

MATERI III

TOTAL QUALITY MANAGEMENT DAN SIX SIGMA



Total Quality Management

LEARNING DAN TQM

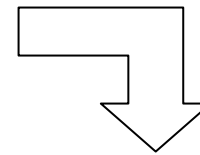
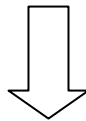
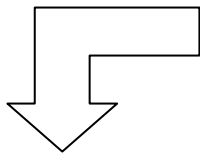
Learning



Process Improvement



Quality Improvement



**Customer
Satisfaction**

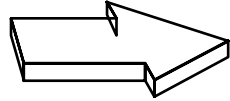
**Shareholder
Satisfaction**

**Employee
Satisfaction**



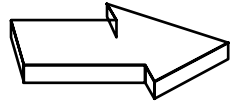
PRINSIP DASAR TQM

Approach



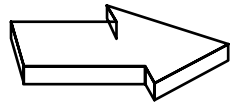
Management Led

Scope



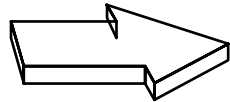
Company Wide

Scale



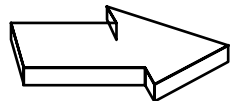
Everyone is responsible for Quality

Philosophy



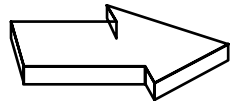
Prevention not Detection

Standard



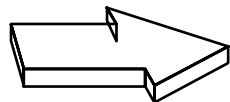
Right First Time

Control



Cost of Quality

Theme

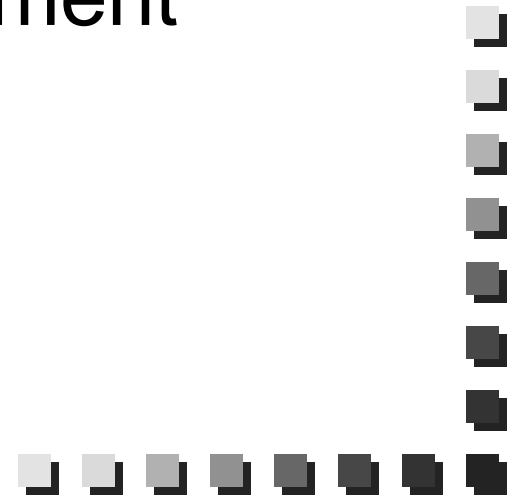


On going Improvement



KONSEP DAN IDE DARI TQM

- Continuous improvement
- Competitive benchmarking
- Employee empowerment
- Team approach
- Data-based decisions
- Knowledge of quality management
- Supplier quality
- Quality at the source



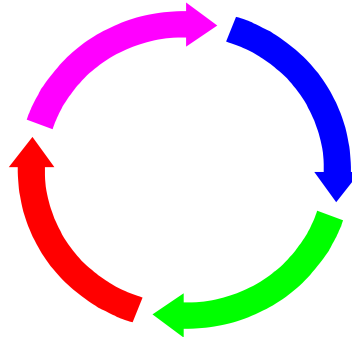
The Deming Cycle or PDCA Cycle

PLAN

Merencanakan perubahan ke proses.
Memprediksikan efek perubahan yang akan terjadi dan bagaimana efek tersebut diukur

DO

Implementasi perubahan pada skala kecil dan mengukur efeknya



CHECK

Mempelajari hasilnya untuk mengetahui efek pada proses yang telah diubah.

ACT

Mengadop perubahan sebagai permanen modifikasi ke proses atau menolaknya.



TAHAP-TAHAP DALAM PDCA CYCLE

1. Tahap Plan

- a. Menentukan proses mana yang perlu diperbaiki
- b. Menentukan perbaikan apa yang akan dilakukan terhadap proses
- c. Kewajiban pimpinan organisasi untuk menentukan data dan informasi yang diperlukan untuk dapat memilih hipotesis mana yang paling relevan untuk melakukan perbaikan proses.

2. Tahap Do

- a. mengumpulkan baseline information untuk menentukan keadaan yang nyata sekarang mengenai jalannya proses
- b. hipotesis yang telah dibuat kemudian diuji pada skala kecil organisasi untuk menghindari kerugian-kerugian yang tidak dikehendaki.

