



Operational Excellence

Merlin Gerin

Modicon

Square D

Telemecanique

Conference, Jan. 6th, 2003

Schneider
 **Electric**

Building a New Electric World



New Electric World 2004

Our Mission

Give the best of the **New Electric World** to everyone, everywhere, at any time.

Our Ambition

Be the worldwide leader in Power & Control by pushing back our limits in all aspects of our business : markets, geographic spread, technology, behavior, corporate social responsibility.

Our Commitment

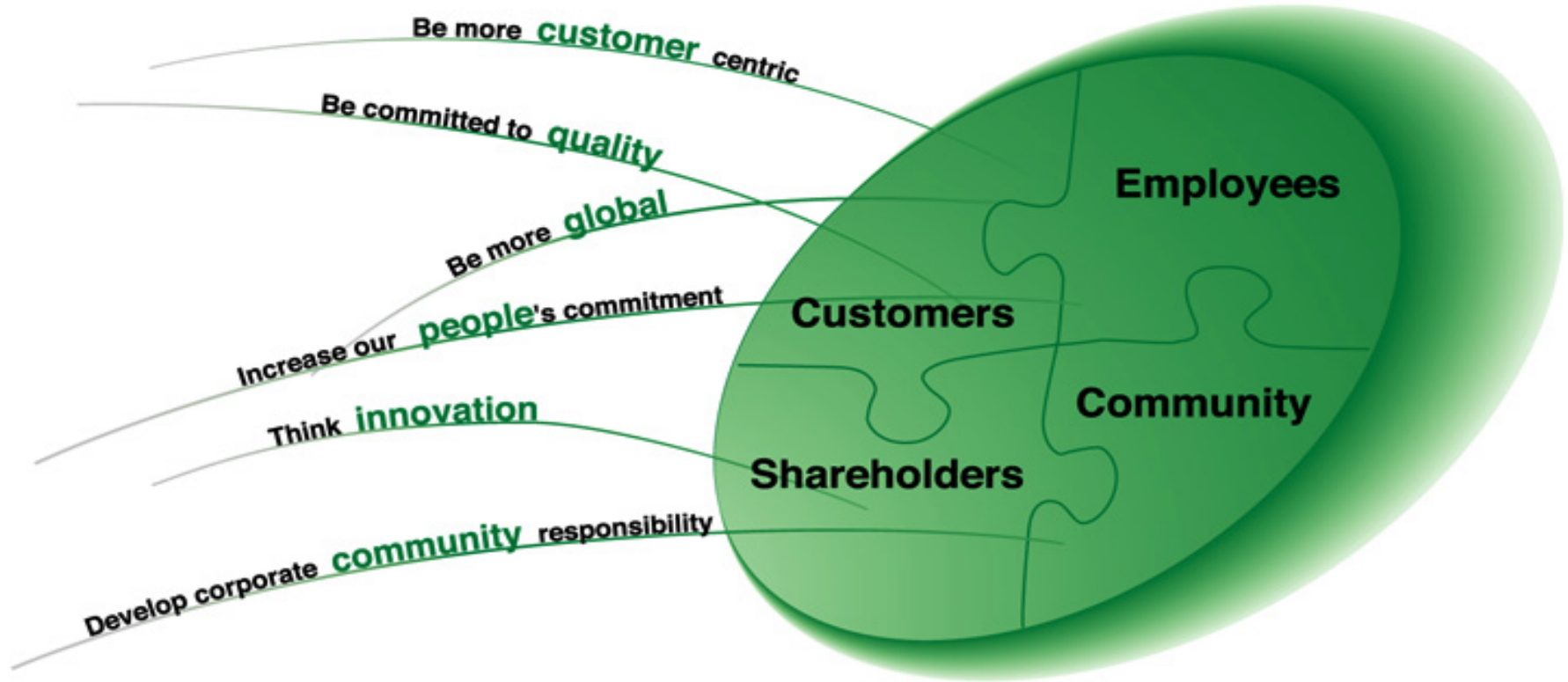
Enable customers to meet their performance challenges.



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New2004 = Growth & Efficiency


Our six challenges → Our stakeholders





Our 2004 Financial Goals

- 1. Sales:
 - Organic growth: 2 points above the market every year
 - External growth: EUR 2bn

 - 2. Gross margin: 43.5% of sales
 - Increase Gross Margin on Sales by one point a year
- 
- 3. Operating margin: 14% of sales

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Introduction

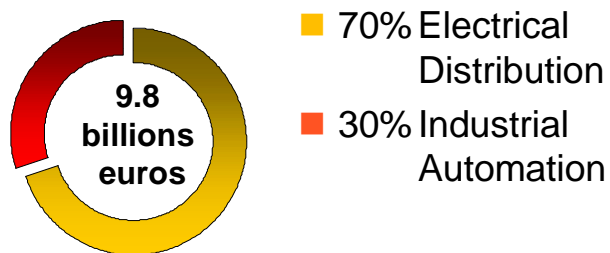
*Marcel Torrents
Executive VP Developments-Industry*



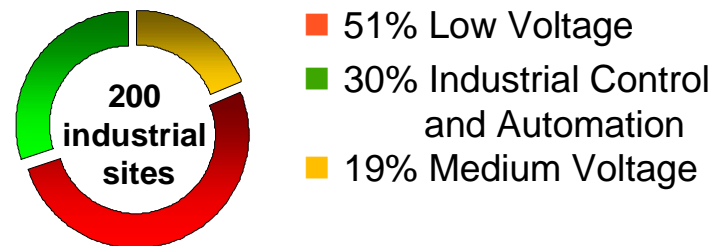
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A few figures: Schneider Electric in 2001

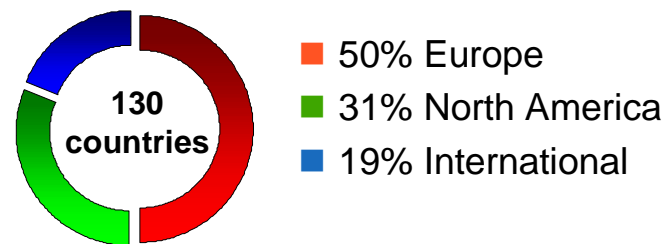
Sales by core business



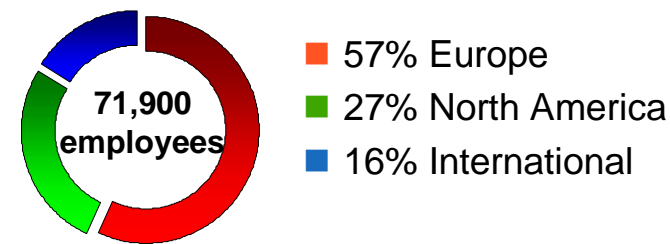
Sales by business segment



Sales by geographic division



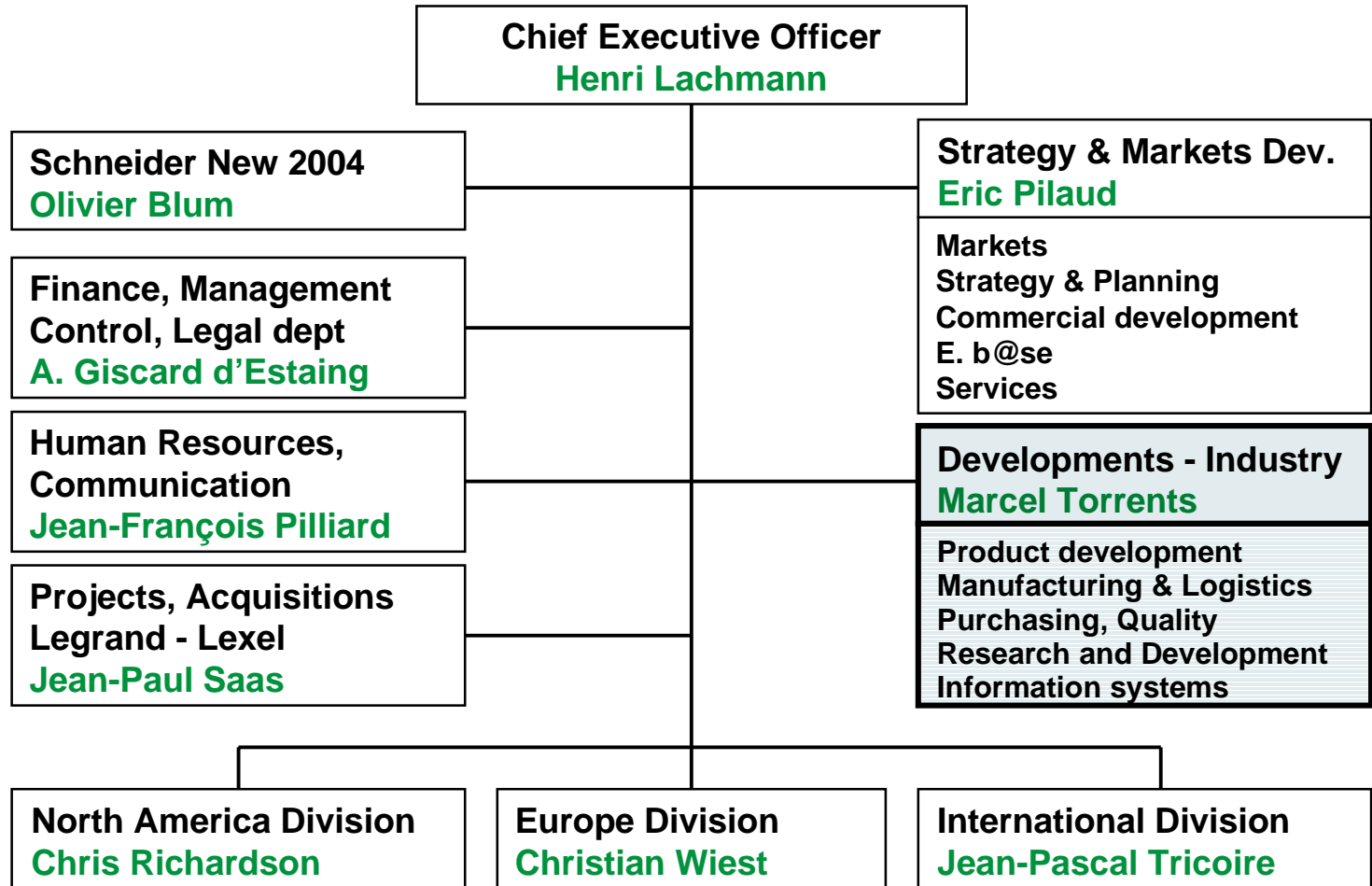
Workforce





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Schneider Electric organization





