



Implementing Software Process Improvement Initiatives – What are the Challenges?

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Ernest Wallmüller



*„Drive
change
actively!“*

Education

Thesis in computer science (Informatik), J. Kepler University, Linz, Austria; habilitation in business information system, author of several books.

Researcher and lecturer at the Swiss Federal Institute of Technology, University Zurich and Salzburg

ISO 15504-, Baldrige-, EFQM-Assessor,
membership in the IEEE, ACM, WIF, GI, SI, and Software Test Austria.

Professional Career

Research and development in the area of software engineering at J. Kepler University, Linz, Austria and at the Swiss Federal Institute of Technology (ETH) Zurich, Switzerland;

Manager at SBG (UBS) Zurich;

Senior Consultant at ATAG Ernst & Young in CH, A, D, and UK;

Principal, Process Coach and Manager of Project Quality Office and Quality Systems at Unisys (Schweiz) AG;

CEO and Senior Consultant of Qualität & Informatik, Zurich since 1997.

Key Activities

Quality, Process, Risk, and Project Management and Organizational Development.

Agenda

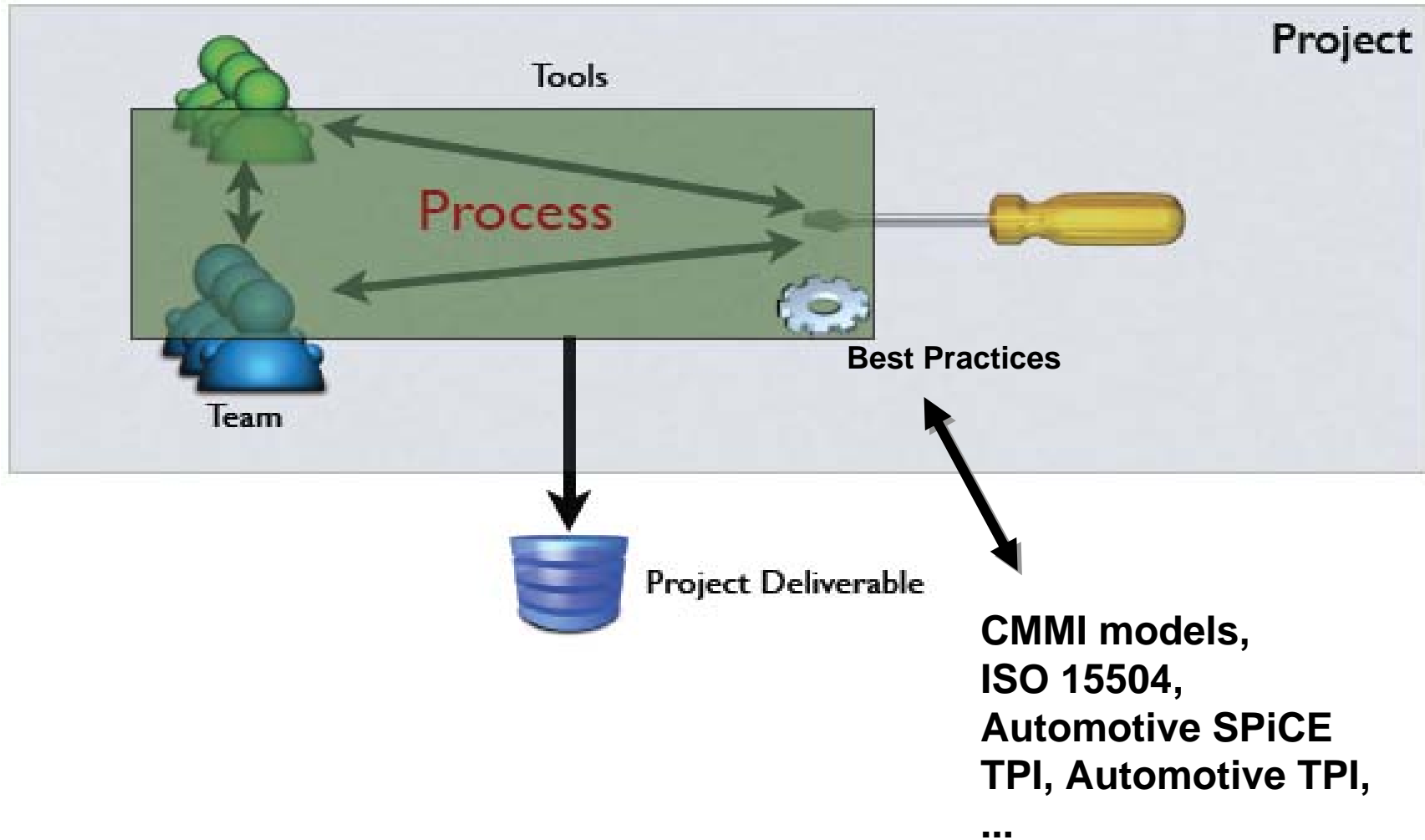


- What is SPII?
- Typical challenges
- Successful change of the organization
- Costs & Benefits
- Summary
- Q & A

