



PQ UNTERNEHMENSBERATUNG GMBH



AUTOMOTIVE MINDSET: QUALITY AS A DIFFERENTIATOR



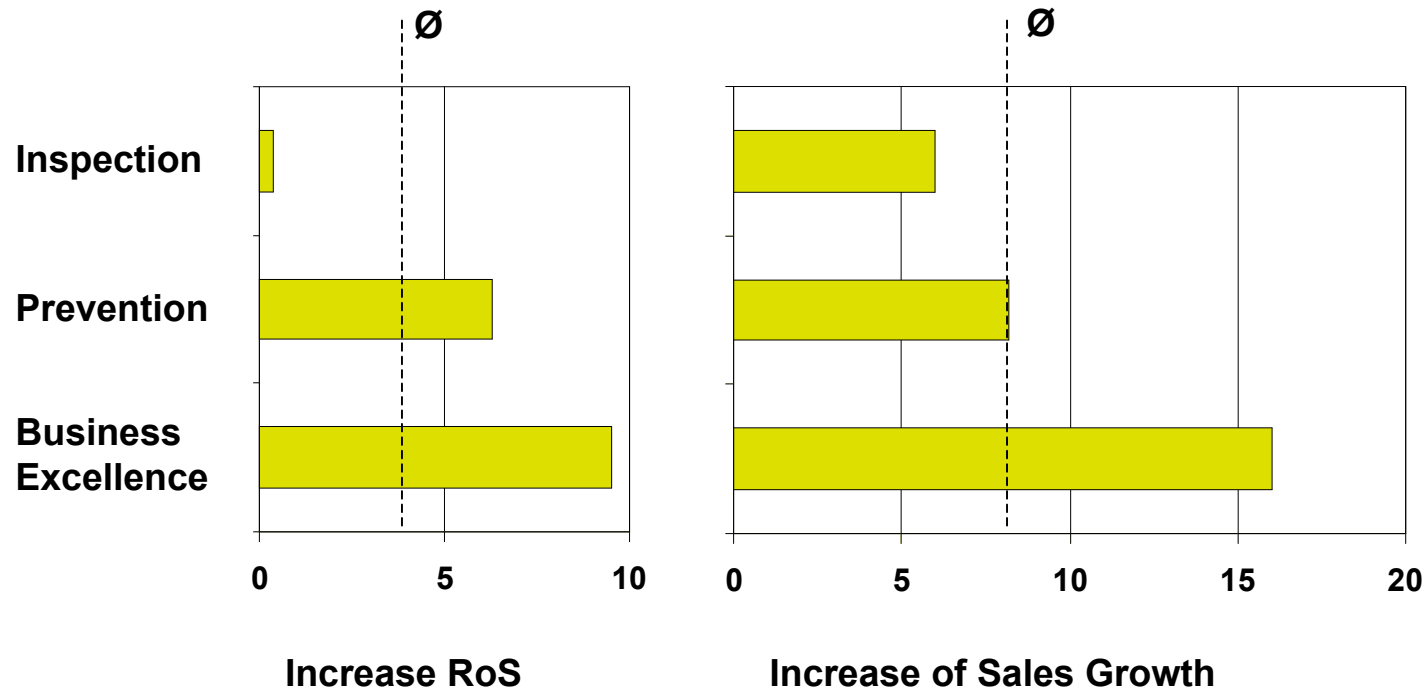
CONTENTS

- + Quality and Automotive Business
- + Trends of Quality and the Automotive Market
- + Customer Expectation and Relationship
- + Requirements to fulfill the Targets – Technology, Quality and Timing
- + The Paradigm Shift from Functional to Process Orientation
- + The New Way of Management
 - + Project Management
 - + Supply Chain
 - + Quality Functions
- + Conclusions



QUALITY AND AUTOMOTIVE BUSINESS

Proficiency in Quality drives RoS and Growth



Source: "Geschäftserfolg – Messlatte für das Qualitätsmanagement", Gerd Stegmann

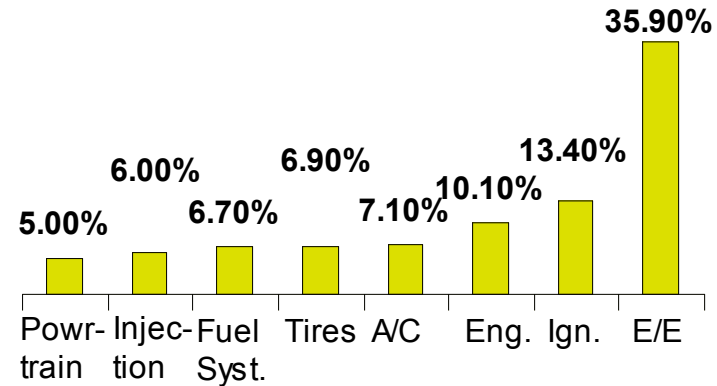


TRENDS OF QUALITY AND THE AUTOMOTIVE MARKET (I)