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DDI and SDM: 2 "Boosters"



Developments - Industry (DDI)

- Boost quality & customer satisfaction
- Boost productivity
- Develop products more innovative & competitive in line with markets' and customers' needs



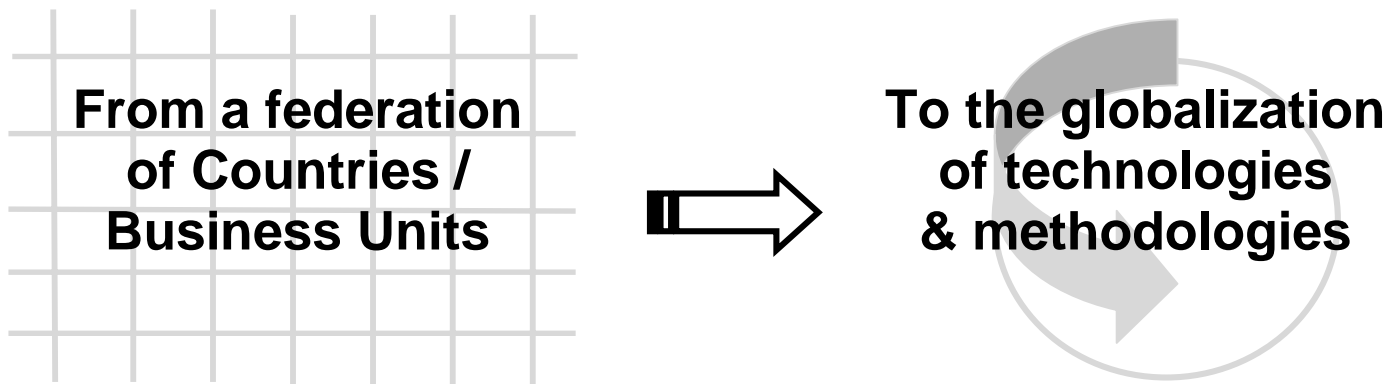
Strategy & Markets Development (DMS)

- Boost growth within the countries
- Implement market approach through a collaborative process between countries, markets and products teams
- Detect new growth opportunities, target and prioritize growth projects



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Boost Productivity



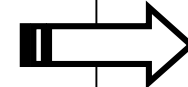


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Productivity levers

- **6 Sigma**
Dysfunction approach through Quality tools
- **Purchasing**
Globalization
- **Manufacturing**
Methods & rationalization
- **Quality & Value Engineering**
Make our ranges live

- **+ Reduction of Capital employed**



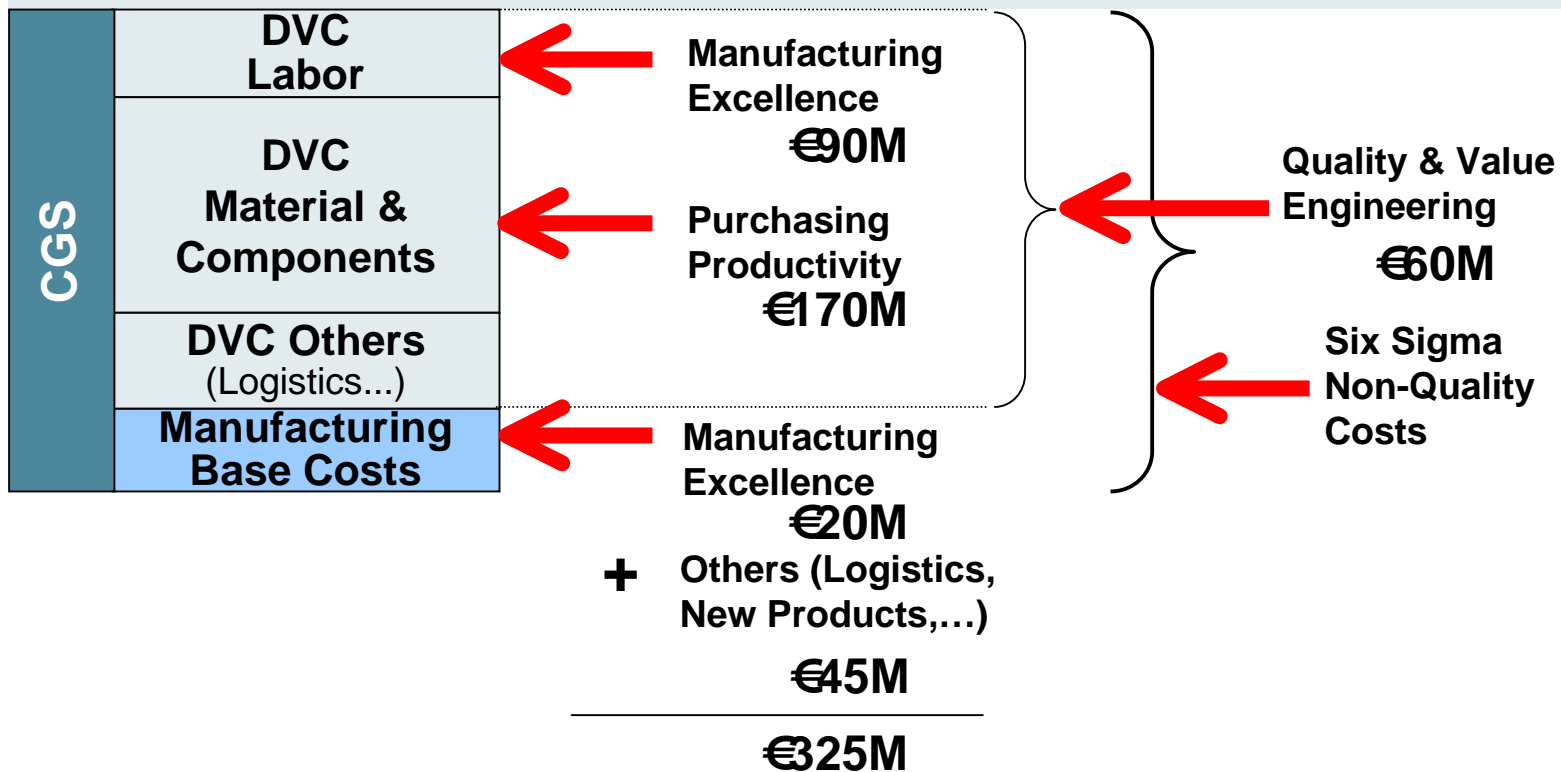
**Operational
Management**

**5% Manufacturing
Productivity**



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Productivity levers (cont'd)



**We target a Gross Margin of 43.5% in 2004 from 40.2% in 2001...
...we need to gain €325M**

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Six Sigma at Schneider Electric

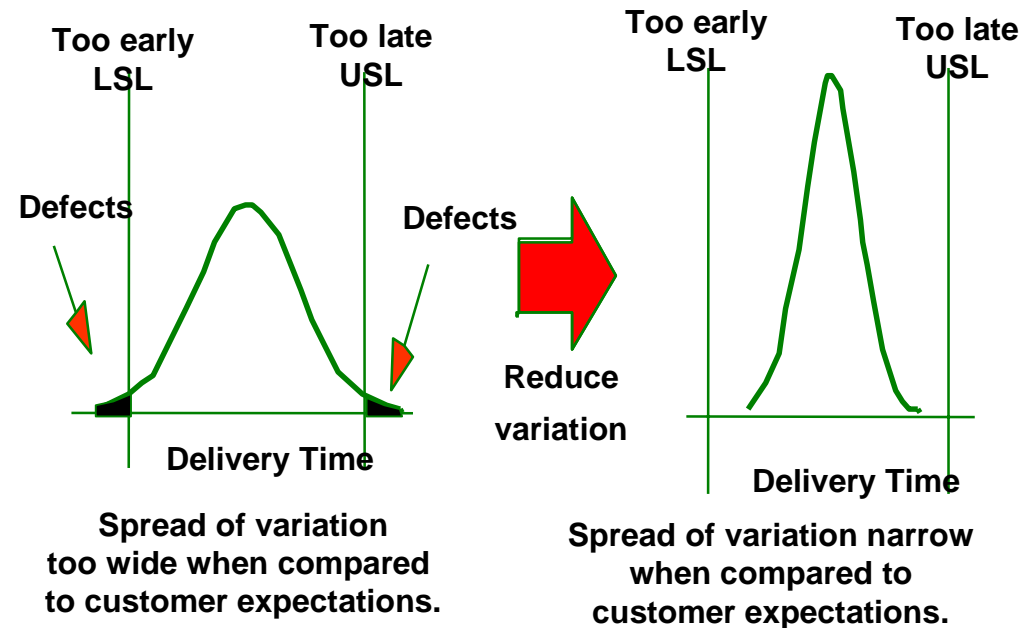
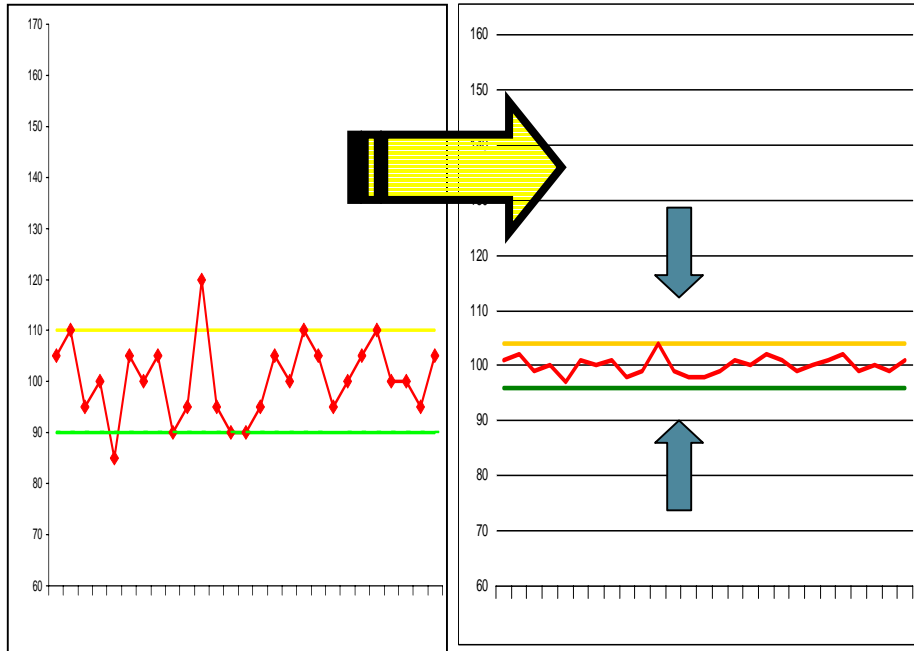
*Daniel Victoir
Senior VP Quality*