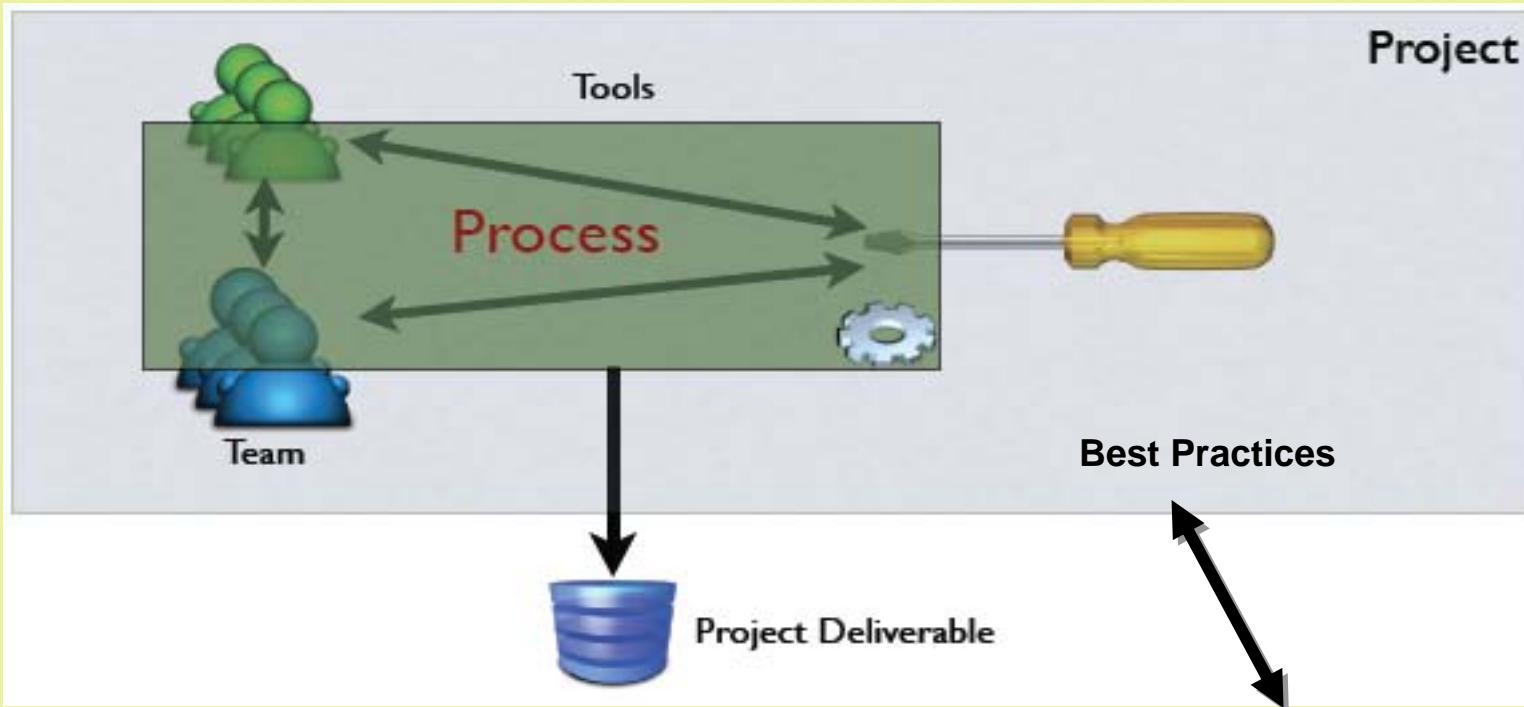
What is SPII?



What is behind SPI?



What is behind SPI?



Organizations with strategies, values, beliefs and attitudes

CMMI models
ISO 15504
Automotive SPiCE
TPI
...

Typical Challenges



Herausforderungen

- SPII Projekt - Vorgehen
- Prozessarchitektur/Prozessinfrastruktur (PAL)
- Umsetzung in die Praxis (OCM)
- Nutzen nachweisen (Messen und Analysieren)
- Tools
- ...

First Challenge: SPII are Projects or Programs

◆ SPI Project

- Create SPI Project Plan
- Monitor the progress



Project scope

- objectives
- assumptions, constraints
- schedule, milestones
- deliverables

Project organization

- project team
- infrastructure, meetings
- roles, responsibilities

Resources

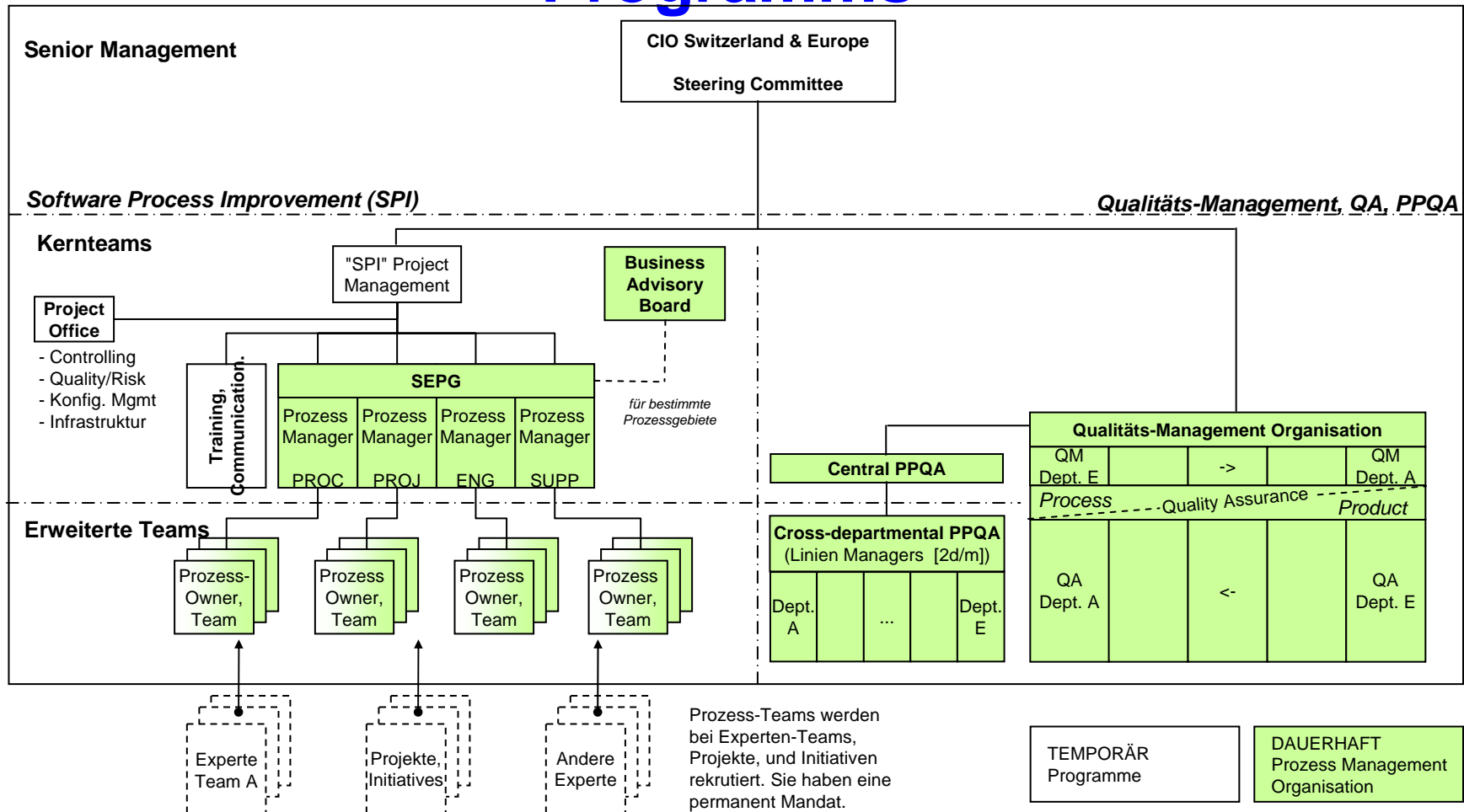
- budget
- training, tools

SPI Project Monitoring



- status, highlights
- decisions on processes
- milestones
- benefits, problems, risks
- measurements
- next steps