3. Tahap Chek

Pimpinan harus dapat mengadakan analisis (memisahkan dan membahas data), mengadakan sintesis (merangkum data) dan menafsirkan data serta informasi sebagai kesimpulan pendapat.

4. Tahap Act

- a. Memutuskan perubahan yang akan diimplementasikan.
- b. Bila berhasil, perlu disusun prosedur yang baku
- c. Perlu pelatihan ulang dan tambahan bagi karyawan terkait
- d. Mengkaji perubahan tsb punya efek negatif thd bagian lain organisasi atau tidak
- e. Memantau terus perubahan tersebut

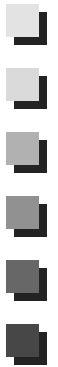
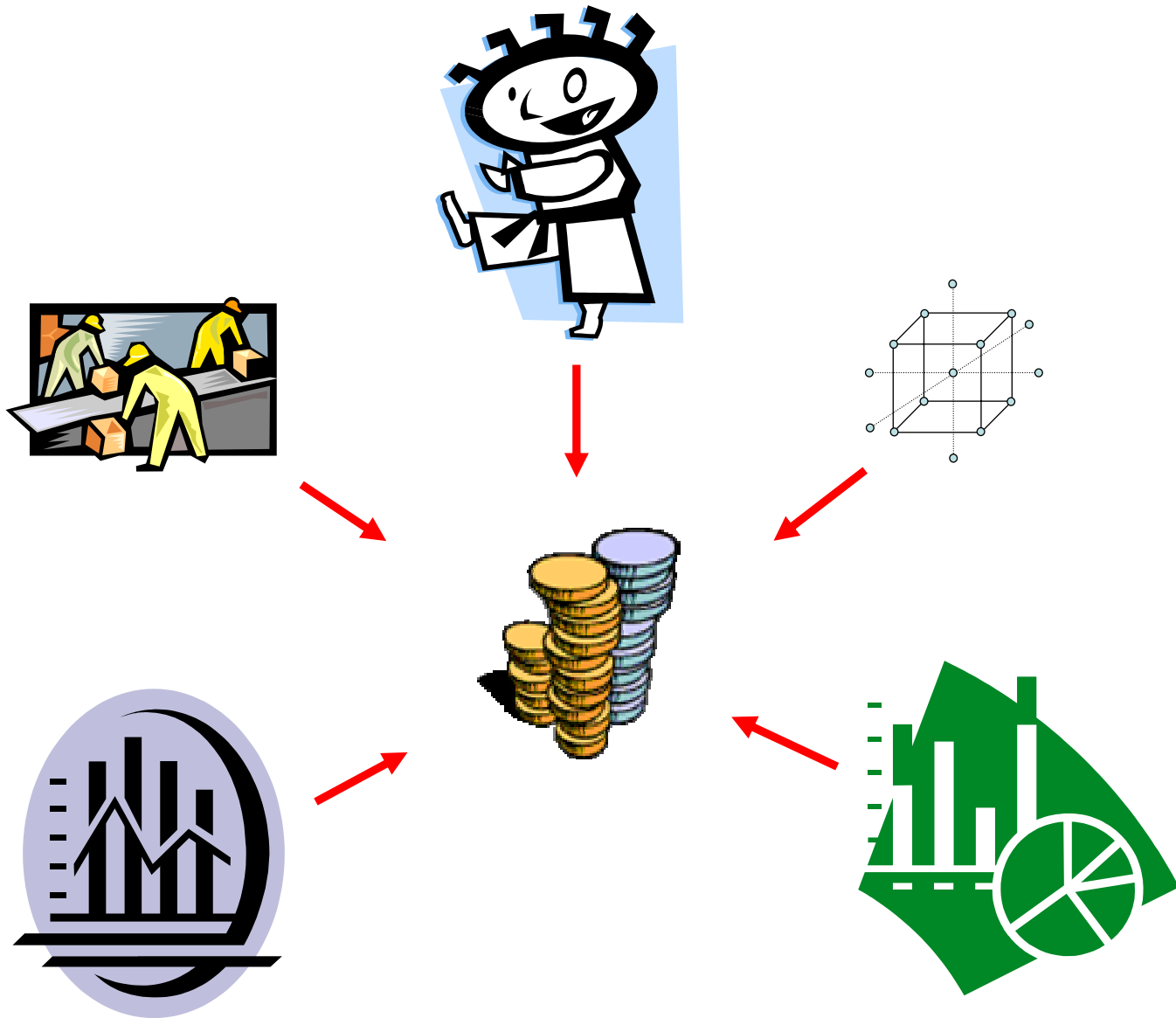