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What is Six Sigma? Statistical tools based on processes

Six Sigma reduces the variability of all processes



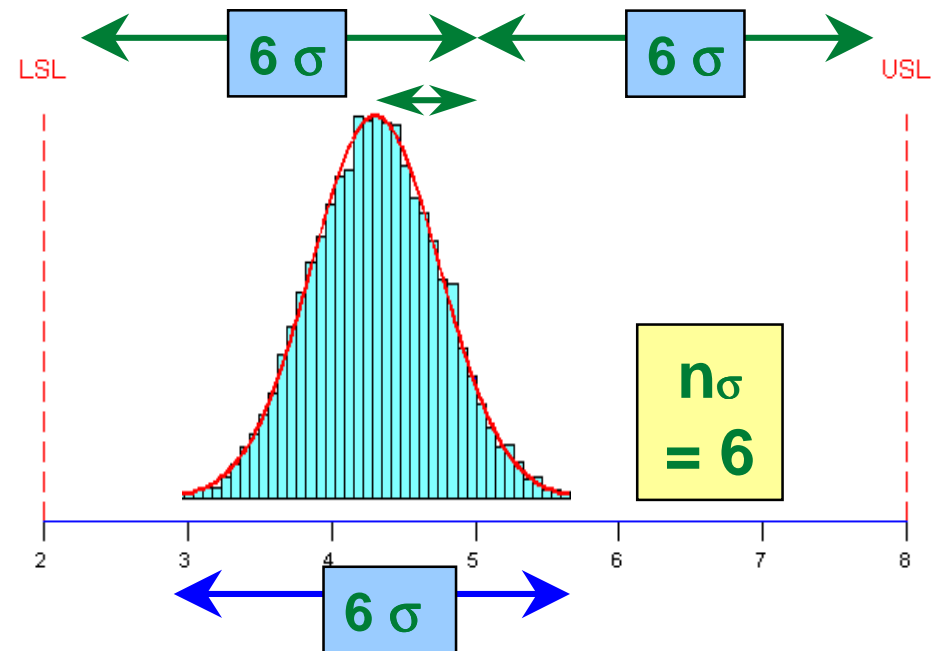
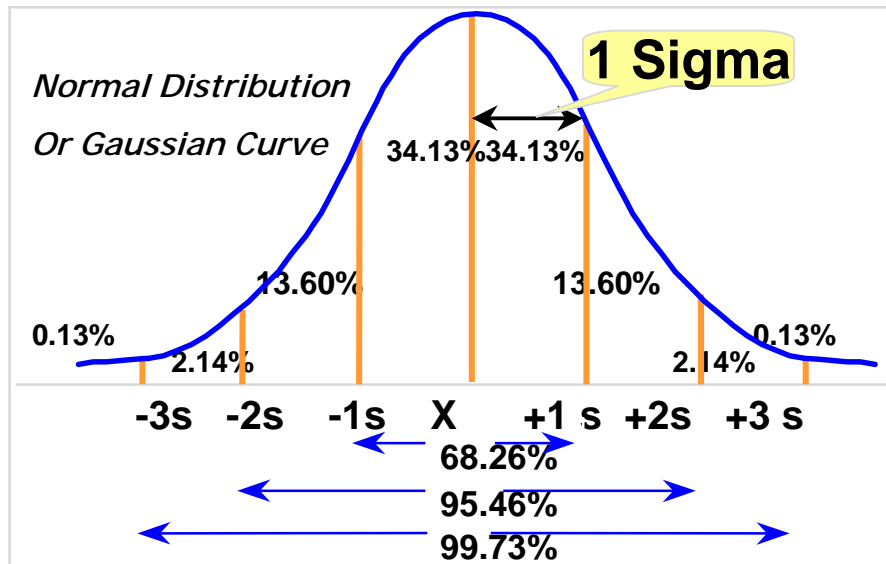


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What is Six Sigma?

Statistical tools based on processes (cont'd)

σ in statistics is the standard deviation in a normal distribution





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Why is Six Sigma so efficient? The method to improve customer satisfaction

As a consequence, the number of opportunities of defects in a process is decreasing very strongly, as the non-quality costs

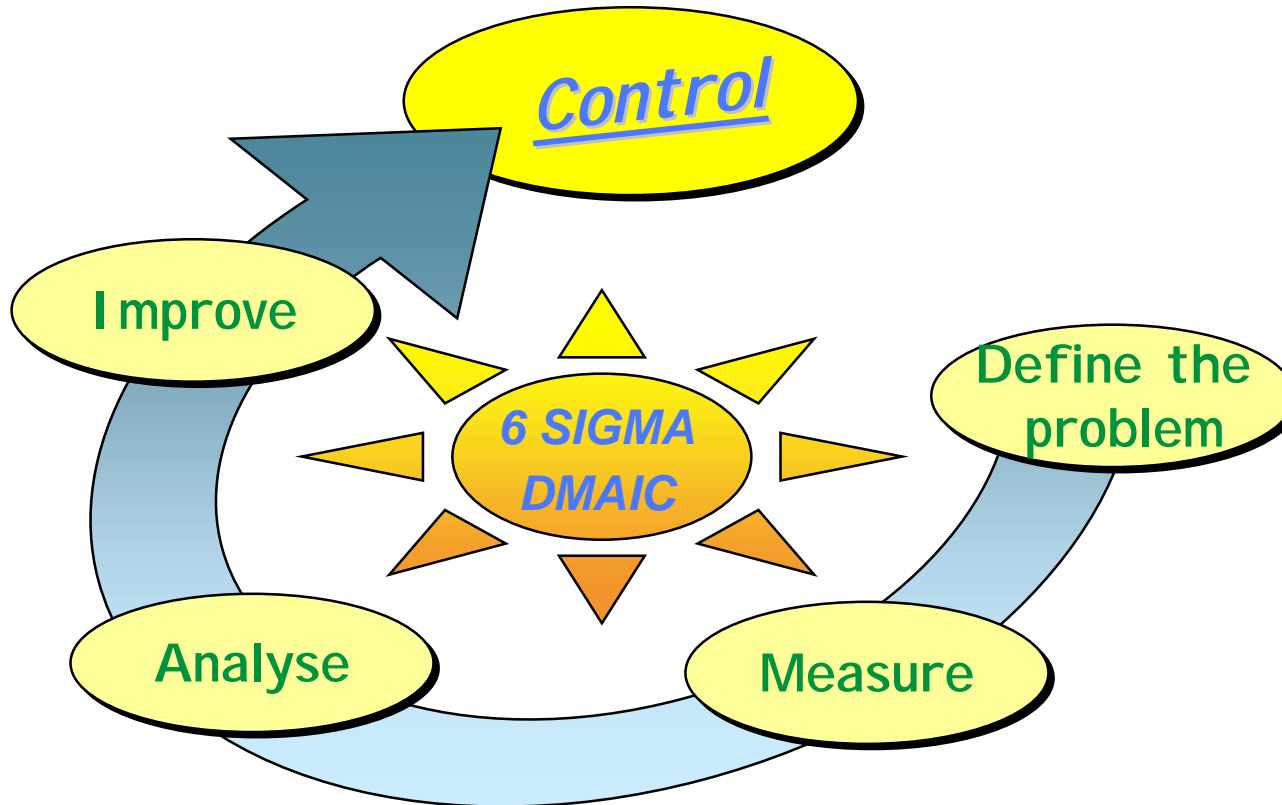
Number of sigma in half the tolerance interval	Ppm*	Cost of non-quality (%)
1	—	—
2	—	—
3	66.810	25 %
4	6.207	15 %
4.5	1.350	10 %
5	233	7.5 %
6	3	5 %



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Why is Six Sigma so effective? The DMAIC cycle

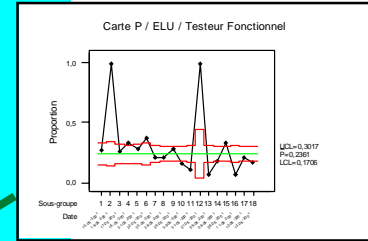
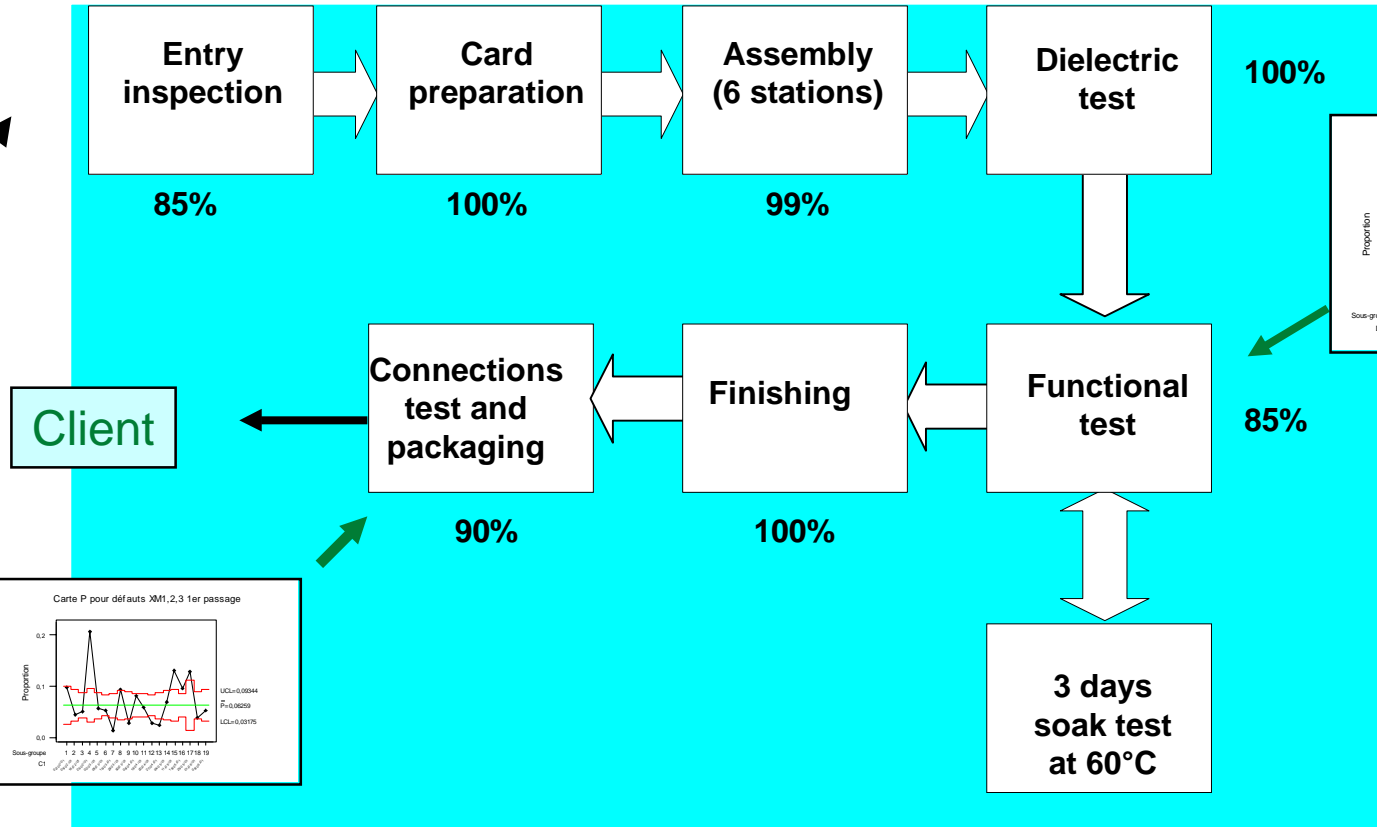
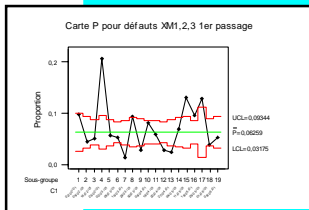
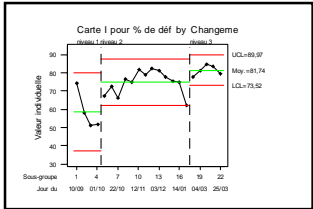
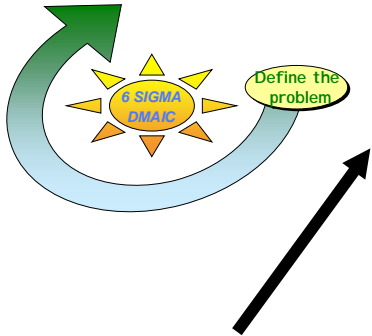
Six Sigma uses statistical tools and rigorous process to reduce variability





