The Past and the Future of PI

- Models - Implementations - Trends

Presenter

Tomas Schweigert

Former Head of JRC SPI Manager

Born 16.10.1956 in Cologne, Germany
Studied laws, worked for several law firms and insurances, joined "Gesellschaft für Software Qualitätssicherung" in 1991, work domains: testing, project management, tendering and software process assessment and improvement. Worked actively in the domains of test processes, agile processes and process improvement management. Actually working for a successor Company named "Expleo Technology Germany GmbH". Contributed as co Autor of the Assist Model for software acquisition for small and medium enterprises, co author of the test process PAM TestSPICE®, co author of the agile extension of the TestSPICE® model. In the context of the European Certification and Qualification Association (ECQA) contributed to the development of the SPI manager Qualification as head of the Job Role Committee (JRC), co Author of the SPI Manifesto, member of industrial programme committee of several EuroSPI conferences, member of programme committee of SOFTENG conference.

Agenda

- About ECQA

- The Past: SPI in the 90s

- The SPI Manifesto

- (S)PI in the early 21 Century ISO/IEC 15504/4

- The SPI Manager Training

- Can you do large scale infrastructure Projects using PI approaches – yes we can

- The journey to the future – ISO/IEC 33014

- Assessments a cornerstone of PI Business special in the Automotive Domain

- Whats next?

"Let's join our strengths together!"

ECQA GmbH

Rechte Kremszeile 62
A-3500 Krems , Austria

www.ECQA.org

Why European Certifications?

- Problem addressed by industry

    – Participation certificates locally

    – Every Training issuing a different cert.

    – Different Regions/Countries different topics

Solution?

- Europe wide acceptance of single schema

- Industry know what they need

- Training institution know what they train for

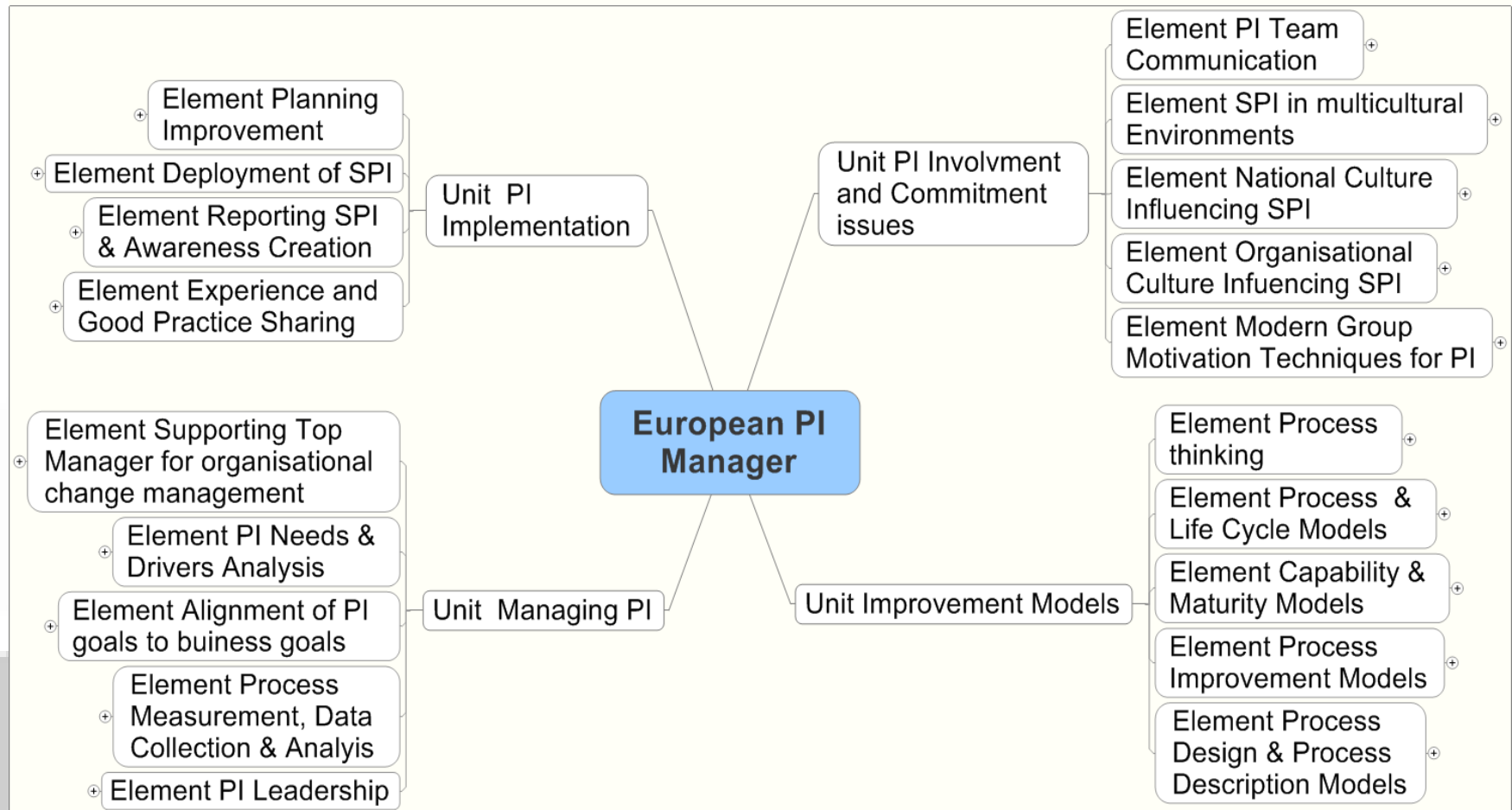- Europe wide exams

- Single certificate for all countries

The **ECQA** in Europe 2010:

The **ECQA** in Europe 2020:

Current structure of SPI Manager units and elements

Only 30% of started Projects delivered in Time, Budget, Quality

Business People

Project Manager

Customer

IT was a Hero Business

Inside:

How can we improve ourselves, implement proven good Practice and reduce Risk -> Models / Set Ups with internal driven scope

Outside

How can we compete and compare with others
-> Standard Models / Set Ups with external driven Scope

Are there better ways to reliably deliver useful IT services?

Assembler?

Cobol?

Pascal?

RexX?

DB2?

JCL?

MVS

Unix

RACF

MS-Dos

Waterfall?

