

How to Complement ISO 9001:2000 with Six Sigma

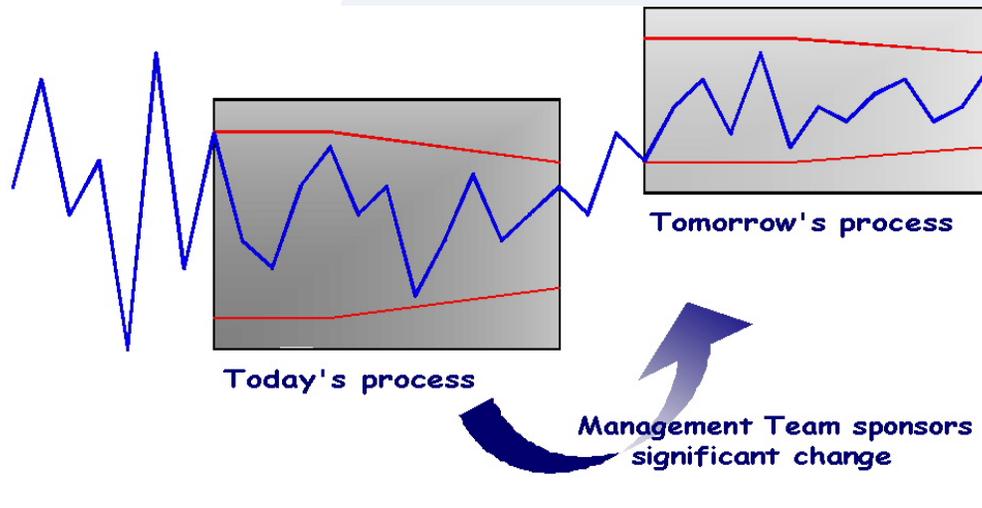
White Paper by Patrick Dey, Senior Consultant, Excel Partnership

Introduction	1
Drive Performance Out of the Box	1
How Six Sigma Programs Work	2
How Six Sigma complements ISO 9001:2000	3
How ISO 9001 complements Six Sigma	4
Six Sigma and TL 9001	5
A Note on Six Sigma Quality Levels	5

Introduction

ISO 9001:2000 introduces a strong focus on measurement, analysis and improvement. This white paper discusses how to meet the new requirements and drive significant business performance improvement with a complementary Six-Sigma program.

Drive Performance Out of the Box



For many organizations today's process is consistent and repeatable, a far cry from the inconsistent fire-fighting their ISO 9001 management system has replaced. Internal audits, corrective and preventive action systems help to maintain consistency, reduce variance, and maybe even drive small improvements.

But breaking through the status quo, making the quantum leap that is essential to get ahead of the competition (and not just keep up), is elusive.

Once today's process is stable and consistent, there's a tendency to treat it like a box, with rigid roles, responsibilities and handoffs. When challenged to change, people find it hard to think outside the box: "Oh, we can't change that because ..."

With its holistic blend of leadership, alignment, measurement, recognition, accountability and sound quality methods, an effective Six-Sigma program drives the organization out of the box to new levels of performance excellence.

How Six Sigma Programs Work

A Six Sigma program integrates the elements of management culture and quality techniques that are critical to driving performance improvement and business excellence:

- ❑ Six Sigma projects are results-oriented (typically directly related to revenue, costs, employee retention or customer satisfaction). Their leaders are held accountable for return on investment. Some companies involve their accountants in verifying financial success.
- ❑ Projects are selected and driven by data to align the organization's people towards a common, measurable goal and promote team work across functions.
- ❑ Senior managers sponsor improvement projects, having been trained in Six Sigma principles and methodology in order to do so effectively.
- ❑ A critical mass of people are trained in quality improvement techniques. Florida Power and Light's "QI Story and Techniques", an excellent pocket handbook of Quality Improvement techniques, was first published to employees in 1987 and is now in its fourth edition.
- ❑ Achievement is recognized with "Green Belt" and "Black Belt" qualifications.
- ❑ Success is celebrated to create momentum and encourage a chain reaction through the organization.

How Six Sigma complements ISO 9001:2000

The ISO 9000 family of standards is based on eight quality management principles which, when applied, can help a company realize greater benefits:

Customer Focus

- ❑ Six Sigma shows how to align the organization through customer-focussed measures of performance.

