Six Sigma Through the Years

Monday, 20 October 2008
9:00 – 9:45 presentation

Since Motorola "invented" Six Sigma 20+ years ago, the program has evolved from a metric used to measure product quality to a management philosophy. Good ideas developed in companies all around the world have been embraced as Six Sigma is using 'continuous improvement' on itself. We will take a look at the journey the program has taken since its early days and venture to look into the future a little.

Tina Huesing, Motorola, October 2008

1928

Company founded

1936

Entered the mobile communications business with Police Cruiser Radio

1943

First portable FM two-way radio for U.S. army

1955

World's first high-power transistor in commercial production

1969

First words from the moon relayed via a Motorola radio

1973

Demonstrated prototype of the DynaTAC portable cellular system

Tina Huesing, Motorola, October 2008

1986

Invented the Six Sigma Quality Process that provided a common worldwide language for measuring quality

1995

The Motorola Tango pager is the world's first two-way pager

1996

The 3.1 ounce (88 grams) StarTac© wearable cellular phone is the world's smallest and lightest

2000

World's first general packet radio service (GPRS) wireless phone for always on Internet access

2002

World's first wireless cable modem gateway introduced

Tina Huesing, Motorola, October 2008

2004

Iconic RAZR V3 wireless phone introduced

2005

MOTOMESH broadband radio network: one of the first multi-radio mesh networks to combine 4.9 GHz licensed mobile broadband radios and unlicensed Wi-Fi radios into a single access point

2006

MING smart phone recognizes more than 10,000 handwritten characters of the Chinese alphabet

2007

World's first WiMAX 802.16e mobile handoffs

2008

Industry's First CDMA/EV-DO Rev-A to LTE Network Handoffs

Tina Huesing, Motorola, October 2008

1928-2008

The story of Motorola and Six Sigma

agenda

Early beginnings (1979 to 1988)

Maturation of core concepts in Motorola and other companies (1988 to 2003)

Six Sigma as a management philosophy and Integration of LEAN and more (2003 to today and beyond)

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agenda

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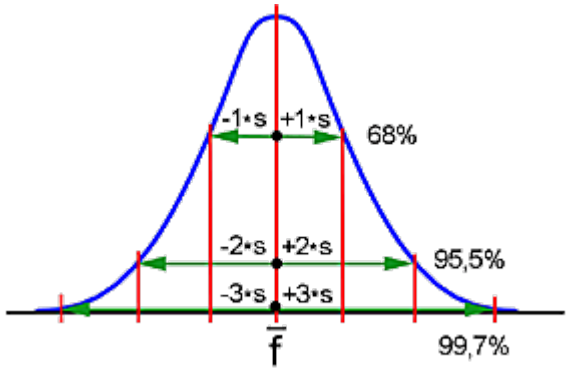
Standard normal distribution



standard normal distribution = normal distribution with a mean of zero and a variance of one;

often called the bell curve because the graph of its probability density resembles a bell

Carl Friedrich Gauß
(1777- 1855)

Tina Huesing, Motorola, October 2008

Standing on the shoulders of giants

Deming

Taguchi

Juran

Continuous Improvement

JIT

Business Process Reengineering

1979

At the 1979 annual Motorola officers meeting, Vice President Art Sundry says: “Motorola’s Quality stinks”.

Rather than blaming other forces for the slow down of business, Motorolans start looking more closely at quality. Statistical methods are being employed in Arizona, and a Yield Enhancement Seminar is being conducted.

First use of Fractional Factorial Design screening experiment (to simplify and reduce cycle time of RadHard CMOS – (the complexity had impacted launches of communication satellites) in MICARL (Motorola Integrated Circuits Applications Research Lab)

Used a combination of statistical modeling and process simulation to
reduce process development time from 1 yr → 3 months and
increase yields from 25% → 80% (driven by J. Ronald Lawson and Eric Maass**)**

Philip B. Crosby, *Quality Is Free—The Art of Making Quality Certain*, is published

Joseph M. Juran(1904 – 2008) starts the Juran Institute

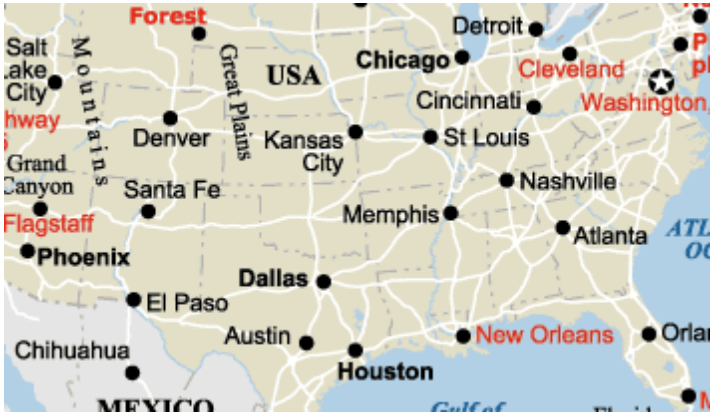
Early 1980s

Success stories, problems and solutions were widely shared within the Motorola Network of Statistical users. Initially, there were two nexuses in this network: Eric Maass and Tony Alvarez

Janet Fiero, Motorola Corporate Director of MTEC

(Motorola Training and Education Center; later Motorola University) strongly promoted Statistics training throughout Motorola; internal courses were developed and taught.

Motorola sites in Arizona



Motorola sites in Chicago and Florida

1980s continued

Executives and managers are encouraged to hire Statistics experts in their groups, e.g Arizona: Mikel Harry - GEG, Mario Perez-Wilson – SPS Phoenix, Skip Weed – SPS Mesa, adding to internal experts like J. Ronald Lawson, Eric Maass, Tony Alvarez SPS-Mesa and professors / consultants like Dr. Dennis Young and Dr. Douglas Montgomery from Arizona State University.

Janet Fiero at MTEC rolls out series of Statistics courses,
including a course by the external consultant, Dorian Shainin which captured the imagination of a senior engineer named Bill Smith

Eric Maass: *A Strategy for Reducing Variability in a Production Semiconductor Fabrication Area (*1987) (This approach was inspired by Gerald Hahn and Samuel Shapiro: Statistical Models in Engineering (1967, Chapter 7) who worked at General Electric)

Mikel Harry: *The Nature of Six Sigma Qualify, (*white paper 1986, booklet 1987)

Kaoru Ishikawa, *What Is Total Quality Control? The Japanese Way*, Prentice-Hall, 1985.

White Papers

System Moments Method for Reducing Fabrication Variability

Eric C. Maass
Motorola, Inc.,
Semiconductor Product Sector
Phoenix, Arizona

1987

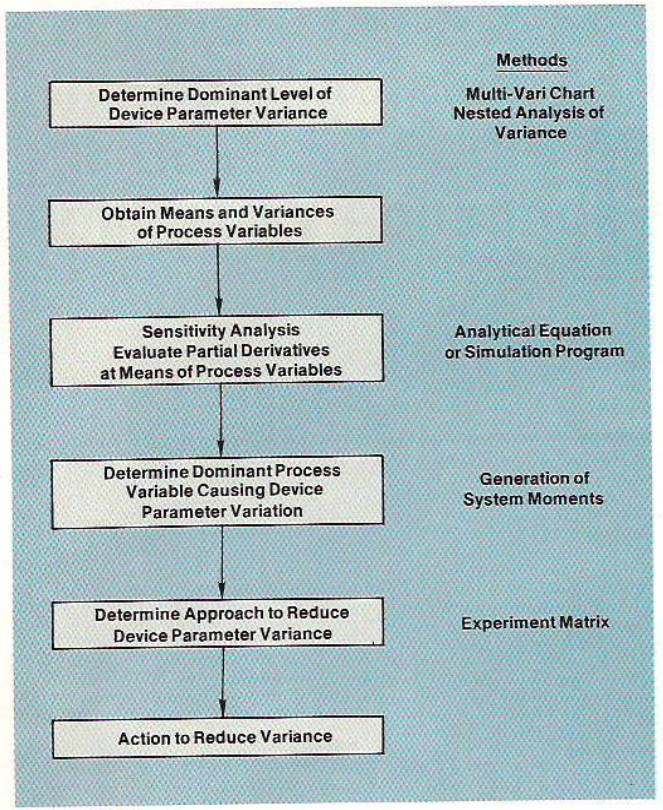


Fig. 1—Flowchart describing a strategy to reduce parametric variance.

Tina Huesing, Motorola, October 2006

THE NATURE OF SIX SIGMA QUALITY

by

Mikel J. Harry, Ph.D.
Principal Staff Engineer
Government Electronics Group, Motorola Inc.

1988

ABSTRACT

This booklet highlights the six sigma product quality concept and its relationship to Motorola's position in the marketplace.

The discussion zeros in on the concept of six sigma, which advocates that there are strong relationships between product nonconformities or "defects" and product yield, reliability, cycle time, inventory, schedule, and so on. As the number of defects found during manufacture increases, the number of sigmas decreases. In other words, the larger the sigma value, the better the product quality – and vice versa. Although the ultimate aspiration is zero defects, the threshold of excellence is six sigma quality.

Interestingly, six sigma quality is estimated assuming "typical" shifts and drifts in the average. In this sense, 99.99966 percent capability at the "part" and "process step" levels is an intermediate target toward the ideal of perfection. This may be illustrated by considering a product that contains 300 parts and the related manufacturing process that consists of say, 500 individual steps. A six sigma capability at the part and process step levels would ensure a final "rolled throughput" yield of 99.73 percent. This would be to say, out of every 10,000 units of product manufactured, there would be 9973 units that would be produced completely free of nonconformities. Of course, this example assumes that each part and process step possesses only one opportunity for nonconformance, that all parts and steps are independent, and that nonconformities are randomly distributed.

