

Lessons Learnt from Six Sigma



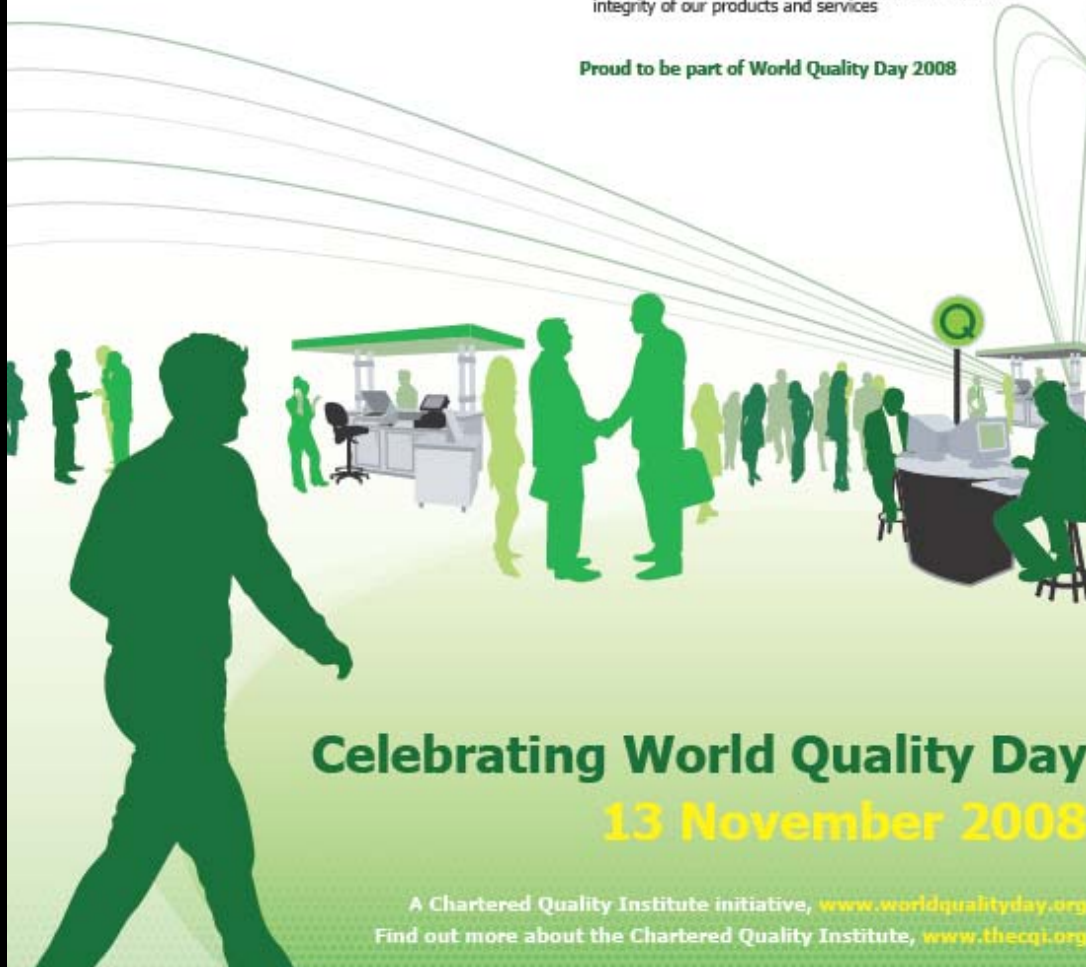
North of Scotland Branch
13th November 2008



We are joining with many other organisations in the UK and around the world to recognise and celebrate the fundamental part that attention to quality plays in our success which we believe:

- Improves value for all our customers and other stakeholders
- Achieves business excellence through understanding and satisfying stakeholder needs and expectations
- Makes our processes predictable and stimulates continual improvement in our efficiency and effectiveness
- Supports our brand through the reliability, delivery and integrity of our products and services

Proud to be part of World Quality Day 2008



Celebrating World Quality Day 13 November 2008

A Chartered Quality Institute initiative, www.worldqualityday.org
Find out more about the Chartered Quality Institute, www.thecqi.org