Leadership

- ❑ Senior leaders sponsor six sigma projects through active involvement. Six Sigma includes training in the selection, coaching and leadership of six sigma projects.

Involvement of People

- ❑ Six Sigma projects are specifically designed to involve all stakeholders. The program includes training in facilitation techniques and team development.

Process Approach

- ❑ A six sigma project maps and analyzes the business processes in order to improve them.

System Approach to Management

- ❑ Successful six sigma projects recognize that people and processes are connected in an interdependent system. They achieve significant breakthroughs by striving for measurable stretch goals which span the end-to-end system.

Continual Improvement

- ❑ Six sigma organizations understand what Intel's Andrew Grove meant by "Only the Paranoid Survive". They improve, constantly, seeing Quality as competitive edge that bites.

Factual Approach to Decision Making

- ❑ Six Sigma project teams focus their energy on collecting and analysing data, to slice through opinions and arguments and win collaborative understanding.

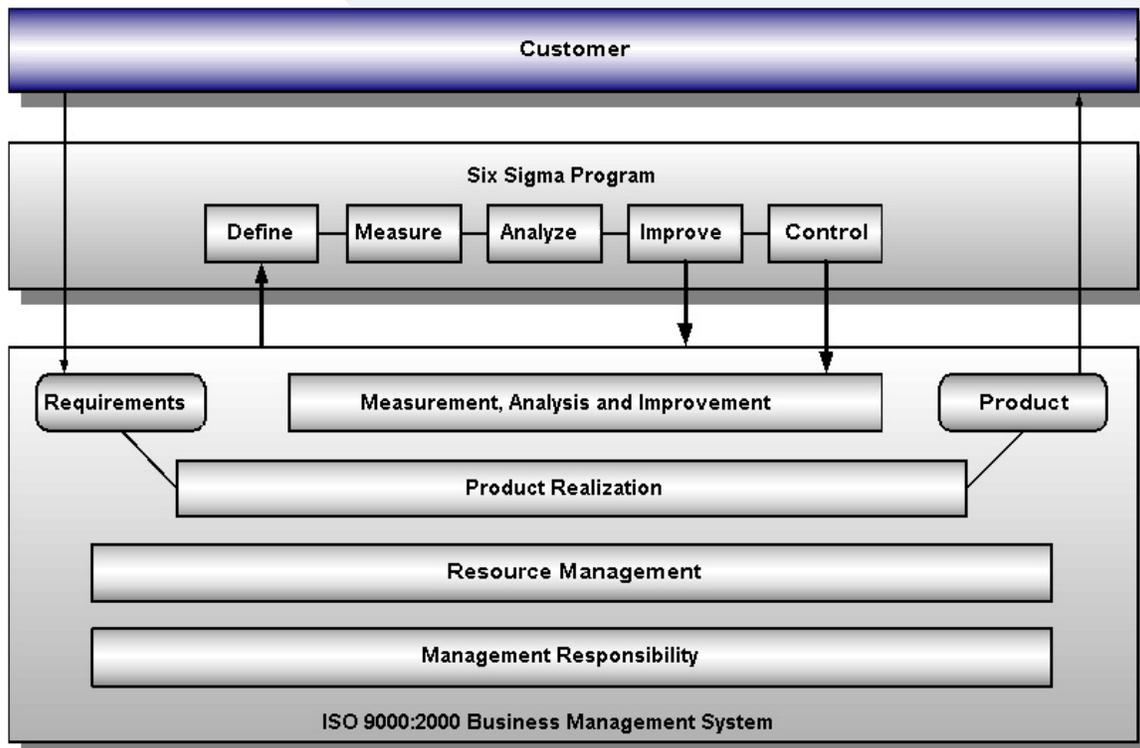
Mutually Beneficial Supplier Relationships

- ❑ Six Sigma sees customers and suppliers as a connected system, each with needs that must be satisfied.