The notion of variation is presented as the number one enemy of quality, yields, and costs. It must be arrested and ultimately eliminated in order to achieve "best in class." By attacking variation during the design phase, within suppliers' processes, and within our own processes, six sigma product quality can be achieved. In doing so, the foundation of excellence is laid.

The discussion also focuses on a more statistically based understanding of the six sigma program. It describes the arithmetic mean (μ), standard deviation (σ), and practical uses of the normal distribution. In particular, the rationale for making quality and yield estimates under the assumption of a 1.5σ shift in the mean is emphasized. Based on the statistical perspective, the product and process engineering viewpoints are brought into focus by means of analytical examples. Through the discussion and examples, insights are developed as to the objectives of the six sigma program: enhanced product quality, yield, and cost – all of which, in turn, improve customer satisfaction.

MOTOROLA INC.

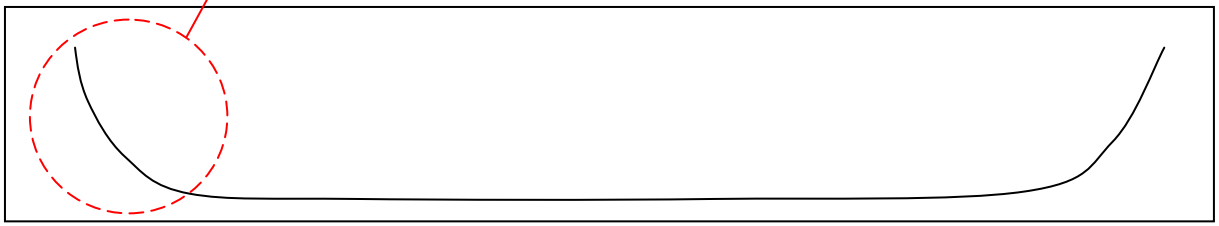
Bill Smith

1929 -1993

"We were trying to improve the overall Reliability. Units would go through testing in repeated loops of 5. Many failures matched what was going on in the field. Most were **Early Life Failures** due to latent defects."

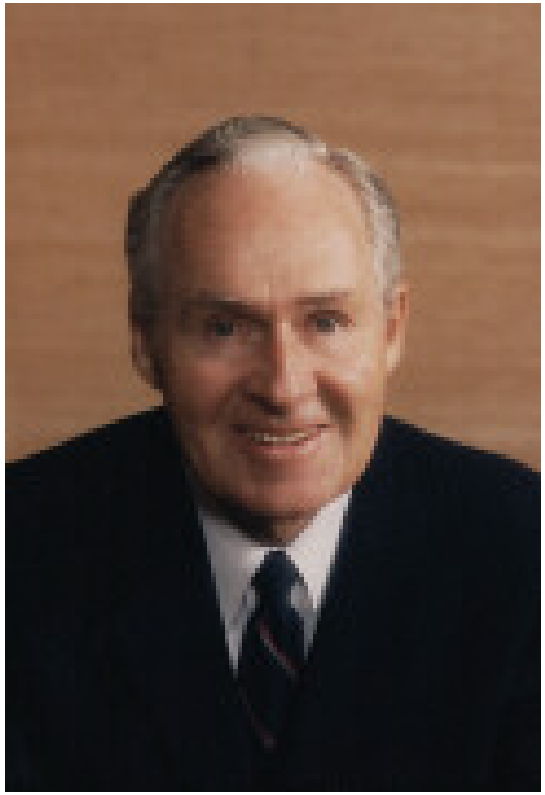
Recollections of Bill Smith and Six Sigma – courtesy of John Forsberg

Bathtub Curve



The "Bathtub Curve" is used in Reliability to show three types of failures after shipment to customers: Early Life failures fail early on (the left side of the Bathtub curve), Random failures (the middle part), and Wear out failures (the right side of the Bathtub curve). Bill Smith's insights focused on Early Life Failures.

Bob Galvin



“… Bill Smith called me asking for an appointment. He came to my office and explained the theory of latent defects.

I called him back the next day to try to better understand what he was talking about. He soon became a sophisticated advisor in applying statistical methods to improve quality.”

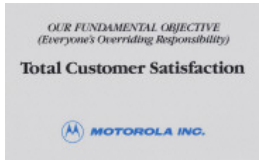
Tina Huesing, Motorola, October 2008

Beginnings of DFSS

Bill Smith and Mikel Harry created a class for MTEC called *Design for Manufacturability.* The main thrust of the course was to improve process capability to the point that no more than 3.4 defects per million opportunities would be created when mated with their respective design specifications. After some initial course development and piloting, Mr. Smith and Dr. Harry collaborated to perfect the approach. Looking back now, it's easy to say this class was the first step in formalizing what is known today as design for Six Sigma (DFSS).

text courtesy of Dr. Mikel Harry at www.mikeljharry.com

Total Customer Satisfaction (1987)



1987 Total Customer Satisfaction teams are formed to apply Six Sigma and cycle time reduction.

TCS is modeled after quality circle teams used by Motorola employees in Japan.

1989

1991
first worldwide competitions

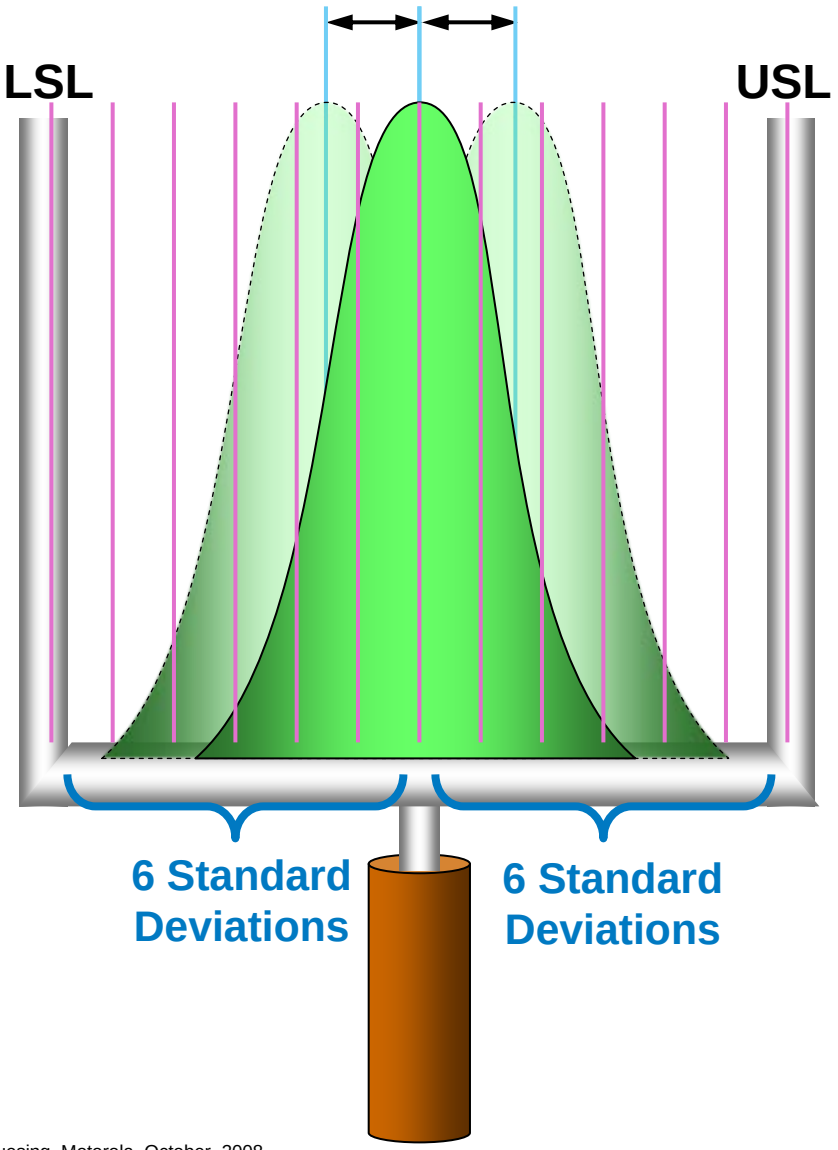
First Gold Medal Winner:

FACT TOPS Team (led by Eric Maass and David Feldbaumer) with the FIRST DFSS effort: using a novel (later patented) approach to forecast Composite Yields and Composite Sigma Level with Multiple Responses led to record new product introduction (28 weeks for 57 new IC's); all first pass successes with an average yield of 92.4% generating more than $200m profit over 5 years.

Later rebranded
Teaming for Excellence

Tina Huesing, Motorola, October 2008

A Six Sigma Process



A Six Sigma Process allows for long-term variation within the customer requirements!

Tina Huesing, Motorola, October 2008

Black Belt

"That's it," he said. "That's sexy; I can sell that!"

Cliff Ames at Unisys, to Mikel Harry when he suggested the term in 1988

Colors representing different levels of knowledge and/or application

Motorola standardized its language in 1991

Other companies use “Experts” at gold, silver bronze levels

Six Sigma DMAIC and DMADV

Initially, the Six Sigma process involved 6 steps

#1 - Identify the product you create or the service you provide WHAT DO YOU DO?

#2 - Identify the Customer(s) for your product or service, and determine what they consider important i.e. Customer Requirements WHO USES YOUR PRODUCT AND SERVICES?