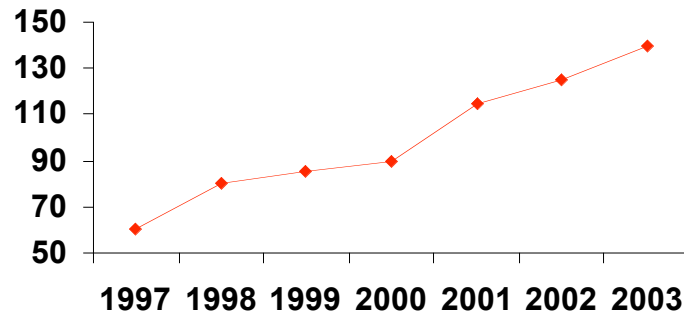
Brand Image and Quality

Image	1st place
Good Craftsmanship	OEM 1
High Dependability	OEM 2
Good Service	

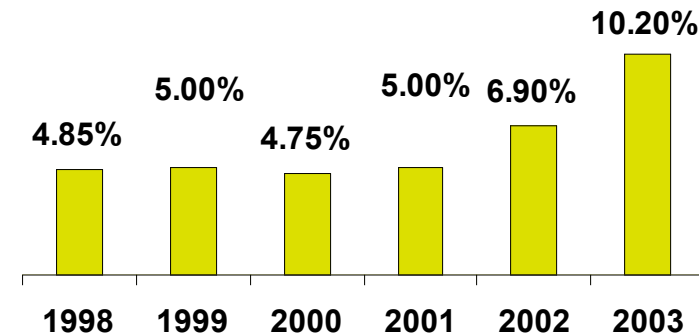
Breakdown statistics – new cars



Recalls per year



Warranty Cost in % of Revenue

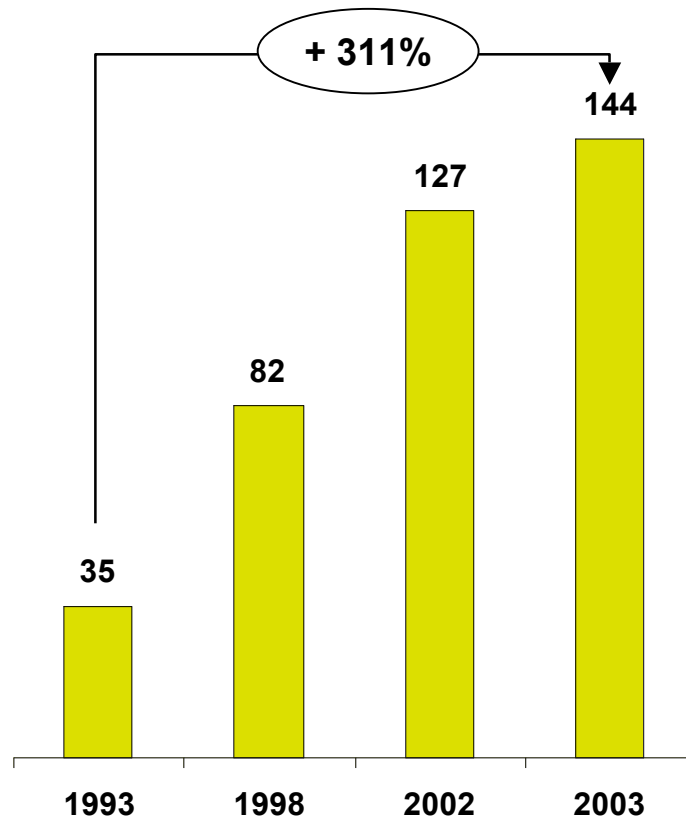


Sources (clockwise): ams, 17.4.2002; ADAC Pannenstatistik 2003; Automobilwoche 2003; Automobil-Prod 23/04



TRENDS OF QUALITY AND THE AUTOMOTIVE MARKET (II)

