

**55<sup>th</sup> EOQ Congress**  
World Quality Congress  
Budapest, Hungary - June 20-23, 2011

"Navigating Global Quality in a New Era"



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**June 22, 2011 (Wednesday)      55th EOQ Congress**

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**CONCURRENT SESSIONS**  
**KEMPINSKI HOTEL CORVINUS**

**Wednesday 8:30 – 12:30**  
**Erzsébet tér 7-8, Budapest V.**

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**REGINA BALLROOM II.**

**Wednesday 8:30 – 10:30**

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## **19.1. QUALITY IN THE AUTOMOTIVE INDUSTRY**

**Session Chair:** *Balázs Németh, Kvalikon Consulting, Hungary*

### **9.20 Quo Vadis Automotive Industry?**

*Jan Hnatek, Czech Society for Quality, Czech Republic*

**Hnatek, Jan** (Czech Republic)

He is graduated at Mechanical Engineering High School in Prague and afterwards at the Czech Technical University of Prague, Faculty of Electrotechnical Engineering. He had a PhD study in Quality Management at the Faculty of Metallurgy and Material Engineering, Technical University Ostrava. Jan is an ISO/TS 16949 registered certification auditor and EFQM Excellence Award Assessor. He spent 15 years as consultant and auditor in automotive industry supply chain.

In 1994 Jan joined SGS Czech Republic, Ltd., Prague, as Manager QA (Quality Assurance) Services Division creating the work team for management system certification services. From 1998 till now Jan operates own consultancy company named QH-Consult, Prague and he is active as a freelance auditor for automotive industry supply chain. Jan was founding member of the Czech Society for Quality (CSQ), President of CSQ in the period of 1998-2001 and Vice-President of the European Organization for Quality (EOQ) in the period of 2000-2006. He was project manager of the 51st EOQ Congress, 2007 in Prague. In this area he (co-) published several books and articles, coached and trained junior colleagues as a tutor and lecturer of CSQ. He is a member of the Executive Board of the Association for the Czech National Quality Award and Chairman of its Jury.

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## Quo Vadis Automotive Industry

**Dipl. Ing. Jan Hnátek**

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Kempinski Hotel Corvinus

Wednesday, 22nd June, 2011

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- **Introduction**
- **Automotive industry over past 2 decades**
- **Actual situation in supply chain**
- **Future consequences**
- **Conclusion**

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## Introduction

- In the late 1980's, taking advantage of a domestically captured East Europe market, the czech car producer Škoda Mladá Boleslav was selling every vehicle it could produce.
- Although the timing and specific details of particular trends will differ from industry to industry, what Škoda Auto a.s. experienced in last two decades since VW Group starting his position in Mladá Boleslav near Prague in 1991, is not only representative of the czech automotive industry, but czech industry in general, and provides lessons for all of us.

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## Automotive industry over past 2 decades

- In the late 1980's, in production, quality was primarily assured by inspection. Quality inspectors would randomly sample parts produced in each production department and make sure these parts met the required specifications. If they found parts that did not meet specifications, the operation producing these parts would be shut down for repair, the parts rejected and sorted.
- It was the manufacturing foreman's job to produce and ship as many parts as possible. So quality inspectors and foremen would occasionally find themselves working at cross-purposes with each other!

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## Automotive industry over past 2 decades

- In the start of 1990's, the new product development process was aided by the use of VW Group methods.
- Manufacturing operations became focused on reducing manufacturing variability around significant product or process characteristics that impacted customers. The goal was to achieve manufacturing capability of 1,67 Cpk or 1,33 Cpk for serial production, using tools such as SPC, Design of Experiments, QFD, Product and Process Failure Mode and Effects Analysis, and Control Plans.
- In engineering, the focus shifted from “finding and fixing problems” to “preventing problems” in design and developing activities.