"CMMI for CS IT" – Organisationsstruktur des Programms



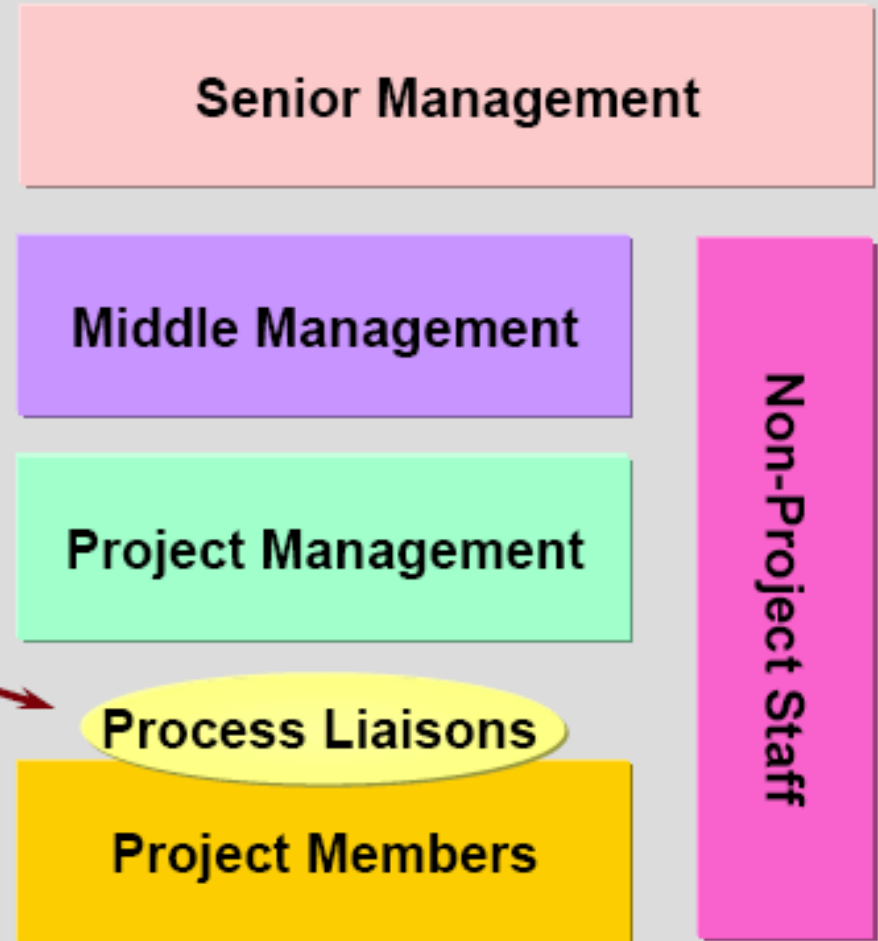
Landucci, 2007

Transition via EPG Organization

Process Improvement Infrastructure



Development Organization



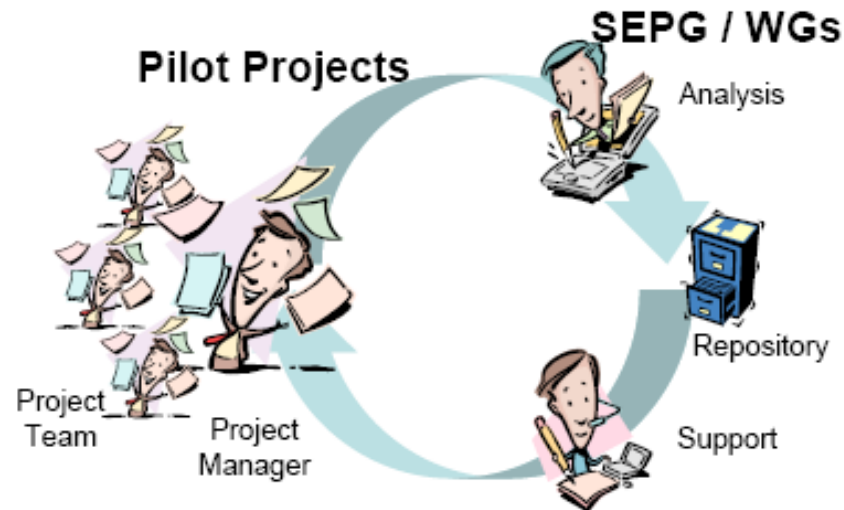
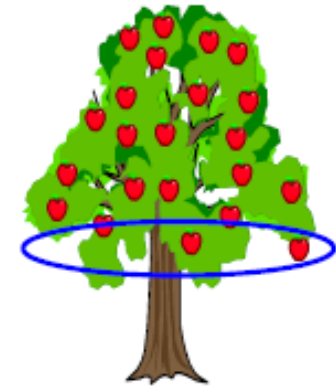
First Results - Less is More

◆ First results of process improvement

- Address the current project problems
- Provide visible benefits to pilot projects and organisation
- Increase acceptance of people

◆ Start with small improvements

- Pick-up “low hanging fruits” (low effort and high impact)
- Generate short-term wins (days/weeks not months/years)



Process Improvement

What does it take?



COOPERATION



COORDINATION

- on all level of management and practitioners
- it is not only the job of the quality group (QM) or the EPG to make SPI happen