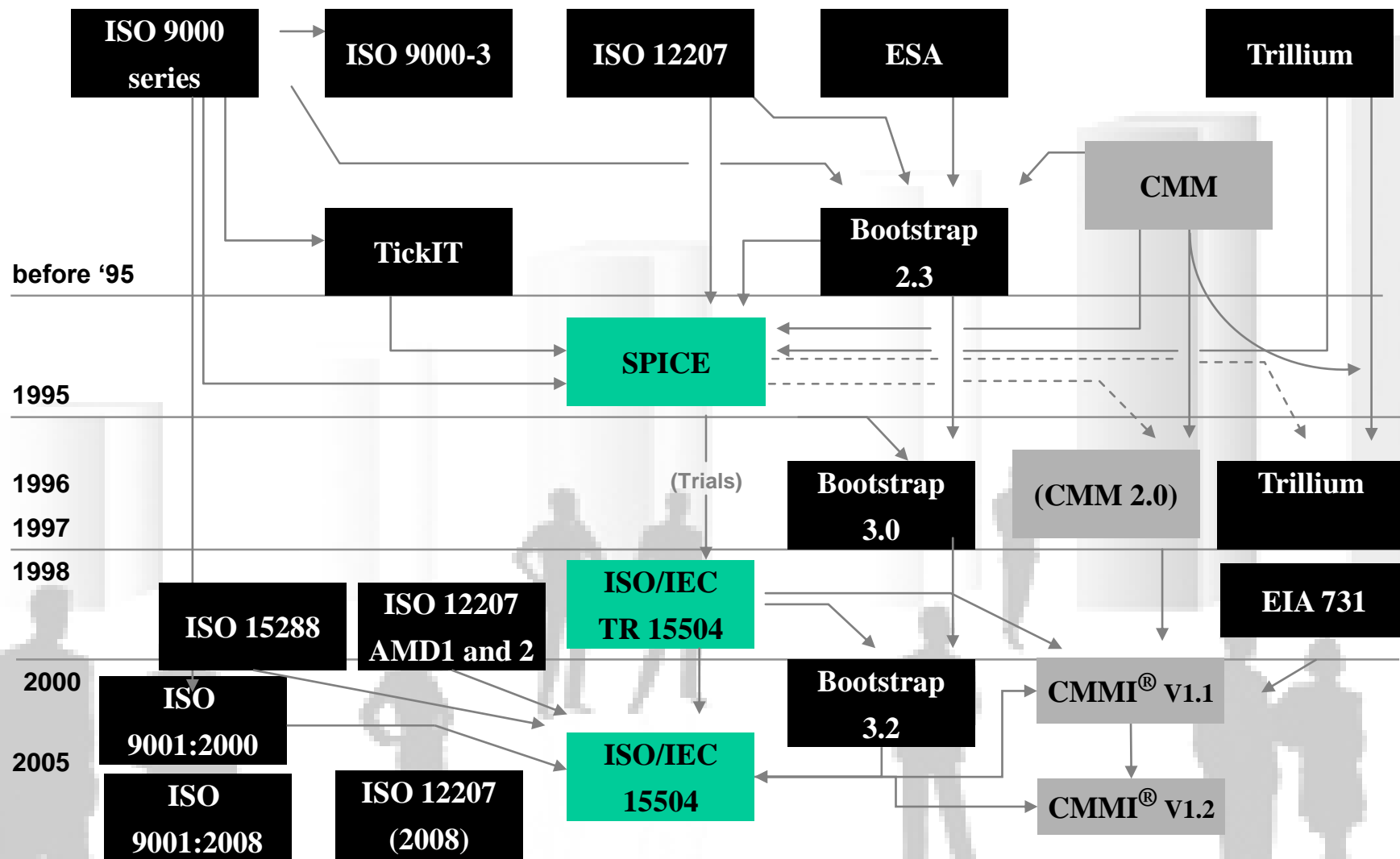RuP

V-Model

???

Waterfail

CMMI?

Timeline diagram: SPI standards in the 90s

| Year	
	ISO 9000 series → ISO 9000-3, ISO 12207, ESA, Trillium
	CMM
before '95	TickIT, Bootstrap 2.3
1995	SPICE
1996	(Trials), Bootstrap 3.0, (CMM 2.0), Trillium
1997	
1998	ISO/IEC TR 15504, EIA 731
2000	ISO 15288, ISO 12207 AMD1 and 2, ISO 9001:2000, Bootstrap 3.2, CMMI® V1.1
2005	ISO 9001:2008, ISO 12207 (2008), ISO/IEC 15504, CMMI® V1.2

Customers like Capability Levels

Investing in process improvement led by the OU-wide quantitative feedback and causal analysis resolution. Standards are adapted and re-deployed.

Quantitative data about process performance comparable since CL 3. Such data is measured, recorded, and data history is statistically analysed to allow objective decisions and to ensure that the performance remains within defined limits in order to ultimately support business goals.

Institutionalized learning from experience: A set of specific standard processes for the organisation exist, including tailoring guidelines. Standards improvement through organisation-wide feedback.
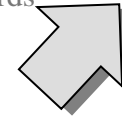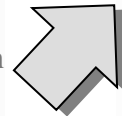
CL 5   Innovating

PA.5.1   Process Innovation
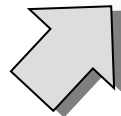PA.5.2   Process Innovation Implementation

CL 4   Predictable

PA.4.1   Quantitative Analysis
PA.4.2   Quantitative Control

CL 3   Established

PA.3.1   Process Definition
PA.3.2   Process Deployment

CL 2   Managed

PA.2.1   Performance Management
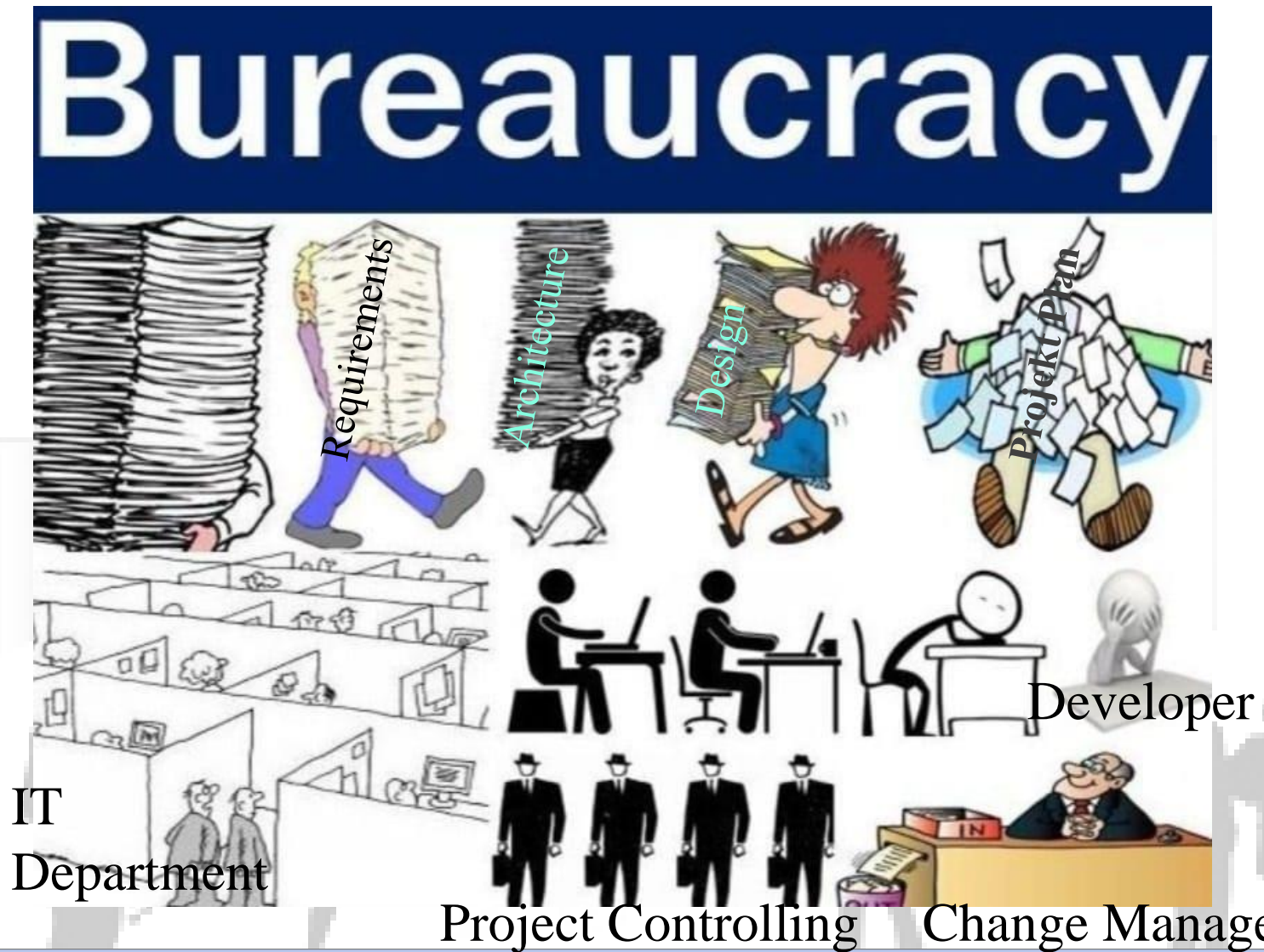PA.2.2   Work Product Management

CL 1   Performed

PA.1.1   Process Performance

CL 0   Incomplete   Process results not existent, incomplete or inappropriate

https://www.waterfall2006.com/

Rebellion ante Portas

Bureaucracy

Requirements

Architecture

Design

Projekt Plan

Developer

IT Department

Project Controlling   Change Management

Some Other People also dealing with a Manifesto

Principles behind the Agile Manifesto

We follow these principles:

Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.

Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.

Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

Business people and developers must work together daily throughout the project.

Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.

The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.

Working software is the primary measure of progress.

Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.

Continuous attention to technical excellence and good design enhances agility.

Simplicity--the art of maximizing the amount of work not done--is essential.