#3 - Identify your needs (to provide product/service so that it satisfies the Customer) WHAT DO YOU NEED TO DO YOUR WORK?

#4 - Define the process for doing your work HOW DO YOU DO YOUR WORK?

#5 - Mistake-proof the process and eliminate wasted efforts HOW CAN YOU DO YOUR WORK BETTER?

#6 - Ensure continuous improvement by measuring, analyzing and controlling the improved process HOW PERFECTLY ARE YOU DOING YOUR CUSTOMER-FOCUSED WORK?

Mario Perez Wilson developed a 5 step M/PCpS method for characterization in manufacturing.

Ideas from these methods together with others eventually became the Six Sigma Processes.

Tina Huesing, Motorola, October 2008

1988 Baldrige National Quality Award

Robert W. Galvin accepting the award

Congress established the award to promote quality awareness and to recognize quality and business achievements of US organizations, and to publicize these organizations' successful performance strategies.

The Baldrige Award is given by the President of the United States to businesses that are judged to be outstanding in seven areas: leadership; strategic planning; customer and market focus; measurement, analysis, and knowledge management; human resource focus; process management; and results.

1988 Motorola was the first company to win the award.

Winners share their stories

"…we will share Six Sigma with the world,
and it will come back to us…
with new ideas and new perspectives…."

Tina Huesing, Motorola, October 2008

agenda

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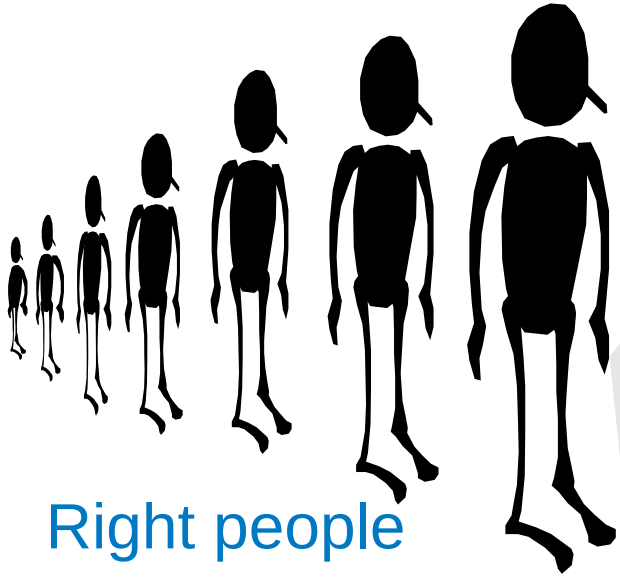
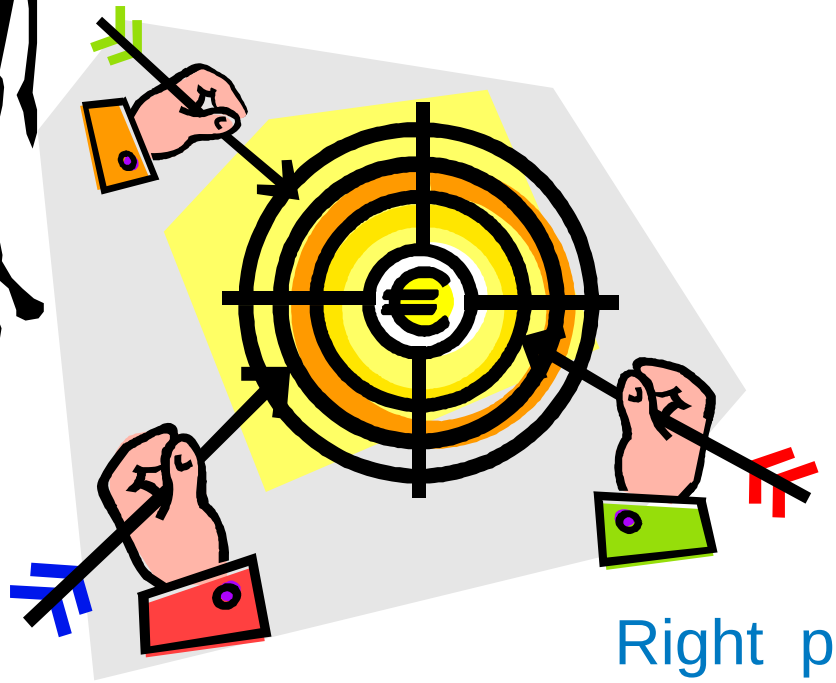
Maturation of core concepts in Motorola and other companies (1988 to 2003)

Six Sigma as a management philosophy and Integration of LEAN and more (2003 to today and beyond)

Ingredients



Right people



Right tools

(including methodology)

Right projects

Right governance

Tina Huesing, Motorola, October 2008

Everything is a Process

Process Examples:

- Building a product, e.g. a phone, modem, base station, etc.
- Developing software
- Preparing financial statements
- Preparing a sales presentation
- Hiring personnel
- Getting ready for work

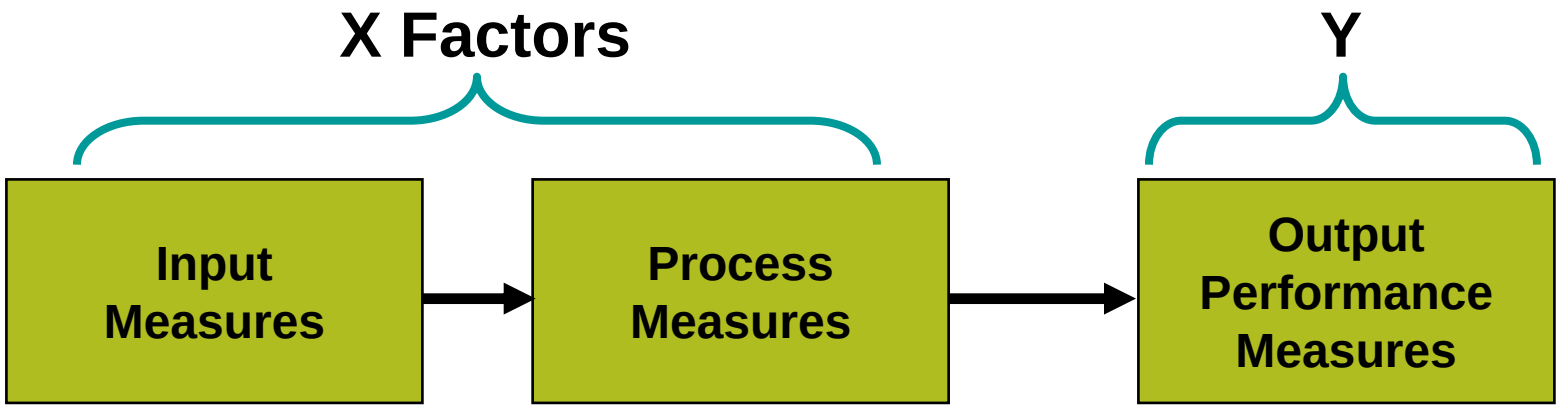
Every Process Has Suppliers and Customers (both Internal and External)

Supplier		Customer
Motorola	→	**Wireless carrier**
Distribution Center	→	**Retail Outlet**
Manufacturing	→	**Distribution**
Product Development	→	**Supply Chain**
Front end process	→	**Back end process**
Workstation #1	→	**Workstation #2**
Teacher	→	**Students**

Tina Huesing, Motorola, October 2008

All Processes can be Measured

Y = f(x)



- Location
- No. Employees
- Loan or Lease
- Amount of Loan
- Date

Efficiency Measures

- Time Waiting for Approval
- Approval Time
- Time from Credit Approval to Approval Decision
- Errors in Applications
- No. Loans - App/DisApp
- Loan Decision (App/DisApp)

Effectiveness Measures

- Loan/Lease Cycle Time
- Customer Satisfaction Score

Tina Huesing, Motorola, October 2008

The Importance of Measurement

Processes must be measured to establish a baseline (current condition) against which future improvement can be quantified

Process measurements may be either direct or indirect:

- Cycle time in a product development process
- A quality characteristic that falls outside the specs
- A process characteristic that is important for the product/service
- Retention rate (measuring employee satisfaction)

"If you can't measure it,
you can't manage it.
W. Edwards Deming (1900 - 1993)

W. Edwards Deming : System of Profound Knowledge (SoPK)

Knowledge of Variation, that is, a knowledge of common cause and special variation.

Knowledge of Systems, that is, understanding that all the parts of a business are related in such a way that if you focus on optimizing one part, other parts may suffer.

Knowledge of Psychology, that is, what motivates people.

Theory of Knowledge, that is, how we learn things.

TQM

Six Sigma built on TQM

evolved to be about business management, value creation and improvement for the customer and the shareholder

Minimizing Variation

Minimizing variation is a key focus

Variation means that a process does not produce consistent, predictable results over time

Variation leads to defects, and defects lead to unhappy customers

Variation exists in all processes

"We have tended to use all our energy and Six Sigma science to move the mean [delivery time] to… 12 days. The problem is 'the mean never happens,' and the customer is still seeing variances… a heroic 4-day delivery time on one order, with an awful 20-day delay on another, and no real consistency… variation is evil."

– Jack Welch, former GE CEO

1990s

Motorola

In 1986 Motorola invested an initial $25 million in training to implement the program. One year after the program was initiated, the company saved $250 million. Five-fold growth in sales, with profits climbing nearly 20% per year.

By 1992 70,000 out of 100,000 employees had participated in Six Sigma training Motorola reduced errors in manufacturing by 80 percent, resulting in a savings of $4 billion

To date cumulative business impact from Six Sigma efforts is estimated at US$ 16 billion.