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Example: Encoders Define Micrologic Process roadmap

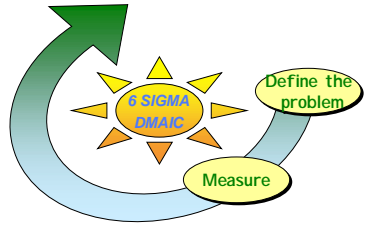


Representing a global return of 63%

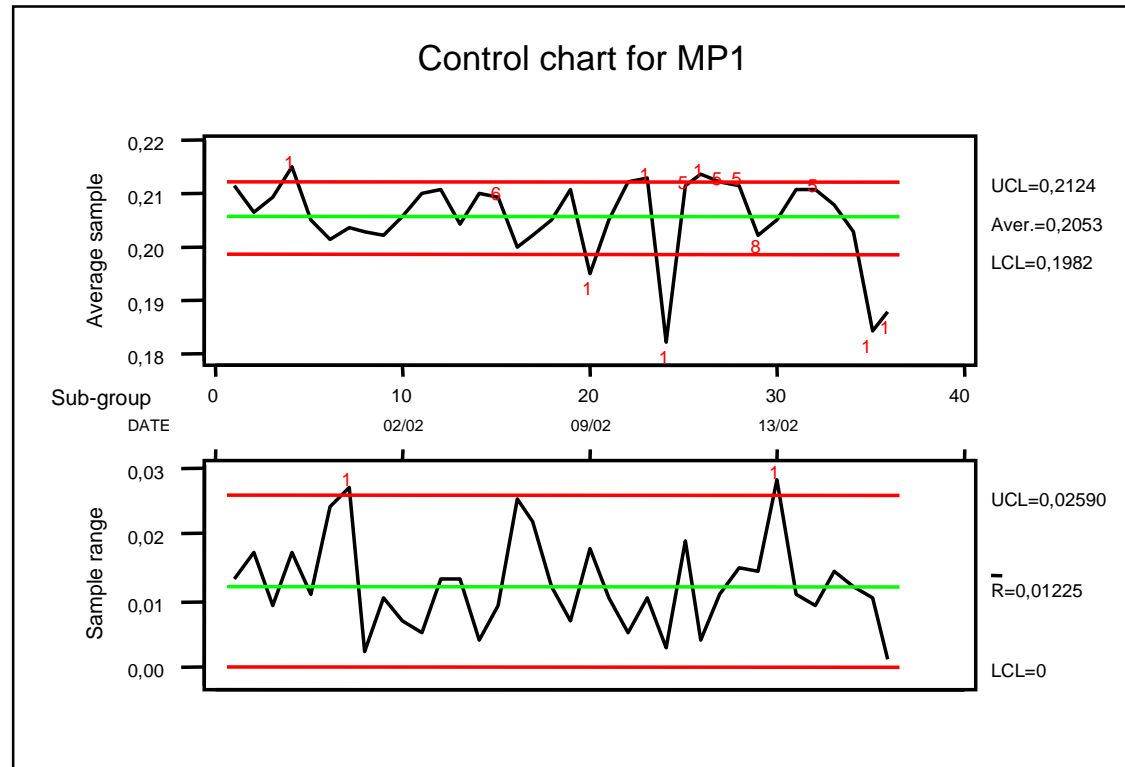
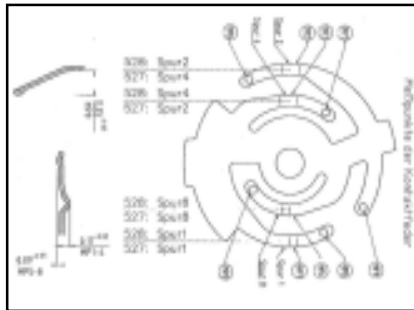


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Example: Encoders Measure



- We install a control card at the encoder suppliers

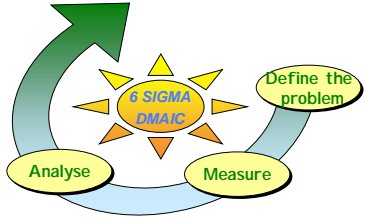


- An unstable process with nonrandom sources of variation

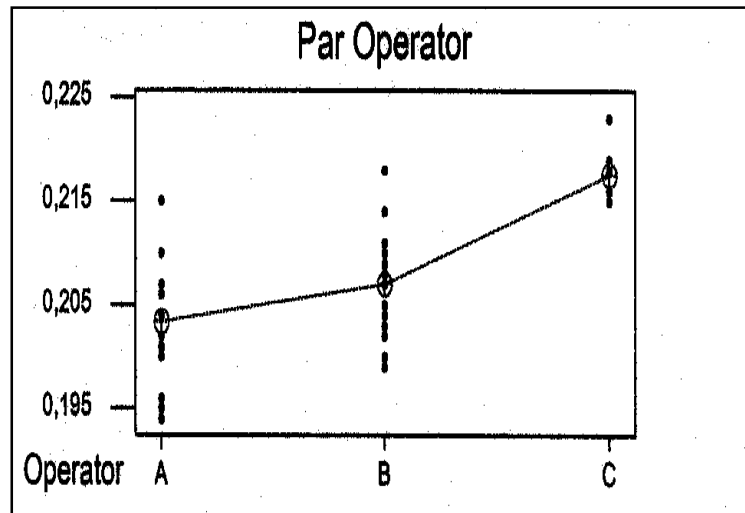
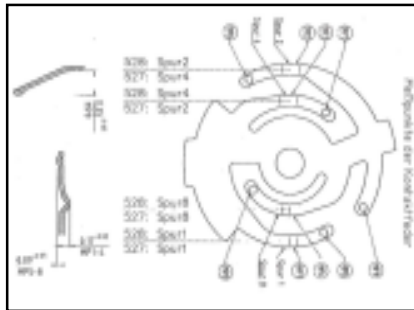


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Example: Encoders Analyze the two main causes



1. Thanks to the "Gage R&R" tool, we can identify a very strong operator effect and major problems concerning repeat accuracy of measurements at the adjustment stage early in manufacture

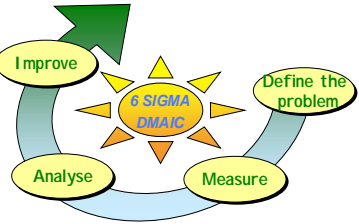


2. Crimping of the contact strip is critical since it causes the component to fracture during reflow process
Thanks to our Design Experiment experience plan, we adjust the crimping parameters (pressure, temperature, duration) and alter the thickness of the plastic

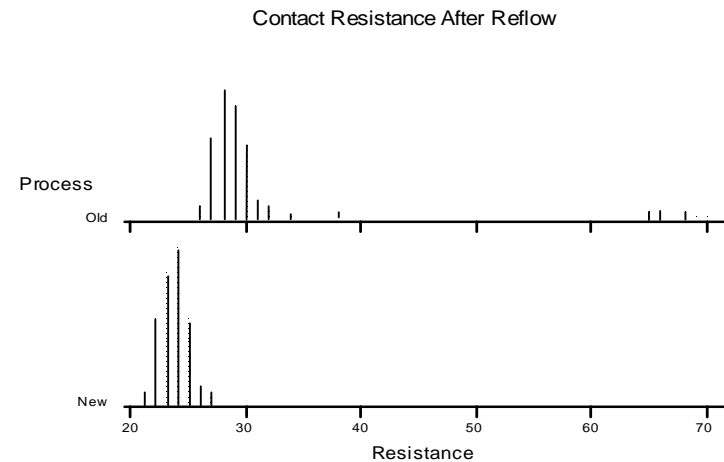
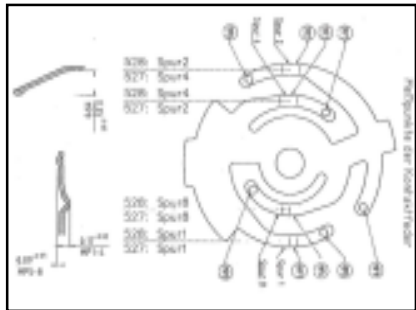


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Example: Encoders Innovate with two changes in the process