Challenge: Manage and Reward Cooperation

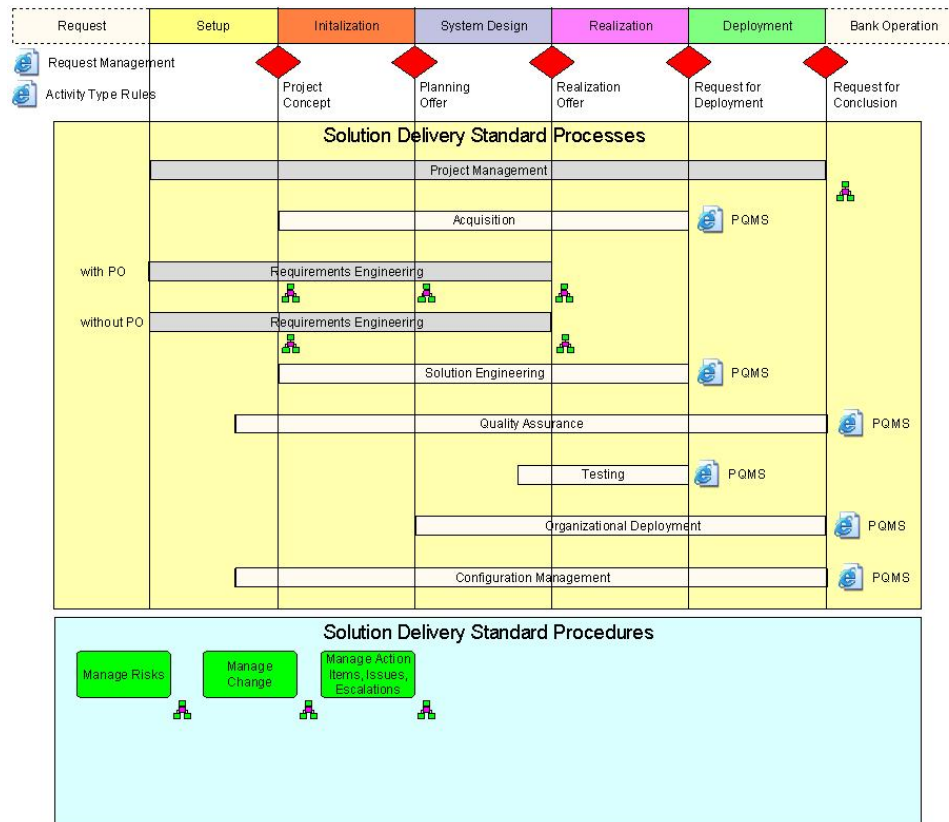
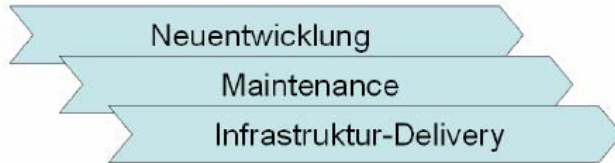
- ❑ Today's complex projects and products require highly skilled technicians and managers working together in an **integrated team (iTeam)** environment

- ❑ **iTeams** think like a mini version of the organization

- ❑ Performance of **iTeams** can be tuned by
 - Team vision
 - Team charter
 - Decision making process not disturbed by line management



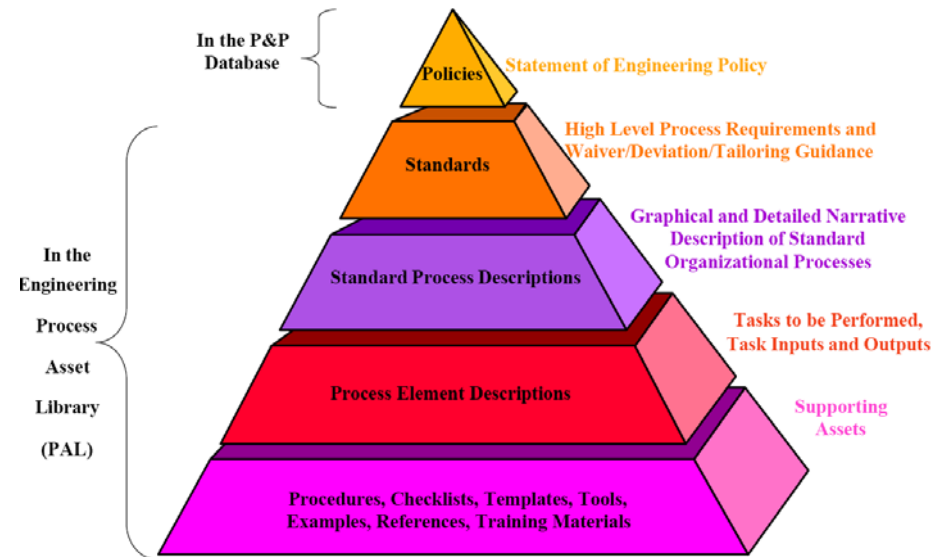
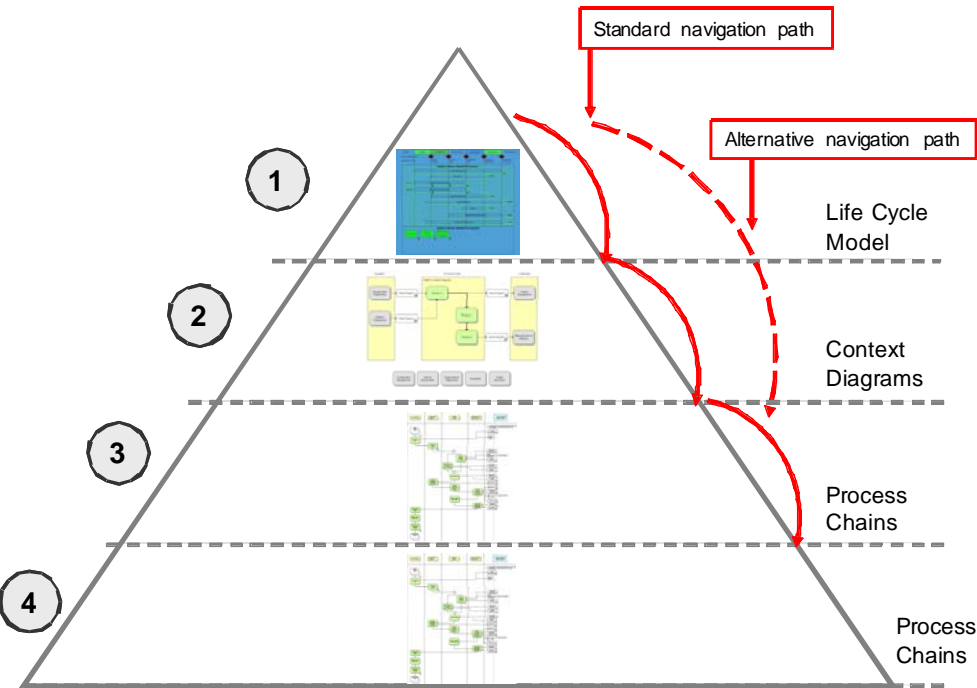
Prozessvarianten:



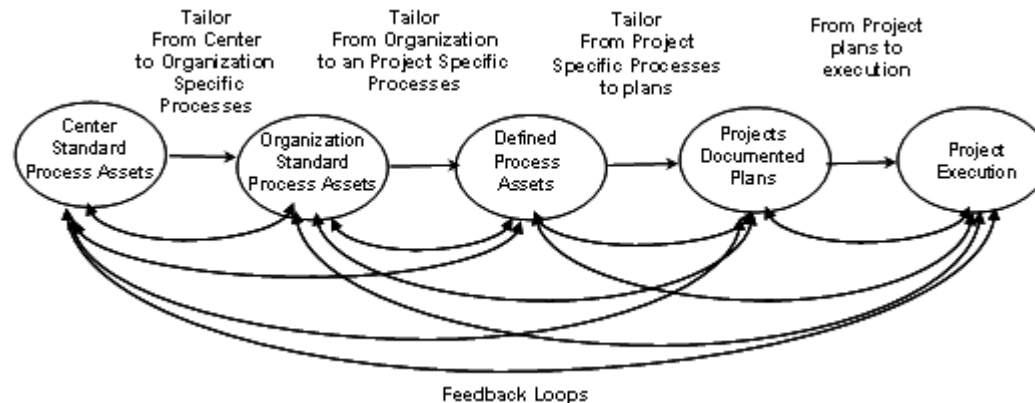
Challenge: Process Architecture and Infrastructure

Lifecycle Models of IT- Organization

Process Infrastructure & Process Asset Library



Tailoring & Feedback (Lessons Learned)



Konklusion

- Der Erfolg einer Prozessverbesserungsinitiative hängt maßgeblich von dem erzielten Mehrwert und der Nutzbarkeit der Prozessinfrastruktur ab
- Eine gute Prozessarchitektur ist Voraussetzung für eine nutzbringende Prozessinfrastruktur
- Die Prozessarchitektur muss an den Bedürfnissen des Unternehmens ausgerichtet sein
- Die Erstellung einer „guten“ Prozessarchitektur erfordert eine konstruktive Zusammenarbeit vieler Unternehmensbereiche

Die Wettbewerbsfähigkeit von IT-Unternehmen wird zukünftig durch die Qualität und Leistungsfähigkeit der Prozessinfrastruktur bestimmt

R. Mierzwa, Daimler/TSS

Challenge: Organizing and Leading Change

„No pain, no gain“
Karl E. Wieggers



Challenge: Obtaining Sponsorship and Commitment

◆ Senior Management – strong sponsorship

- Gives direction
- Defines objectives
- Secures resources
- Shows interest in the progress
- Removes barriers and obstacles
- Shows commitment to the improvement initiative
- “Walk the talk”



Executive Role in Improvement

- ✓ Take personal responsibility
- ✓ Set realistic goals
- ✓ Establish improvement project
- ✓ Manage change
- ✓ Align management
- ✓ Align incentives
- ✓ Establish policies and empower assurance
- ✓ Involve customers
- ✓ Involve developers
- ✓ Review status
- ✓ Replace laggards
- ✓ Never relent



SPI means also ...

- No project heros ...
- We have got a new process handbook from our consultant, but ...?
- I am experienced project manager but I have to fill out a bunch of templates!
- How do I start with all these new practices in my project?
- Is SPI only extra work and over time?
- What is the benefit for me?
- ... ?



Resistance to change

PROSCI-Study, 2007

Primary reasons employees resist change

1. Lack of awareness

- Participant quote:
“They were not given the awareness of what the change was doing to their day-to-day roles.”

2. Fear of the unknown

3. Lack of job security

4. Lack of sponsorship

...



Tools for Leading the Change

❑ Stakeholder Analysis

- Who are drivers, supporter, obstacles and neutrals?
- What are we doing with them?

❑ Communication Plan (Concept)

- What, how, when and why do we communicate?

❑ Change Navigator

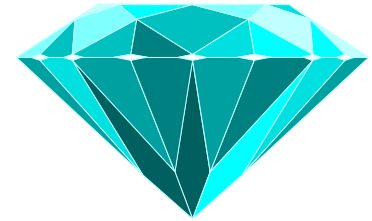
- Instruments to evaluate status of change

❑ Feedback and Lessons Learned Mechanism

- What worked? What didnt worked?