Thus, Six Sigma offers a proven management framework (including processes, techniques and training) which satisfy ISO 9001:2000 requirements in these areas:

- ❑ Demonstrating top management commitment to continually improving the effectiveness of the quality management system (5.1)
- ❑ Competence, awareness and training in statistical techniques and quality management (6.2.2)
- ❑ Continual improvement of the quality management system (8.1.c; 8.5.1)
- ❑ Monitoring and measurement of customer satisfaction (8.2.1)
- ❑ Monitoring, measurement and improvement of processes (8.2.3) and product (8.2.4)
- ❑ Analysis of data (8.4)

How ISO 9001 complements Six Sigma



Six Sigma achieves results through a consistent process for identifying and picking the low-hanging fruit – and continually raising the bar so there's always more fruit within reach.

The results can be surprising, yet the methods aren't new. What *is* new is communicating and using those methods through a consistently managed process. (Had we all adopted them as Deming, Juran and others taught, what is now seen as 'new' would have been a way of life.)

That consistent process is "DMAIC": Define, Measure, Analyze, Improve, Control. The Define Phase is driven by customer requirements and satisfaction measures, and brings in the "as is" process – all taken from the ISO 9001 management system. Although the process in question will usually be from product realization, Six Sigma projects might also involve resource management, management responsibility, or the measurement, analysis and improvement processes themselves.

The result of a Six Sigma project is a revised process which is deployed and assured – in Six Sigma terms, "Controlled" – through the quality management system with its documented procedures, communications processes, and internal audit system. Thus, the ISO 9001 management system enables the organization to "sustain the gain", as Six Sigma practitioners say. Probably most important is the internal audit system (ISO 9001:2000 8.2.2), assuring there is no regression from the new process back to the old.

Of course, since ISO 9001's section 8 requires measurement, analysis and improvement processes, these should of value in Six Sigma's Measure, Analyze and Improve phases.

ISO 9001's Resource Management (section 6) and Management Responsibility (section 5) are critical to resourcing and sustaining the Six Sigma program.

Six Sigma and TL 9001

TL 9001 is a specific interpretation of ISO 9001:2000 for the telecommunications industry, which emphasizes data and benchmarking. Six Sigma provides direct implementation support for these TL 9001 additional requirements:

- 5.4.1.C.1 Targets for TL 9001 measurements (and, more to the point, action plans for achievement of those targets)
- 5.4.2.C.1 Long and short term planning
- 6.2.2.C.2 Quality Improvement Concepts Training
- 6.2.2.C.5 Advanced Quality Training
- 8.2.1.C.1 Customer Satisfaction Data
- 8.2.3.C.1 Process Measurement
- 8.4.C.1 Trend Analysis of Nonconforming product
- 8.4.H.1 Field Performance Data
- 8.4.V.1 Service Performance Data
- 8.5.C.1 Quality Improvement Program
- 8.5.1.C.2 Employee Participation

A Note on Six Sigma Quality Levels

One common criticism of Six Sigma programs is the belief that six sigma defect rates are either unnecessarily low, or too expensive to achieve.

While it's true that Six Sigma takes its name from the concept of managing process variation such that six standard deviations of performance will fit within specification limits, low defect rates are not mandatory – at least, they aren't mandated by Six Sigma. Realistic assessments of return on investment, and in some cases commercial survival, will mandate six sigma quality levels more often than many might think.

% Process Steps Completed On Time					
Each Step	Enter Order	Design	Procure Materials	Manufacture	Install
93%	93%	93 x 93 = 86%	86 x 93 = 80%	80 x 93 = 75%	75 x 93 = 70%
97%	97%	97 x 97 = 94%	94 x 97 = 91%	91 x 97 = 89%	89 x 97 = 86%
99.15%	99.15%	98%	97%	96%	95%

If 85% of deliveries must be on time, and if there are five sequential steps – Enter Order, Design, Procure Materials, Manufacture, Install – each step must be 97% on time.

Small improvements in timeliness across the system are magnified by the multiplication of probabilities to produce dramatic overall improvement. If each step is just 93% on time, deliveries are 70% on time; if each step is 99.15% on time, 95% of deliveries are on time.

Given that most modern processes are considerably more complex than 5 sequential steps, it's not hard to see how six sigma performance levels can mean competitive edge.

Of course, attempting to improve on time delivery by setting targets like "all tasks have to complete on time 97% of the time" is neither management nor leadership. If the process is not changed, its results won't change. Six sigma shows how to use metric targets to change the way people work through systems thinking, true leadership, and involvement.

Patrick L Dey