Number of recalls per year

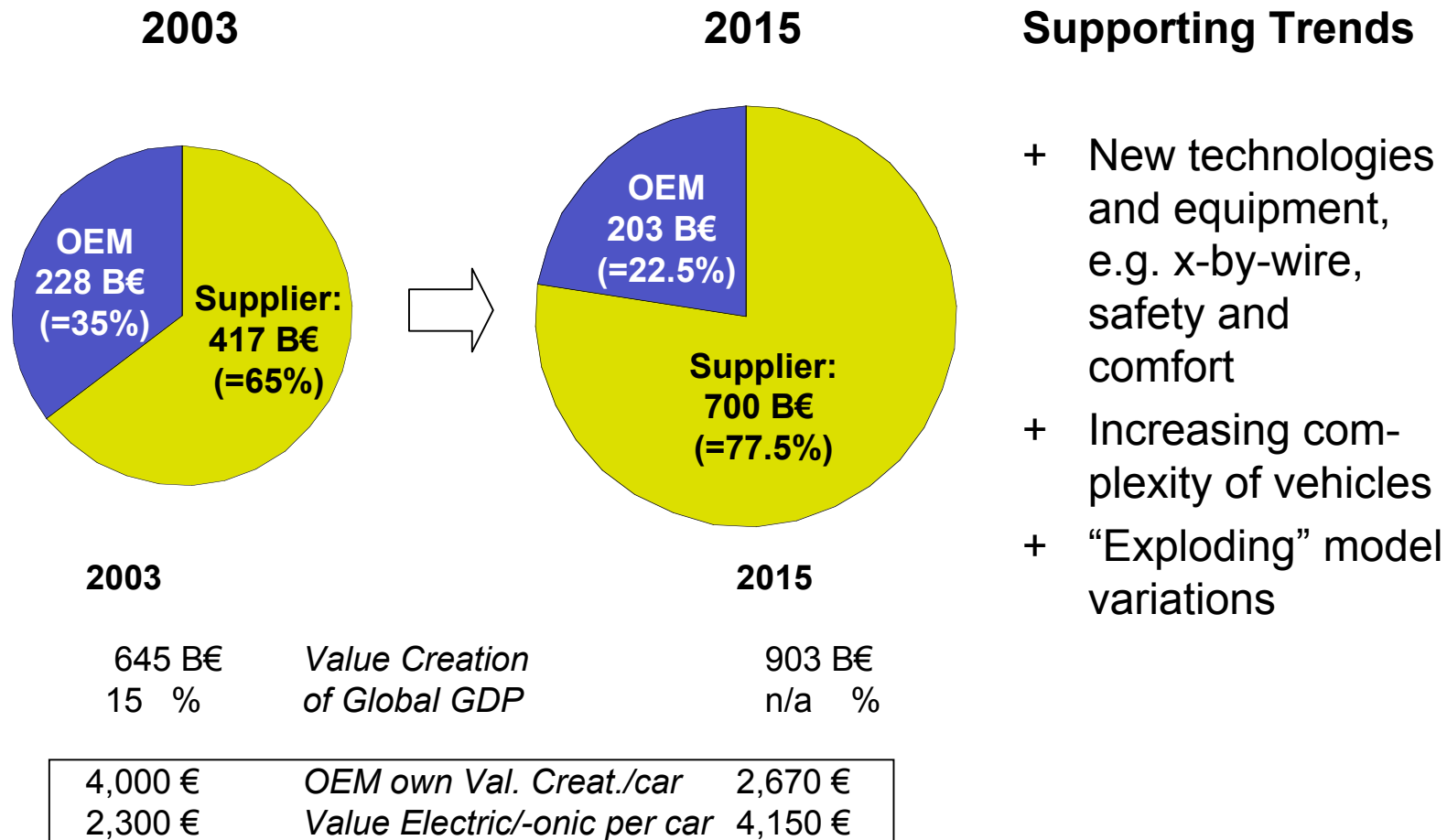


Main defects

- + **Malfunctions of electronic control units**
- + Malfunction (ignition) of Airbags
- + Defective seatbelts
- + Breaking parts of chassis
- + Breaking wheels
- + Unlocked trailer coupling

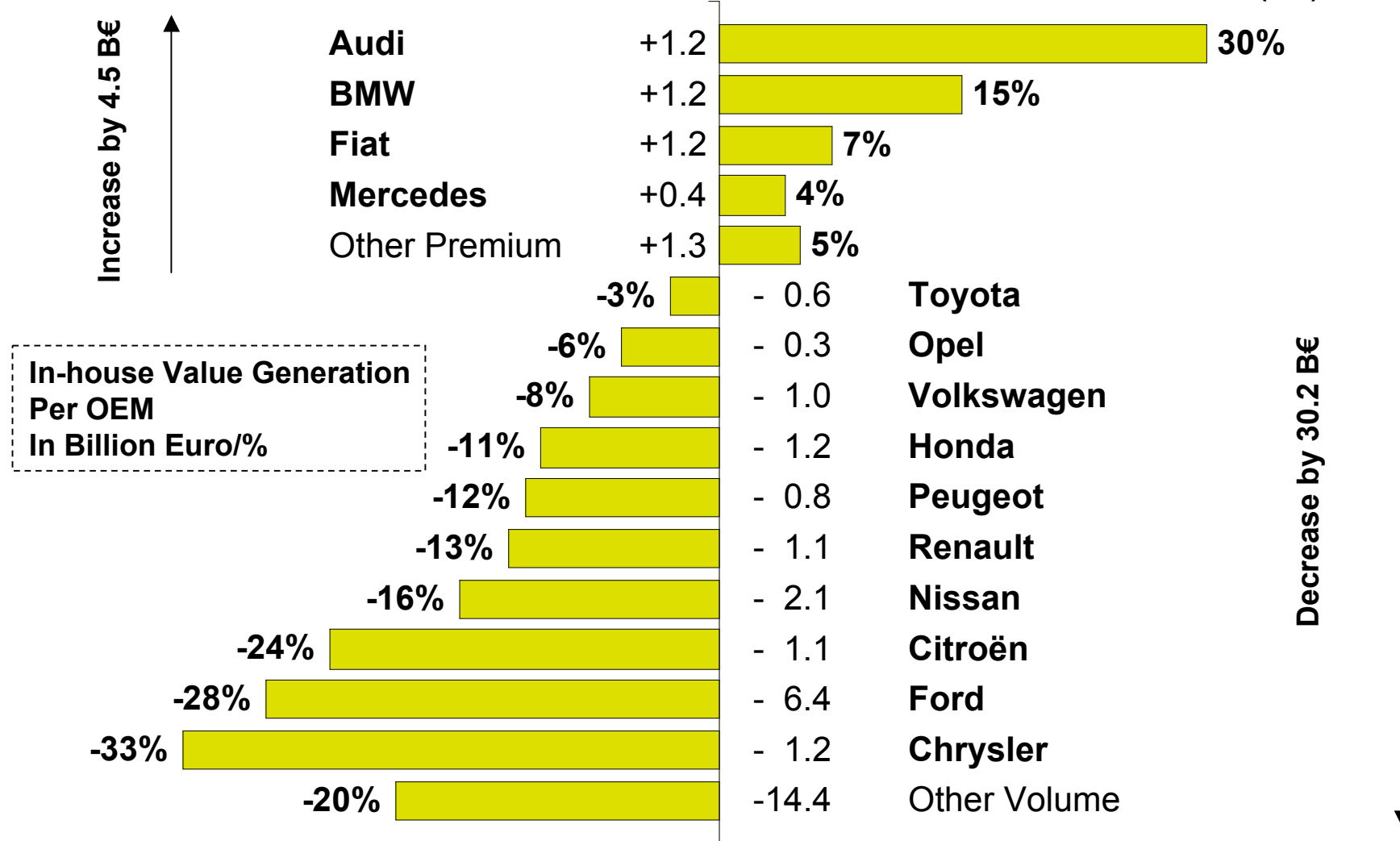


TRENDS OF QUALITY AND THE AUTOMOTIVE MARKET (III)





TRENDS OF QUALITY AND THE AUTOMOTIVE MARKET (IV)



Source: Mercer Management Consulting/Fraunhofer (2002 – 2015)

01.12.2005

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CUSTOMER EXPECTATION AND RELATIONSHIP

