

7 Six Sigma in Non-Manufacturing

7.1 PRESENTATION

Some good examples presented in Varese were the root causes of the decision to select Non-Manufacturing as third focus point for the Second European Six Sigma Conference. The question behind this of course being: What must be changed in the Six Sigma approach to be as successful as in Manufacturing.

Peter Rudberg started his introduction lecture with the following outline:

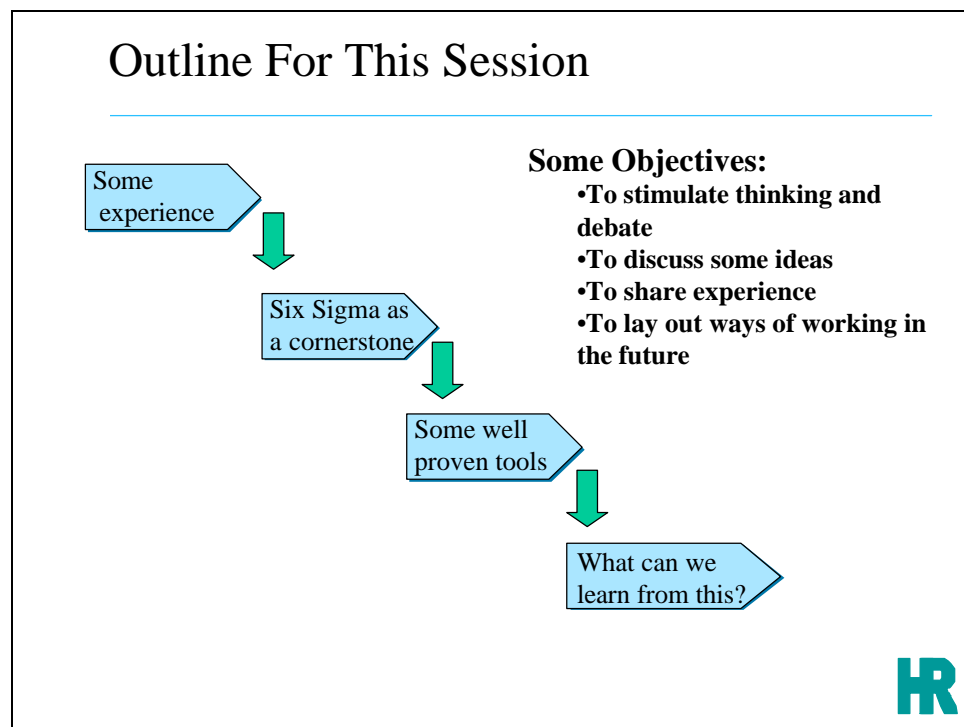


Fig. 7.1 Outline of introduction lecture for Non-Manufacturing

From his long experience in process improvement Peter gave us an overview of the approaches that passed by since 1980¹. One of the learning points that goes beyond the boundaries of a specific drive is the solution of the problem “how to share effectively and efficiently resources and solutions on a global basis”. The solution to this well-recognised problem is a common way of working. Peter even called it a pre-requisite.

Fig. 7.2 Common Way of Working as pre-requisite

In picturing all the important characteristics of the Six Sigma drive in one sheet (Fig. 7.3), Peter showed that Six Sigma fulfils this pre-requisite. And, apart from one minor

¹ Sheets 3 and 5 in the original presentation (see Appendix 5)

detail (Peter prefers to call the extra man-capacity to really do the improvement Commandos in stead of Black Belts), the picture was taken.