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## Past 2 decades Management System's Development

### Excellence Models:

#### USA

- The MALCOLM BALDRIGE NATIONAL QUALITY AWARD since 1988

#### JAPAN

- The DEMING PRIZE since 1953

#### EVROPA

- The EFQM Excellence Model since 1991, last modification in 2010

### Standards ISO 9000:

1987 - first edition  
1994 - first edition revision  
2000 - big revision  
2008 - last revision  
2011 - start of further revision

### Automotive Suppliers:

1998 - QS-9000, 3.edition  
1998 - VDA 6.1, 4.edition  
1999 - ISO/TS 16949:1999  
2002 - ISO/TS 16949:2002  
2009 - ISO/TS 16949:2009

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## Requirements of VW Group, Daimler, FoMoCo, GM, Chrysler, PSA, Toyota & others for its suppliers:

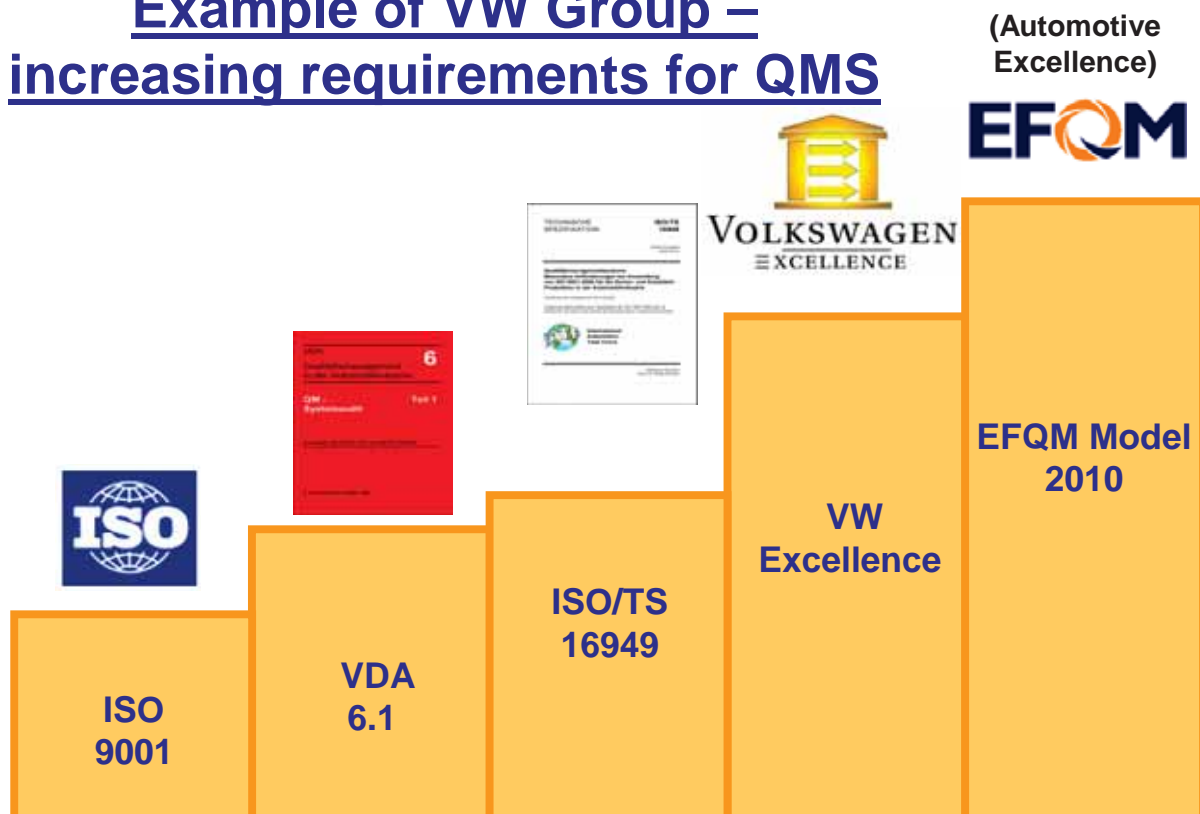
- To be conform to the requirements of the Technical Specification ISO/TS 16949:2009 based on ISO 9001:2008
- Process approach based on organization's processes performance instead of conformity approach
- Key Performance Indicators shall to be established, followed and analysed for improvements
- Customer Specific QMS requirements for Suppliers (CSR)
- Continual Improvement of product delivered and organization's processes focused to quality and costs.