1990s

Allied Signal (Honeywell)

Credits company success to a large extend to Six Sigma (especially 1994 - 1998)

- Reduce cycle time
- Improve order processing
- Tighten shipping and procurement procedures
- Accelerate new product development and innovation

team of three Black Belts achieved more than US$ 25 million in cost savings and capacity improvement on one project alone

Six Sigma and GE

June 1995
Bossidy present to GE top management
Late 1995 Welch launches Six Sigma program

1996
US$ 200m for training
200 Master Black Belts and 800 Black Belts
3000 projects

1997
US$ 250m for training
4,000 Black Belts and Master Black Belts, more than 60,000 Green Belts
(out of a workforce of 222,0000
Benefits of US$ 300m in operating income

1998
US$ 500m invested in Six Sigma
Benefits of over US$ 750m in savings

1999
Benefits of US$1.5bn in savings
Operating margin improved from 14.8% (1996) to 18.9% (2000)

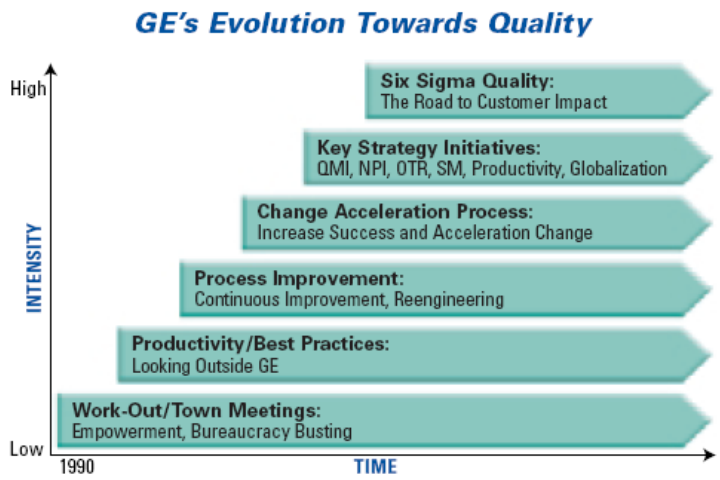
BusinessWeek June 1998: *How Jack Welch Runs GE* and other sources

Six Sigma at GE and beyond

GE's Evolution Towards Quality

GE began moving towards a focus on quality in the late '80s. Work-Out®, the start of our journey, opened our culture to ideas from everyone, everywhere, decimated the bureaucracy and made boundaryless behavior a reflexive, natural part of our culture, thereby creating the learning environment that led to Six Sigma. Now, Six Sigma, in turn, is embedding quality thinking — process thinking — across every level and in every operation of our Company around the globe.

Work-Out® in the 1980s defined how we behave. Today, Six Sigma is defining how we work and has set the stage for making our customers feel Six Sigma.



1999

Jack Welch later wrote about his leadership in Six Sigma at GE in Jack-Straight from the gut (2001) and Winning (2005).

After Welch adopted Six Sigma more than a quarter of the FORTUNE 200 followed suit.

Some other companies with successful Six Sigma Programs

3M (in 2001)
Advanced Micro Devices
Agilent Technologies
Air Canada
Amazon.com
AXA
Bank of America
Bechtel Corporation
Boeing
Canada Post
Caterpillar Inc.
CIGNA
Cognizant Technology Solutions
Computer Sciences Corporation
Cummins Inc.
Deere & Company
Dell
DHL
Dominion Resources
DSB Bank
DuPont
EMC
Flextronics
Ford Motor Company
General Dynamics
Genpact
HSBC Group
Ingram Micro
Korea Telecom
Kraton Polymers
KTF
LG Group
Littlewoods Shop Direct Group
Lockheed Martin
Mando Corporation
McKesson Corporation]
Merrill Lynch
Microflex, Inc.
Mumbai's Dabbawala
National Australia Group Europe
Network Rail
Nortel Networks
Northrop Grumman
Patheon
Precision Castparts Corp.
Quest Diagnostics, Inc
Raytheon
Samsung Group
SGL Group
Shinhan Bank
Shinhan Card
Siemens AG
SKF
Vodafone
Starwood Hotels & Resorts
Sterlite Optical Technologies
Teradyne
Trane
Textron
The McGraw-Hill Companies
TSYS (Total System Services)
United States Air Force
United States Army
United States Marine Corps
United States Navy
UnitedHealth Group
Wipro

http://en.wikipedia.org/wiki/List_of_Six_Sigma_companies

"…we will share Six Sigma with the world,
and it will come back to us…
with new ideas and new perspectives…."

….and it has!!!!

agenda

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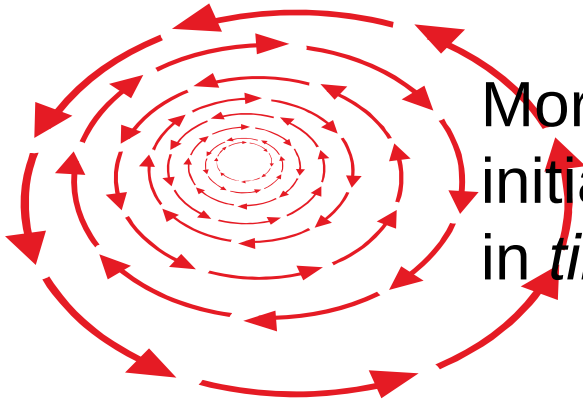
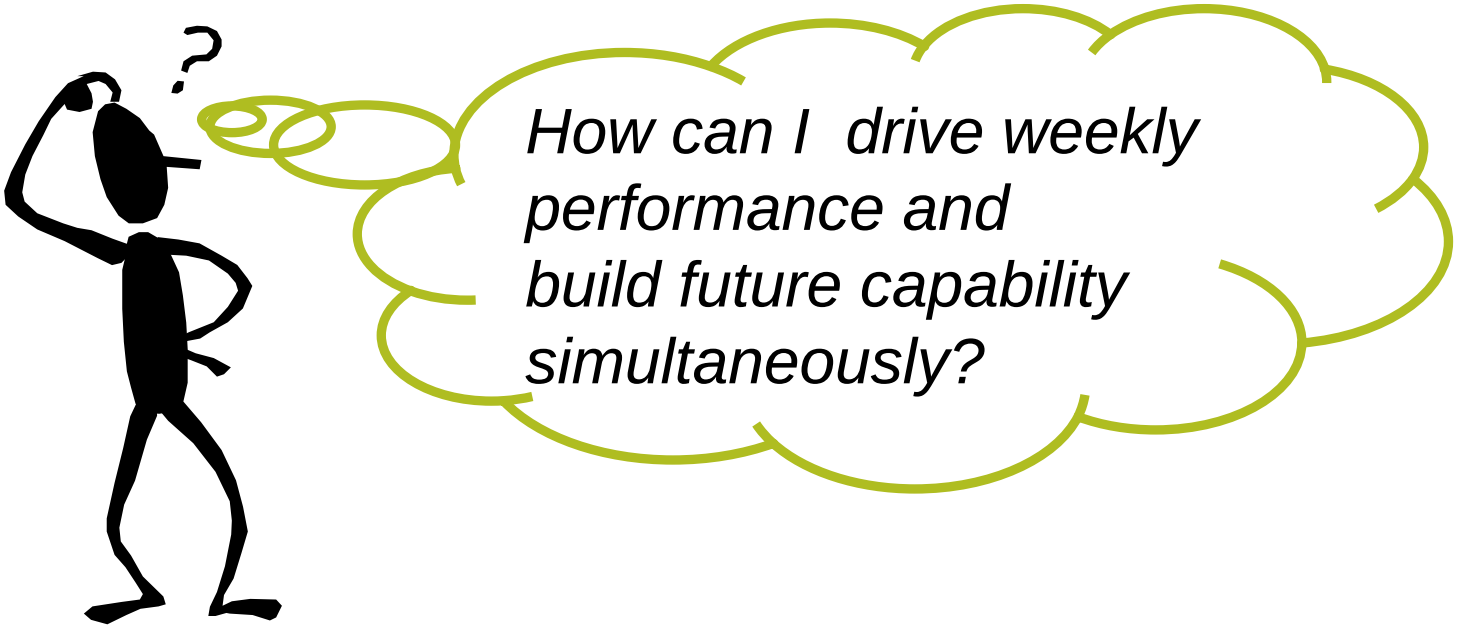
The Leader's Dilemma



More than 70% of all improvement initiatives FAIL to achieve desired results in *time to make a difference*