Diamond Model

Diagnosing and Guiding Change



Mission, Vision

Purposes, Directions or
Visions of the Future

Culture

Shared values, beliefs,
and behaviours of the
organization

Power

Determines expenditure
of energy and the making
& keeping of decisions
over time

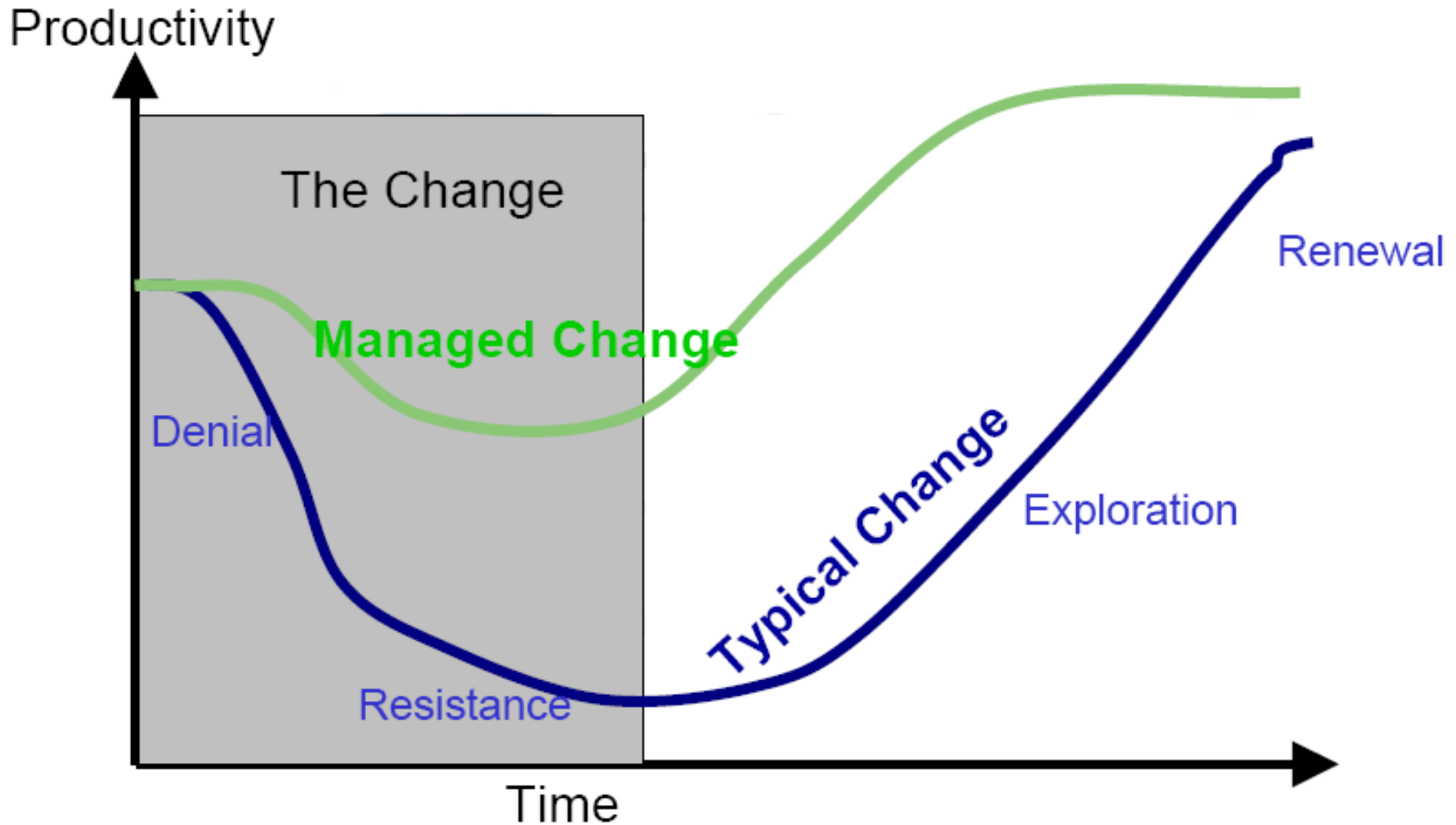
Structure

Points to a form
plan, or formalized
set of activities

Resources

Anything that can be
distributed or is needed
to accomplish the mission

Types of Changes



Costs and Benefits of SPII

- Measure the Progress

Example: The way to CMMI Level 3 - Facts

Process Development and Improvement

- 36 months duration
- 500.000€ consulting and assessment costs
- 12.000h internal improvement effort
- 6.000h training and support
- 250 process improvement proposals per year
- 12 process experts
- 50% of engineering staff involved in process development and improvement

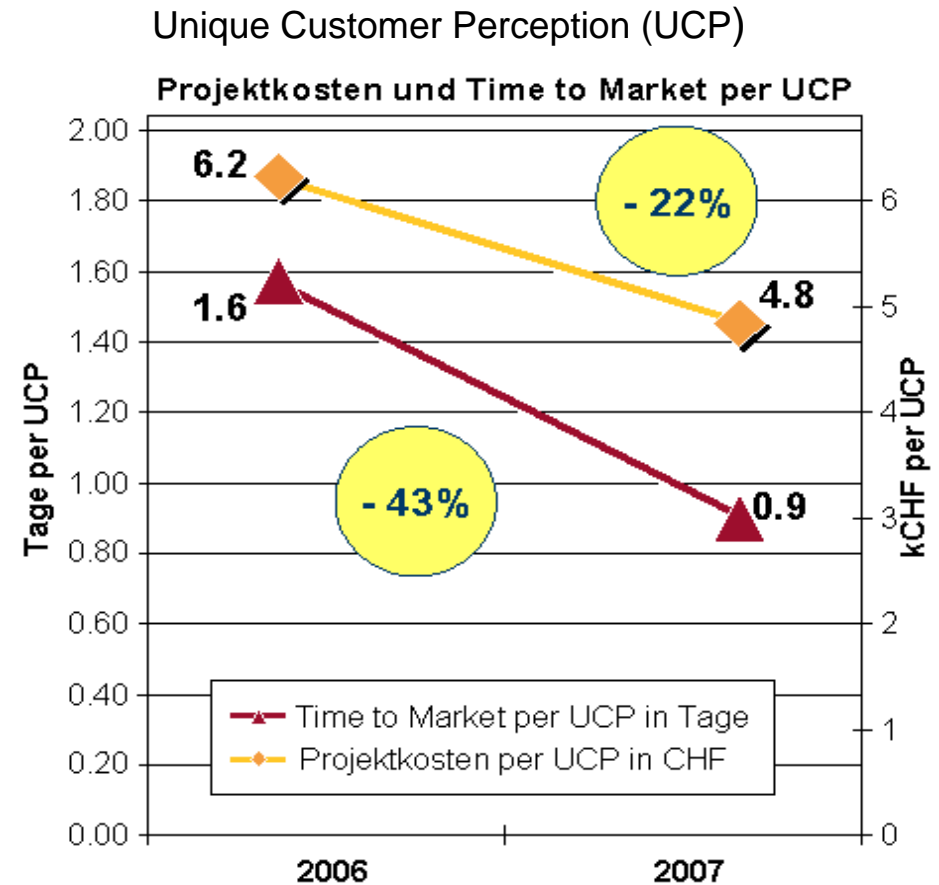
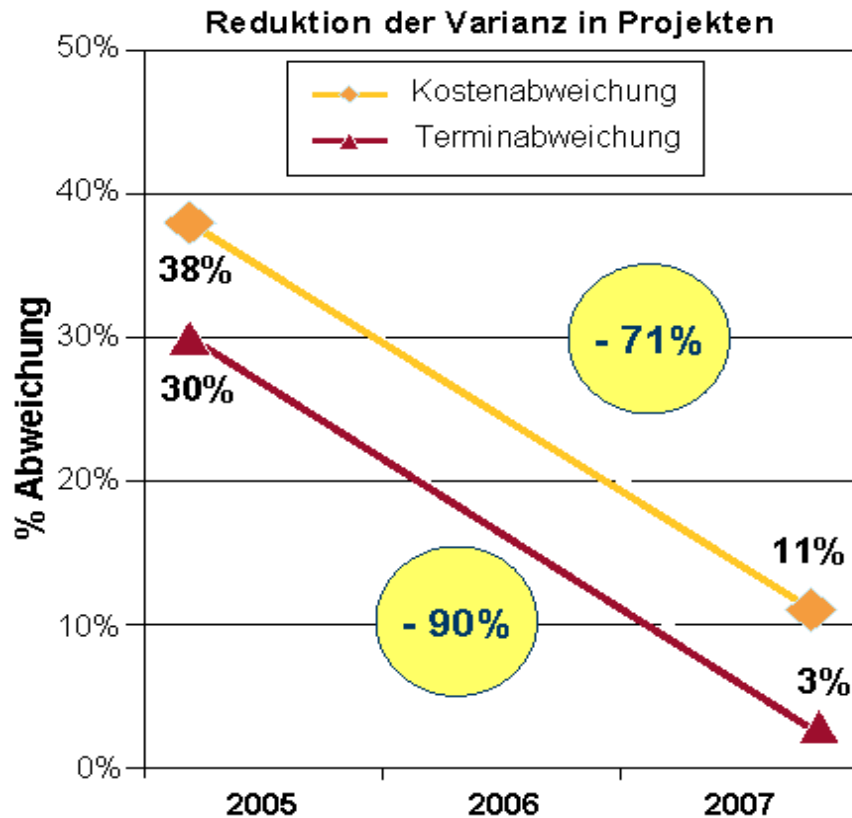
Maintenance Costs (OPF, OPD, GP2.10, GP3.2)