The SPI manifesto -. Values

VALUES

We truly believe that SPI

A | People | **Must involve people actively and affect their daily activities**

NOT to show-off or be focused on management alone

B | Business | **Is what you do to make business successful**

NOT to live to deploy a standard, reach a maturity level, or obtain a certificate

C | Change | **Is inherently linked with change**

NOT continuing as we do today

Source: SPI Manifesto (Version1.2.2010) www.fisma.fi/wp-content/uploads/2010/.../SPI_Manifesto_A.1.2.2010.pdf

The SPI Manifesto - Principles

PRINCIPLES

We trust that the following principles support the values

People

Know the culture and focus on needs

Motivate all people involved

Base improvement on experience and measurements

Create a learning organisation

Business

Support the organisation's vision and objectives

Use dynamic and adaptable models as needed

Apply risk management

Change

Manage the organisational change in your improvement effort

Ensure all parties understand and agree on process

Do not lose focus

Source: SPI Manifesto (Version1.2.2010) www.fisma.fi/wp-content/uploads/2010/.../SPI_Manifesto_A.1.2.2010.pdf

Photo

1. Thomas Wegner
2. Tom Peisl
3. Andreas Riel
4. Richard Messnarz
5. Jørn Johansen
6. Diana Kirk
7. Bernhard Sechser
8. Gunther Spork
9. Detlef Vohwinkel
10. Tim Kasse
11. Alec Dorling
12. Clenio F. Salviano
13. Morten Korsaa
14. Risto Nevalainen
15. Jan Pries-Heje
16. Patricia McQuaid
17. Miklos Biro
18. Kouichi Kishida
19. Christian Hertneck
20. Sema Gazel
21. Bo Balstrup

Not on photo

Kurt S. Frederichsen
Elli Georgiadou
Rory O´Connor
Jürgen Schmied
Tomas Schweigert
Kerstin Siakas
Serge Tiechkiewitch
Keith Fuller
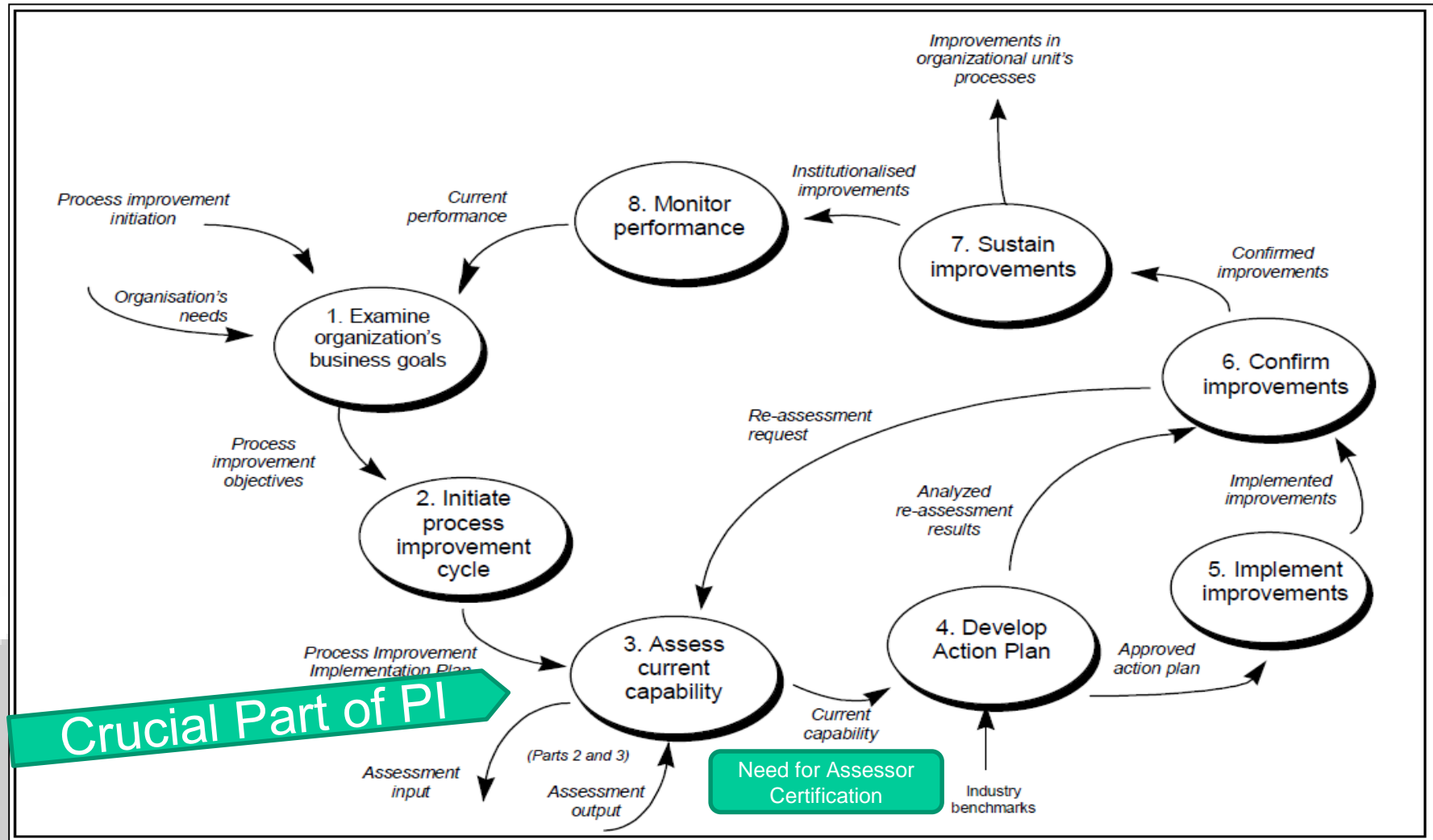
How to certify assessors -> intacs^{TM} ?

- intacs^{TM} (<u>Int</u>ernational <u>A</u>ssessor <u>C</u>ertification <u>S</u>cheme)
  - Independent and legally registered non-profit organization
  - Open and transparent operations in an honorary capacity
  - Global presence, multilingual

- Main objective

  Ensuring high quality assessment performance through

  - setting training and certification standards for ISO/IEC 15504 / ISO/IEC 330xx assessors
  - setting standards for maintaining assessor competence
 - promoting assessment models & community interactions

  http://www.intacs.info

Source: Intacs provisional Assessor Training
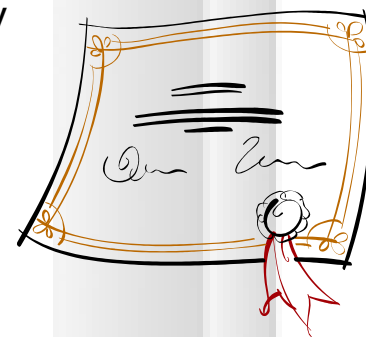
intacs™ industry domain support

- intacs™
  - is adaptable to any industry domain and business areas
  - supports any approach compliant with ISO/IEC 15504 and ISO/IEC 330xx, respectively

- At present
  - Automotive
  - Testing
  - IT Service Management
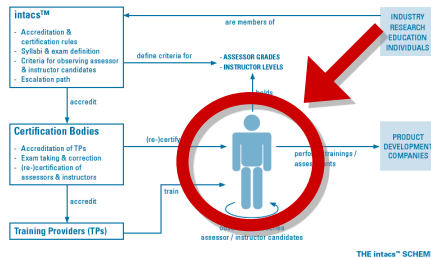 - Aerospace
  - Medical Devices
  - Banking & Finance