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## Example of VW Group – increasing requirements for QMS



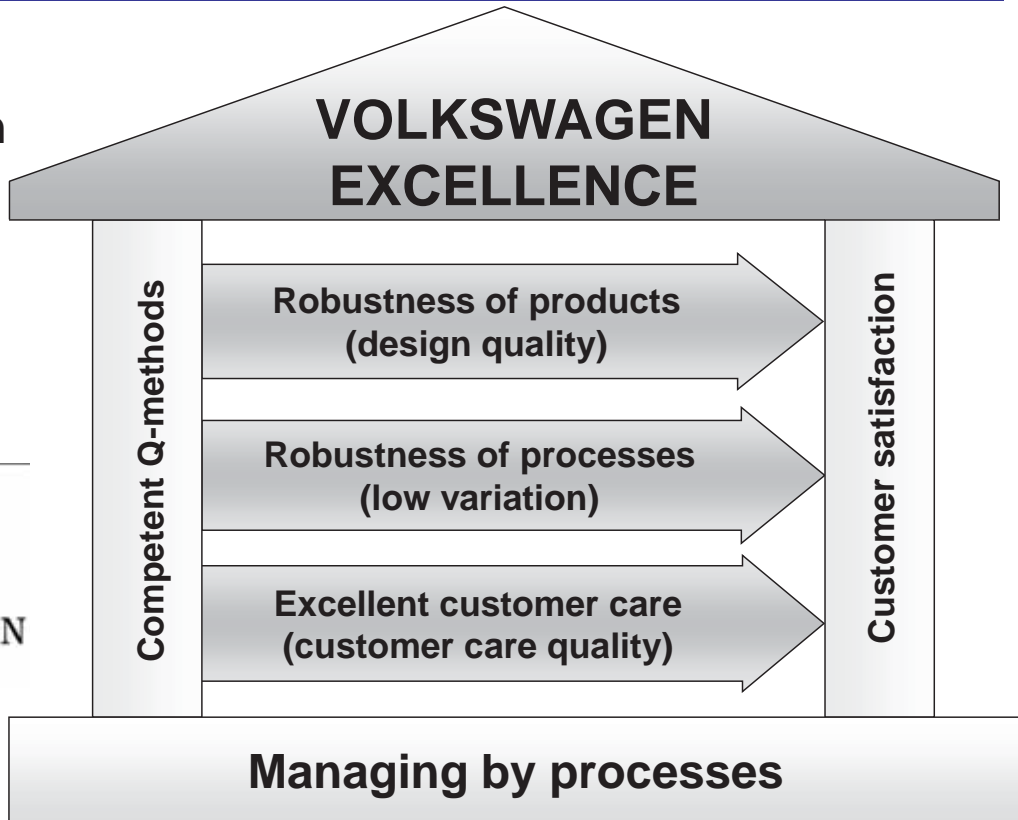
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## Example of VW Group inclusive ŠKODA AUTO a.s.