LANGKAH-LANGKAH DALAM MENERAPKAN TQM

- Memahami harapan dari pelanggan
- Mendesign produk untuk memenuhi atau melampaui harapan pelanggan
- Mendesign proses untuk mengerjakan dengan benar dalam setiap waktu
- Menjaga hasilnya dan meningkatkan kinerja system
- Berusaha keras agar supplier dan internal menerapkan TQM

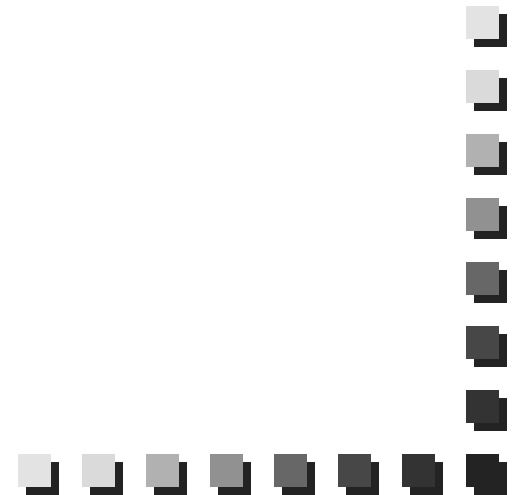


Six Sigma - Introduction



Outline

1. Brief Six-Sigma history
2. Overview of Six-Sigma
3. Implementing Six-Sigma
4. Benefits of Six-Sigma
5. Examples of applications



History of Six-Sigma

1800's - Carl Frederick Gauss introduces the concept of the normal curve

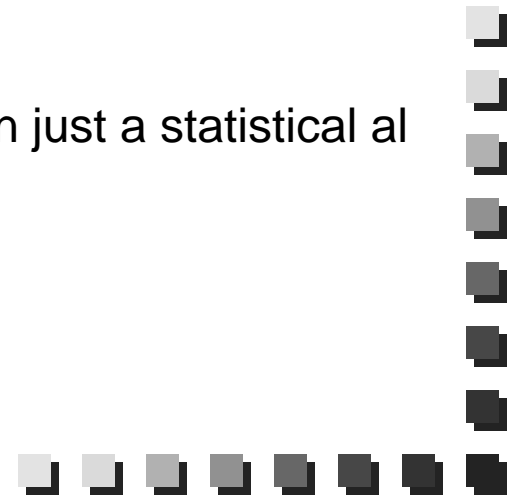
1920's - Walter Shewhart shows that three sigma from the mean is the point where a process requires correction

1970's - Bill Smith came up with the name Six-Sigma

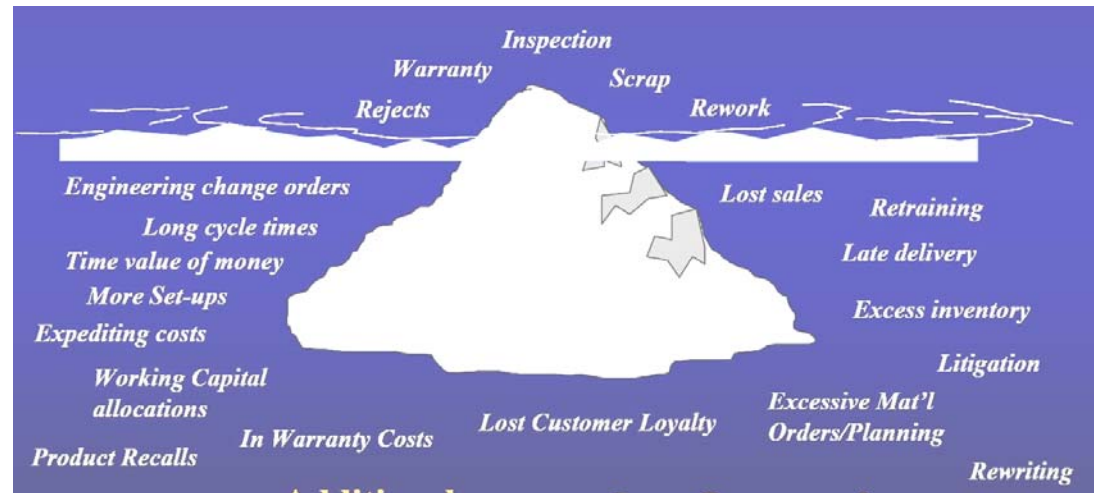
1980's - Motorola engineers need refined granularity

1990's - GE brings Six-Sigma to the front page.