- 2% of total man-hour effort p.a. (excluding assessments)

Rail Signalling Solutions

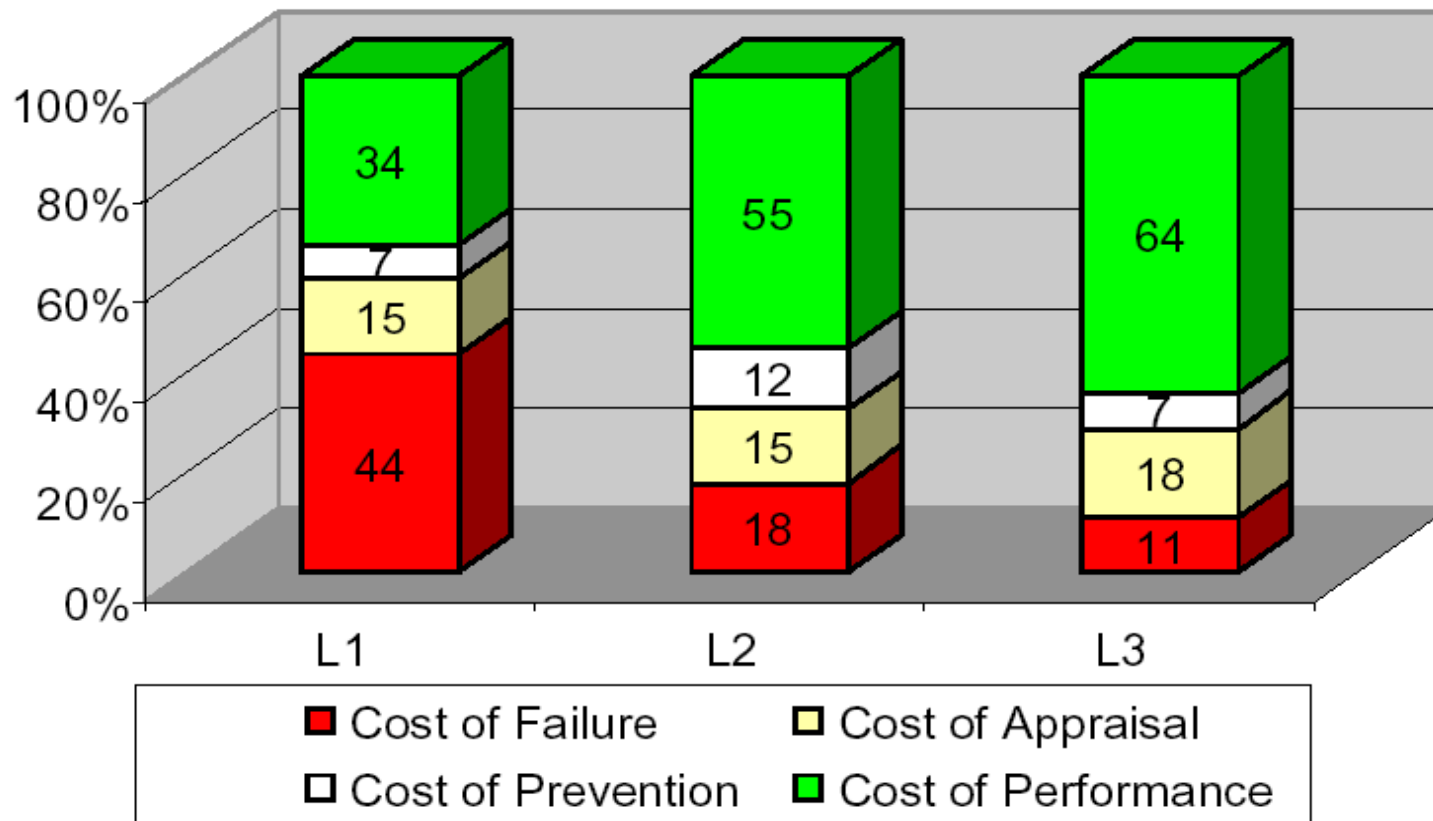
Thomas Auer, Thales, Vienna, 2008

Results of CS (Maturity Level2 - Oct 2007)



Philippe Landucci, Dimitri Fazzone, 2008

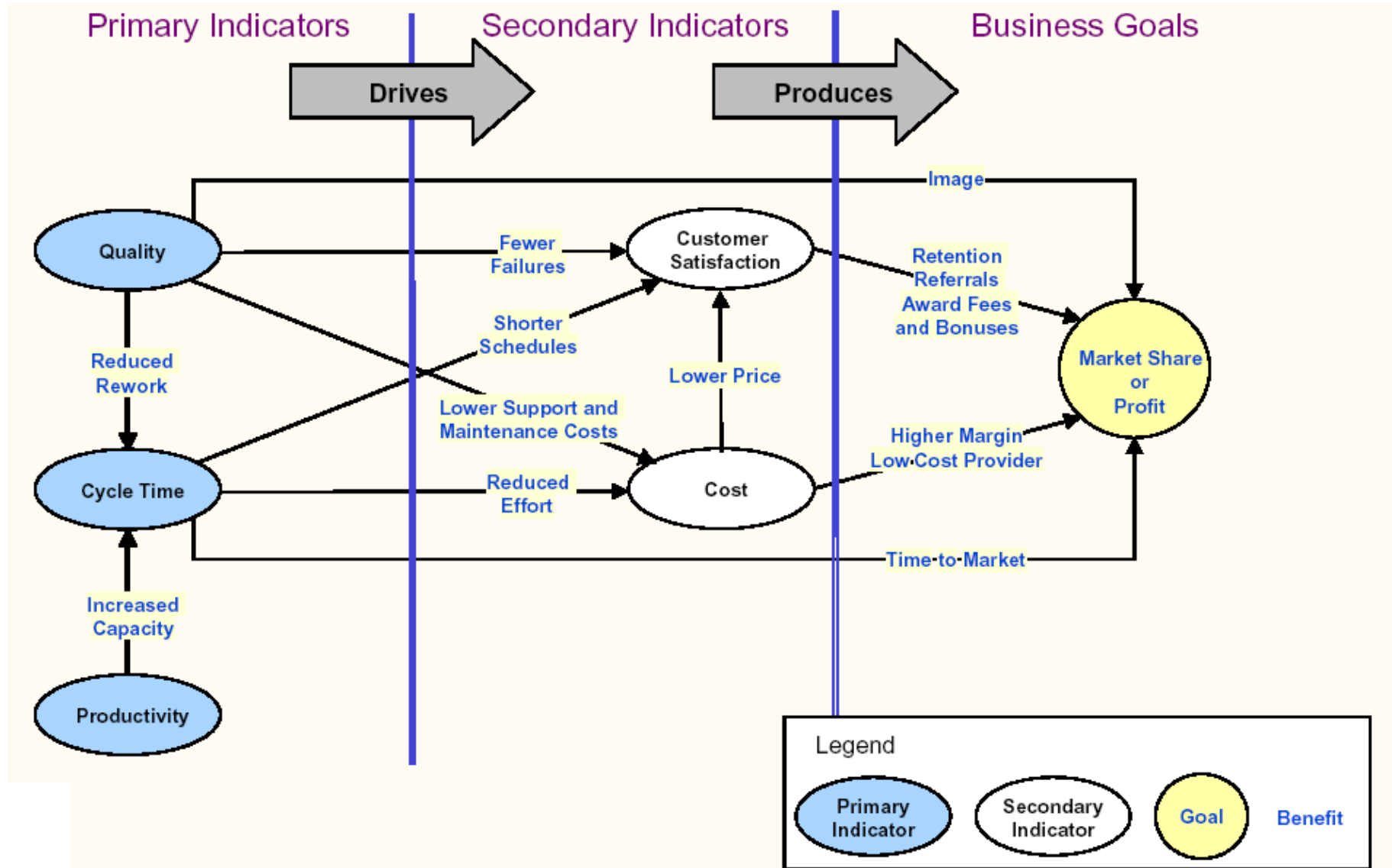
Higher maturity organizations enjoy lower CoQ...