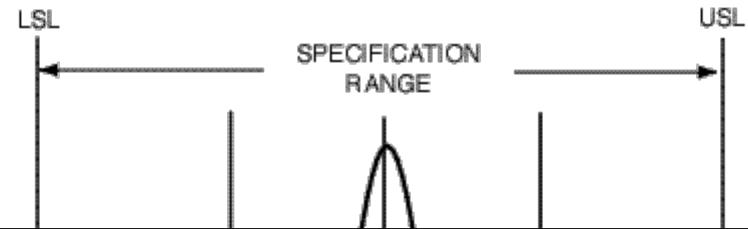
About Me



6σ Terminology

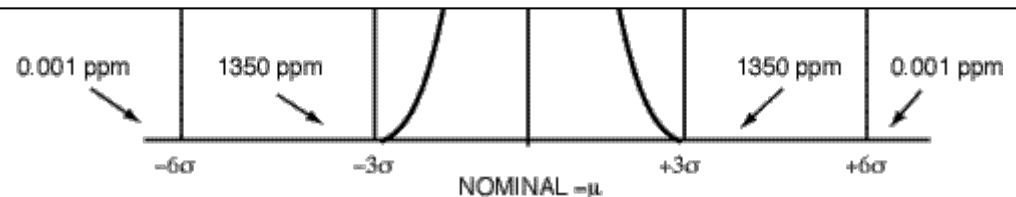
- DMAIC
- DFSS
- DMADV
- 5S
- Kaizen
- DOE
- Taguchi
- Monte Carlo
- TRIZ
- Regression
- R^2 adjusted
- ANOVA
- CTQs
- MSA
- Gauge R&R
- MBB / BB / GB / YB / WB
- I-MR
- SPC
- DFSS
- UCL / LCL
- USL / LSL
- VOC
- SIPOC / COPIS
- P-charts
- Poke-Yoke
- Jidoka
- Gemba
- FMEA
- Sigma shift
- $Y = f(X) + \epsilon$

What is 6 Sigma?



"Six Sigma is many things, and it would perhaps be easier to list all the things that Six Sigma quality is *not*. Six Sigma can be seen as: a vision; a philosophy; a symbol; a metric; a goal; a methodology."