Today - Six Sigma has evolved over time. It's more than just a statistical tool, it is a major quality system.



Overview of Six-Sigma



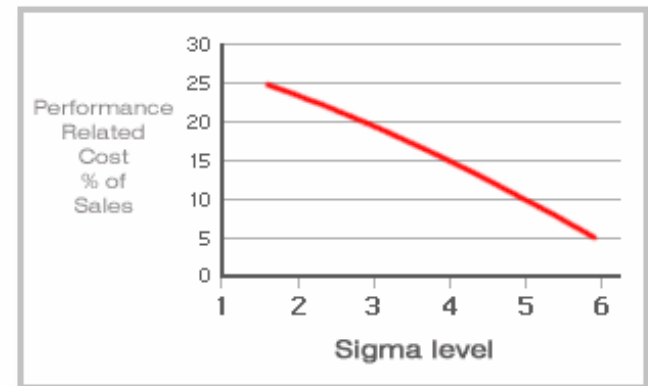
PHILOSOPHY:

Variation is the root cause of performance limitations.

Remove all variation from an organization:

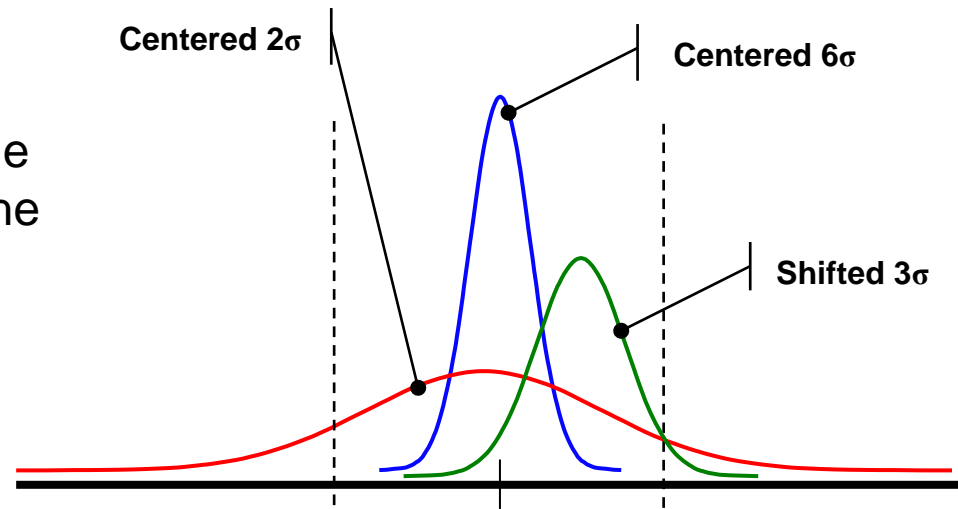
- provide the right product or service
- on time
- at the right cost
- defect free
- lasts an expected period of time

➔ No customer complaints, efficiency.



SIGMA:

The name six-sigma comes from the value of the standard deviation of the process output.