From product quality to business performance improvement

Scope increases from product-focused quality to

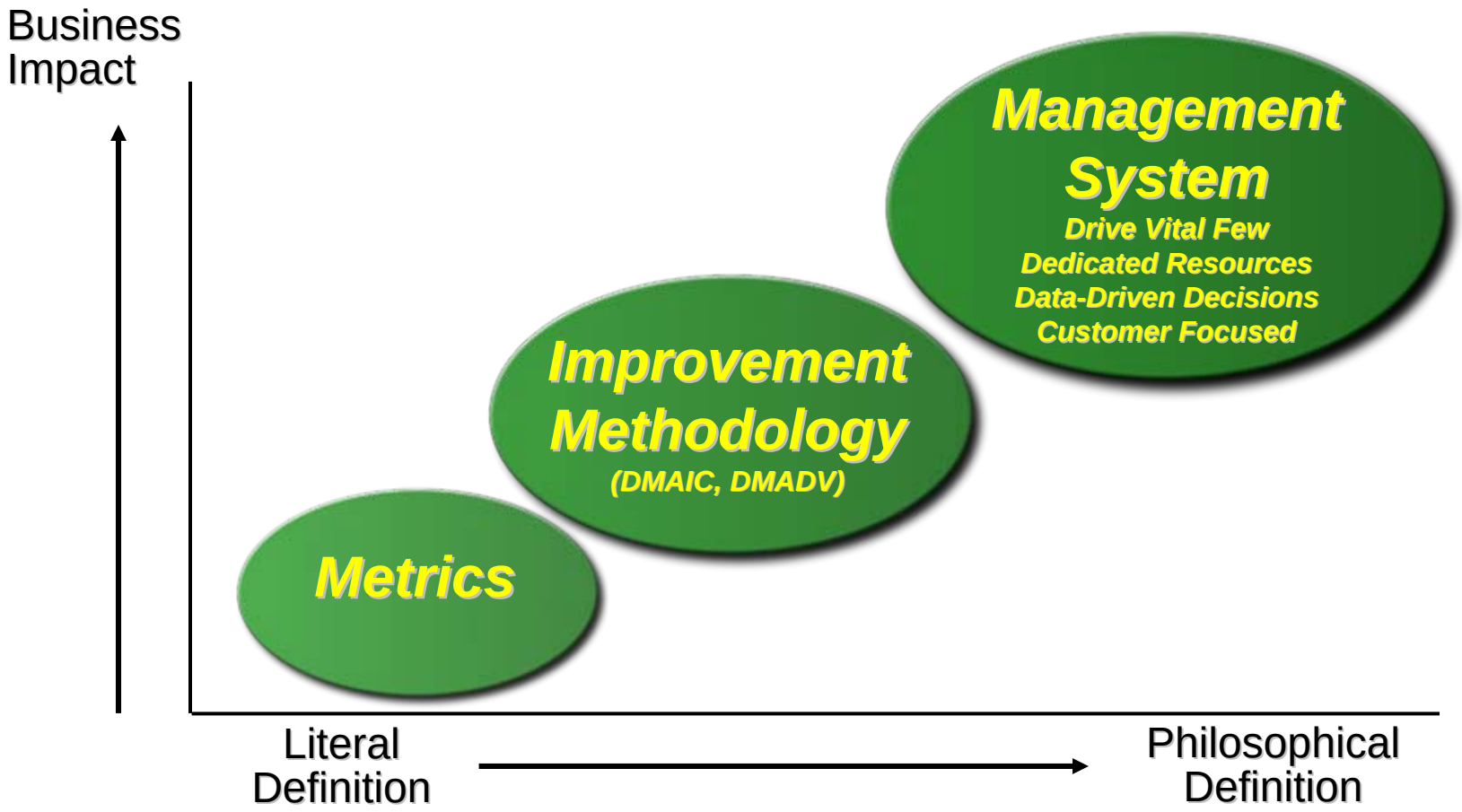
- **Capacity (work flow)**
- **Efficiency (effort; cycle time)**
- **Yield-related opportunities (innovation, development)**
- **Financial improvements (cash conversion cycle)**

Large scale change campaigns with plans for

- **Deployment and implementation**
- **Communication**
- **Training**

Tina Huesing, Motorola, October 2008

What is Lean Six Sigma?
One Term, Multiple Meanings



Tina Huesing, Motorola, October 2008

Four cornerstones of Digital Six Sigma
introduced 2003

Alignment

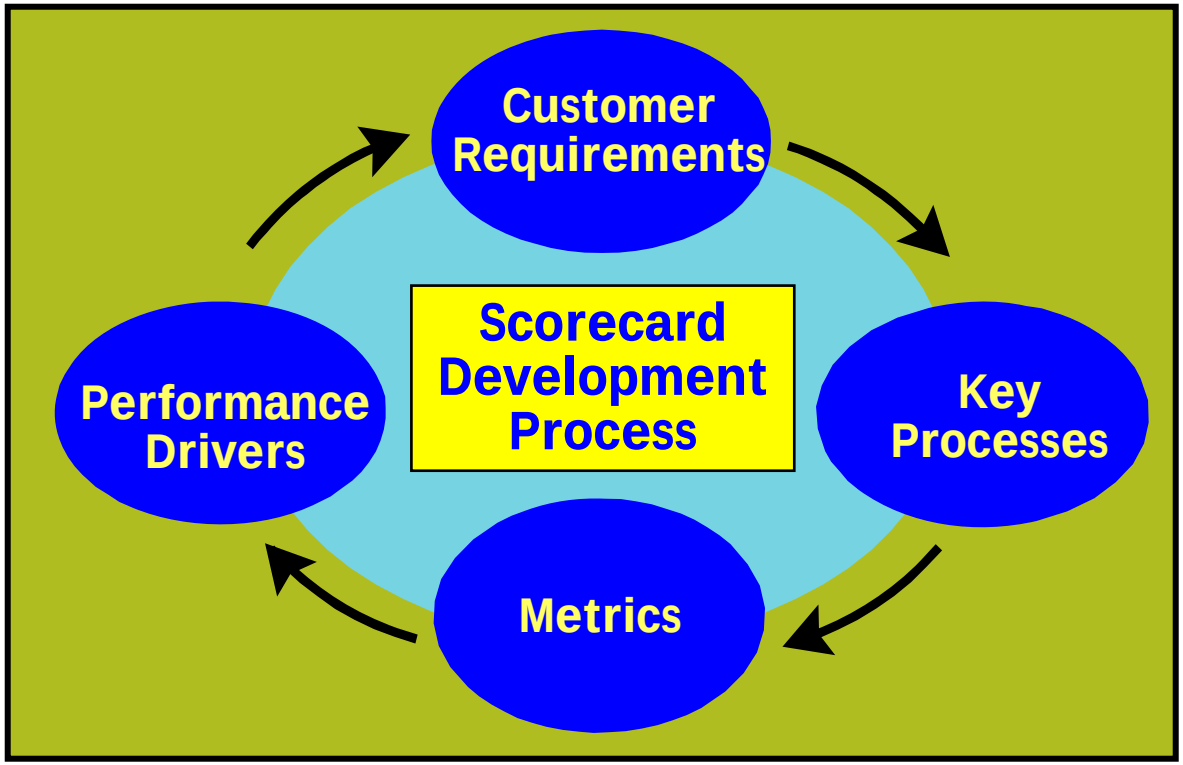
Mobilization

acceleration and

governance

Insight #1, Align . . .

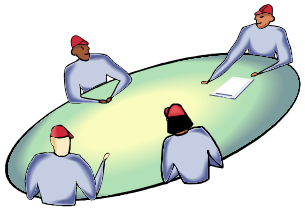
Using the Scorecard Process as a framework, create relevant, "Line of Sight" improvement targets, stretch goals and appropriate measures.



Insight #2, Mobilize . . .

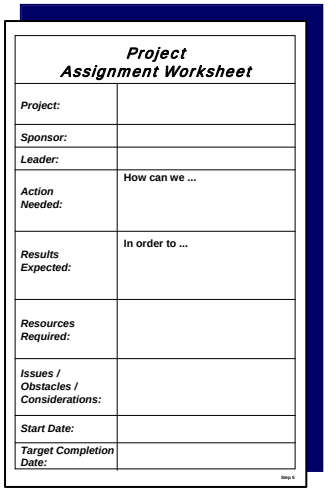
Using empowered teams and a focused project management methodology, equip the organization to enable people to take action.

Recast improvement targets into customer focused team efforts.



Organize team efforts into focused projects with

- ✓ clear charters,
- ✓ success criteria,
- ✓ rigorous reviews.

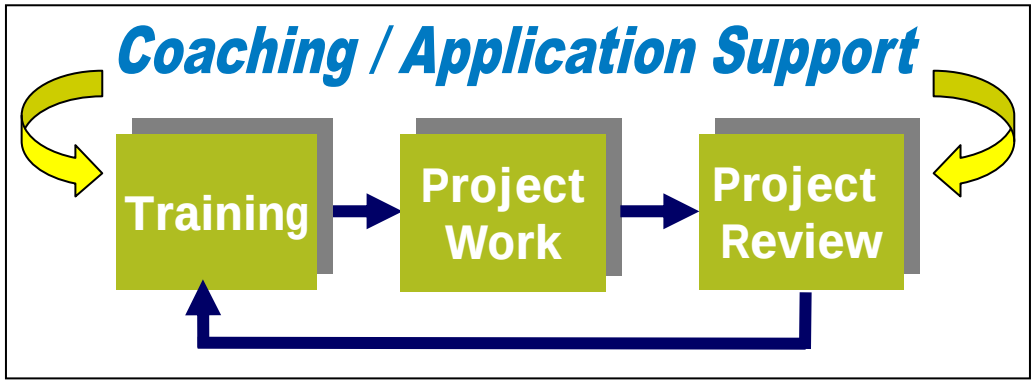


Project Assignment Worksheet	
Project:	
Sponsor:	
Leader:	
Action Needed:	How can we ...
Results Expected:	In order to ...
Resources Required:	
Issues / Obstacles / Considerations:	
Start Date:	
Target Completion Date:	

Deliver team training to impact desired results.

Insight #3, Accelerate . . .

The keys to accelerating results are:



Action Learning Methodology

Campaign Planning

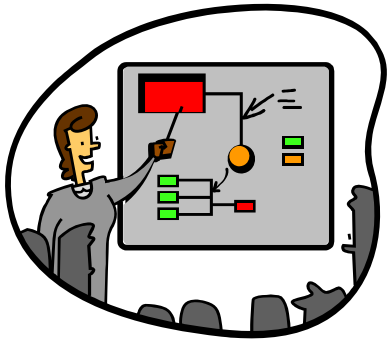
Clock Management

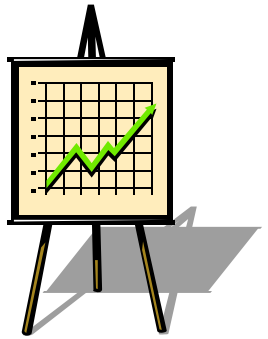
Insight #4, Govern . . .