Volkswagen  
Excellence  
strategy  
key pillars



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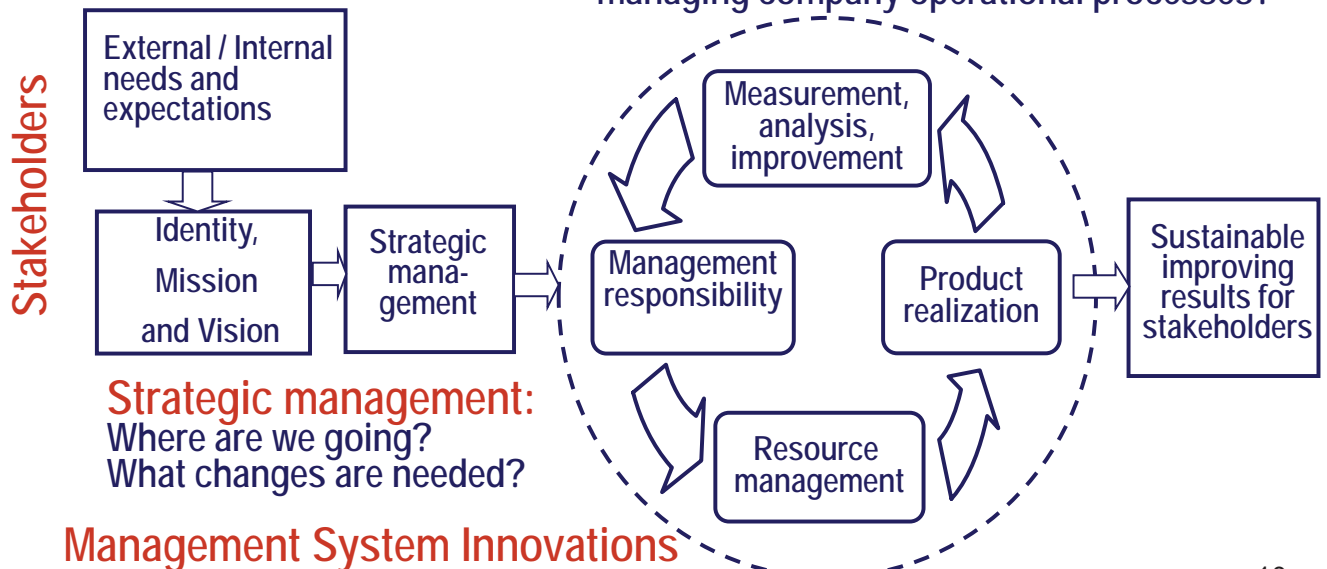
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## Actual situation in supply chain

### QMS – Model ISO/TS 16949

Quality of management system = Level to which a set of core characteristics of a management fulfils needs and expectations of organisation's stakeholders

**Operational Management:**  
How to carry out daily duties through managing company operational processes?



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## Actual situation in supply chain

- The use of Process FMEA's and Control Plans were emphasized as part of an Advanced Product Quality Planning (APQP) process. ISO/TS 16949:2009 and lean manufacturing are also emphasized.
- **The ISO/TS 16949 audits orientation to evaluate the proper implementation of automotive industry „Core Tools“ APQP & Control Plan, FMEA, SPC, MSA and PPAP, is still not sufficient.**
- **The knowledge of customer specific requirements (CSR) of OEM's customers is essential for each ISO/TS 16949 audit. Actual overview of OEM's CSR is at the webpage: [www.iatfglobaloversight.org](http://www.iatfglobaloversight.org)**

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## Actual situation in supply chain

### Tighten up ISO/TS 16949:2009 requirements:

- **Manufacturing process development strictly together with product design according the customer specification.**
- **Management of outsourced activities influencing product and process conformity.**
- **Tighten up requirements for internal and external laboratories – capability to perform the required inspection, test or calibration services according the customer requirements, by external accreditation to ISO/IEC 17025 or acceptance to the customer.**
- **Top management responsibility to review the manufacturing processes and other company processes to assure their effectiveness and efficiency.**
- **Supplier QMS development (VW Group Formel Q - „International quality driving licence“).**



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## Actual situation in supply chain

### Inconsistent realization of QMS in daily practice:

➤ Unreliable or disabled processes = potential for nonconform parts –

**Goal: Robust processes**

➤ Inconsistent test and inspection activities in the course of the design stages = leak of faults to customer –

**Goal: Robust products**

➤ Inconsistent internal manufacturing process and product audits = nondetection of internal weaknesses –

