Overview of SPI activities and strategies in Europe

Dr Richard Messnarz

Chair EuroSPI www.eurospi.net

Vice President European Certification and Qualification Association www.ecqa.org

Founding Member INTACS www.intacs.info

JRC Leader European Innovation Manager

Director ISCN www.iscn.com

Contents

- Shifting paradigms in SPI in Europe
  - Environment of Innovation
  - Engineering versus Management Practices
  - Topic Cluster Networking and Innovation Transfer
  - Human Empowerment Schema and Brain Drain Inversion
  - A Multidimensional Store for Improvement
- Future Vision of SPI and Networking
- Join the European SPI Communities

Company Profile

- ISCN Ltd Ireland (Coordination Office) founded 1994 in Ireland
  - Development offices in Austria
    - ISCN Regionalstelle founded 1997
    - I.S.C.N. GesmbH founded 2001
  - Further Consulting Offices in ISCN Group
    - SIBAC, Mittelbiberach (near Ulm), Germany
    - Performing Technologies, Vienna Austria
- EuroSPI Conference and Network Coordinator since 1994
- Vice President and Technology Provider for the European Certification and Qualification Association since 2005
- SPICE Assessments and Improvement Project since 1994
- ISCN Group Annual Turnover approx 2 million Euro (20 core staff)

ISCN
International Software Consulting Network

Company Profile

ECQA
European Certification & Qualification Association

VDA QMC
AUTOMOTIVE SPICE®
training partner

- Accreditated iNTACS™ training provider for ISO/IEC 15504 and Automotive SPICE®
- Accreditated VDA-QMC training provider and partner
- Moderator of the German SOQRATES initiative, where 23 leading Germany companies share knowledge concerning process improvement.
- EU Research Projects since 1995

ZF
ZF Lenksysteme
Continental
innova
geleceğe hazır çözümler
KTM
MAGNA
MAGNA POWERTRAIN
T · · Systems ·
HELLA

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Paradigm 1:

Building on Environments Empowering Innovation

US View

Statement by the SUN innovation manager at a workshop in Nuremberg, 15.11.2005

Profit - Strategy

The best innovation takes place if with least possible effort (this included staff) the highest possible profit can be achieved.

Reference:
ECQA Certified Innovation Manager
2003 – now
www.ecqa.org

European View

Result of 3 European studies including more than 300 firms in total

Human capital intensive strategy

Innovation is created by connecting innovative human resources who align their personal goals with the business achievements and help their organization to have competitive ideas which leads to an implementation and business success of the firm.

Reference:
ECQA Certified Innovation Manager
2003 – now
www.ecqa.org

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Why?

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Because Europe missed to offer such a human capital intensive strategy supporting new innovative minds for decades we lost a lot of human high skilled resources to the US and other continents where it was easier to implement the innovation.