- + **Product Maturity (Concept Quality)**
 - + Technical Requirements
 - + Project Management Processes
 - + Milestone Reviews
 - + ppm targets
- + **Robust Processes (Process Quality)**
 - + First Pass yield
 - + Production Stock
 - + Field returns
- + **Customer Service (Service Quality)**
 - + Service on-site
 - + Regular Meetings
 - + Problem Solutions



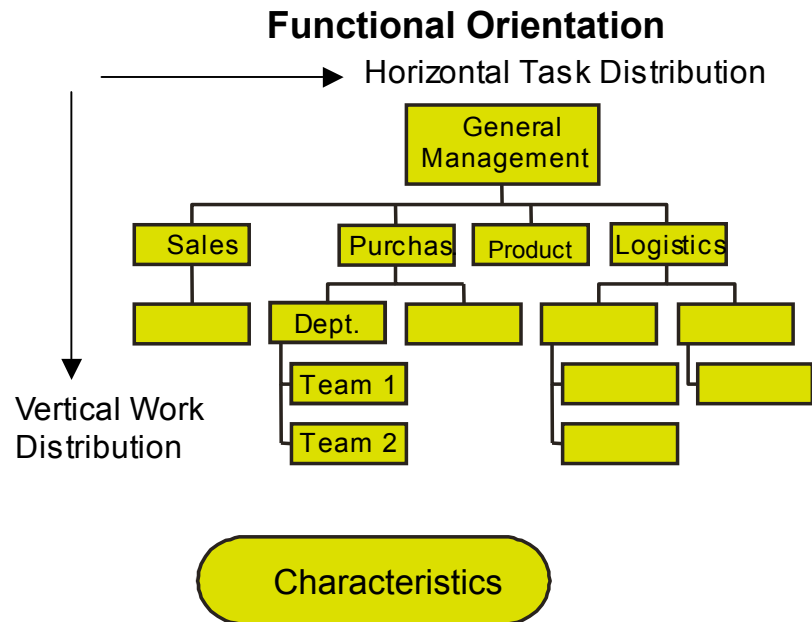
REQUIREMENTS TO FULFILL THE TARGETS TECHNOLOGY, QUALITY AND TIMING

- + Change Management
- + Risk Management
- + Object Review
- + Suppliers PPAP
- + System FMEA Product
- + Product Design Freeze
- + Design Validation
- + ISO/TS 16949 Certification



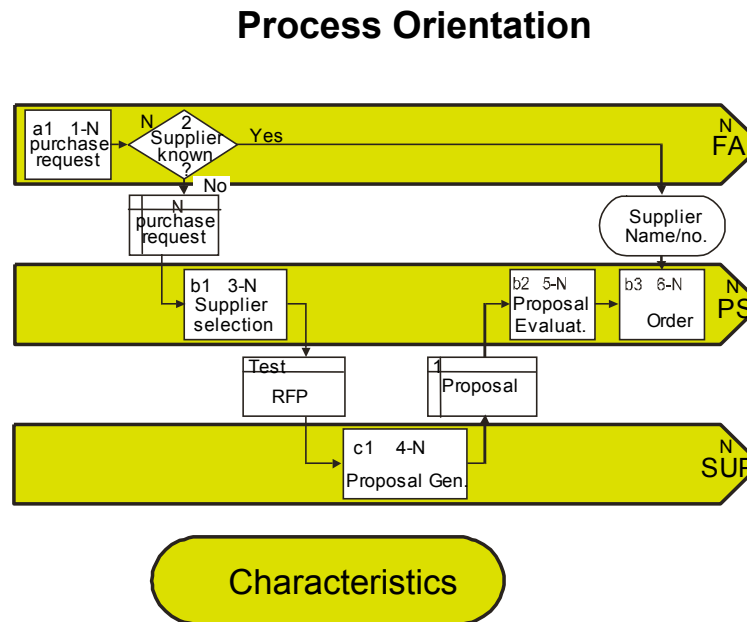
THE PARADIGM SHIFT FROM FUNCTIONAL TO PROCESS ORIENTATION (I)

First Industrial Paradigm (Adam Smith 1770)



- Partial Optimum
- Many interfaces
- Huge coordination effort
- Small areas of responsibility
- De-motivated Employees
- Static Rationalization

Second Industrial Paradigm (Toyota 1990)



- Total Optimum
- Less Interfaces
- Autonomy
- Holistic Work Content
- Motivated Employees
- Continuous Improvement



THE PARADIGM SHIFT FROM FUNCTIONAL TO PROCESS ORIENTATION (II)

From a Quality Perspective Process Orientation means...

- + Failures are the result of the development process – they are not personalized
- + Root causes of failures and defects are identified and removed
- + Quality is less incidental but the result of a carefully planned process
- + Prevention is prioritized over troubleshooting
- + Testing is a means of checking the process quality



THE PARADIGM SHIFT FROM FUNCTIONAL TO PROCESS ORIENTATION (III)