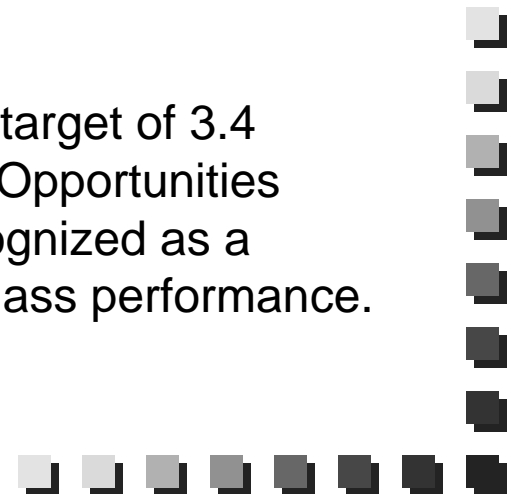


Sigma	Defects Per Million Opporunites
3σ	66,810
4σ	6,210
5σ	233
6σ	3.4

6 Sigma is 3.4 defects in every million opportunities

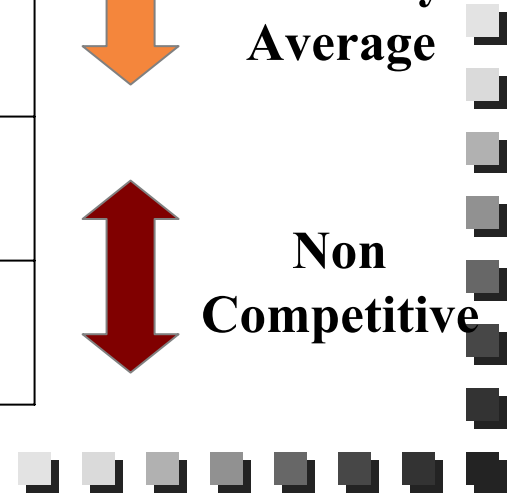
TARGET:

Six Sigma is also a target of 3.4 Defects Per Million Opportunities (DPMO) and is recognized as a definition of world class performance.



Cost of quality at various levels of Sigma

Sigma	Defect rate(PPM)	Cost of quality	Competitive level
6	3.4	<10%	World Class
5	233	10-15%	
4	6210	15-20%	Industry Average
3	66807	20-30%	
2	308537	30-40%	Non Competitive
1	6,90000	>40%	

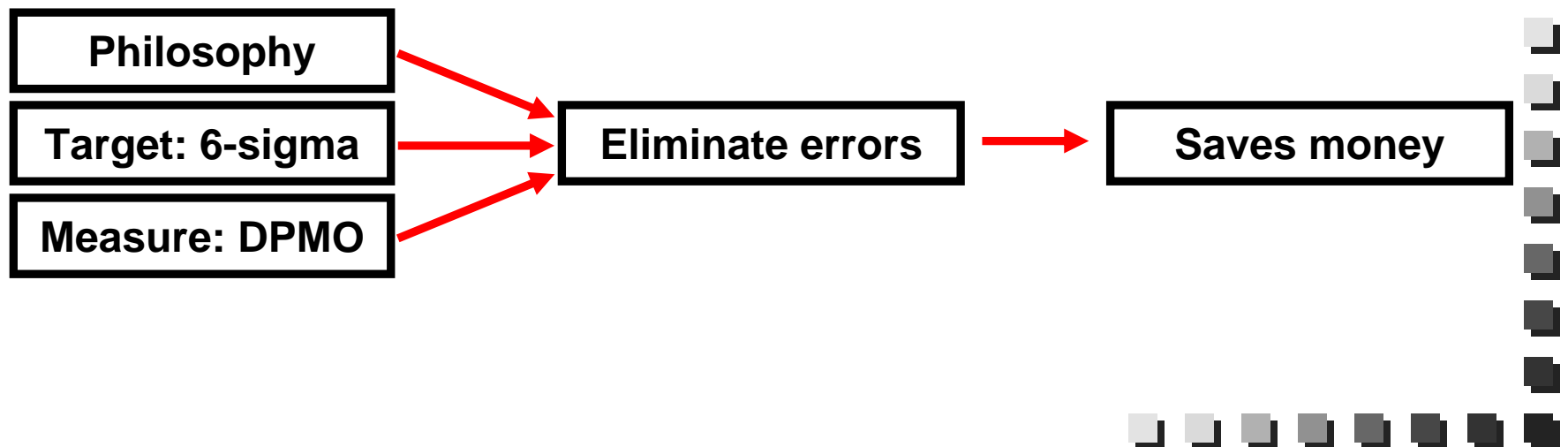


SIX-SIGMA IN GENERAL:

What: A way of working aimed at near perfection in all that an organization does.

How: Reduces all variation in methodical manner, improves existing products and processes, re-design if necessary.

Result: Eliminates defects and errors, saves time and **money**.