Reference:
ECQA Certified Innovation Manager
2003 – now
www.ecqa.org

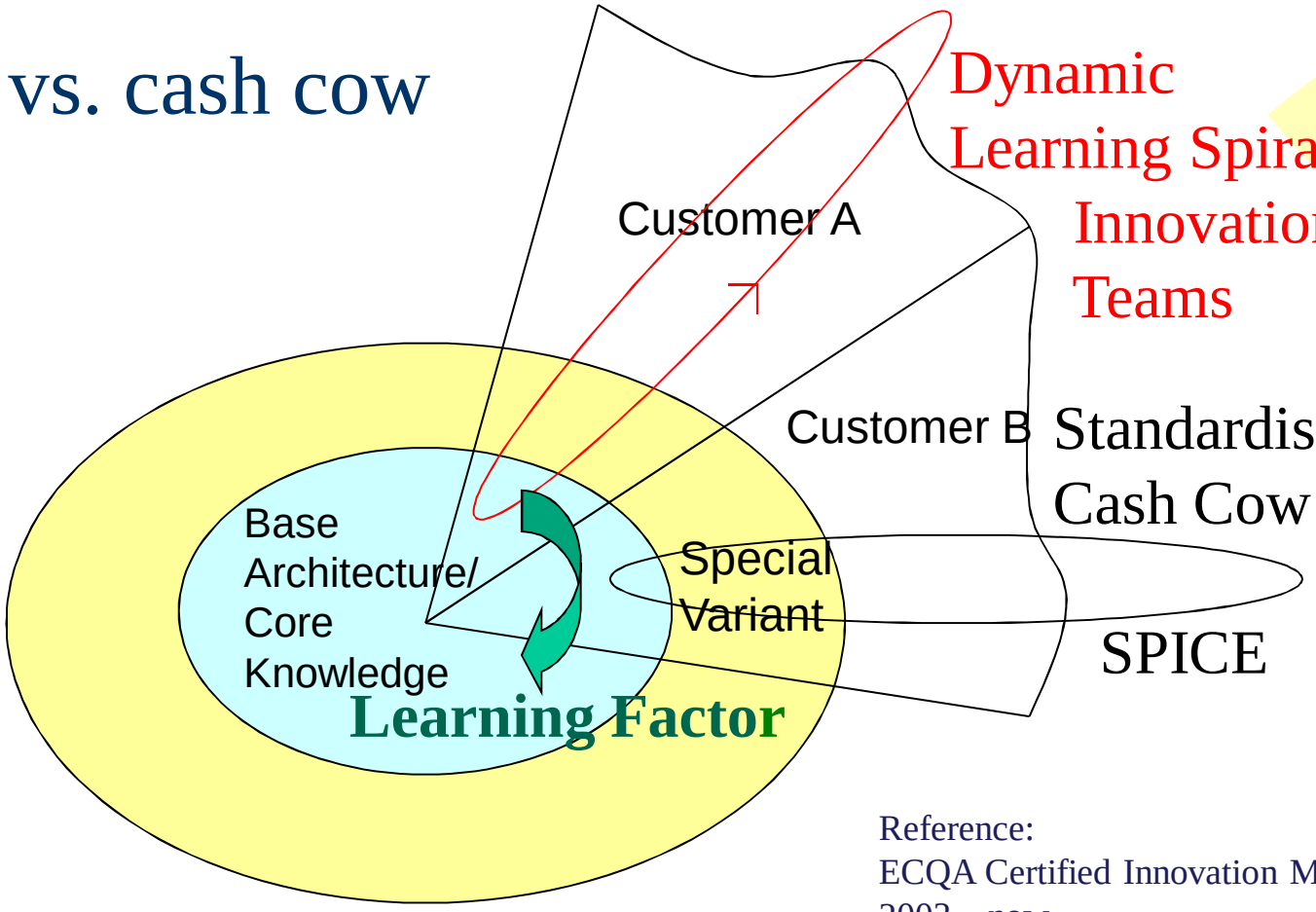
European Implementation Strategy

Creating cross company task forces to jointly lead the Innovation and provide a learning culture supporting new ideas and minds. Examples - EADS, Automotive SPICE, Research in Physics CERN LHC, etc,

Creating educational strategies to train managers for creating such concepts in European industry.

Learning Organisations

Innovation vs. cash cow project



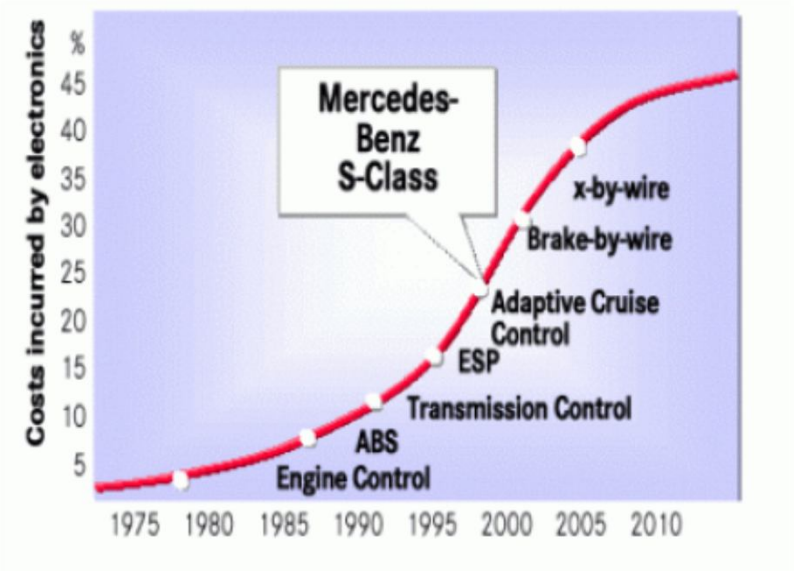
Reference:
ECQA Certified Innovation Manager
2003 – now
www.ecqa.org

Paradigm 2:

Competence to manage complexity in engineering is of higher importance than classical management

Managing Complexity

Professional management of increasing complexity caused by the dependence of electronics, and software in the car.