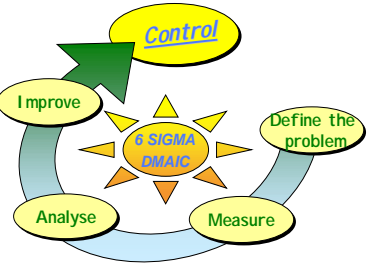
1. Introduction of a tri-dimensional laser type measuring system to cancel any operator effect during the measurement of the contact strips
2. Modification of the component cage to make it more robust regarding the card assembly process (reflow oven). A "hypothesis test" confirms that modification is effective



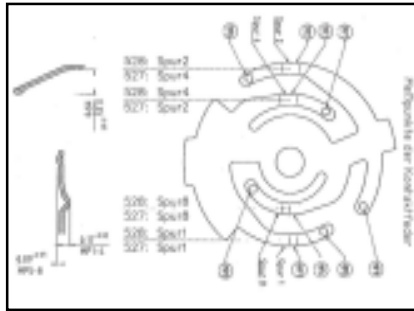


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Example: Encoders Control



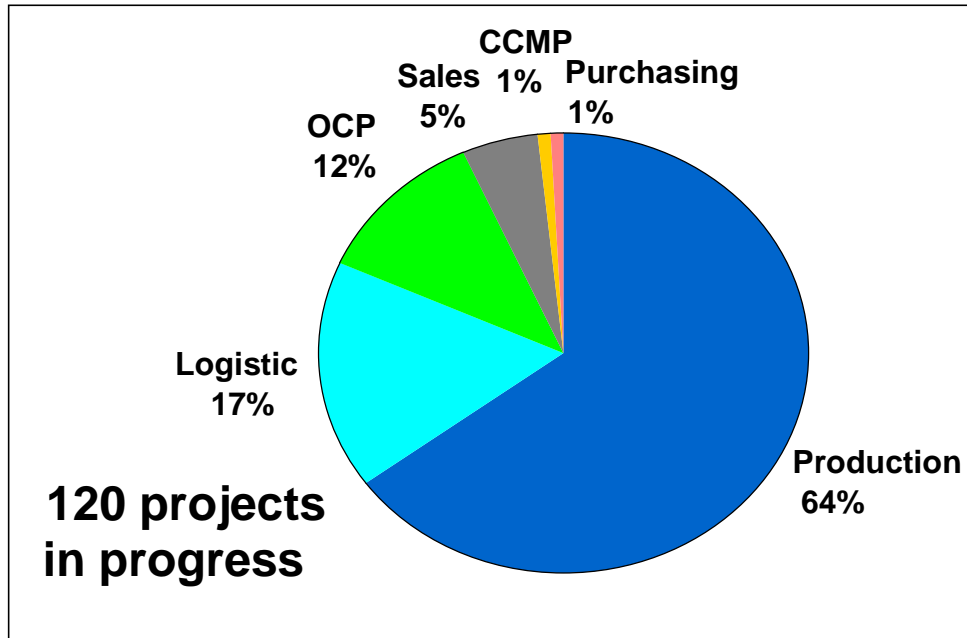
- The supplier installed four control cards on the process corresponding to key quality control areas for the component
- These cards are refreshed each week and are quality controlled.
- **Scrap related to encoders has dropped from 30,000 to 100 ppm**





Our ambition

Participate to 20% of industrial productivity savings by end of 2004 and improve productivity outside production



- 170 people trained or in training
- Main Entities involved today:
France, DDI, China, Australia, Brazil, Italy, Spain, Russia, Belgium, Ireland, Czech republic, UK...



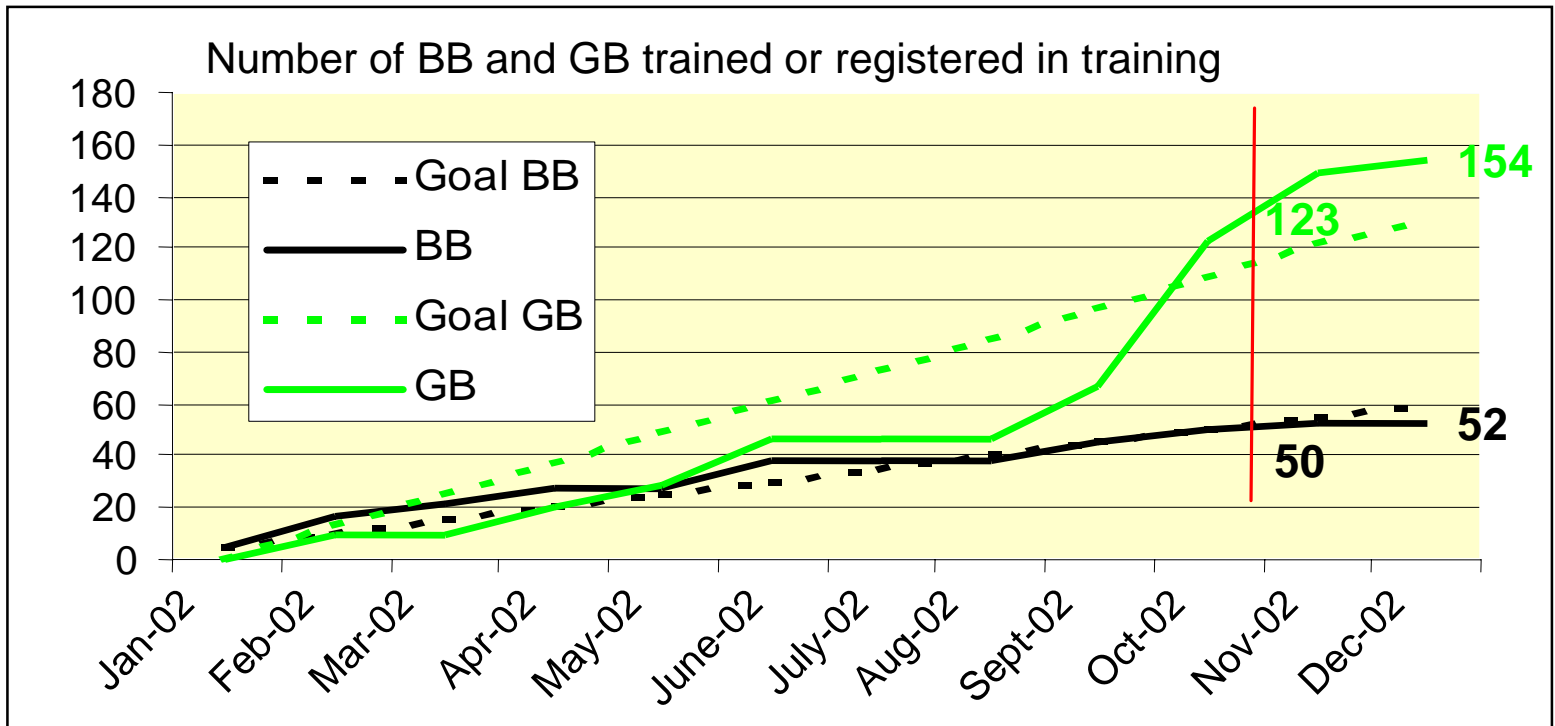
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Deployment

Plan

	2002	2003	2004
Black belts	50	210	300
Green Belts	150	860	1,600
Projects	120	1,000	2,500

Status





Concrete opportunities

- **120 projects in progress including 8 completed, i.e. €61M stakes* identified which of €14M of savings**
 - Actual average stakes per Black Belts projects: €400K (goal: €250K)
 - Actual average stakes per Green Belts projects: €180K (goal: €50K)
 - Cost of a training session: €4K, Black Belt: €8K

The expectations are huge

* Stakes include potential savings but also benefits from risk reduction for the company.

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Purchasing

Bernard Delvallée
Senior VP Purchasing



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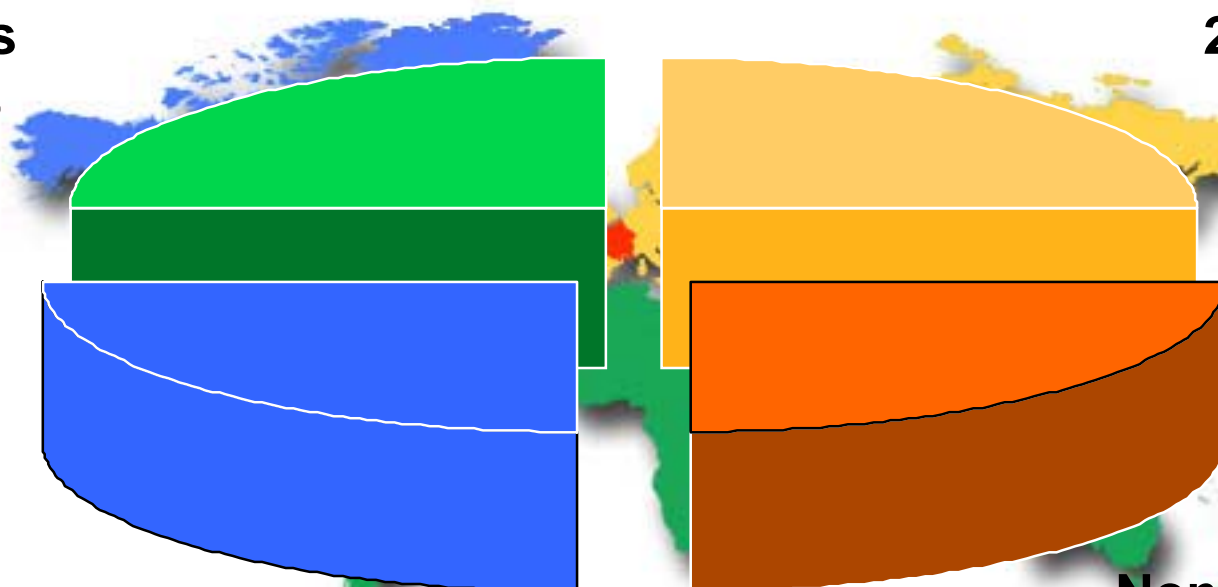
What are we buying?