Source: Intacs provisional Assessor Training
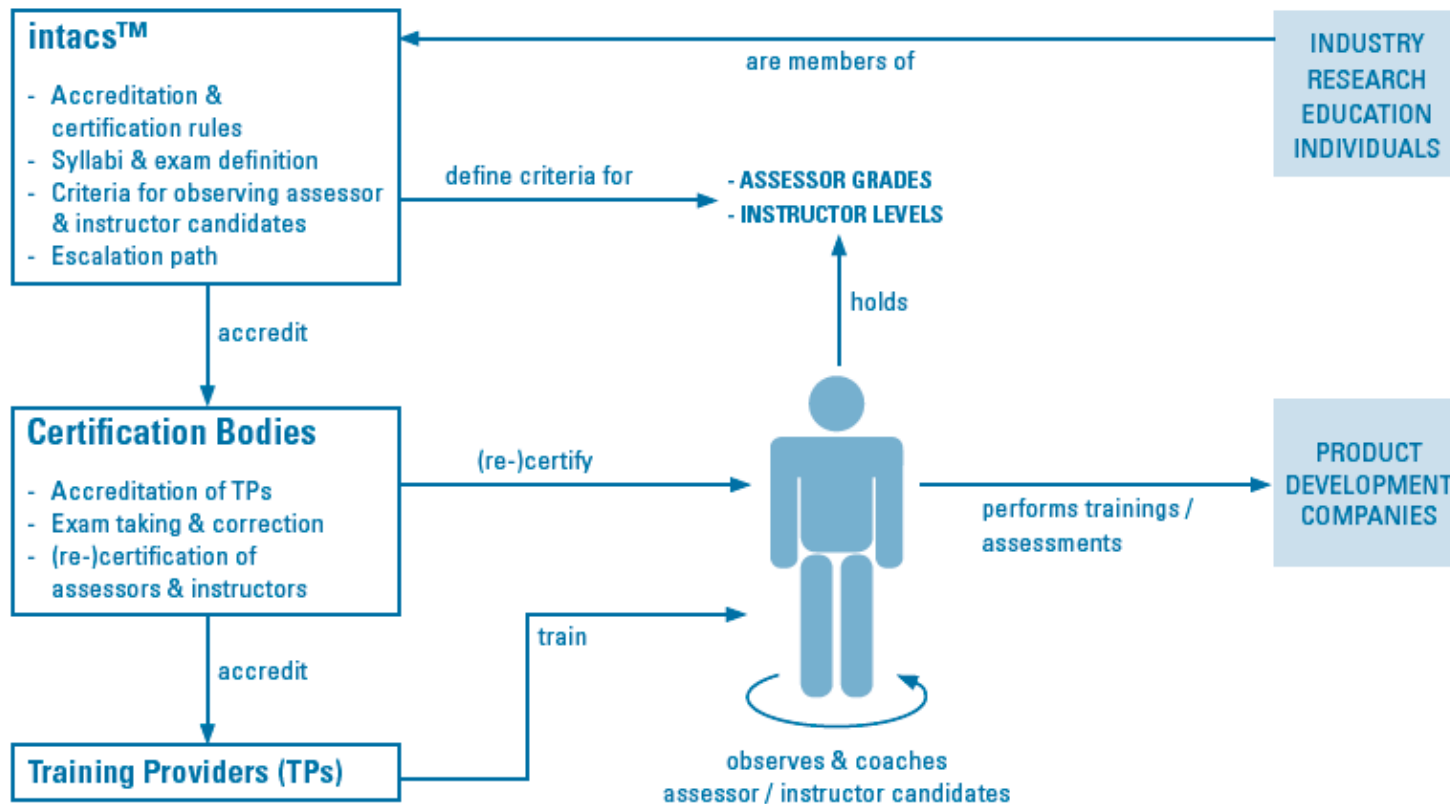
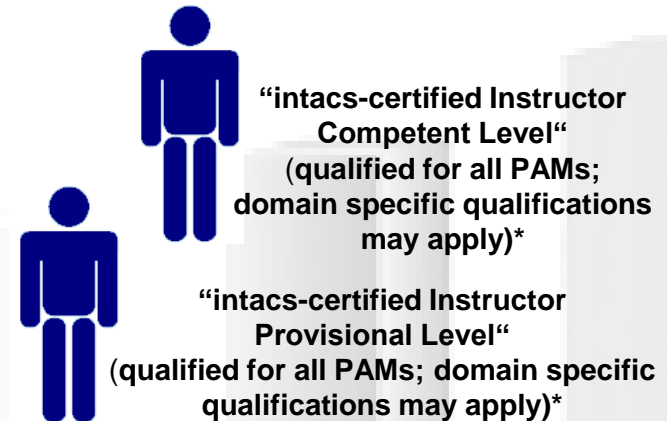Source: Intacs provisional Assessor Training

intacs™ certification levels – brief overview

- Proven didactical skills
- Approval by an accredited instructor (observation process)
- No training course or exam

"intacs-certified Instructor Competent Level"
(qualified for all PAMs; domain specific qualifications may apply)*

"intacs-certified Instructor Provisional Level"
(qualified for all PAMs; domain specific qualifications may apply)*

- Continuously and actively contributes to the international ISO/IEC 15504 community's knowledge & best practices
- No training course or exam

"intacs-certified Principal Assessor"
(qualified for all PAMs; domain specific qualifications may apply)*

- Assessment experience
- Capable of leading assessments
- Passed training course & exam

"intacs-certified Competent Assessor"
(ISO/IEC 15504-5, ISO/IEC 330xx, Automotive SPICE®, TestSPICE)

- Little or no assessment experience
- Capable of acting as a co-assessor
- Passed training course & exam

"intacs-certified Provisional Assessor"
(ISO/IEC 15504-5, ISO/IEC 330xx, Automotive SPICE®, TestSPICE)

Source: Intacs provisional Assessor Training

* e.g. „Blue Gold Volume" for Automotive SPICE® 3.0

Does it make sense?
How to get improvement done?

SQS – the world's leading specialist in software quality
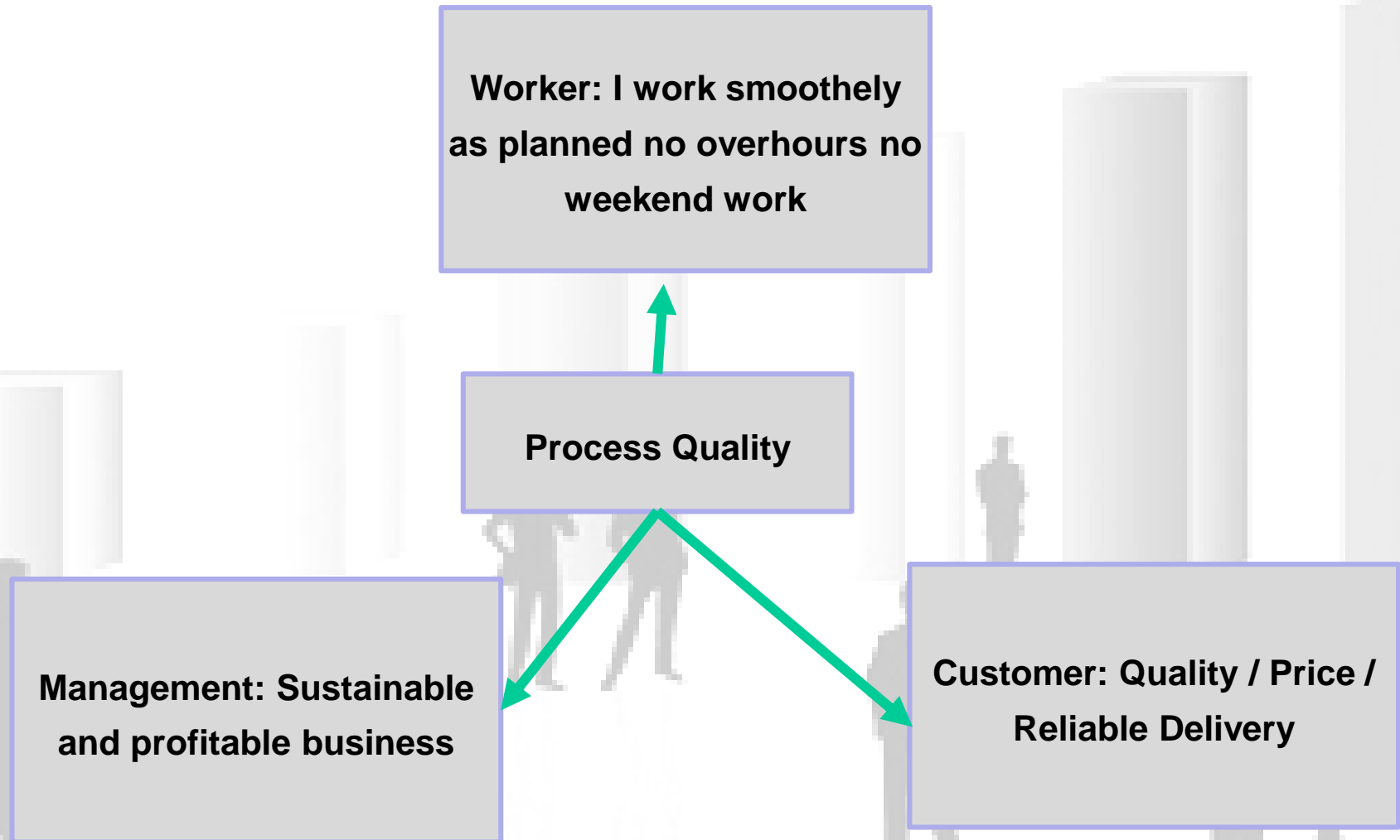
SPICE in the Real World
Success for Large Infrastructural Projects with ISO/IEC 15504 Part 6