Geoff Tennant



Short History of Six Sigma



- Roots can be traced back to Carl Frederick Gauss (1777-1855) – Normal Curve



- Product variation in 1920's – Walther Shewart



- Bill Smith of Motorola coined the term in 1980's

Benefits of Six Sigma



\$2Bn savings announced in 2007



\$11Bn saved from 1985 - 1995

MOTOROLA



\$2Bn saved from 1995 - 1999

6 Sigma Vs. Lean

- Six Sigma

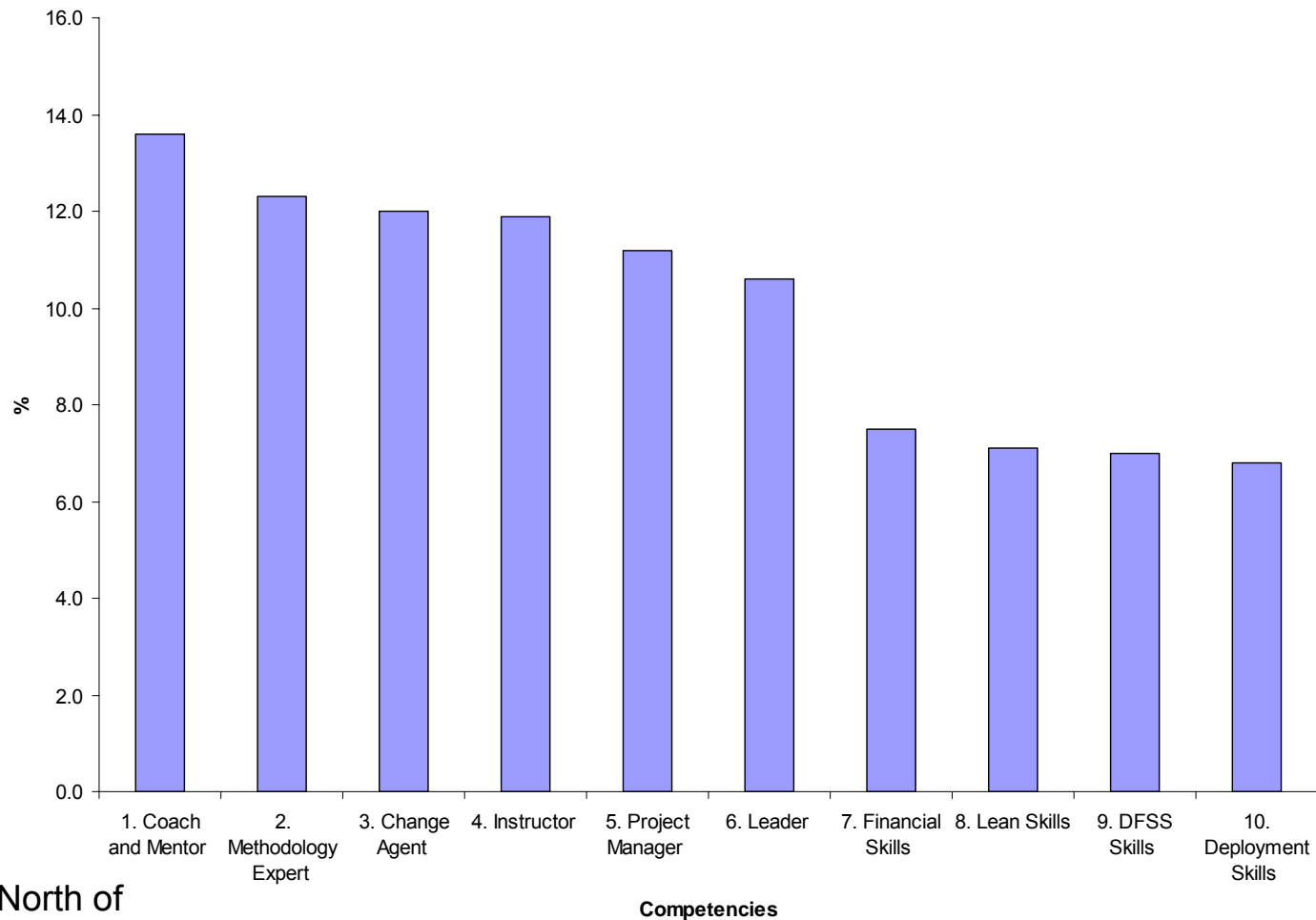
- Defined process
- Starts with customer problems
- High cost of training
- Applied company wide
- Uses “technical” language
- Require management buy-in
- Gains may take time
- Processes have less variation

- Lean

- Defined process
- Starts with internal problems
- Low cost of training
- Can be applied in isolation
- Plain English
- Require management buy-in
- Gains are immediate
- Processes become more efficient

Selecting the right people

International Society of Six Sigma Professionals - Ten most important competencies desired in Six Sigma Practitioners



Six Sigma Training

- Not all training is the same
- In-House Vs What's available in the market
- Over training

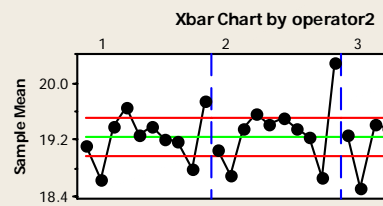
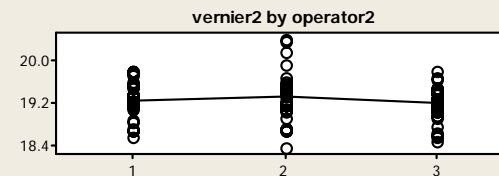
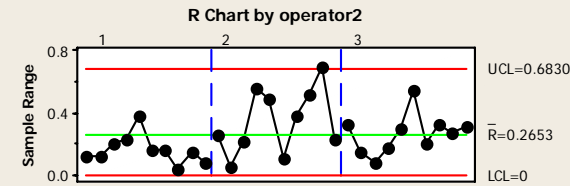
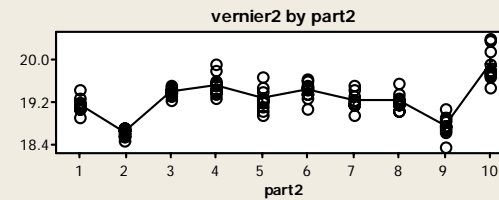
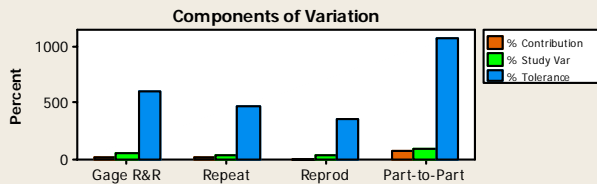
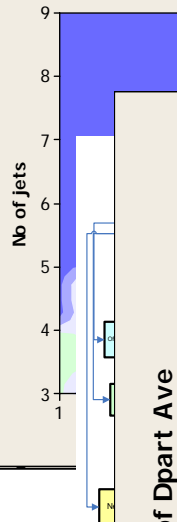