...and consequently higher Cost of Performance



Value Network



Summary

- SPI means cultural and organizational change
 - Risks but benefits
 - Long lasting investments for higher maturity
- SPI is continuous improvement
 - Working on processes means working on the (management, quality, process) „System“
- Don't lose motivation
 - Quality, processes and engineering seen as values
 - Have fun!



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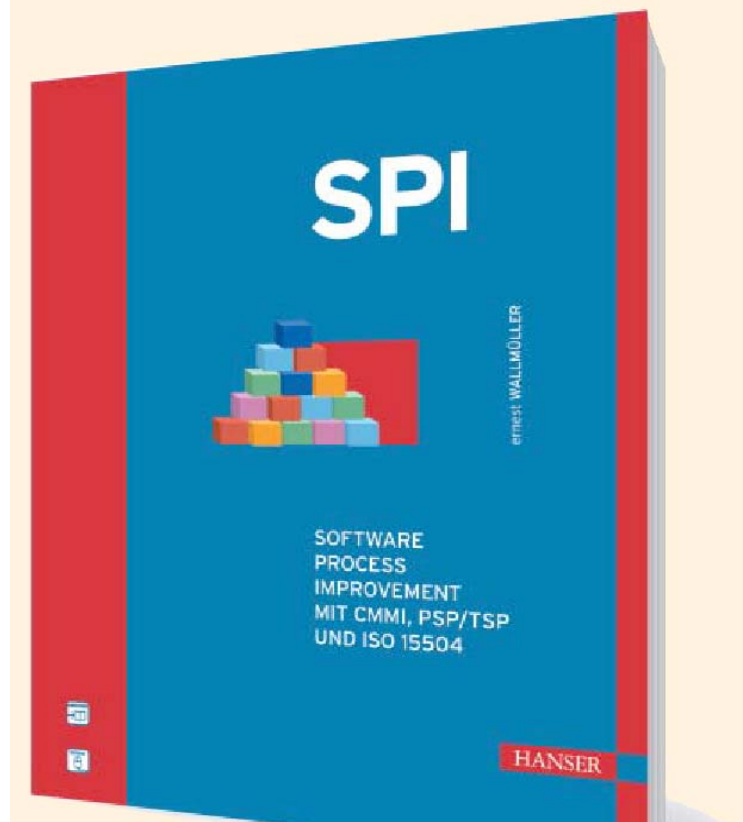
*Thank You
for Your Attention!*

Questions & Remarks



New Book (in German)

...



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Ja, hiermit bestelle ich 14 Tage zur Ansicht und gegen Rechnung:

Ernest Wallmüller

SPI – Software Process Improvement mit CMMI, PSP/TSP und ISO 15504

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€ 34,90 [D] zzgl. Versandkosten

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References

- Bush M. & Dunaway D.: CMMI Assessments - Motivating Positive Change, Addison Wesley, 2005
- Conner D., Managing at the speed of Change, Wiley, 2002
- Doppler K., Lauterburg C., Change Management, Campus, 1995
- Doujak A., Harte Schnitte - Neues Wachstum, Überreuter, 2002
- Fatina R. : Practical Software Process Improvement, ARTECH HOUSE, 2005
- Grady, Robert B.: Successful Software Process Improvement, Prentice Hall, 1997
- Humphrey W. S.: Managing the Software Process, Addison Wesley, 1999
- Johnson S.: Die Mäusestrategie für Manager, Ariston, 1998
- Kneuper R.; CMMI. Verbesserung von Softwareprozessen mit Capability Maturity Model Integration, dpunkt.verlag, 3. Auflage, 2007
- Kobi J.M: Management des Wandels. Die weichen und harten Bausteine erfolgreicher Veränderung, Haupt, 1994
- Mohr N., Woehe J. M.: Widerstand erfolgreich managen, Campus, 1998
- Rico D. F.: Roi of Software Process Improvement: Metrics for Project Managers and Software Engineers, J. Ross Publishing, 2004
- Wallmüller E.: Software-Qualitätsmanagement in der Praxis, Hanser, 2. Aufl., 2001
- Wallmüller E.: SPI mit CMMI, PSP/TSP und ISO 15504, Hanser, 2007
- Zahran S.: Software Process Improvement, Addison-Wesley, 1997

SPI - WEB LINKS

Qualität & Informatik -Links

N.B. SPIN

Software Engineering Institute-CMMI

Software Productivity Consortium

A Software Process Bibliography

**Kneuper Ralf - Qualitätsmanagement
und Vorgehensmodelle**

Process Improvement Associates

SPICE ISO

SPICE Usergroup

Wiegiers Karl - Process Impact

Brad Appleton's Software Process Links

www.itq.ch/links/

www.nbspin.org/main.html

www.sei.cmu.edu/cmmi/

www.software.org

www.sei.cmu.edu

www.kneuper.de

www.processimprovement.com

www.isospice.com

www.spiceusergroup.org

www.processimpact.com

www.enteract.com