Quality Management  **Process Optimization**

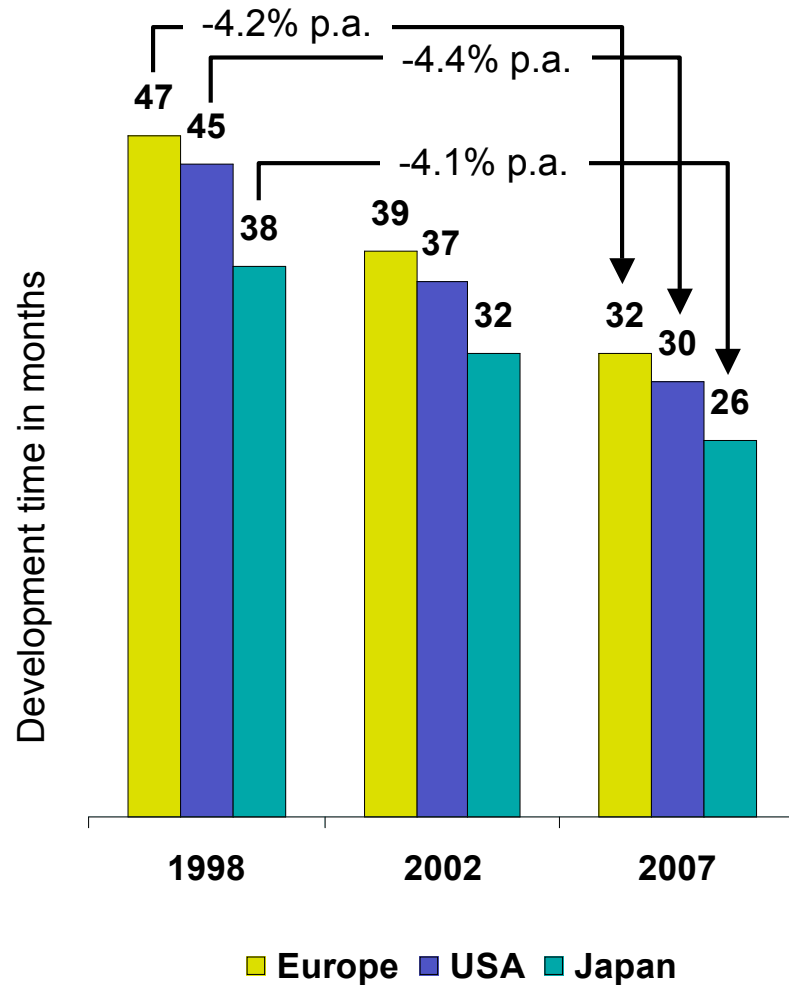
- + Quality Manual
(VDA 6.1/QS 9000)
- + EFQM
- + Auditing

- + Process House
(ISO/TS 16949)
- + CMMI Process
Orientation
- + Certification/Maturity
Audit

EFQM: *European Foundation for Quality Management*
CMMI: *Capability Maturity Model Integrated*



THE NEW WAY OF MANAGEMENT: PROJECT MANAGEMENT



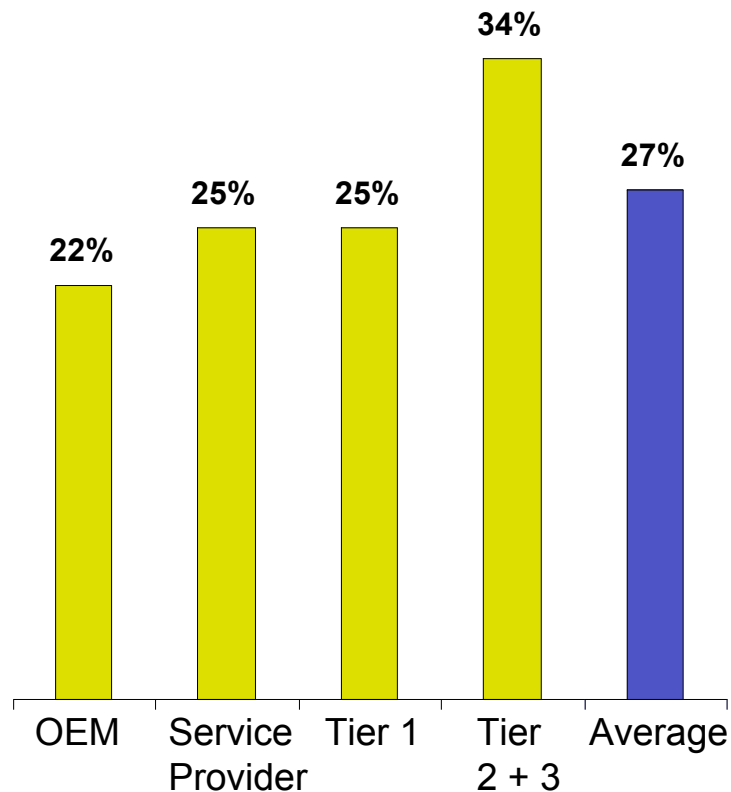
Supporting Trends:

- + Time-to-Market becomes a decisive success factor
- + Strategic Alliances in Development rapidly gain significance (e.g. joint engine programs Ford – PSA)
- + Common-Parts strategies further increase (e.g. modul/platform concept VW group)
- + New ways of working (e.g. distributed product development, development networks OEM - suppliers, simulation e.g. digital mock up)



THE NEW WAY OF MANAGEMENT: PROJECT MANAGEMENT (II)