Reference:
Daimler Chrysler AG,
EuroSPI 2001 Conference,
Limerick, Irland

Automotive SPICE

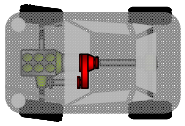
Reference:
www.automotivespice.com

- The new structure of the refined ISO/IEC 15504 permits to define process reference models compliant to the ISO standard

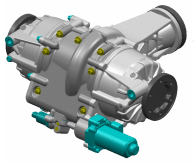
- Due to the demand for a standard adapted to the automotive industry, the largest European car manufacturers started the "*Automotive SPICE*" initiative

Understanding the Functional Dependencies

Professional Traceability of requirements related with mechanics, electronics, and software.



Requirement Requests (Customer)

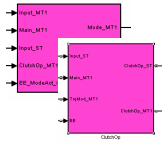


System Requirements

Requirements referring to more than one Sub-System

Sub-System Requirements

- Different components
- No common requirements
- Different responsibilities

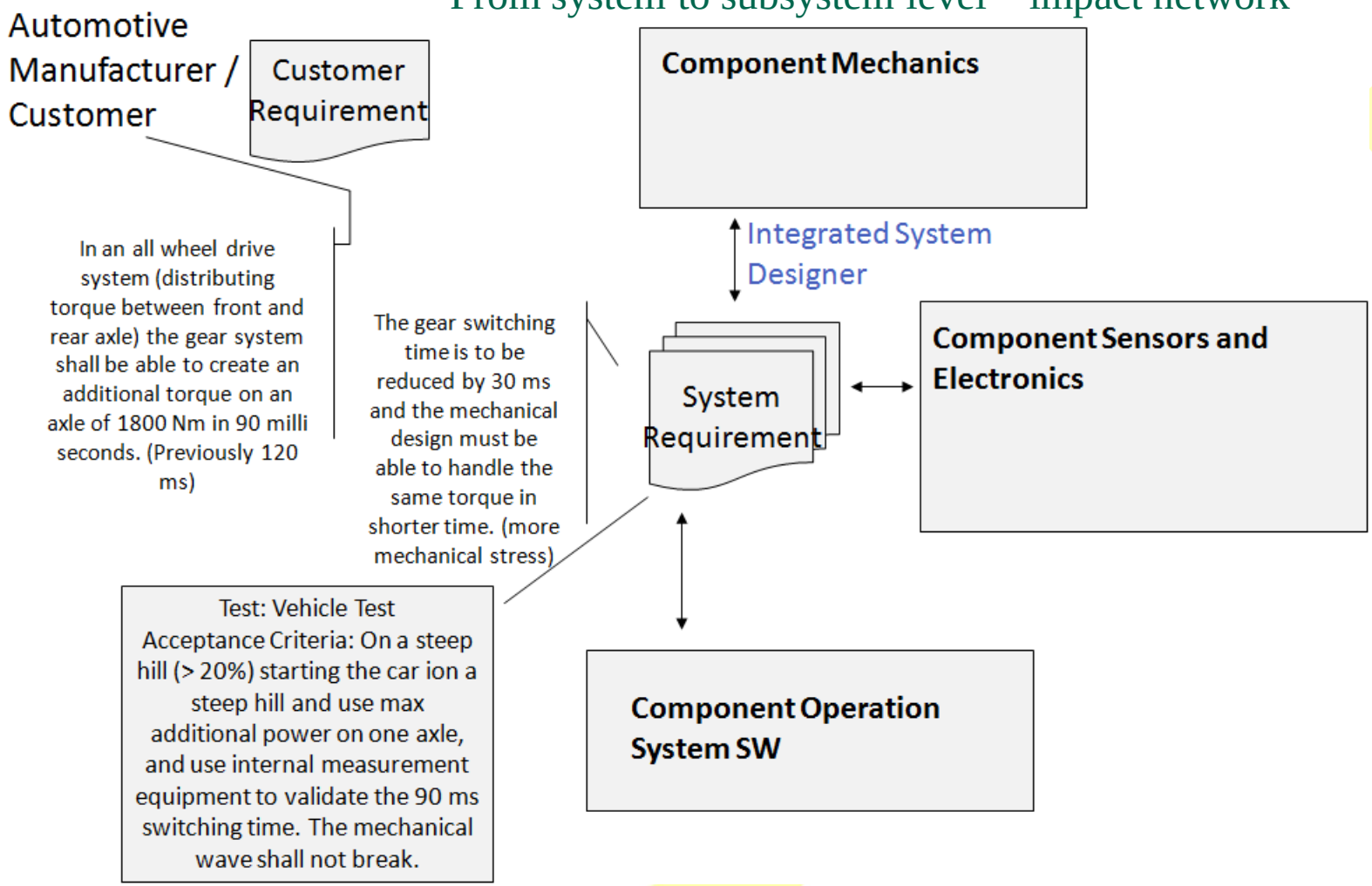


Detailed Requirements

Reference:
Magna Powertrain AG,
Key Note,
EuroSPI 2008 Conference,
Dublin, Irland