Leadership team roles and responsibilities focused on selecting, managing, reviewing and driving the completion of projects include:

Visible Sponsorship

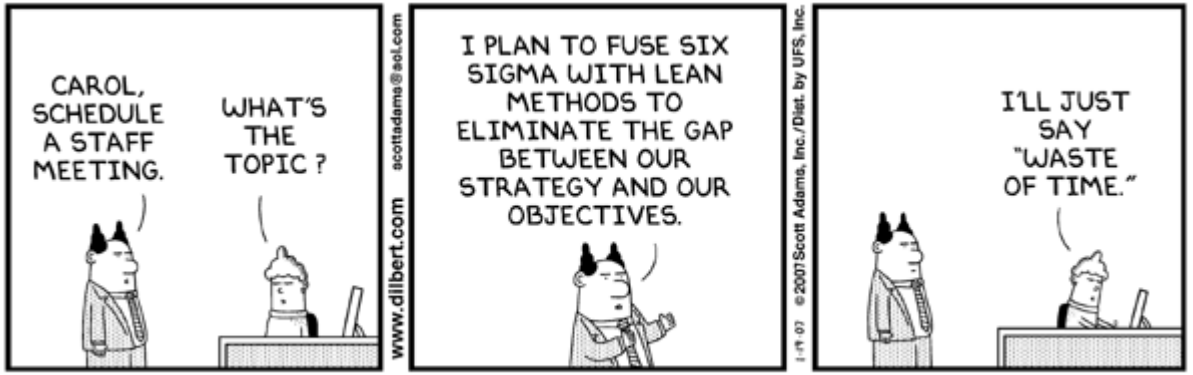
Rigorous Review of Projects





On-going Knowledge Sharing and Proactive Communications

The story continues



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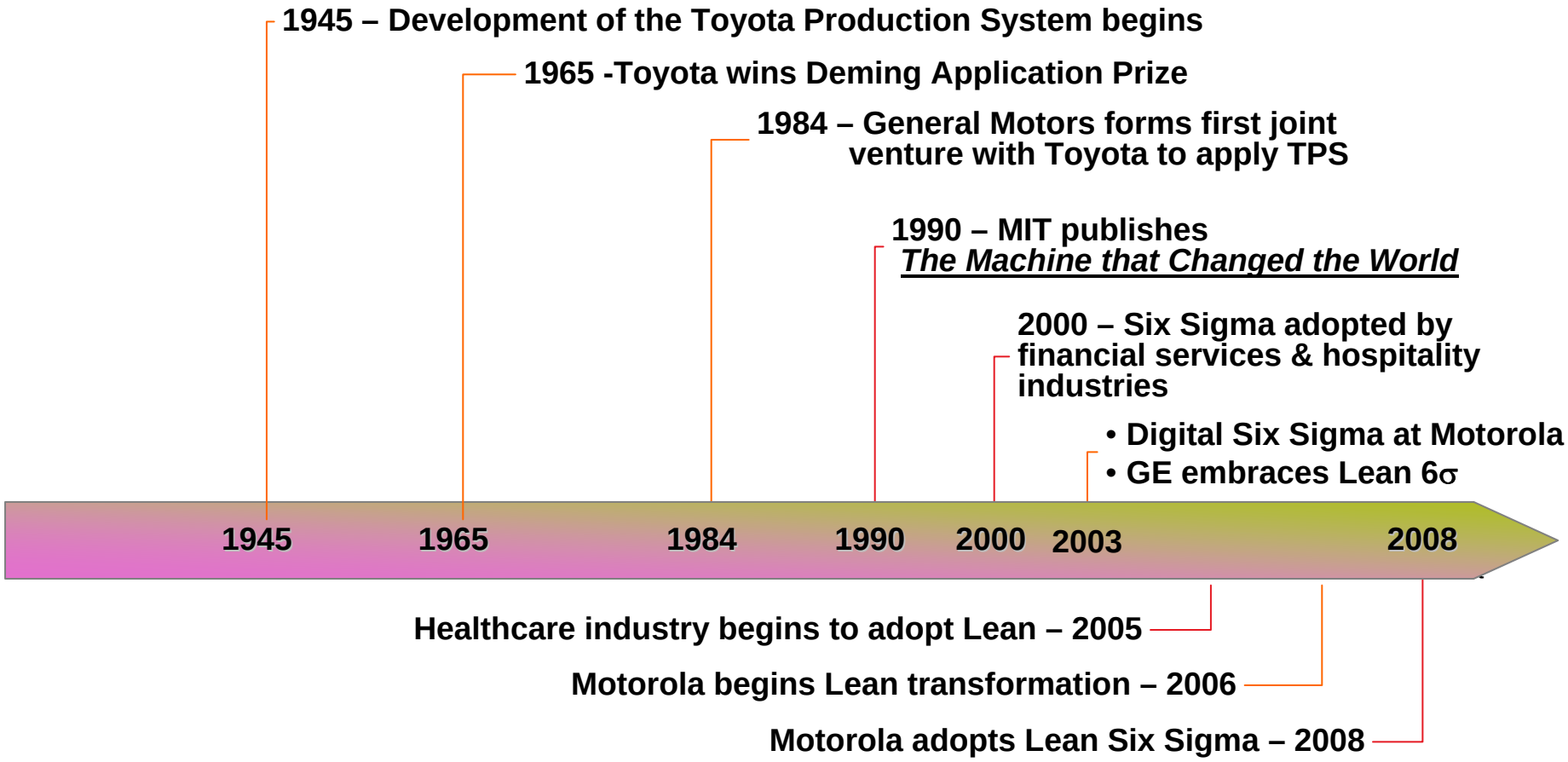
Lean and Six Sigma



Tina Huesing, Motorola, October 2008

Waste in Operations and Service

Types of Waste	In operations	in service/ transactional settings
Overproduction	Produce more than the customer requires, push production	Reports not acted upon
Transporting	Poor plant layout	Poor office layout causing extra walking or communication
Inventory	Safety stock on all parts	Partially done work
Waiting	Waiting for machine, waiting for previous process	Waiting for decisions, shared resources
Processing	Hand finish	Too many signatures, tasks not simplified
Motion	Sitting, bending, walking	Searching, choosing, extra keystrokes or clicks
Defects	Out of specification parts from supplier or processing error	Report error, incomplete or bad information

Tina Huesing, Motorola, October 2008

Lean Six Sigma Philosophy

1. **Customer First**
2. **People are the most valuable resource**
3. **Continuous Improvement**

Just like quality, time is an essential improvement metric.

Reducing process lead time and variation has just as much potential to improve performance as reducing defects and variation in quality.

Customer First

No defect shall be passed on to the customer.

The customer (market) dictates the price.

- Profit = Price – Cost
- The market decides what price it will bear for a product or service
- To increase profit, we must reduce cost

The customer dictates the pace of production.

People are the Most Valuable Resource

Companies succeed through the motivation of people.

Only people can solve problems and make things better.

People have limitless capacity for learning and development.

Value-added work provides a tangible sense of contribution and self-worth, which enables team success.

Continuous Improvement *(Kaizen)*

Solve problems one-by-one to eliminate waste and variation in every process

Never-ending pursuit of perfection

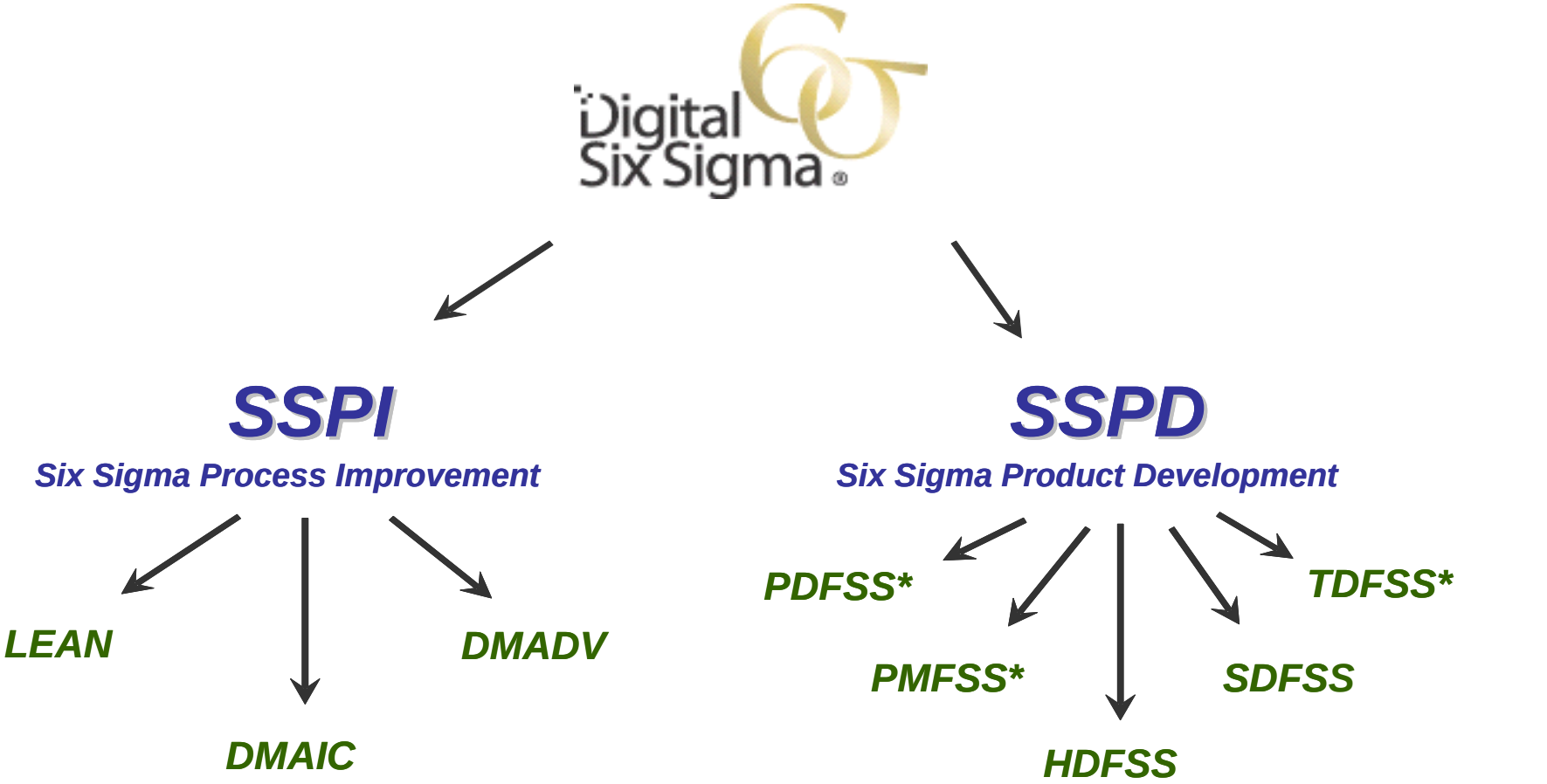
Inherent dissatisfaction with status quo – we can always do better than today