Potential for Improvement



Source: Fraunhofer, 2003; Based on 140 Interviews

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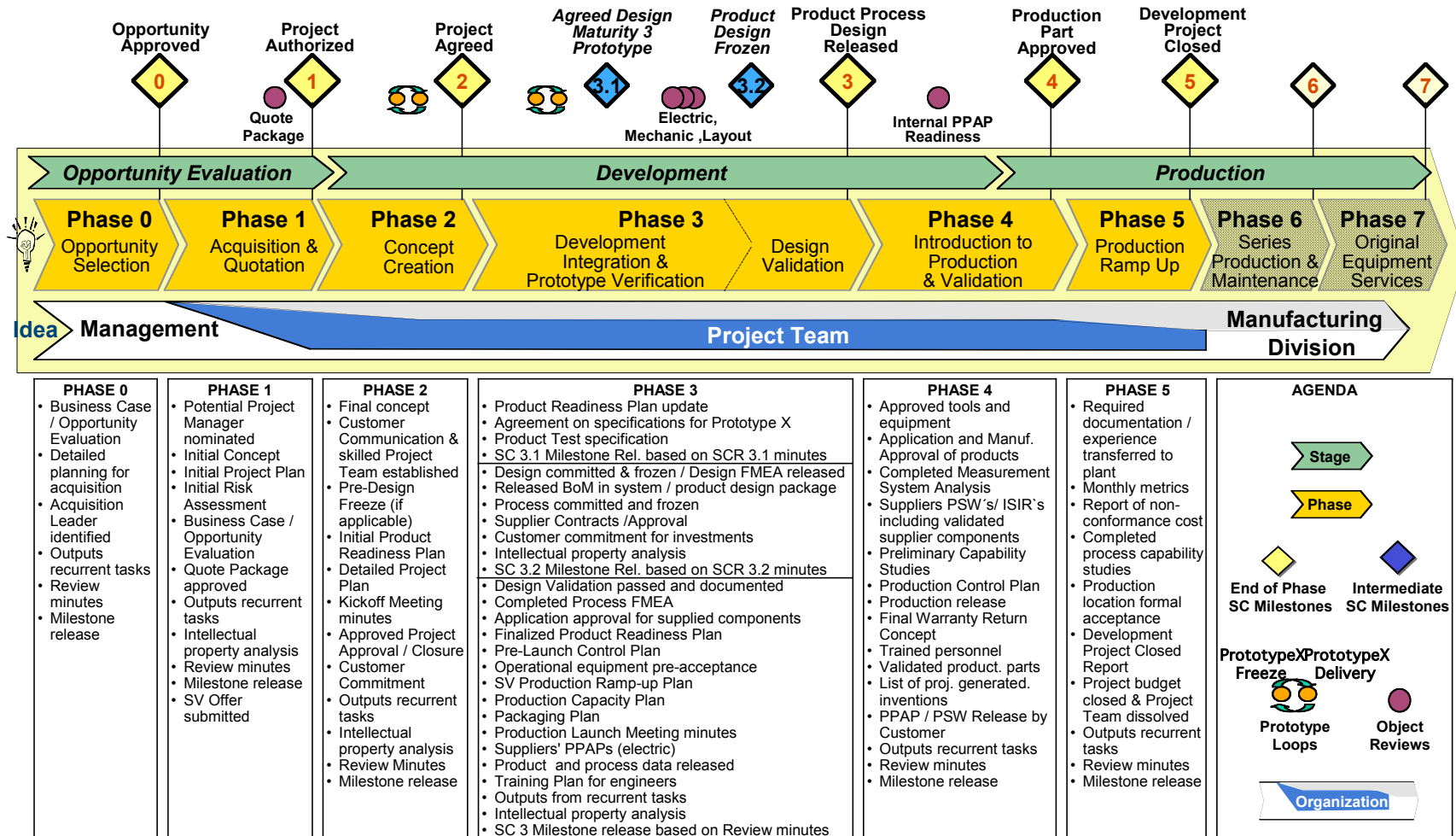
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Main results:

- + The potential for improvement is estimated at around 27%
 - + The biggest potential is attributed to the Tier 2 and 3
 - + The areas with the biggest potential for improvement are
 - + **Development Processes**
 - + **Cooperation**
 - + **Communication**
- as well as
- + Employee Orientation
 - + Organization
 - + Knowledge Management