Dirk Pfauder, Tomas Schweigert, Paul Hendriks

- Poort van Bunnik A12 LuVe -> first project, new experience, learning project for both SQS, RWS and Constructor,

- Poort van Noord N33

- SAAOne,

- A27

- Open IJ Amsterdam Sealock (Will be biggest in the World 1 B Euro Budget)

Perceptions of Process Quality

Worker: I work smoothely as planned no overhours no weekend work

Process Quality

Management: Sustainable and profitable business

Customer: Quality / Price / Reliable Delivery

Everybody talks about Transformation
Car Manufactorers do it

In the 1990th a car was a car

Car-from-UK.com

Key was mechanical engineering

Even this cockpit was seen as
Futuristic
Word „Infotainment" was
unknown

Automotive SPICE since 2005 as OEM Responce to Complexity and Criticality
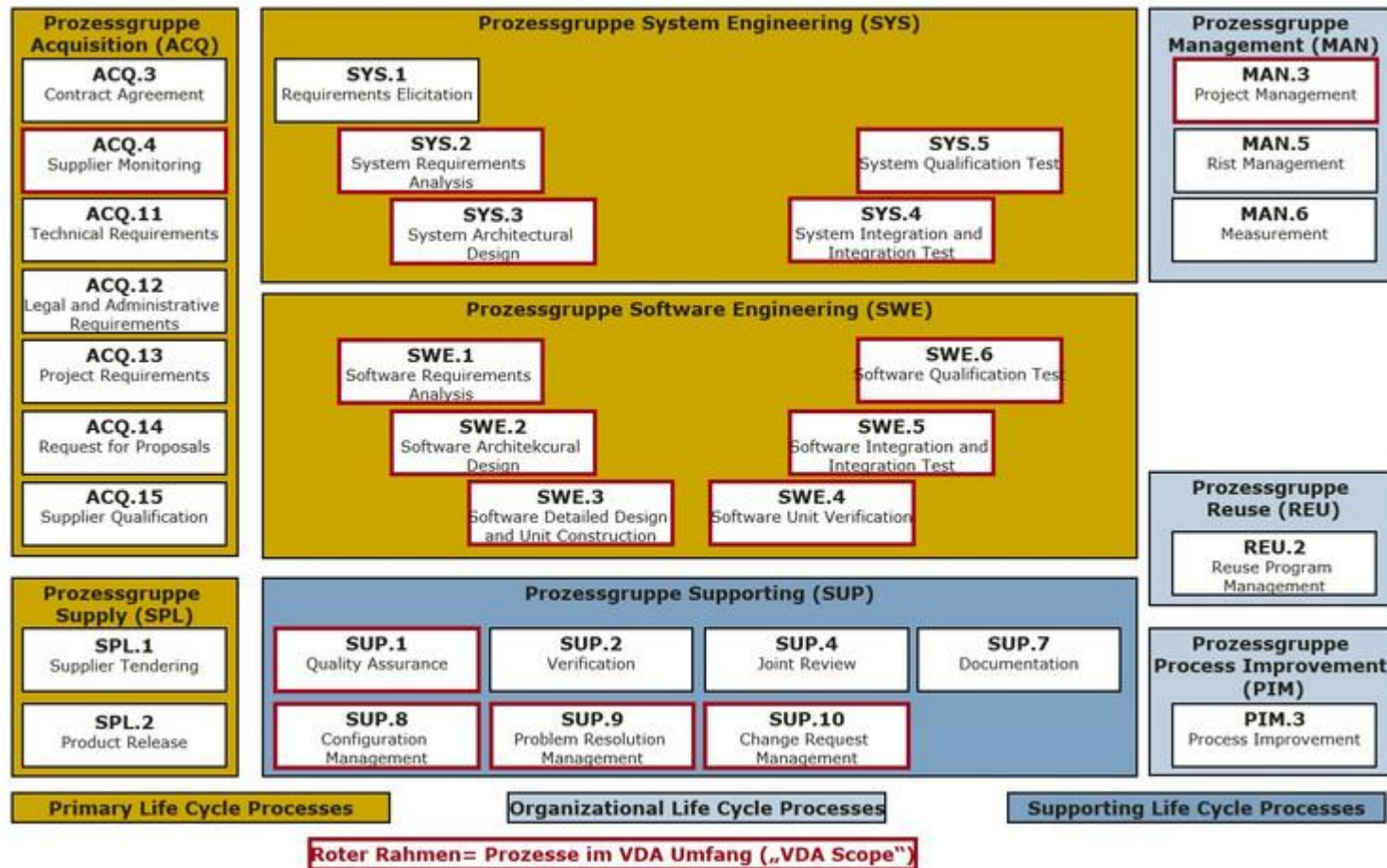
How to get the improvement job done?

Lets talk about ImprovAbility

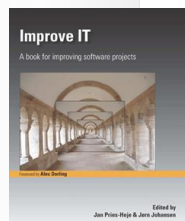ImprovAbility™

Focus: Strengths and weaknesses in developement of new products

Focus: Why is it so diccicult to improve?
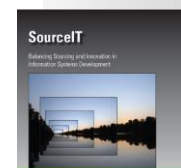
Focus: Ability to source development of products
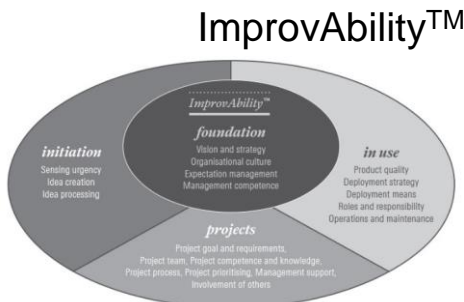
Copenhagen, Denmark

Roskilde, Denmark

1995   2000   2005   2010   2015

Center for Software Process Improvement

SourceIT

Danish research project
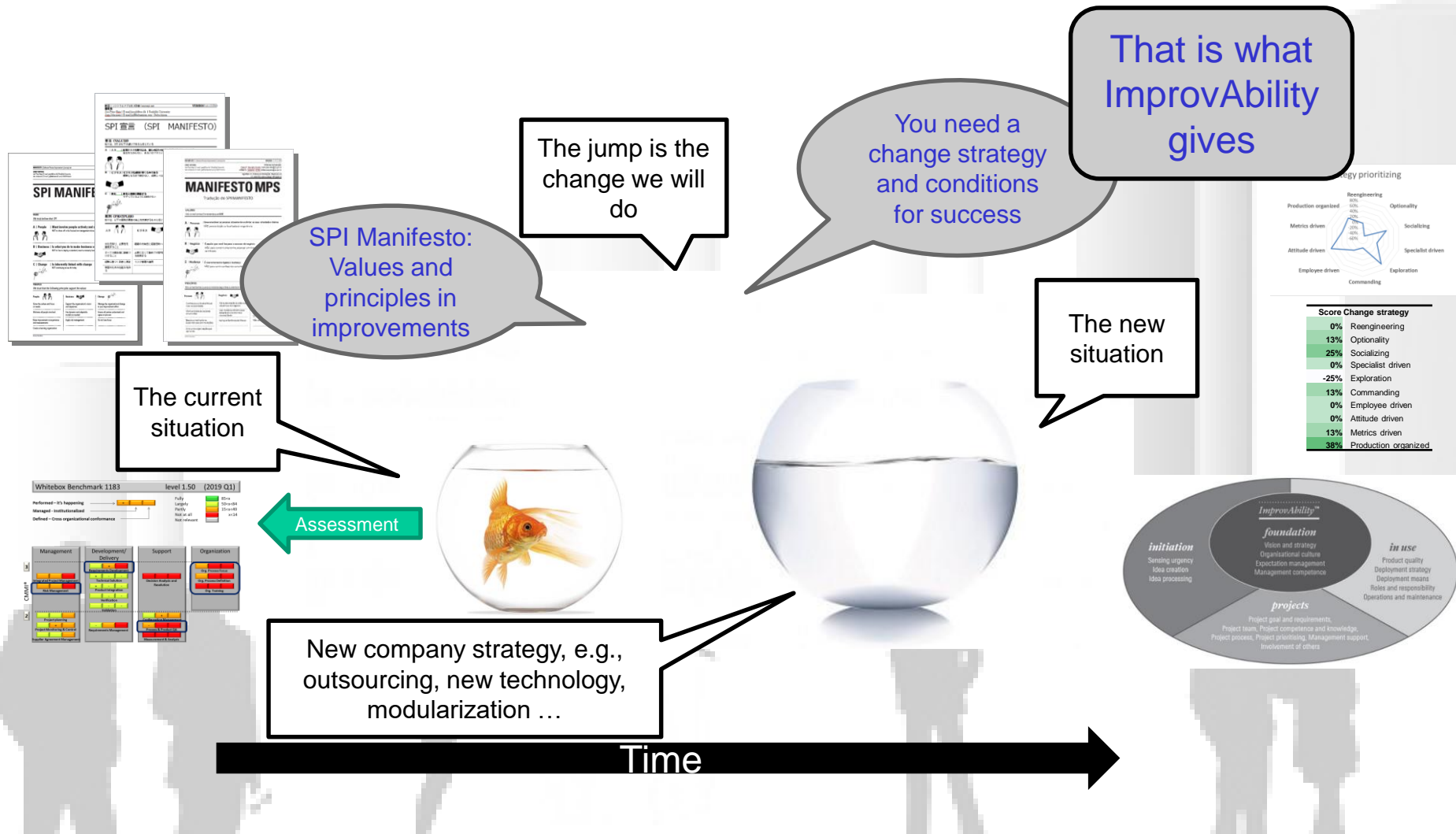Budget: 4 M€ - 30 person year
Duration: 3 years (2003 to 2006)