Raw Materials & Production Means
25 %

Fabricated Components Metallic & Plastic
25 %

Electronic & Electrical
25 %

Non Production
25 %





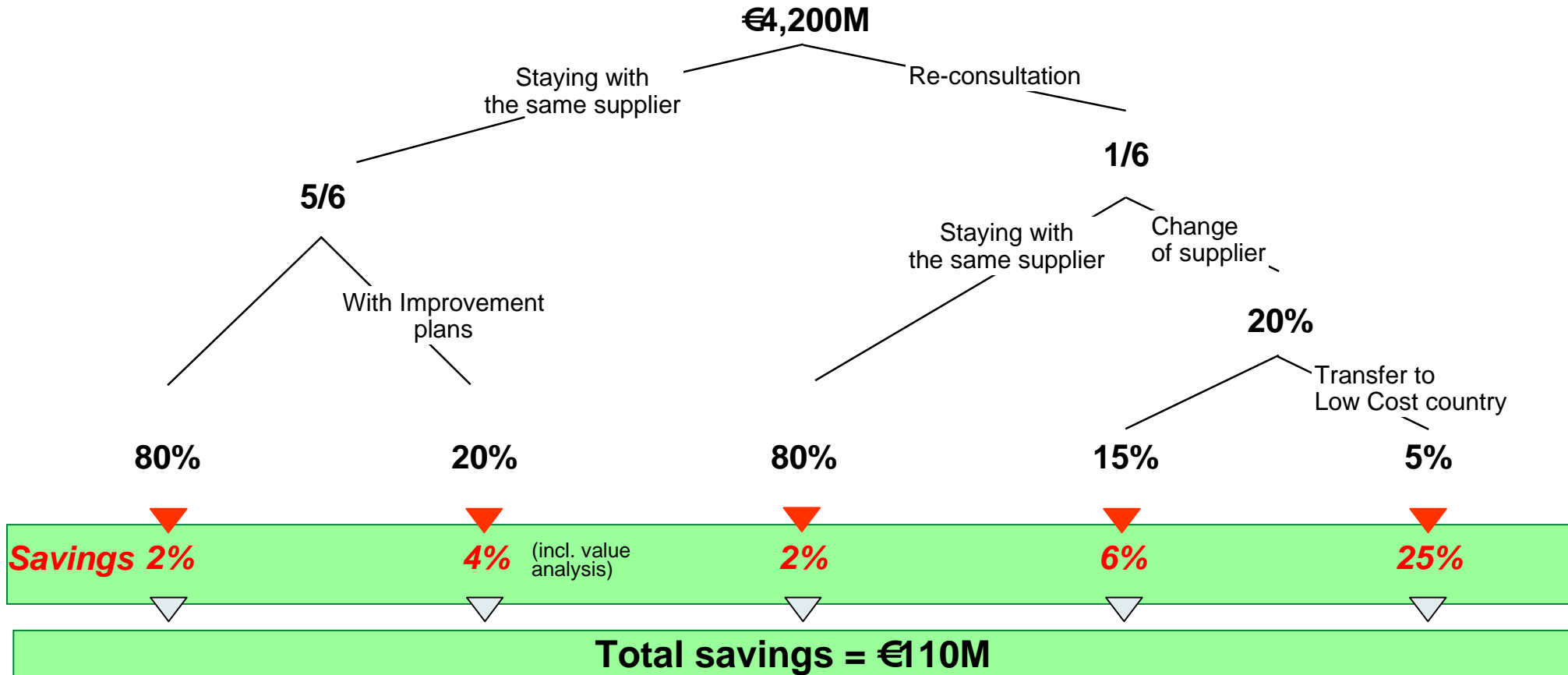
The magic formula

- **Performance = Activity x Efficiency**
- **x 2 Performance = 1.4 Activity x 1.4 Efficiency**



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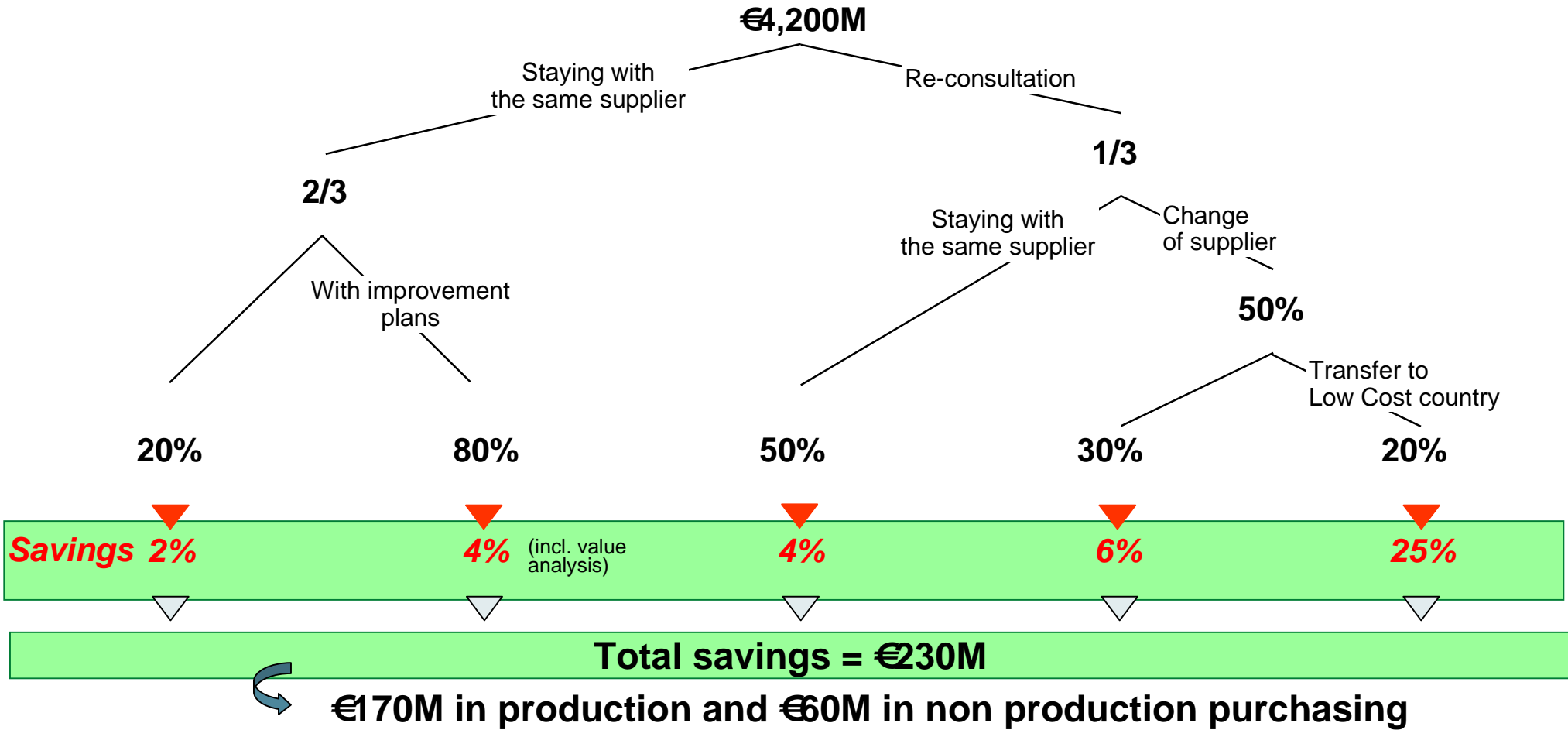
Trend of productivity in the past: 2% - 3% per year





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Our ambition Boost purchasing productivity to 5% - 6% per year





New rules of purchasing

- **Everything should be negotiated**
- **Every year we should re-consult for 1/3 of our purchases**
- **We should negotiate improvement plans in 80% of what we buy and this should bring a minimum of 4% savings**
- **When we re-consult, we should move from one supplier to another one every two times**
- **We should replace 10% of new suppliers every year**
- **We should take advantage of Low Cost Countries and transfer a minimum of €250M every year**



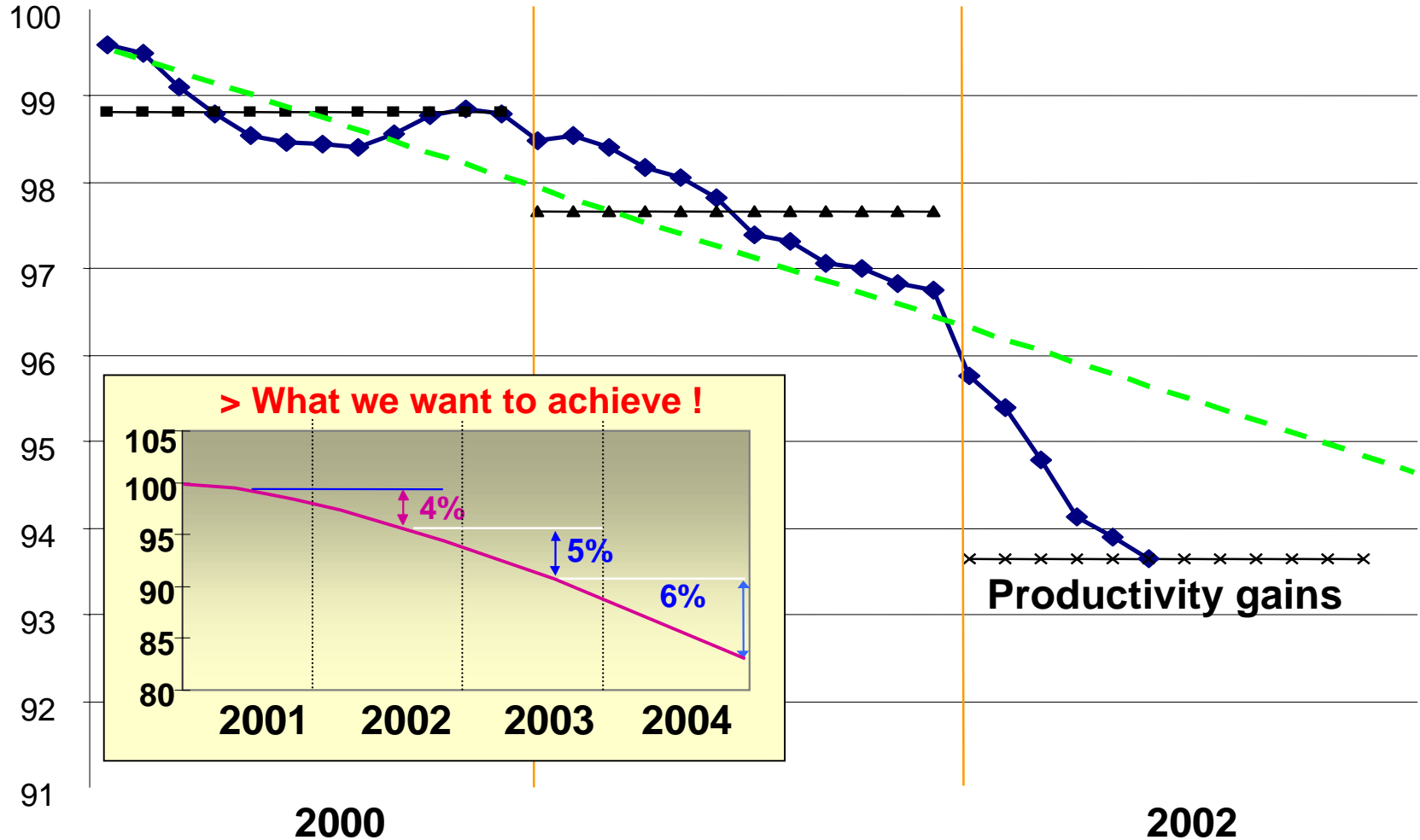
New objectives of efficiency

- **Staying with the same supplier, w/o improvement plan: 2%**
- **Staying with the same supplier, with improvement plan: 4%**
- **Moving from one supplier to another one in the same geographic zone: 4 to 10%**
- **Moving from one country to a Low Cost Country: Up to 30%**



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Boost purchasing productivity First results





Our priorities

- **Efficiency:** implement the productivity path, market by market, product by product
- **Globalisation:** reduce the number of suppliers and introduce new ones, set up hierarchical T2 management, improve products networks efficiency
- **Organisation** (France, Italy, SENA, ...)
- **Internationalisation and localisation**
- **Processes** (qualification, suppliers change, ...)