Scientific method → improvement through structured experimentation

Use of proven Lean Six Sigma methodologies

Everyone is responsible for Kaizen, everyday!

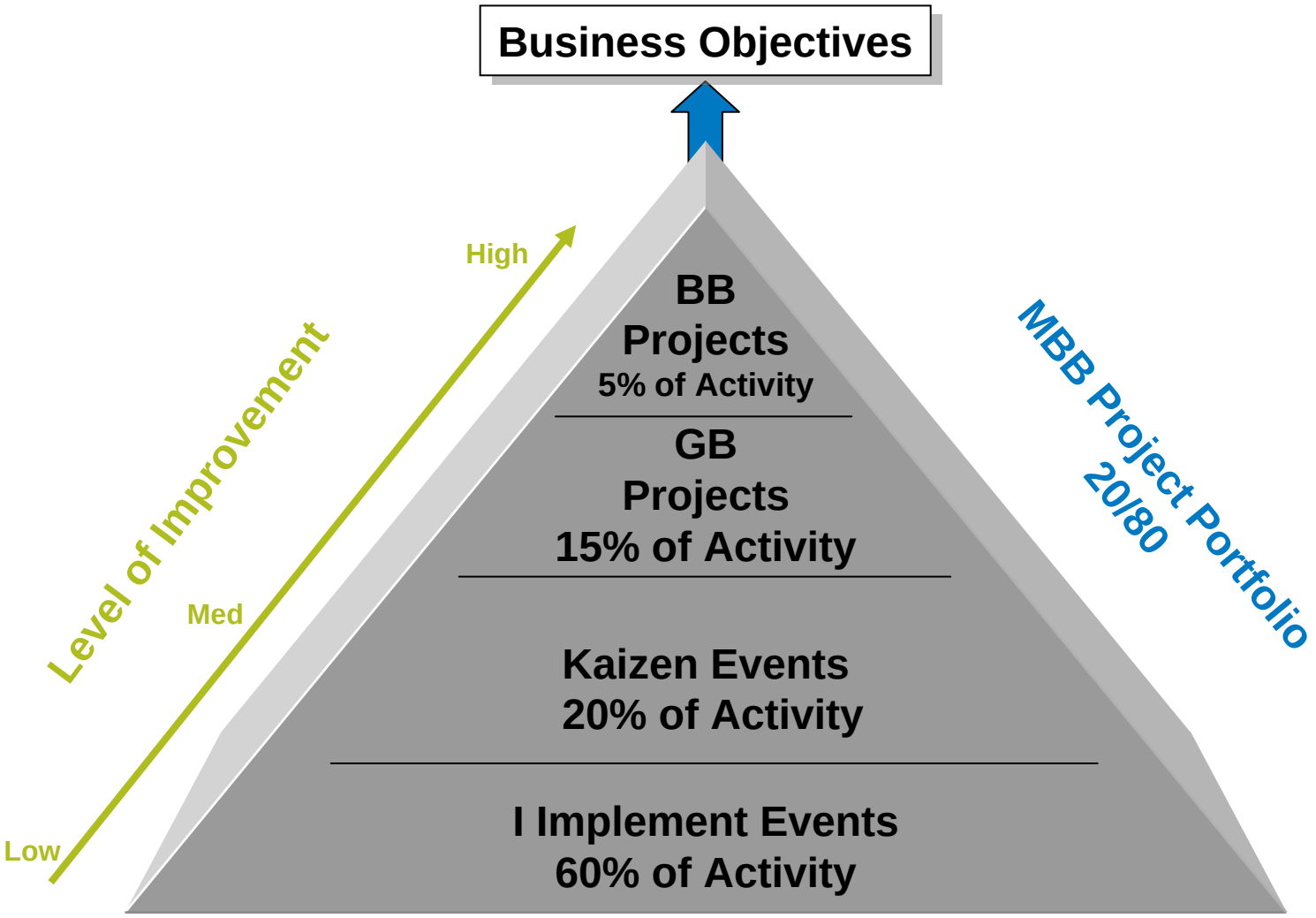
Motorola's Digital Six Sigma Program



Improving Customer Value & Business Performance

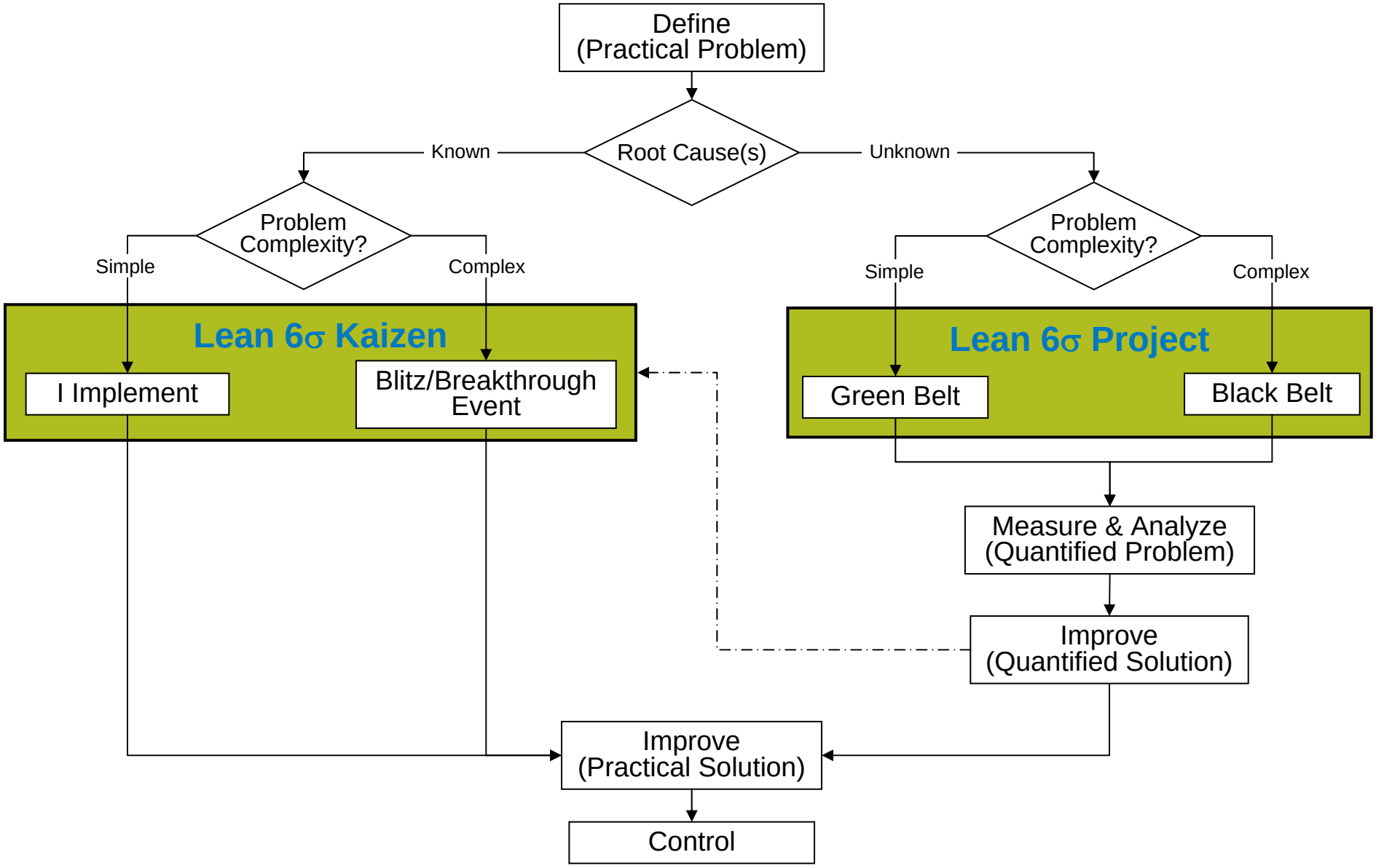
Tina Huesing, Motorola, October 2008

Lean Six Sigma Pipeline of Continuous Improvement



Tina Huesing, Motorola, October 2008

Lean Six Sigma Problem-Solving Flowchart



Tina Huesing, Motorola, October 2008

Six Sigma always has and always will embrace the best of other initiatives

Q: Which of the following Quality methodologies (philosophies) does your organization employ to measure and manage Quality?