To establish the best fit "jump" strategies the ImprovAbility™ model includes these 10 overall change strategies
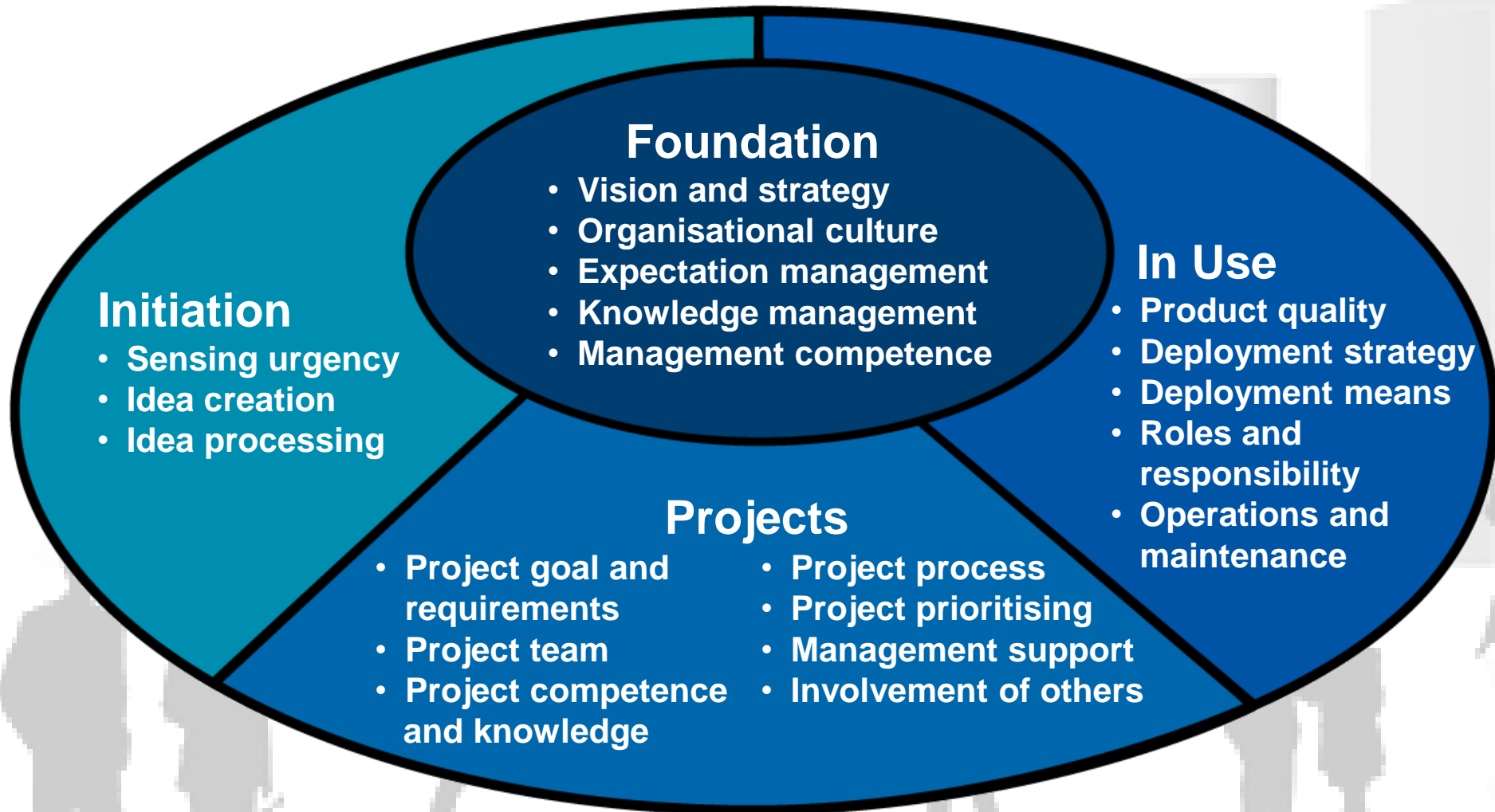
1   Commanding

2   Employee driven

3   Exploration

4   Learning driven (Attitude- driven)

5   Metrics driven

6   Optionally

7   Production organised

8   BPR (Business Process Reengineering)

9   Socialising

10   Specialist driven

The 10 change strategies are all anchored in Change Management literature

Strategy prioritizing

The ImprovAbility™ Model

20 parameters for evaluation of an improvement initiative

Foundation
- Vision and strategy
- Organisational culture
- Expectation management
- Knowledge management
- Management competence

Initiation
- Sensing urgency
- Idea creation
- Idea processing

In Use
- Product quality
- Deployment strategy
- Deployment means
- Roles and responsibility
- Operations and maintenance

Projects
- Project goal and requirements
- Project team
- Project competence and knowledge
- Project process
- Project prioritising
- Management support
- Involvement of others

More info: Whitebox.dk and ImprovAbility.dk

ImprovAbility

- In Whitebox a team of experts done many maturity assessments (more than 700 during the last 25 years)
- Less than half of the assessed organisations were able to use the assessment result for improvement – WHY?
- The Talent@IT research project focused on the ability to improve
  - Ended in development of the ISO/IEC 33014 Guideline for process improvement has given a lot of inspiration – from many countries
  - Includes identification of the change strategi for an improvement initiative
  - and a model with 20 enhancement parameters for ensuring success with the improvement initiatives
- Further development of the model and methods is going on

Literature
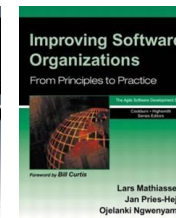
SourceIT: Balancing Sourcing and Innovation in Information Systems Development. Edited by Morten Hertzum & Carsten Jørgensen, Tapir academic press, 2011, ISBN 978-82-519-2758-1