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Manufacturing

Laurent Vernerey
Senior VP Manufacturing-Logistics



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Our ambition

€110M of productivity per year by end of 2004

Our objective

- Generate manufacturing labor and base cost cumulative productivity savings of 20% by the end of 2004 through a total "Lean Manufacturing" implementation

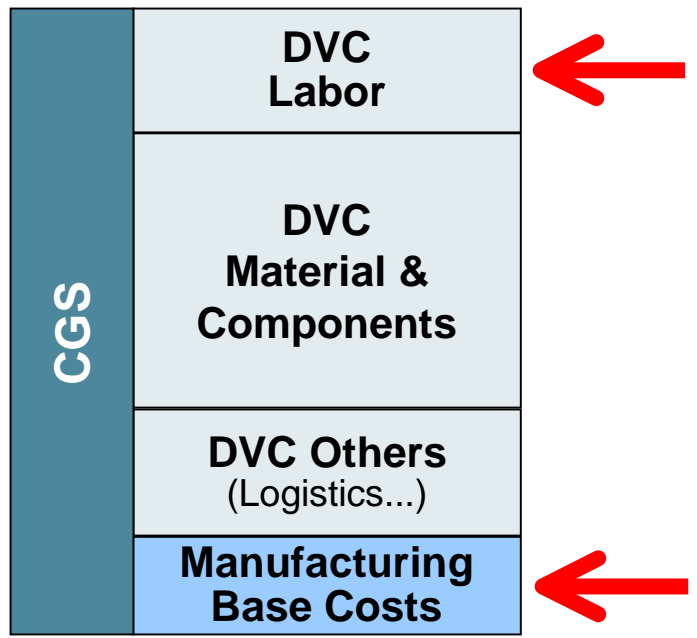
Our approach

- Implement operationally on 5 pilot sites first and then expand to 100 major sites
- Capture and share best practices by developing the Schneider Production System - SPS



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Focus is on direct labor costs and manufacturing base costs



"Manufacturing Excellence" Challenge

-20%

100 plants to tackle 80% of Schneider Electric manufacturing labor and base costs worldwide

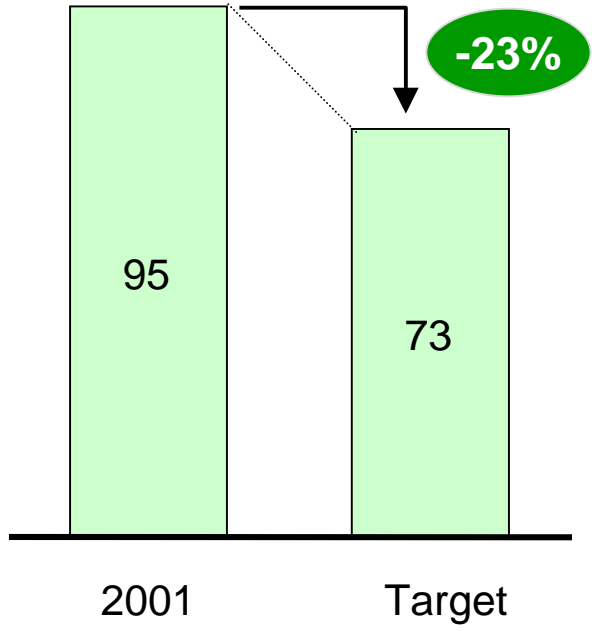


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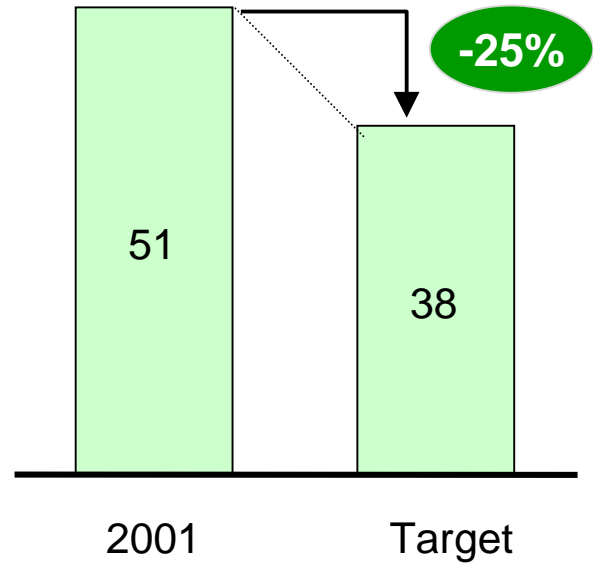
Diagnostic on 5 plants shows potential cumulative gains of 20% to 25%

€ Million

Costs of production staff



Impact on inventories



Other potentials identified

- Reduce customer delay
- Increase quality of service



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Lean Manufacturing consists of reducing 7 sorts of wastes

1. Over-production
Use too much
Produce too early

2. Waiting
To end a cycle, for an item or a machine

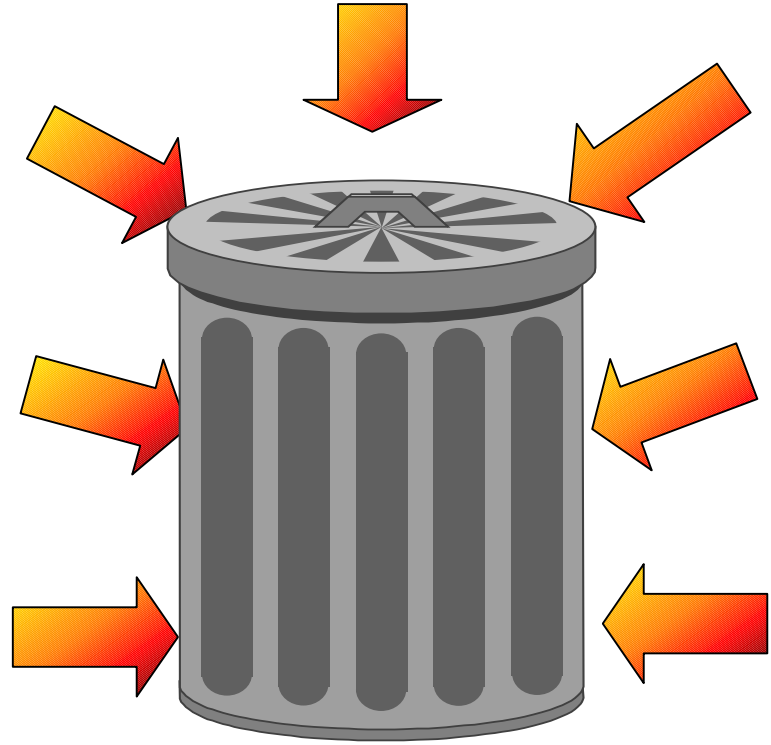
3. Transport

4. Process
Every step not necessary

7. Inventory

6. Repair

5. Micro-movements





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Key challenges to achieve our ambition Schneider Production System - SPS

Acquire
Lean Techniques

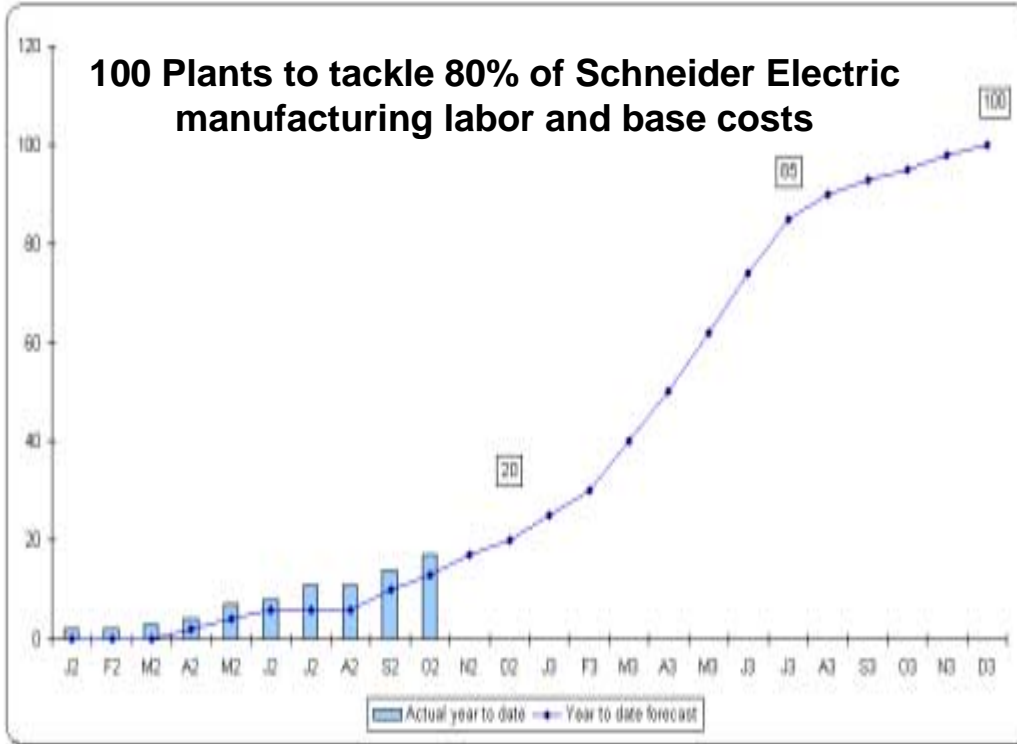
Change behaviors
and
improve performance
management

- **Master Lean Manufacturing techniques**
 - Train 25 - 30 regional and corporate experts
 - Train 160 - 190 experts locally
- **Improve performance management**
 - Visual scorecards
 - Management involvement
- **Plant manager is KEY ACTOR to lead change management**
- **Develop a "Continuous Improvement" mindset**



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Progressive deployment to implement Manufacturing Excellence worldwide



- **Implemented at 17 sites** (27 plants involved end of 2002)
- **46 experts in training** including 21 central experts (end of 2003: 230 experts including 30 central experts)
- **The savings are, so far, in line with the objective**
- **Capture and share best practices by developing the Schneider Production System** (strong involvement of France Manufacturing Operations and SENA Advanced Manufacturing team)



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Example: AFI Plant from line to cell



AFI plant
LV - Electrical Distribution
Products:
Masterpact, Compact CM

Potential identified: €2.5M

Lean Manufacturing will be
deployed by late 2004

"The Manufacturing Excellence approach used on the AFI site is largely based on the principles of Lean Manufacturing.

