Chapter 8
Some Key Topics to be Considered in Software Process Improvement

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ABSTRACT

This chapter summarizes a set of relevant aspects that may have a strong influence on the effectiveness of software process improvement and, as a consequence, on the competitiveness of software companies. Also included are the results obtained from a survey carried out in large companies on their processing needs in order to be more competitive. The organizational structures seen in different projects highlight the relevance of suitable processes as well as a culture of individual and organizational commitment. With this focus in mind, this chapter provides detailed information about teams, their construction and performance so that they can be effective in developing and implementing the processes. Finally, the chapter provides information about successful change management as well as advice on qualification of the workforce and technological tendencies, which is of key importance to achieve the objectives of competitiveness and process improvement.

1. INTRODUCTION

The capacity of organizations and their products, systems and services to compete, adapt and survive will depend more and more on software. With current products like those in the automobile, aviation or services sectors, software provides the competitive differentiation and the fast adaptability to competitive change. Software facilitates the fast adaptation of products and services to different market sectors to support multicultural global coordination of companies. In the following sections of this chapter, different key topics to be considered in the software process improvement are presented.

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2. INDUSTRY NECESSITIES

Taking into account the answers provided by representatives of large software companies to the question "Identify necessities of process technologies from an industrial viewpoint as opposed to a researcher's viewpoint," we summarized a list of necessities as follows:

- Guidance on how to apply process improvement, with equal effectiveness, for a multi-faceted, highly integrated, heterogeneous environment (commercial systems, internally developed systems, hybrids). We need to ensure interoperability, quality, and scalability.
- Guidance on how to motivate key stakeholders to "do it right the first time."
- Quantification of quality, privacy, and security.
- Fusion of multiple models (CMMI, Sarbanes-Oxley, COBIT), all with the same people. How a simple checklist can provide guidance to people who ask "are you doing this, and that?"
- Guidance on how to incrementally enable the education/adoption of process improvement "on the fly." Heavyweight solutions are simply impractical.
- Guidance on processes management for multi-vendor projects based on commercial products as components. Expect that at least some of these will have "low maturity."
- How the established science of behavioral modification can be humanely applied to process improvement transformation.
- We have a well-established process improvement tradition in clinical care – How do we link the software process improvement disciplines to clinical care process improvement disciplines?
- How does a high maturity vendor work with a low maturity customer? Process models are needed not only for multi-site development, but also for working with customers at various levels of maturity. So, they need guidance to work together through coaching, counseling, or education.
- Can I, as a software provider, commit myself to a certain quantifiable level of improvement in productivity (e.g., 3-5% towards level 3)?
- When an organization grows rapidly, there is a great deal of churn from the people perspective. A good process works well with competent and good people. What are the links between competent people and process capability? Some companies have integrated People-CMM with CMMI to tie the competency management with process, but would like more guidance on this.
- Relationship management outsourcing, for example. The ends of the spectrum are at one extreme, where bodies are replaced with low-cost bodies, and at the other where the entire application is handled by an outside vendor.
- Looking at things that will be needed in the next 3, 5, and 10 years, we will need process technologies that cross through companies and cultures (including processes with different maturity). Where does process interface between the two?
- Relationships of partners.
- Statistical process control using process simulation. Simulating a social-economical system gives good indicators of what to change to reach certain goals.
- We would like to establish an overall design process. Some companies generally develop their products in product-line; moreover, they want to have an architect that handles product and process at same time.
- Reusable process components, interfaces, etc.