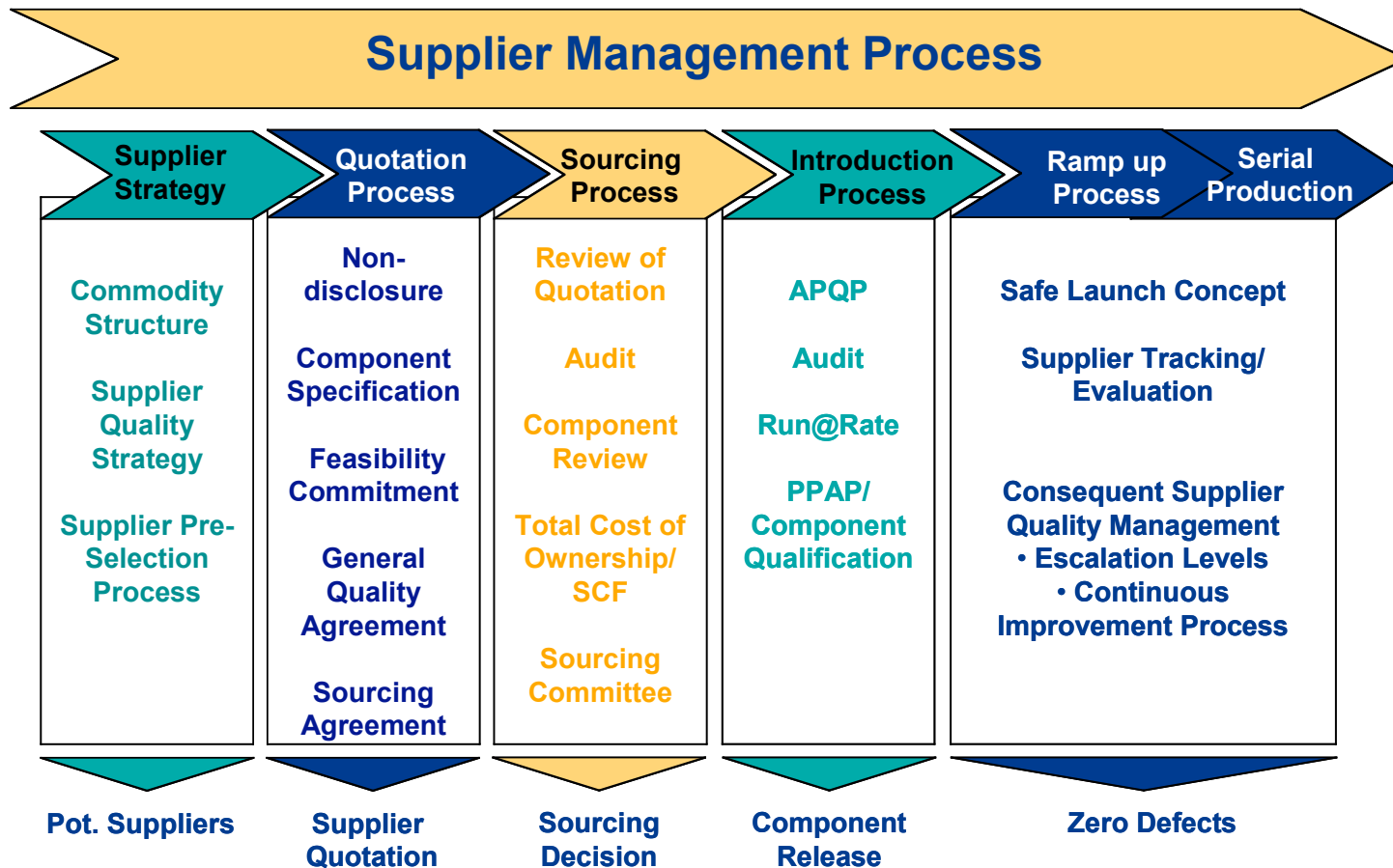


THE NEW WAY OF MANAGEMENT: PROJECT MANAGEMENT (III)





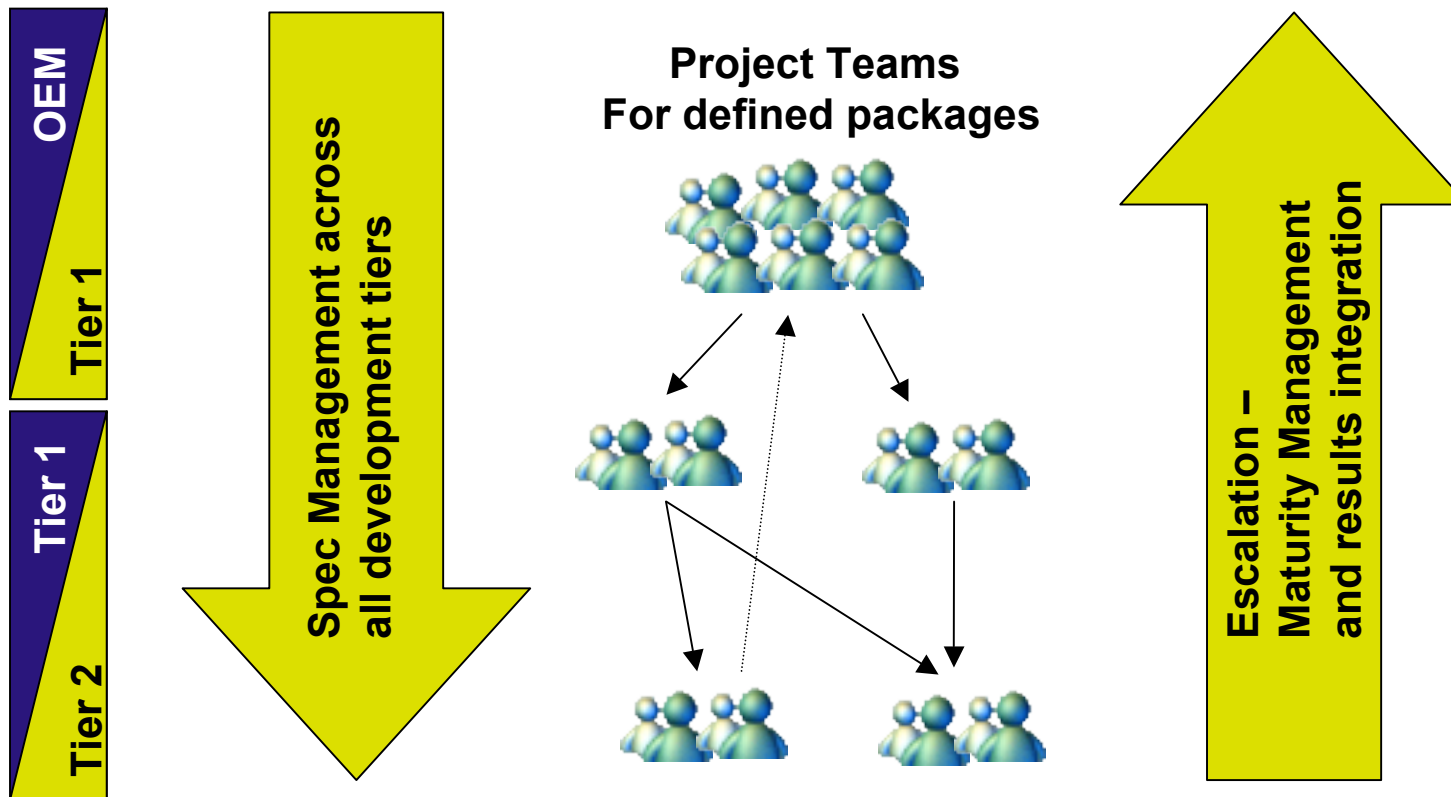
THE NEW WAY OF MANAGEMENT: SUPPLY CHAIN (I)