**Goal: „Zero defect“ strategy**

➤ Inconsistent control of corrective actions effectiveness = recurrent faults –

**Goal: Continual improvement process (KVP process)**

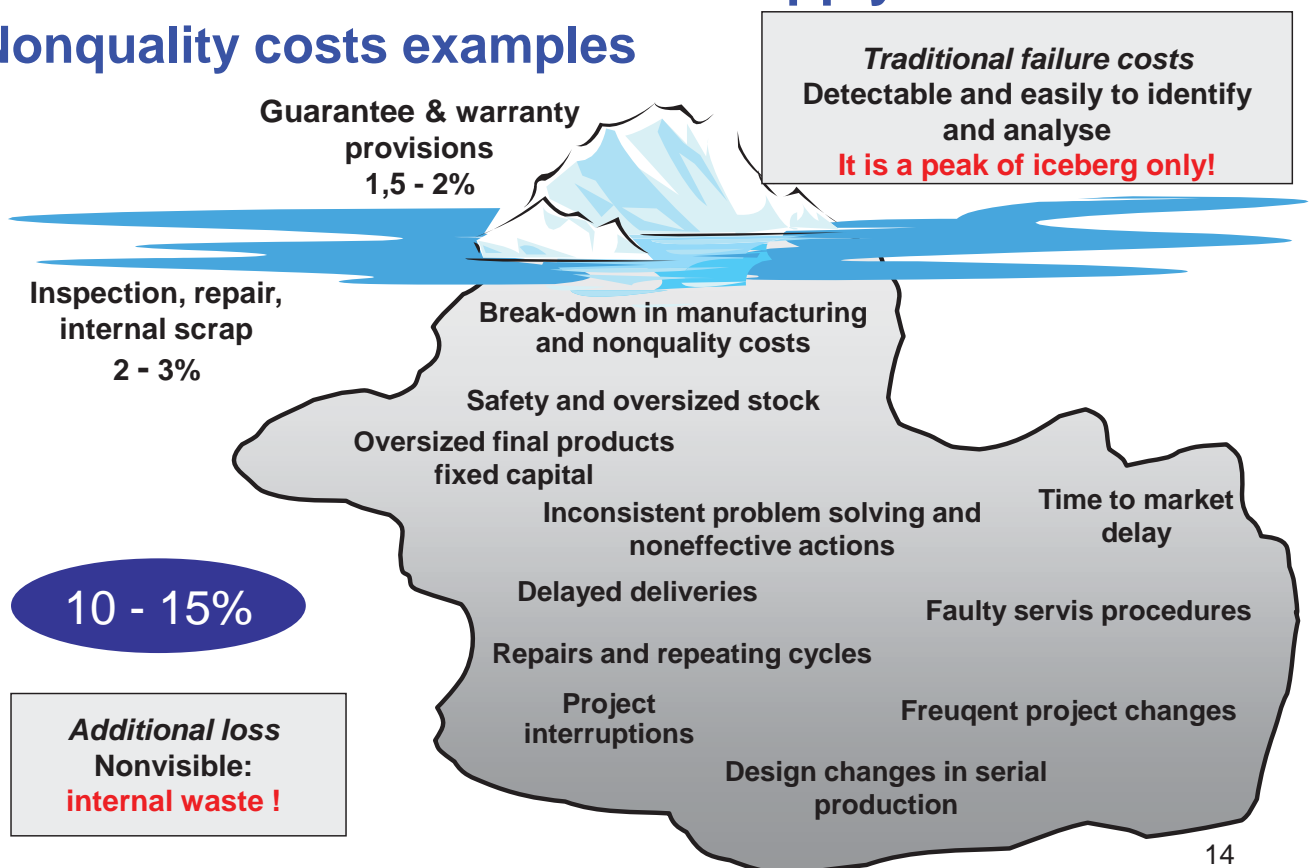
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## Actual situation in supply chain