Use of tools and techniques

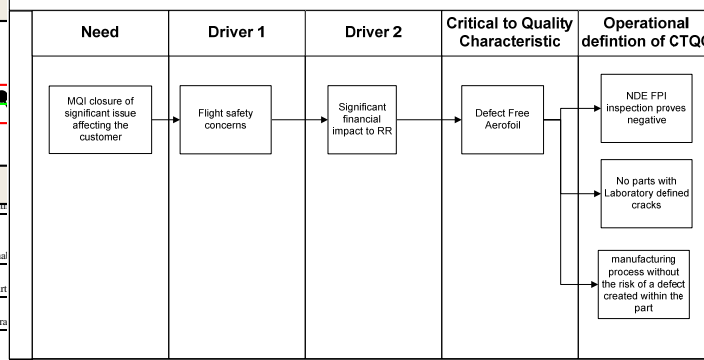
Conto Gage R & R for Vernier

Gage name: Digital Vernier Caliper
Date of study: 1 Dec 2005

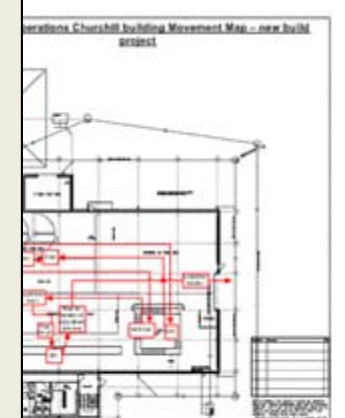
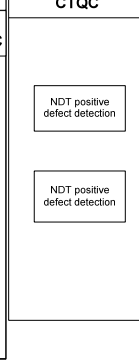
Reported by: John McSherry
Tolerance: 18.90 - 20.10
Misc: Collar used



MQI 581 - Critical To Quality Characteristics



Measures of the CTQC



Target Date	Actions Taken and Completion Date	S	O	D	R
		E	C	E	P
		V	C	T	N
or reduce		5	2	7	70
lines or					
Buy paint and brush		10	2	2	40
					0
					0
					0
brake cleaner bought for team in place in cupboard					0
					0
set-up gage R&R on visual inspection method in cell					0
					0
					0
Design stage of coolant pipe and fire extinguisher system		7	1	2	14

Significant Input Factors for wheel stack capability

Mean of Dpart Ave

std

Type of t

edge thickness

flash

edge thickness

Leadership's role in Six Sigma

- Process owners / People who make change
- Commitment to support, sustain and provide guidance throughout the project
- Be prepared to **Stop** at any time



Team set-up and continuation through project

- Part time improvement has drawbacks
- Full time improvement specialists do bring needed break through change
- Roles & Responsibilities, and communication are vital



Projects



- Target the right area
- Scoping the project
 - Initially
 - Scope creep
- Capturing what you have done
- Sharing success

Top 10 Pitfalls to avoid

1. "It won't work here" mentality
2. Over training
3. "Lies, damned lies, and statistics"
4. Not owned Leadership
5. Not allowing enough or having the time
6. Eating the elephant
7. Performing in isolation
8. Not knowing when to stop
9. Keeping benefits a secret
10. Improper handover