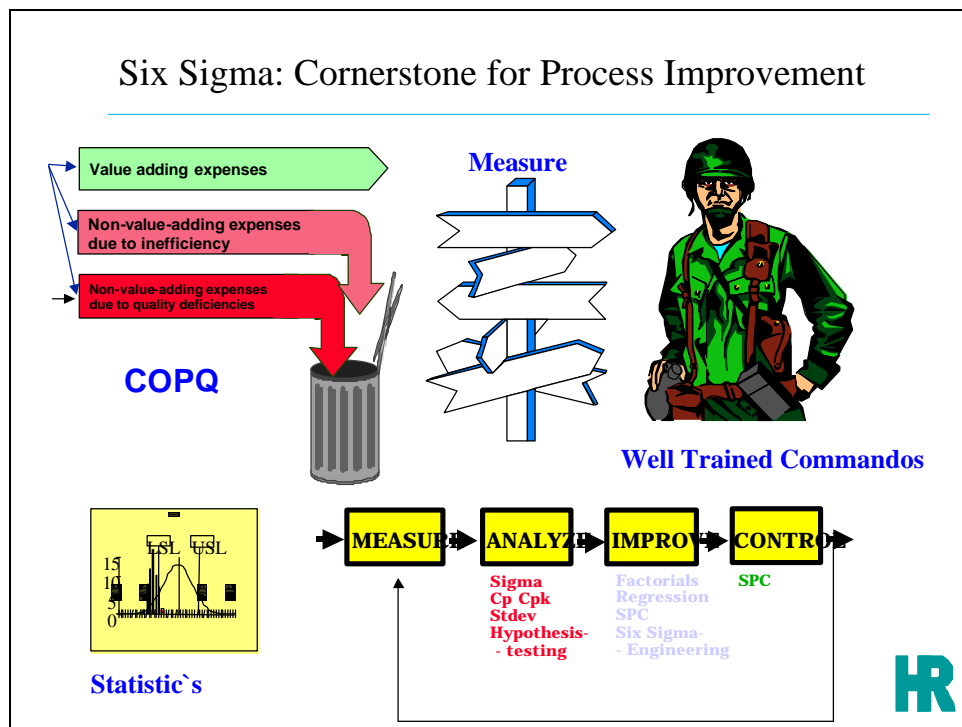


Fig. 7.3

Six Sigma pictured as cornerstone for process improvement

Within Six Sigma projects Peter wants to be pragmatic and uses in practice tools proven to be effective in improving business processes, such as²:

- TBM, Time Based Management
- PO by VC, Process Optimisation by Value Chain
- ABC, Activity Based Costing
- Rummer Brache (Nine Performance Variables)

As special Non-Manufacturing fields the following transactional processes were listed:

- Product development
- Administration
- Sales
- Supply & Purchasing
- CRM, Customer Relation Management
- Engineering Design
- Quality Assurance

As introduction to the workshop part of Non-Manufacturing, Peter showed (Fig. 7.4) the diminishing availability of tools against the growing level of difficulty along the time line of the five main steps in a change process:

- Development of scenarios
- Design of solutions
- Activity Plan
- Implementation
- Stabilisation of the new process

² See original presentation in Appendix 5 for describing sheets.

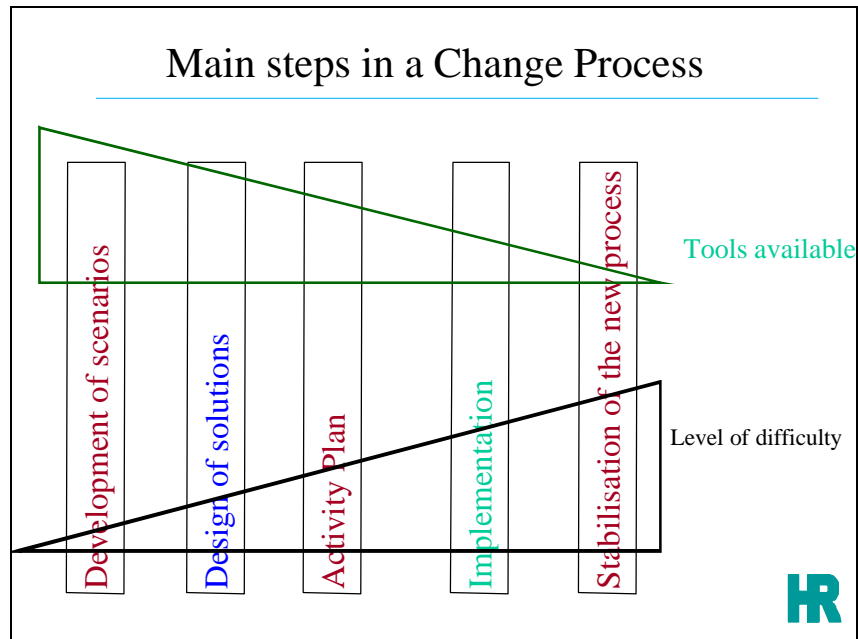


Fig. 7.4 Main steps in a change process

Peter Rudberg ended his introduction with the following statement:

Six Sigma experience in the manufacturing area is able to be transferred to the no manufacturing area³

7.2 WORKSHOP

The purpose of the workshop to follow was phrased as:
To establish some basic ideas for development of a
"European Six Sigma Club Toolbox for
Non-Manufacturing Process Improvement"

The proposed way of working was formulated as:

- List other tools you consider useful for Process Improvement
- Evaluate the known methods at each step of the change process
- Design a package of tools and methodology you consider useful to implement changes in a Non-Manufacturing process

Table 7.1 Result of workshop Non-Manufacturing; list of tools considered to be useful in non-manufacturing

	GROUP 1	GROUP 2	GROUP 3
Define	6 – Process Mapping 4 – P-FMEA 3 – QFD 1 – DFA 6 – Risk Analysis 3 – 7 QT/MT 5 – BBSC 3.5 – FTA 2 – 9 Performance Indicators 1 – TBM 4 - PDCA	- Benchmarking - process mapping - COPQ - brainstorming - tree analysis	- Fish bone - Objectives Model - Model of critical Success Factory - Pareto-Analysis - Brain storming - Balanced Scorecards - Process Mapping - Project Manager - OFD - 7 Management tools - Voice of Customers - EFQM
Measurement	6 – SPC 6 – MSA GR&R 1 – TBM/TCT 5 – PDCA	- Capability analysis - data collection - confidence interval - time chart	- SIPOC - Data Collection Plan - Measurement System Analysis - Key performance indicators

³ The same belief inside Philips has led to the development of Process Survey Tools for all Business Processes

	6 – ABC	- scorecards - gauge R'nR	- Customers Complain - Sigma level - How to identify Opportunities - Risk Management (FMEA) - NCC Analysis - ABC
Analyse	5 – PDCA 5 – Process Mapping 3 – Value Change Analysis 5 – DOE 4 – P-FMEA 5 – SPC 6 – ABC 6 – Risk Analysis 4 – 7 QT/MT 5 – FTA 6 – Analysis Tools (-Anova, + T-test) 6 – Root C	- Confidence interval - Regression - Correlation analysis - Multivariate analysis - Hypothesis analysis - Cause and effect matrix - FMEA - Value Add Analysis - Fish bone - Pareto - 7 QC + 7 MT	- Run counts-cysum - Histograms - Cycle time Analysis - Correlation - Portfolio-Korno Model - QFD - Capability Analysis - Regression Analysis / Anova - Summarised Analysis - Hypothesis Analysis - Confidence Analysis - DOE & Plots - Discriminant Analysis - Fish borne
Improve	6 – Risk Analysis 5 – PDCA 3 – Force Field Analysis 6 – Communication Plan 6 – Stakeholder analysis	- Process mapping - Design of experiments - Force field analysis - team leading - hypothesis test - confidence interval - QFD	- DOE - Solution Generation Method (6,3,5) - Process Mapping - Benchmarking - Selection of solutions - Regression - Simulation - FPI - Implementation plan
Control	6 – SPC 6 – BBSC 3 - PDCA	- SPC - Scorecard - Confidence interval - Capability analysis - COPQ - DPMO - Pareto	- Control charts - Balanced Scorecards - Run carts - Assessment (EFQM) - Monitoring - Dashboard

The result of the workshop (table with useful tools per step of the well-known structure DMAIC as regarded by each of the three groups⁴) was not very surprising. But by doing this in fact we tried to come up with arguments against the statement that Six Sigma can be applied as well in Non-Manufacturing as in Manufacturing. No argument was found.

In the discussion also some room was given to the "problem" of lack of tools in the implementation phase of a change process (see Fig. 7.4). The conclusion was phrased as: Not so much of a tool is needed:

just simply do it !

7.3 BB EXAMPLE

In one of the Black Belt presentations, Bernhard Kleemann presented a non-manufacturing case (see Appendix 8). In this case he illustrated quite well that “even” in the sales field the structured DMAIC approach can be used successfully. Starting from the problem statement (“no transparent system for sales performance” and “no predictability of volume”) and defining the steps to be taken:

- prospecting
- discovery/strategy process
- close deal
- ongoing account management.

In the measuring step, the most important move was made by convincing the involved sales men that the complete action should not be seen as a threat but as an aid: “we don’t want to teach you how to sell, but there are some tools to make your life easier”.

During the analysis step, the difference in success per country for large and small deals was discovered and could be traced back to the sources. Because of these findings in the implementation phase, a Sales Discovery Project was started. This project yielded 71% improvement, the cycle-time was reduced from 29 days to 10 days. The control step was filled in by establishing a Sales Training (see for more details Appendix 8).

This BB example illustrates very well Peter Rudberg’s statement that Six Sigma can be applied in the non-manufacturing area as well.

⁴ This table is added as last sheet to Appendix 5