### Nonquality costs examples



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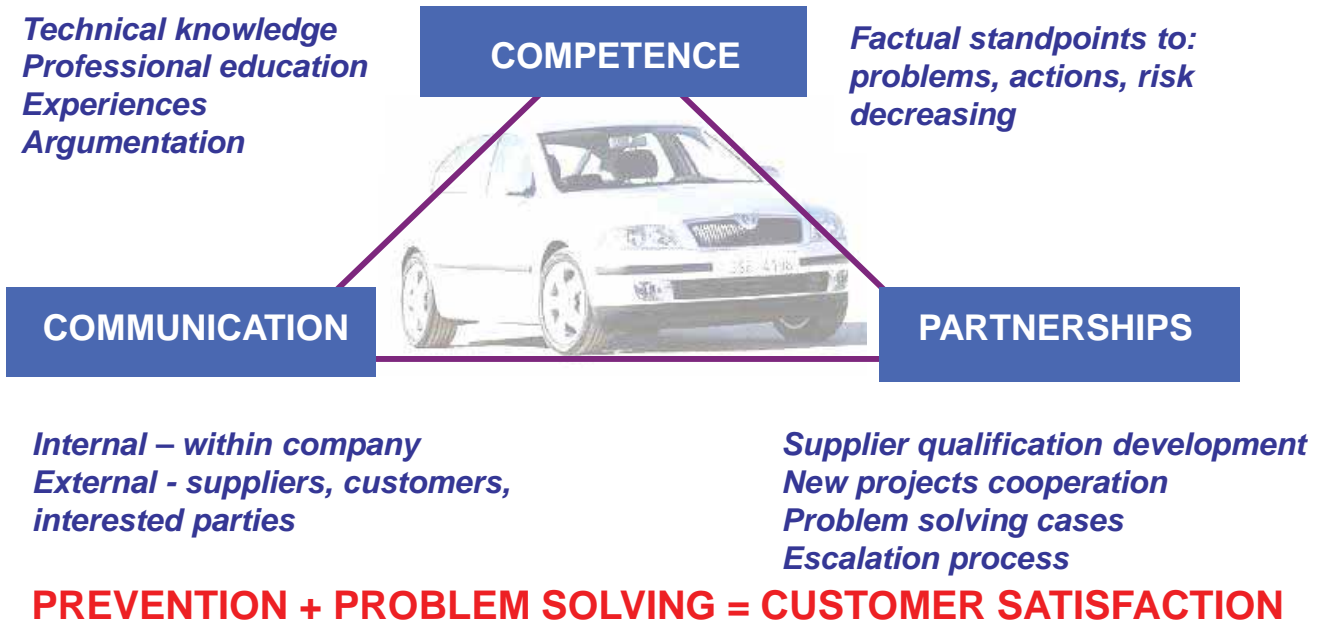


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## Actual situation in supply chain



### Prerequisite for prevention and problem solving



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## Actual situation in supply chain:

### Challenge for actual practice in automotive supply chain:

- Lessons Learned effective use
- Orientation to processes control and robustness
- Orientation to mistake proofing (Poka-Yoke)
- Emphasis on first-through quality
- Drawing and visual standards in manufacturing processes
- Emphasis on measurement system analysis (MSA)
- Orientation to quaranted „pass-through“ special characteristics from supplier

