The Commercial Power of Common Processes

How Motorola Government Electronics Division Implemented a Successful Common Process Methodology

AMY KASSNER • DICK WHITE

It all started with a commitment. Motorola's Government Electronics Division (GED) at Scottsdale, Arizona, in a concerted effort to improve its business processes and provide maximum product value to Motorola's customers, was one of the earliest businesses to implement an innovative new way of doing business – the single or common process methodology, identified throughout the DoD acquisition community as the single process initiative.

About the Methodology

In today's business climate, continuous improvement of all business processes is a distinct competitive advantage for any business. Motorola is no exception. The single or common process methodology allows Motorola to enhance its efficiency by allowing similar tasks to be performed in the same manner, thereby reducing errors, and facilitating the identification of process weaknesses and subsequent corrective action. This is critical to continuous process improvement. Another added benefit is that process tailoring can be significantly reduced.

In addition, the workers who implement the process go through multiple learning cycles, resulting in lower processing costs, and increased process consistency and efficiency. Since tailoring a process to satisfy multiple customers can create chaos, the single or common process minimizes this disadvantage and its associated problems. Once the single or common process is initiated in a business environment, continuous improvement in functional and product areas is also facilitated.

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The "Reinvention Lab" (a process used by the Government to develop new methods of doing business) concept, enables flexibility of approach, allows innovation, and encourages paradigm shifts. We were empowered to break out of traditional modes of doing business and develop and implement new and innovative approaches to increase value to our customers. This business approach supports the "Single Quality System" concept or common process methodology.

Motorola has experienced success implementing the strategies and methodology of the Reinvention Lab. One early experience was the process characterization and optimization activities initiated in 1986. At that time we had numerous ways of doing even basic tasks such as coating and staking of electronic assemblies. Motorola initiated a process characterization and optimization initiative designed to achieve the single best method for improving the manufacturing process. We used four steps: process definition, analysis, process optimization, and process control. The results were a 10:1 reduction in the total number of specific manufacturing processes.

National Security Agency, 1992

This concept was again used in 1992 when Motorola joined with the National Security Agency (NSA) to create a generic "Quality Program Plan." The generic Quality Program Plan allowed us to define the best process, in our estimation, and pursue this process with NSA personnel. A negotiation process followed, which assured that both parties' expectations were met in a manner that satisfied NSA requirements. The plan provided a single quality process methodology for executing both ground and space programs.

Kassner is the Quality Assurance Operations Team Leader, Motorola Government Electronics Division, Scottsdale, Arizona.
White is the Team Leader, Quality Engineering, Motorola Government Electronics Division, Scottsdale, Arizona.

DCMAO-Phoenix, 1995

In 1995, Motorola and the resident Government (DCMAO-Phoenix) joined forces to apply the single process methodology to the single quality system in response to acquisition streamlining objectives. Again, going to the "Single Quality System" at Motorola's Government Electronic Division started with a commitment. Both Government and Motorola leadership provided resources to accomplish this effort. The objectives were to:

- determine the Motorola quality system adherence to ISO 9001 for DoD contracts;
- develop an Advanced Quality Practices document;
- develop a methodology for focused oversight (risk model); and
- establish a common set of results-focused metrics that could be used jointly by DCMAO-Phoenix and Motorola.

Once the program gained commitment, the next step was building joint communication, teamwork, and trust. Joint training was initiated with a certified ISO instructor facilitating the ISO 9001 training. The result was a set of jointly developed assessor checklists. These checklists were used to evaluate the Motorola system to ISO 9001 requirements. To further enhance communications, terminology specific to each organization was shared and understood by all.

In order to gain the greatest benefit during the fast-paced seven-week effort, all tasks became team tasks. Assessments were performed by subteams, and all observations were shared on a daily basis with the entire team. Corrective actions were jointly determined and implemented. Changes to both the Motorola system and Government requirements were identified. The assessment was completed in three weeks with excellent results. Motorola was awarded a Certificate of Qualification to the requirements of ISO 9001 by Col. Tom Barnes, DCMAO-Phoenix Commander. This effort completed our first objective – determining ISO 9001 adherence for DoD contracts.

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Once the assessment was complete, including the agreed-upon system modifications, a joint group of government and Motorola personnel developed a basic quality practices document. This document covers topics not included in ISO 9001 that are of concern in defense contracting. These topics included right of entry, government source inspection, and technical data packages. An Advanced Quality Practices document was also created that encourages continuous improvement techniques, concurrent engineering, empowered teams, etc. This completed a definition of a quality system that is applicable to all levels of defense contracting.

In parallel, an effort was initiated to develop risk models. One model focused on the 20 elements of ISO 9001, and the second model focused on the product development/project activity. These risk models address the inherent risk of the process or product from a somewhat subjective viewpoint, followed by an evaluation of the system strengths to determine if the risk is mitigated. Likert scales were used to improve the objectivity of the risk assessment process. Quantitative data are used, where practical, when reviewing the design or manufacturing process. The result of the risk evaluation is plotted on a Johari window, which provides a graphical view of high-, medium- and low-risk areas. The government and Motorola can immediately determine where to deploy resources. Since the original risk model development, the concept has extended to Program and Supply Management risk models.

As a part of this task, key metrics were identified. The metrics used to assess the health of the ISO 9001 system were specific to each ISO element. The activity was extended to include process and product development metrics. The objective was to provide a set of quantitative measures that depict performance/system health at designated intervals. This common set of metrics is reviewed by the government and Motorola each month.

Having met our four stated objectives, Motorola and DCMAO-Phoenix successfully defined and implemented a single quality system methodology. This method is constantly being evaluated to ensure that identified objectives are attained. It has been necessary to adjust some of the metrics and add risk models as a part of the continuous improvement process.

Summary

As the three examples show, we have seen just how powerful a Common Process with increased Cycles of Learning can be. If a process is not used multiple times, it is impossible to identify process weaknesses, make changes to the process, and then assess the effectiveness of the changes. Our defect rates are down, our contract submittal errors are less, and on-time delivery is approaching 100 percent. Looking to the future, the opportunity to use this methodology is wide open in areas such as Contract Management, Business Systems, Program Management as well as Engineering and Manufacturing. We will continue to use this method as a part of our Continuous Improvement Initiative.