MWC-BC*	Balanced Scorecard	Benchmarking	Enterprise-wide Business Process Management	ISO 9000 Programs	Kaizen	Lean and Lean Manufacturing	Six Sigma	Total Quality Management (TQM)	Other
Yes	62.5%	100.0%	77.8%	88.9%	88.9%	88.9%	88.9%	33.3%	0.0%
No	37.5%	0.0%	22.2%	11.1%	11.1%	11.1%	11.1%	66.7%	100.0%

* MWC-BC = Mature or World Class Benchmark Class, n = 19

Best Practices , LLC: Benchmark Study for Quality Performance Forum, Nov 2006

New areas for application

I think the best is yet to be. In this current century, we are going to see a lot of growth in quality because the scope has expanded so much. We used to think that it was a factory problem. No more.

It has expanded from the factory to the offices to the warehouses and away from manufacturing to all the other industries, including the giants: health care, education and government.

Joseph M. Juran interviewed by Scott M. Paton is Quality Digest's editor in chief. August 2002

http://www.qualitydigest.com/aug02/articles/01_article.shtml

New Horizons

Army Adopting Lean Six Sigma

Army News Service | John Reese | February 08, 2006

WASHINGTON - The Army's growing Lean Six Sigma program has its roots in a corporate method of eliminating wasted time, money and material.

Lean Six Sigma integrates two independently-developed improvement tools: Lean and Six Sigma. Lean is an outgrowth of the Toyota production system, and focuses on increasing efficiency and reducing cycle time by the elimination of waste.

Six Sigma was developed by Motorola beginning in the 1970s as an approach to improving quality and effectiveness through statistical control. Its roots go back more than 150 years to a Prussian mathematician who introduced the concept of the normal curve.

Together, Lean and Six Sigma are powerful tools in transforming organizations, Army Materiel Command officials said. They said Lean Six Sigma enables a culture of innovation that continuously listens to customers, questions the status quo, and improves results through fact-based decisions.

.Streamlining familiar goal for military

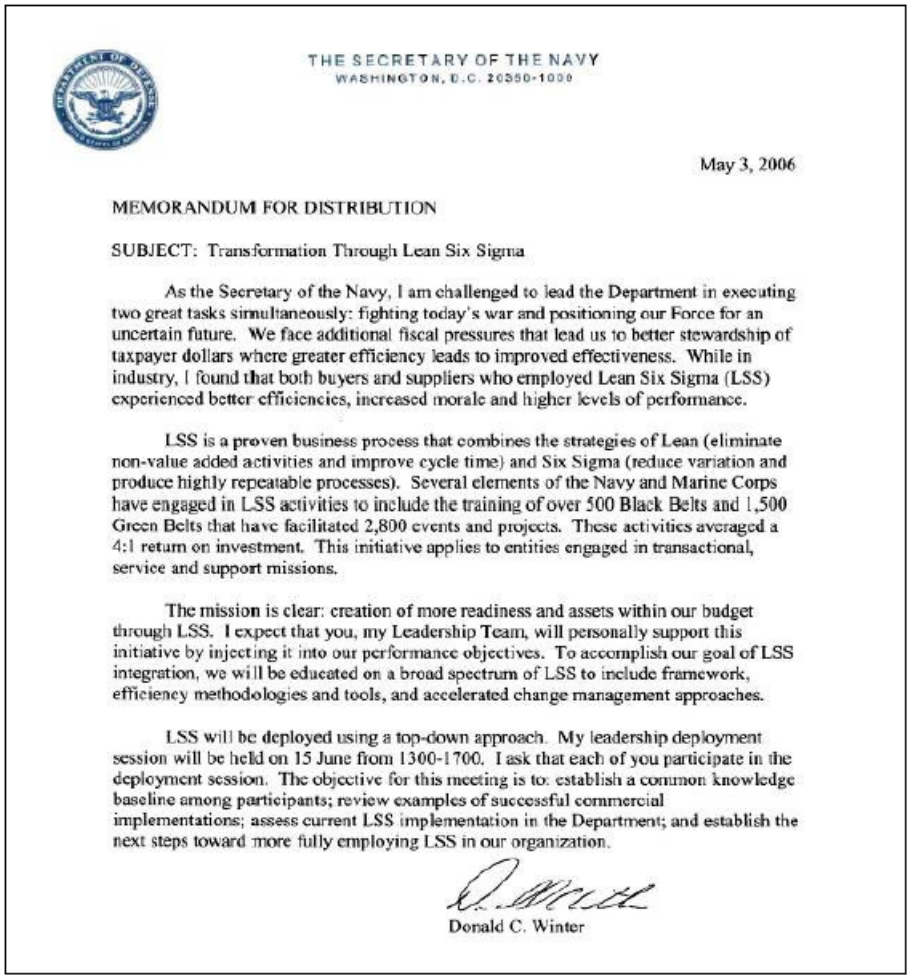
"It's essentially to take the work out of a process and to apply it both to a factory-type operation or repair, and also to a headquarters operation, like the Department of Army," said Secretary of the Army Francis J. Harvey at a Pentagon press briefing March 23.

"Back in 1982 it was called Quality and Productivity Improvement. Then we called it Total Quality Management. Then we called it Business Process Re-engineering. We've had several different names for the same thing," said Harvey. "You look at the way you do business, and you change it for the better."

AMC first employed Lean in 2002 as a tool to better wage the Global War on Terrorism and enable transformation. By 2004, Lean evolved to Lean Six Sigma and AMC began a program to develop the workforce in the use of these tools .

AMC black belts to train others

"Headquarters AMC has trained almost 200 people since it began its Green Belt, Black Belt, and Master Black Belt programs in Lean Six Sigma in November 2004," said Ron Davis, AMC deputy chief of staff for Industrial Operations.



THE SECRETARY OF THE NAVY
WASHINGTON, D.C. 20350-1000

May 3, 2006

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Transformation Through Lean Six Sigma

As the Secretary of the Navy, I am challenged to lead the Department in executing two great tasks simultaneously: fighting today's war and positioning our Force for an uncertain future. We face additional fiscal pressures that lead us to better stewardship of taxpayer dollars where greater efficiency leads to improved effectiveness. While in industry, I found that both buyers and suppliers who employed Lean Six Sigma (LSS) experienced better efficiencies, increased morale and higher levels of performance.

LSS is a proven business process that combines the strategies of Lean (eliminate non-value added activities and improve cycle time) and Six Sigma (reduce variation and produce highly repeatable processes). Several elements of the Navy and Marine Corps have engaged in LSS activities to include the training of over 500 Black Belts and 1,500 Green Belts that have facilitated 2,800 events and projects. These activities averaged a 4:1 return on investment. This initiative applies to entities engaged in transactional, service and support missions.

The mission is clear: creation of more readiness and assets within our budget through LSS. I expect that you, my Leadership Team, will personally support this initiative by injecting it into our performance objectives. To accomplish our goal of LSS integration, we will be educated on a broad spectrum of LSS to include framework, efficiency methodologies and tools, and accelerated change management approaches.

LSS will be deployed using a top-down approach. My leadership deployment session will be held on 15 June from 1300-1700. I ask that each of you participate in the deployment session. The objective for this meeting is to: establish a common knowledge baseline among participants; review examples of successful commercial implementations; assess current LSS implementation in the Department; and establish the next steps toward more fully employing LSS in our organization.

Donald C. Winter

Today

Six Sigma today is the result of many people all around the world working together and learning from each other.

We have developed and standardized

- **Methodologies (particularly with DMAIC)**
- **Terminology (Green Belt, Black Belt etc)**
- **Training curricula**
- **A leadership approach (top down)**
- **Solid foundation in data-based decision-making**
- **Focus on the customer**

- **Six Sigma has evolved from product focus (defect reduction) to project focus (cost reduction) to customer value (productivity) to enterprise performance (top line growth)**

Tomorrow?

Next evolution will be about

- **Applying Six Sigma to customer experience**
- **Sustaining value across the enterprise**
- **Horizontal look across the enterprise, including supply chain partners**
- **Efficient flow of information, materials and money**
- **Application to knowledge management**

Don Linsenmann
VP and Corp Champion, Six Sigma
DuPont

More educated consumers require more emphasis on quality and speed, and six sigma's concept of voice of the customer helps

Globalization puts pressure on coast and requires constant efforts in cost savings

Six sigma toolkit for ongoing performance improvement

Joseph A. De Feo, President and CEO of Juran Institute

iSixSigma Magazine, December 2006

And then?

Mike Potosky
Director Six Sigma
Motorola

Six Sigma has embraced ideas from other initiatives and is doing so today with LEAN. It is branching out into new industries and applications.

Six Sigma is used more and more as a leadership tool to drive business improvement.

Six Sigma for Product and Service development and innovation will become more important.

Six Sigma will learn from the new ways in which it is applied today and will include these new learnings into the Six Sigma of tomorrow.

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