Guide to Advanced Software Testing Second Edition. Anne Mette Jonassen Hass, Artech House, 2014, ISBN-13 978-1-60807-804-2
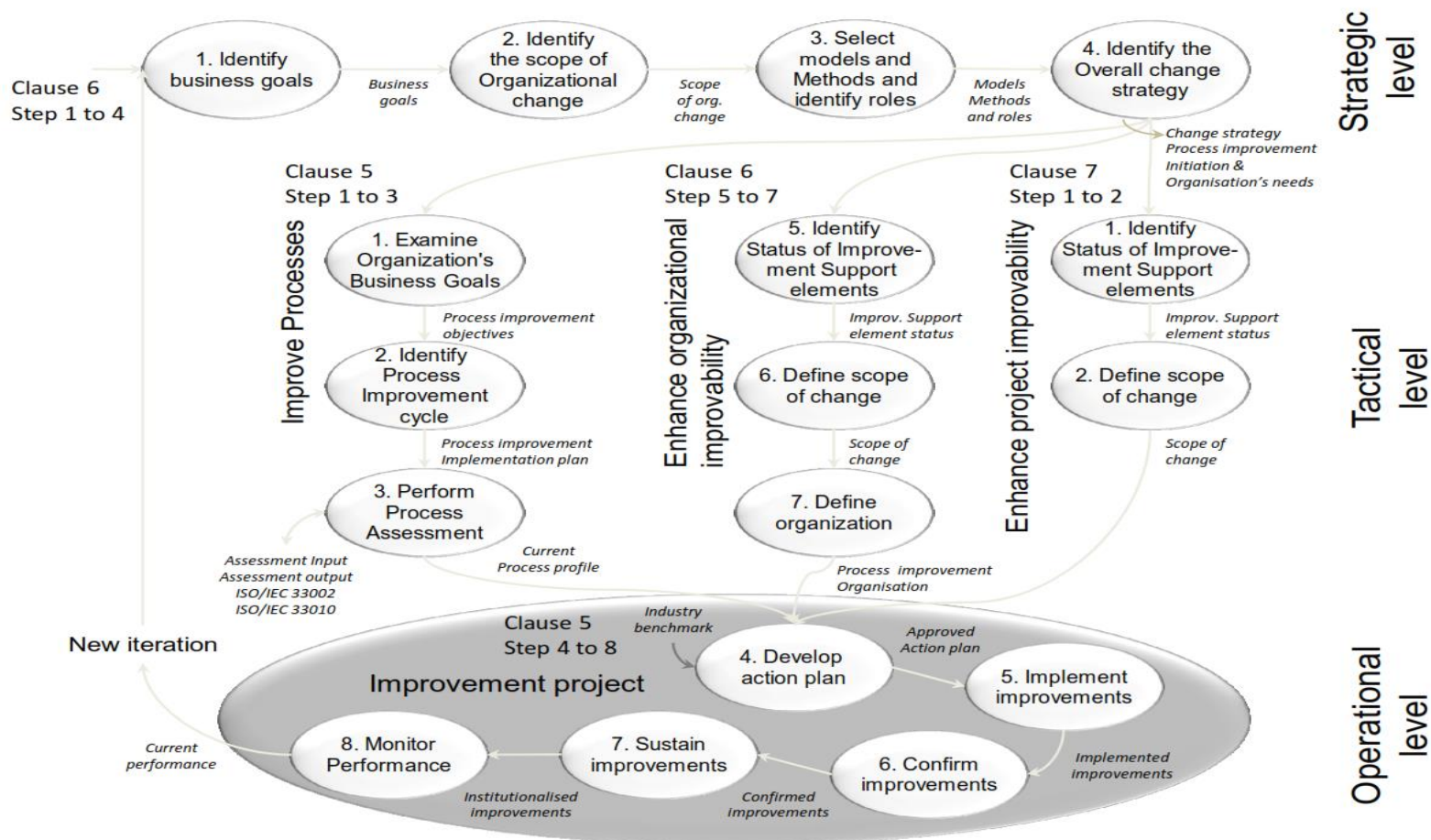
ImprovAbility: A book for improving software projects. Jan Pries-Heje & Jørn Johansen, Whitebox, 2015, ISBN 978-87-998116-0-1

Configuration Management Principles and Practice. Anne Mette Jonassen Hass. Addison Wesley, 2003, ISBN 0-321-11766-2
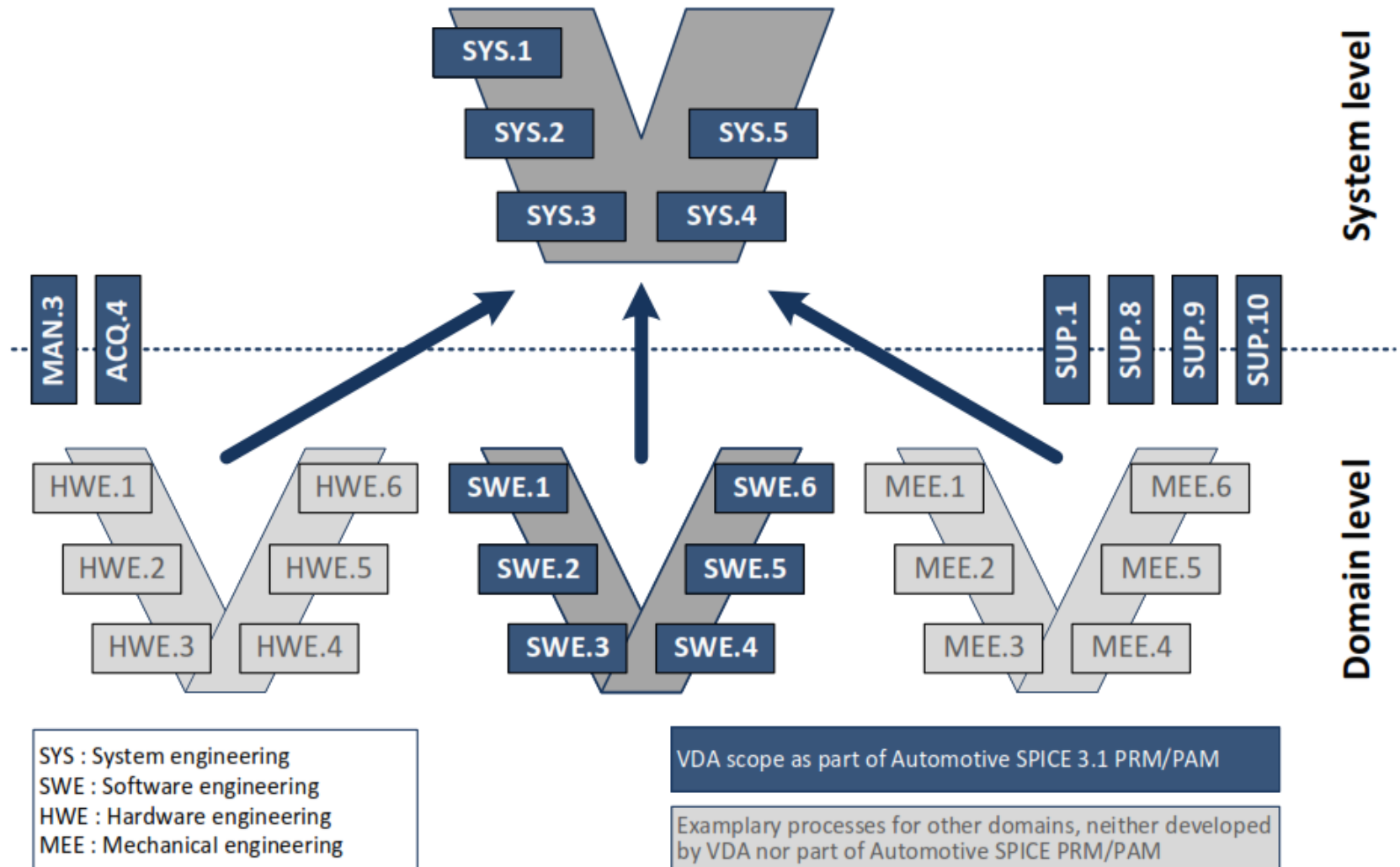
Improving Software Organizations: From Principles to Practice. Lars Mathiassen et. al., Addison-Wesley, 2002, ISBN 0-201-75820-2