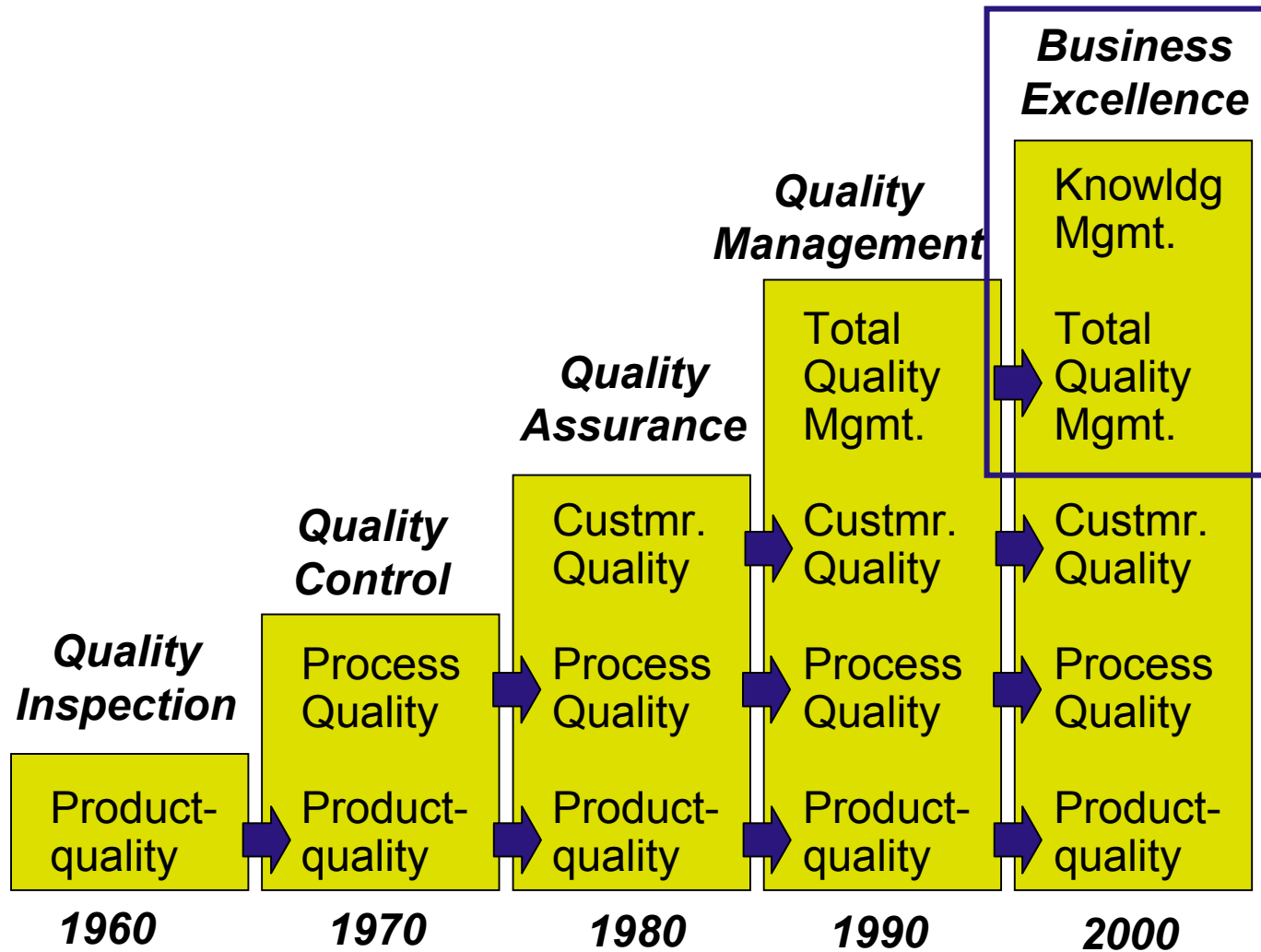
THE NEW WAY OF MANAGEMENT: SUPPLY CHAIN (II)

- + Integrated project Management over all tiers is OEM interest





THE NEW WAY OF MANAGEMENT: QUALITY FUNCTIONS (I)





THE NEW WAY OF MANAGEMENT: QUALITY FUNCTIONS (II)

Cornerstones of current Quality Relationships

- + Quality Management System
- + ISO TS 16949 /VDA 6.1... Certification
- + Process Descriptions (Procedures)
- + Process Audit
- + Product Audit
- + Methods for Prevention
- + Methods for Production Control
- + Quality Agreement (Contractual Quality Targets)
- + Bilateral Commitments



THE NEW WAY OF MANAGEMENT: QUALITY FUNCTIONS (III)

+ For Example: “*Process-Monitor Supplier*” by Volkswagen

- + Process Audit VDA 6.3 [%]
- + Downtime caused by supplied parts [%]
- + Problem-Reports per Supplier [#]
- + Supplied Parts Failure-Rate [ppm]
- + Field Return-Rate [ppm]
- + Warranty costs [€]

(without logistics)



THE NEW WAY OF MANAGEMENT: QUALITY FUNCTIONS (IV)

- + **Zero Defect...**
 - + is a Philosophy
 - + it could be
 - + 0 Failure allowed
 - + 100 ppm and less
 - + reduce the level by 50% (each year)
 - + 1 piece per month
 - + **But...**
 - + today 50 ppm might mean less than 1 piece per month
- + Certainty is only in the agreement between the partners
 - + **But** – more than 50 to 100 ppm is setting up for loosing



CONCLUSIONS

- + Automotive Business requires rigorous process discipline specifically concerning process and product change management – there is “zero tolerance”
- + “Zero defect” is not a buzzword but a necessary and mandatory objective for automotive suppliers
- + Process Management is not a paper exercise to maintain a TS certification but a mandatory requirement in order to achieve outstanding business performance
- + The Supply Chain has to be managed stringently with transparent and contractually committed requirements – with no difference between internal and external suppliers



AN AUTOMOTIVE MINDSET IS THE PRECONDITION FOR AUTOMOTIVE EXCELLENCE

- + An Automotive Mindset requires excellent leadership and continuous organizational development
 - + Close the gaps
 - + Relentless drive for improvement
 - + Demonstrate automotive discipline in daily decisions
- + Some key positions in the organization have to be filled with automotive talent
- + Maintaining Automotive Excellence requires intensive training efforts and involvement of the entire organization



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