The Six Sigma Roadmap

- Five steps to implementing Six Sigma
 1. Identify core processes and key customers
 2. Define customer requirements
 3. Measure current performance
 4. Prioritize, analyze, implement improvements
 5. Expand and integrate the Six Sigma system



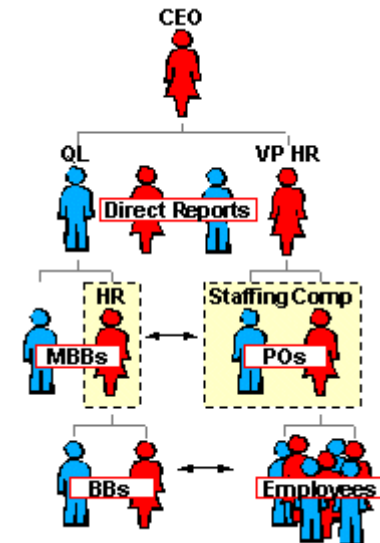
Implementing Six-Sigma

PHASES:

- | | |
|-----------------------------|--------------------------|
| 1- Awakening. | Understand benefits. |
| 2- Implementation. | Create structure, train. |
| 3- Advanced Implementation. | Culture shift. |
| 4- Sustaining. | Continuous improvement. |

STRUCTURE:

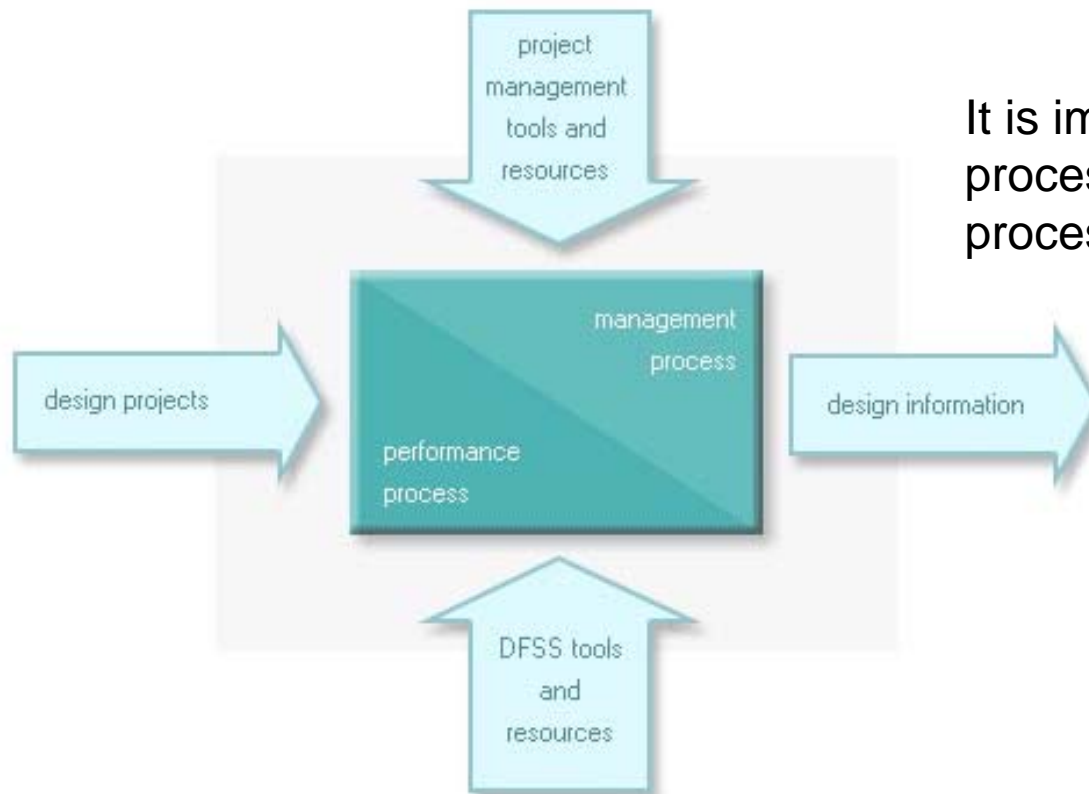
- | | |
|-----------------------|-------------------|
| - Quality leader. | Upper Management. |
| - Master Black Belts. | Area focus. |
| - Black Belts. | Project oriented. |
| - Green Belts. | Culture oriented. |



METHODOLOGY:

There are two main complementary methodologies:

1. DMAIC: Define, Measure, Analyze, Improve, Control
2. DMADV (DFSS): Define, Measure, Analyze, Design, Verify



It is important that the performing process and management process are concurrent.