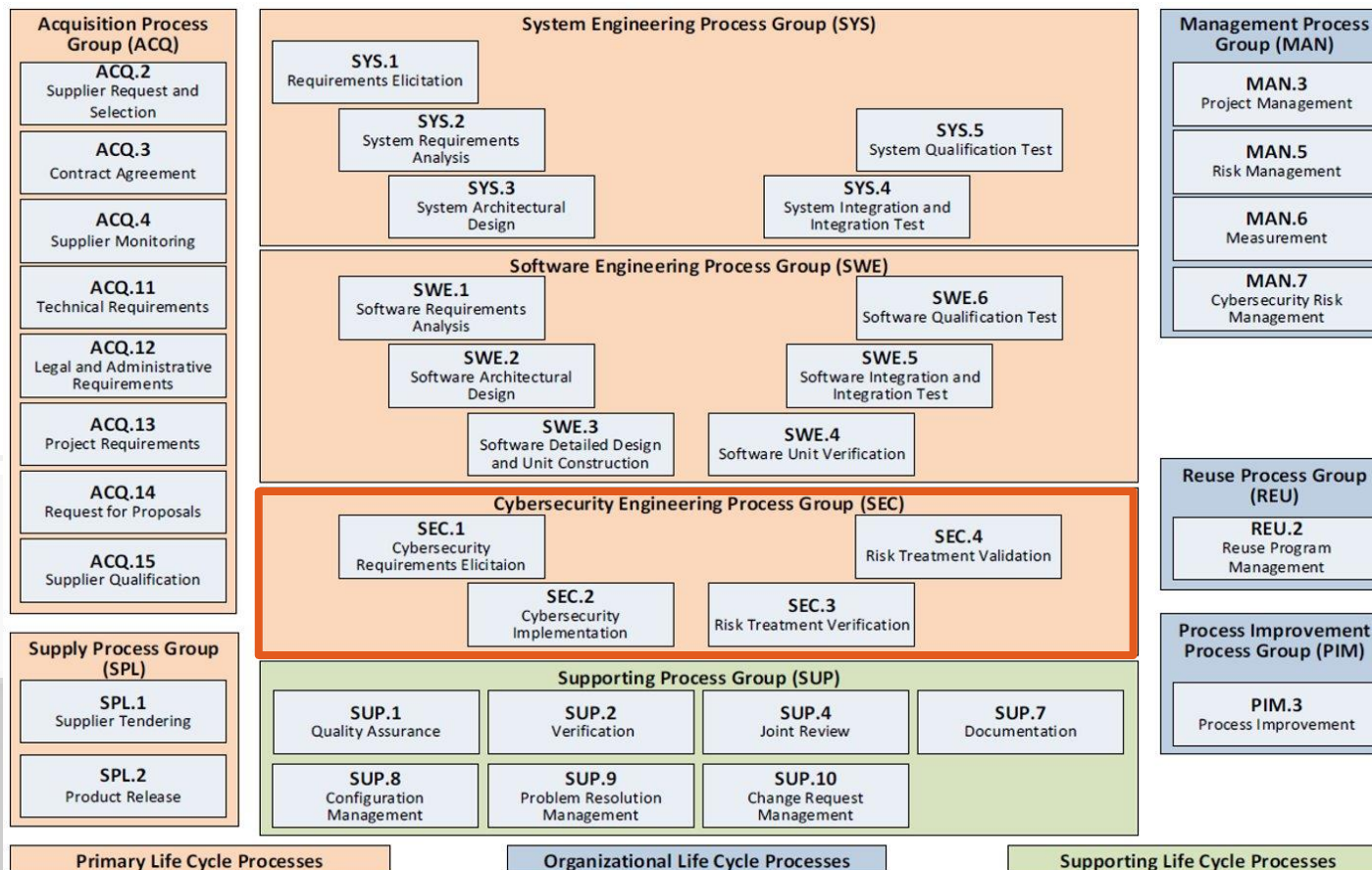ISO/IEC TR 33014 Information technology – Process assessment - Guide for process improvement. ISO/IEC 2013

SPI Manifesto 2010, Jan Pries-Heje, Jørn Johansen, Richard Messnarz, et. All, EuroSPI.net

ISO 33014

SYS : System engineering
SWE : Software engineering
HWE : Hardware engineering
MEE : Mechanical engineering

VDA scope as part of Automotive SPICE 3.1 PRM/PAM

Examplary processes for other domains, neither developed by VDA nor part of Automotive SPICE PRM/PAM

Attention – cybersecurity homologation assessment upcoming 2022

Source: Automotive SPICE® for Cybersecurity PAM, 1st Edition, Feb 2021

Cybersecurity Engineer Knowledge

- EU Blueprint Project for Automotive DRIVES, free MOOC https://learn.drives-compass.eu/

Trends and Discussions
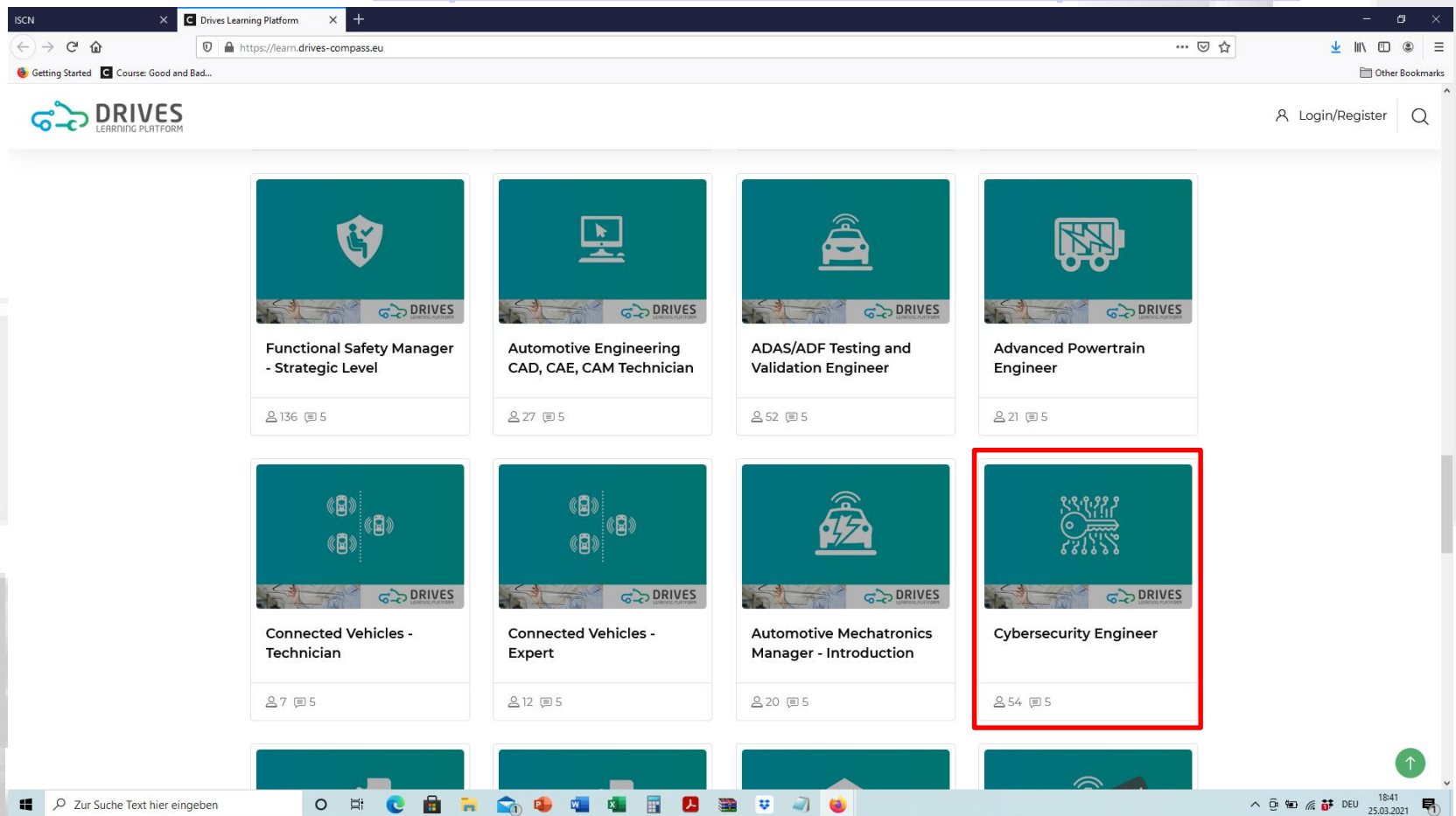
In the Future we might see that important Topics might be reflected in the Training and Certification Schemes regarding SPICE and AutomotiveSPICE®

- ISO 33060 (Systems Engineering)
- ISO 33061 (Software Engineering)
- Cyber Security
- Hardware
- Mechanic
- Agile Development
- Data Management
- Testing (TestSPICE)
- Organisational Capabilities

- Even in agile times Process Reference, Process Assessment and Process Improvement models are of importance for every type of business

- Being not aware of the past and the errors of the past makes you unable to manage the future

- You do neither need to improve nor do you need to survive.