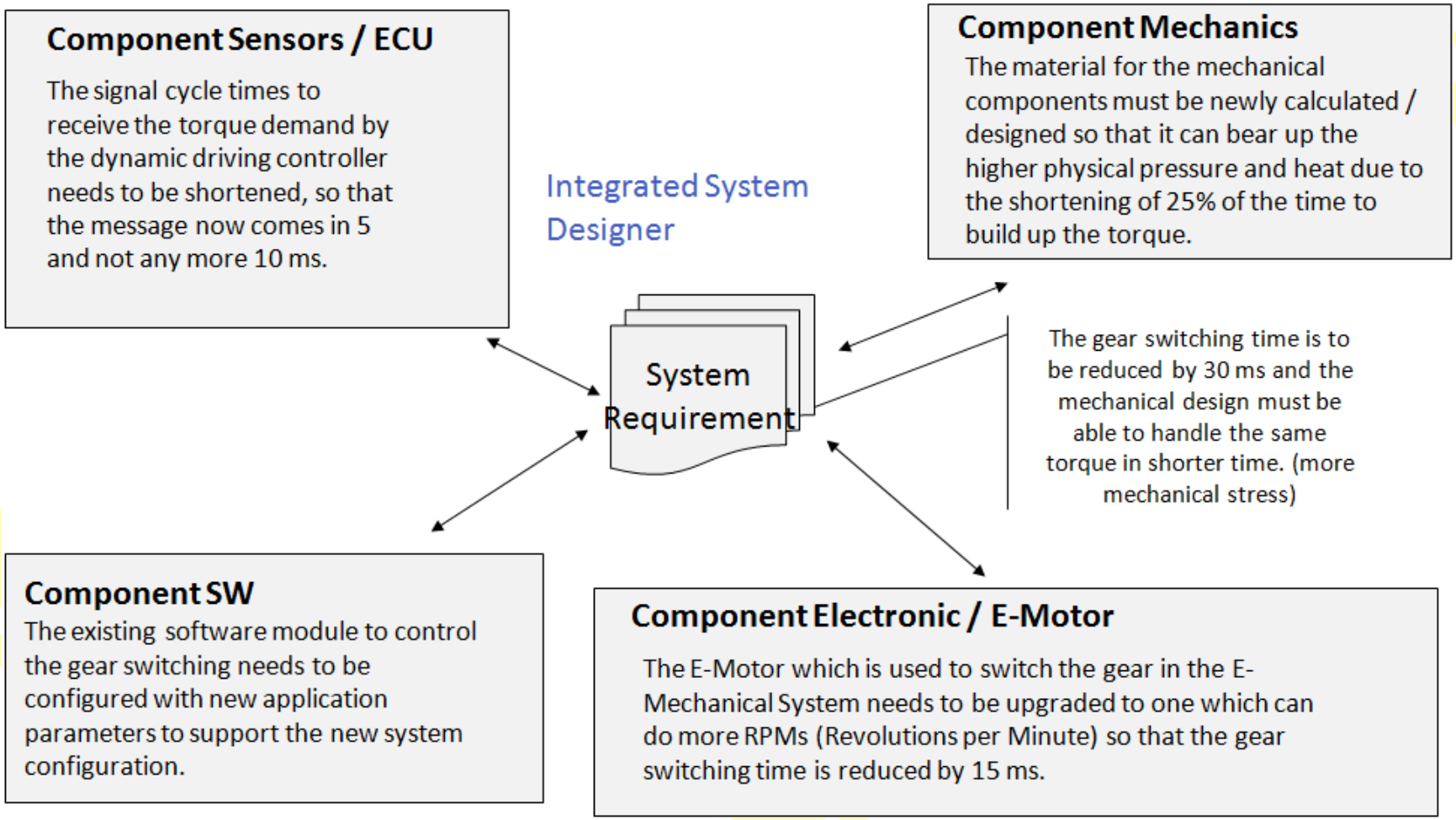
Understanding the Functional Dependencies