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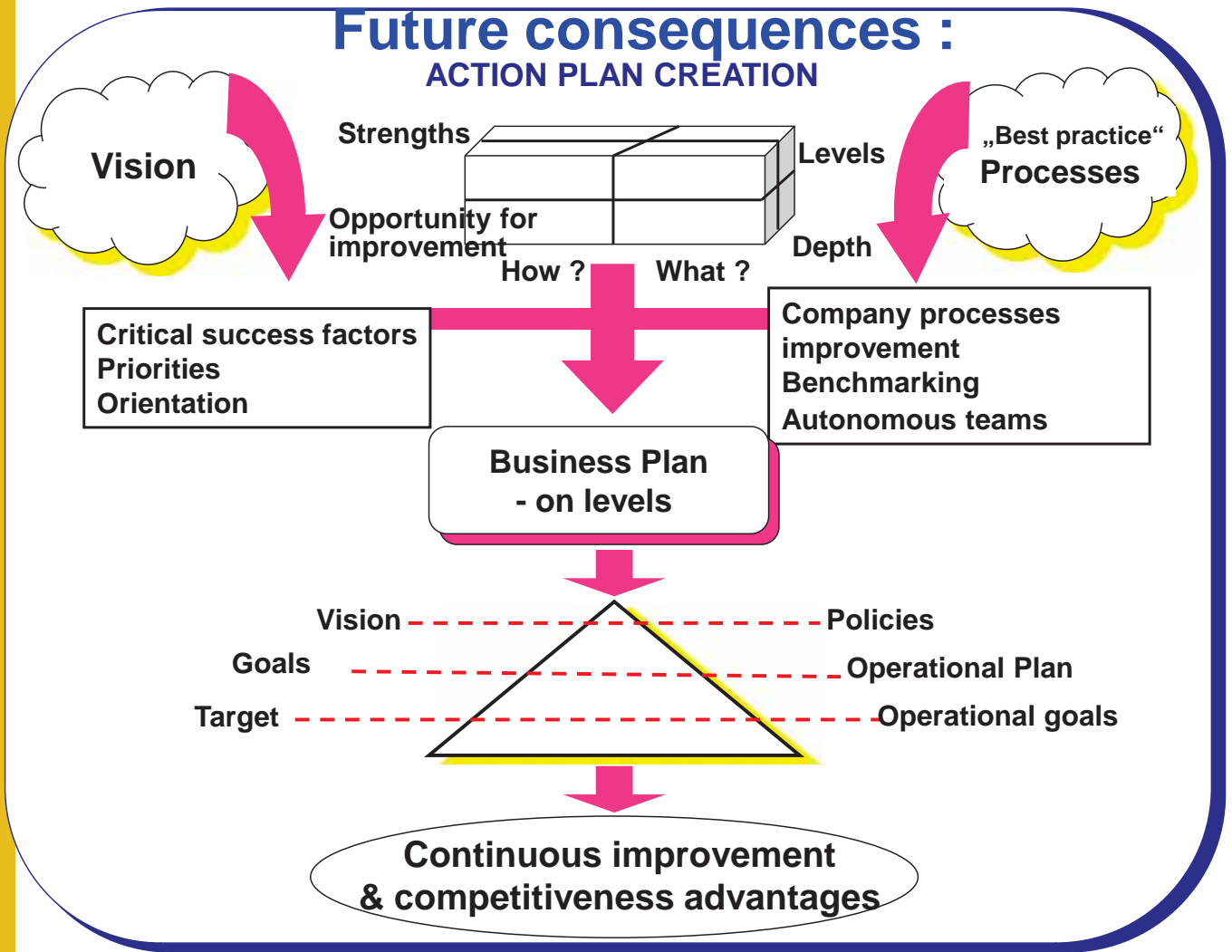
## Future consequences :

- Orientation to „voice of customer“ (VW Group Lastenheft requirements analysis)
- Effective use of „Lessons Learned“ database
- Effective use of mistake proofing (Poka-Yoke) methods
- Orientation to first-through quality / perfect start of serial production
- APQP conformity with PPAP/VDA 2 requirements for serial manufacturing process approval
- Top management support and planning process review
- Product and process design & development including effective use of APQP & Control Plan / FMEA Manual.

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## Future consequences : ACTION PLAN CREATION



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## Future consequences

- 3rd party ISO/TS 16949 audits create added value by detecting reserves in company processes.
- OEMs will have reach for a continuous improvements in its manufacturing centres.
- Decreasing risk by implementation and effectiveness verification of actions.
- Decreasing guarantee and warranty provisions.
- Decreasing risk of possible interruptions by suppliers.
- Significant quality improvements by supply parts under reasonable costs.
- Continual improvement by suppliers QMS.

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## Conclusion:

Dr. W. Edwards Deming, *“Management will in time be judged not by the quarterly dividend, but by plans and innovation with the aim to stay in business, to protect investment, to ensure future dividends, and to provide jobs and more jobs through improvement of product and service for the future. One requirement for innovation is faith that there will be a future. Innovation, the foundation of the future, cannot thrive unless the top management has declared and fulfilled unshakable commitment to quality and productivity.”*

**Such a behaviour will be the future for global automotive industry and the 105 years history of ŠKODA cars is evidence of it !**