The Six Sigma roadmap- Breakthrough strategy

Stage	Phase	Objective
Identification	Define	Identify key business issues
Characterization	Measure Analyze	Understand current performance levels
Optimization	Improve Control	Achieve breakthrough improvement
Institutionalization	Standardize	Integrate Six Sigma in day to day functioning.



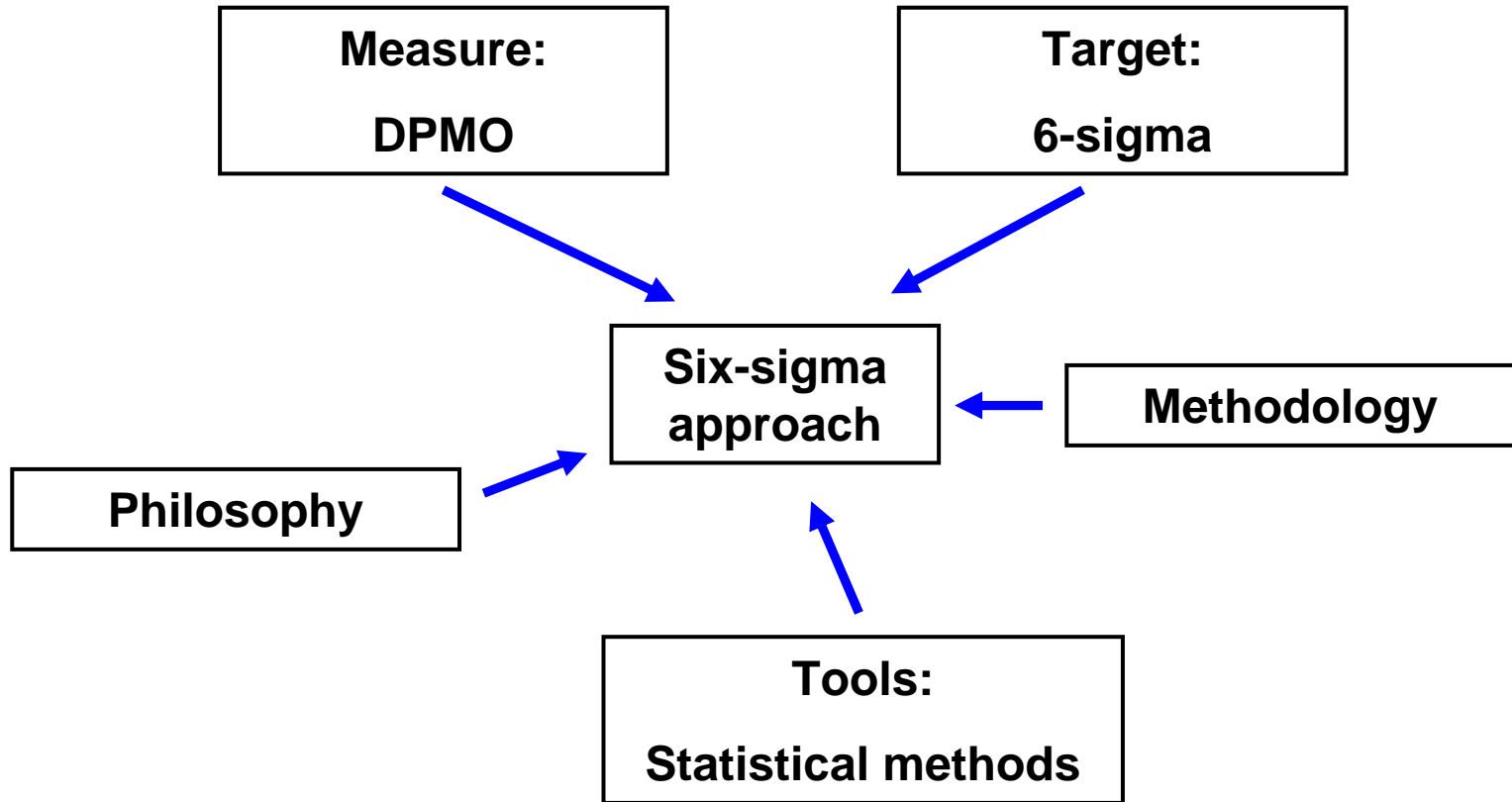
TOOLS:

A wide array of tools is necessary to the six-sigma approach:

- **Process analysis tools:** Benchmarking, cause and effect, Cycle time, etc.
- **Project management tools:** Cost benefit, Gantt chart, Risk analysis, etc.
- **Data analysis tools:** ANOVA, DoE, Regression, Control charts, etc.
- **Change management tools:** Resistance analysis, Communication plan, Rewards and measures, etc.

→ Even process measurements are nearly impossible to accurately establish without expertise.





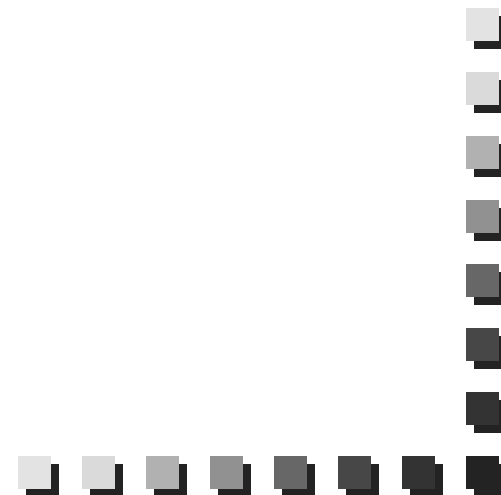
Benefits of Six-Sigma

ORGANIZATION:

- Bottom line cost savings (5 - 20% turnover)
- Improved quality as perceived by customer
- Cycle time reduction
- Common language throughout the organization
- World class standard (image)

STAFF:

- Improved knowledge and skills
- Wide range of tools and techniques



Examples of applications

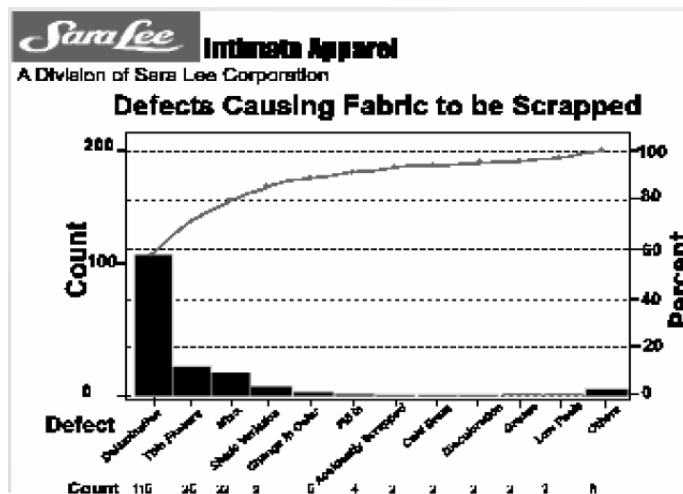
Sara Lee plant: first DMAIC project.

D: Reduction of scrap by 50%.

M/A: mostly DoE and cause and effect analysis.

I: additional testing, changes in the process, etc.

C: keep track of progress and changes.



Reported:

- \$9,000 savings from employee involvement

- 8.8% reduction in annual operating budget (year 1)



Six Sigma Cost And Savings By Company					
Year	Revenue (\$B)	Invested (\$B)	% Revenue Invested	Savings (\$B)	% Revenue Savings
Motorola					
1986-2001	356.9	-	-	16	4.5
Allied Signal					
1998	15.1	-	-	0.5	9.9
GE					
1996	79.2	0.2	0.3	0.2	0.2
1997	90.8	0.4	0.4	1	1.1
1998	100.5	0.5	0.4	1.3	1.2
1999	111.6	0.6	0.5	2	1.8
1996-1999	382.1	1.6	0.4	4.4	1.2
Honeywell					
1998	23.6	-	-	0.5	2.2
1999	23.7	-	-	0.6	2.5
2000	25	-	-	0.7	2.6
1998-2000	72.3	-	-	1.8	2.4
Ford					
2000-2002	43.9	-	-	1	2.3