
Manufacture
because there is always something urgent. To achieve a comparable level of quality, the Japanese do things quite in the reverse time order. They strongly focus on product definition supported by optimizing techniques during design (a hefty 66% of the effort is spent here). This results in getting the product design correct the first time, thus reducing the need for any extensive redesign. The average time spent by the Japanese in the redesign phase is relatively very small—somewhere in the 10% range.

The percentage quoted in man-hours is for a British company designing small ships and that of a Japanese counterpart. In the British company case, the penalty was further compounded by the cost when another similar vessel was ordered. The incremental design cost for a second Japanese vessel was almost negligible (10%), but that for the British vessel was five times more (close to 50%) of the man-hours of the total effort [10]. Today, the relative gap, however, is closing. Some U.S. manufacturers have achieved impressive results. Chrysler brought the viper automobile to market in a three-year development cycle-time, significantly breaking previous five-year standards.

The difference between the Japanese and British approach thus boils down to two main points:

(a) the difference in life-cycle management methodology such as CE, KBE, etc.
(b) the effectiveness with which life-cycle management is practiced (Those who are able to make sound decisions during the early life-cycle will win the biggest competitiveness and profitability battle.)

3. Concluding Remarks

It is important, therefore, to set up a (SP³) team to do Strategic Product/Process Planning before jumping to automation. The role of the SP³ team would be to define a structure or a strategic roadmap for automation. This roadmap will outline a set of high-level requirements and a structure for building various KBE and CE modules, which account for “reusability,” “accessibility,” “sharability,” and other X-ability considerations [11] relevant to an organization based on its business needs.

References