The results of an initial workgroup completed in 2002 are very encouraging, with 50 per cent savings on labor and another 50 per cent savings on manufacturing surface area. This involved refocusing operatives on the added value of their assembly, enhancing their versatility across the entire production line, and setting up U-shaped, "lean" workstations at key locations in this new "facility". Such a success held in itself the promise of a second workgroup, which was launched early October last."

Didier Le-Bour - Plant Manager AFI
(Moirans - France)

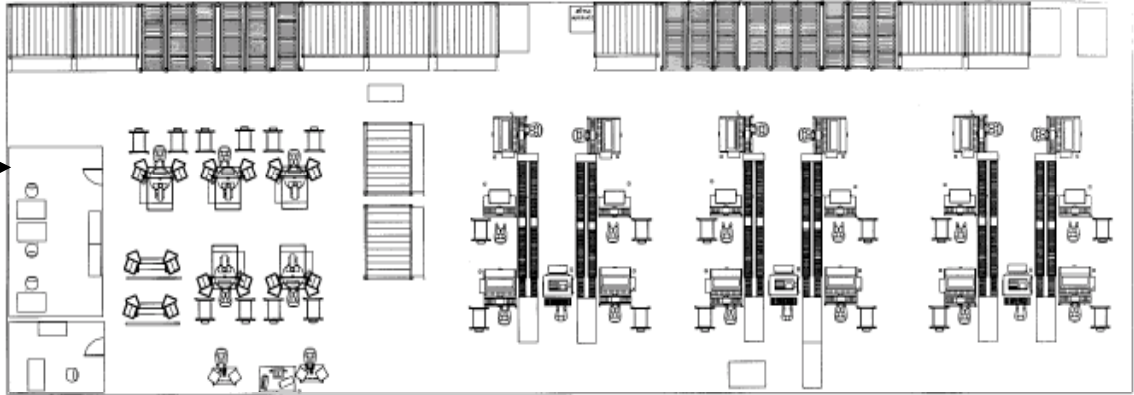
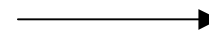




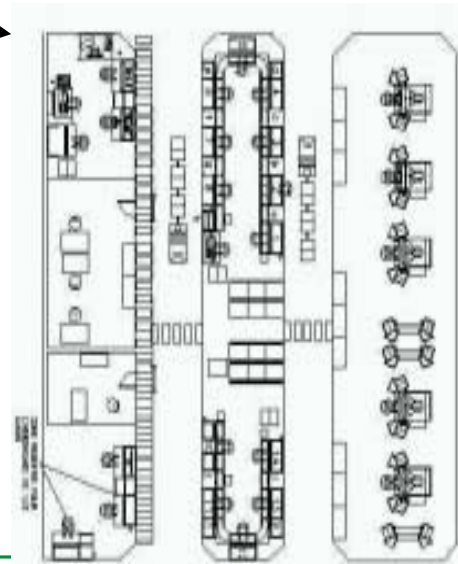
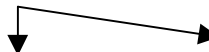
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Example: AFI Plant from line to cell (cont'd)

Before



After



Reduction of surface: 332 M2



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Example: Burlada production unit



Burlada production unit
Products: industrial control - DHM

Potential identified: €1.7M

"The Burlada production unit was the first unit in the Iberian zone to host a Manufacturing Excellence workgroup. Right from the very start, we observed very high employee involvement in this major change process.

The diagnosis completed confirmed end-of-period savings of 28% in direct labor, in particular through in-depth restructuring of our production processes (line reconfiguration, internal logistics, etc)."

Juan Azanza - Plant Manager (Spain)



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Quality & Value Engineering

*Adrien Scolé
Senior VP Cost Challenge*



Q&VE: a cost reduction process keeping Quality and Value at the right level

25% of our
Technical
Resources to be
allocated to Q&VE



■ Q&VE: Quality & Value Engineering

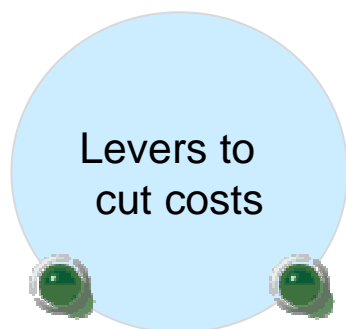
- To allocate part of our purchasing, engineering and manufacturing resources to reduce the cost of our existing products
- The cost reduction initiatives are developed without reducing Quality and Value perceived by Customers

■ Q&VE: an integrated process for product productivity

- Once a new product is released in production, this is just the beginning of its life
- The Product Line Manager is in charge of keeping his products in line with the market constraints (design to cost, cost-killing after a while, continuous improvement...)



Q&VE approach: toolbox



Analysis by Q&VE project type



Nomenclature Analysis



Cost breakdown



€/kG Analysis



AV coefficient Analysis



Supplier panel Analysis



Hourly rate Analysis



Manufacturing range Analysis



Value Analysis



Competition Analysis





Our ambition

€60M of productivity per year by end of 2004

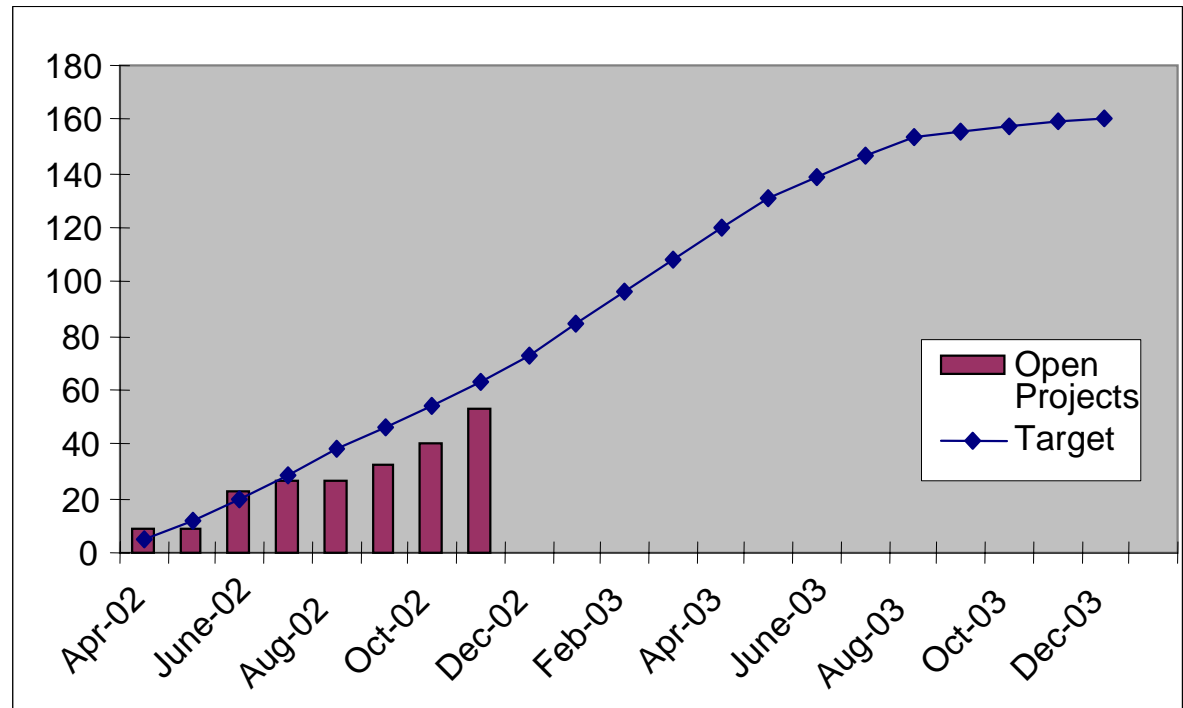
Increase Quality and Value Engineering productivity by reducing the cost of existing products

Situation today:

53 open projects end of 2002

Target:

160 open projects in 2004





Example: LV Miniature CB project Successful benchmarks

"The launching of the Q&VE project for LV miniature CB has enabled the sharing of valuable information between the development teams and manufacturing plants, mainly Vanossi (Italy) and Alès (France).

Two types of gains were identified based on the benchmark findings:

- Purchasing-type quick wins in the short term
- Product optimization in the medium term".



Bertrand Cabaret
DIT
Project Leader

Estimated savings by end 2004: €4.5M

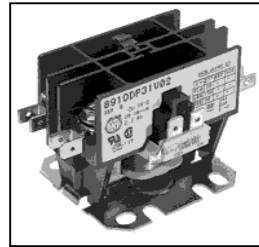




Product cost reduction initiatives for NEMA products in North America



Gun Bhakta
Project Leader



Contactor



Overload relay



Contactor

"This product cost reduction initiative launched in the frame of the IA (Industrial Automation) Challenge brings **3 points of satisfaction** in SENA (Schneider Electric North America)

- Project teams are mixed SENA and DDI (Group) which brings **savings on both NEMA and IEC products**. The team is global, based in the USA, Mexico and France.
- The initiative focuses on the brainstorming phase and sustains also the implementation: it increases the **success ratio of savings implemented vs identified**.
- **A 15% of cost reduction is foreseen** on the 3 products analysed, bringing **€2.7M of annual savings in 2003/2004"**.

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Conclusion

Marcel Torrents



Productivity: the stakes

- Boost short term industrial productivity from 1 to 2% per year to 5% per year



Objective ↔

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Two axes:

- Create structural conditions to **maintain** the level of 5% per year



Building a **New Electric World**