From system to subsystem level – impact network



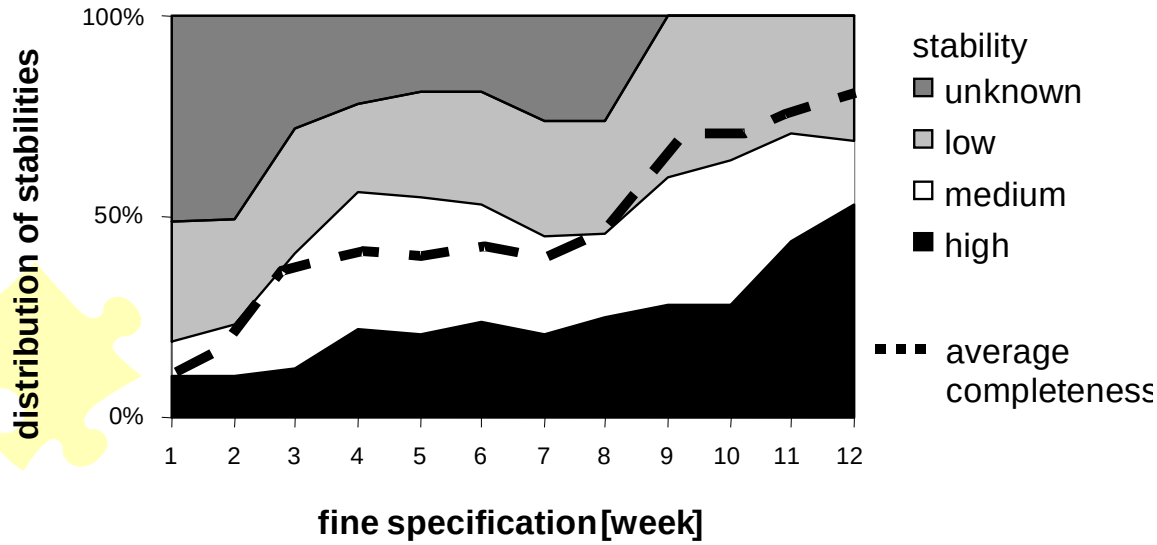
Understanding the Functional Dependencies

From system to subsystem level – impact network



Traceability of changes

A performance controlled development with measurement of a trend of requirements coverage, test coverage, quality metrics, and resources used.



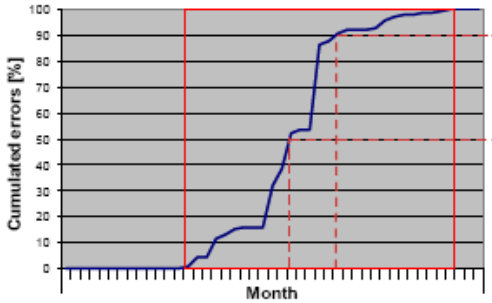
A study from DaimlerChrysler showed that a good project has ca. 48% stable requirements (does not change any more), ca. 25% are relatively stable (some changes are required) and ca. 27% are unstable requirements. Reference: EuroSPI 2001 und 2006 Conference.

Tracking of requirements coverage trends is a must!

Advantages

BMW Experiences, SPICE Days 2009 – Process and Product maturity are related

– Good example for goal-oriented product maturity

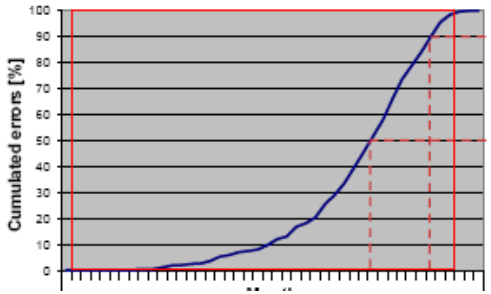


90% of all errors found 11 month before SOP

50% of all errors found 16 month before SOP

Goal-oriented product maturity value: 58%

– Bad example for goal-oriented product maturity



90% of all errors found 2 month before SOP

50% of all errors found 8 month before SOP

Goal-oriented product maturity value: 25%

ASPICE Processes

Acquisition Process Group		
ACQ .3	Contract Agreement	
ACQ .4	Supplier Monitoring	H, Fo
ACQ .11	Techniscal Requirements	
ACQ .12	Legal and Administrative Requirements	
ACQ .13	Project Requirements	
ACQ .14	Request for Proposals	
ACQ .15	Supplier Qualification	

Engineering Process Group		
ENG.1	Requirements Elicitation	Fi
ENG.2	System Requirements Analysis	H, Fi, Fo
ENG.3	System Architectural Design	H, Fo
ENG.4	Software Requirements Analysis	H, Fo
ENG.5	Software Design	H, Fi, Fo
ENG.6	Software Construction	H, Fo
ENG.7	Software Integration	H, Fo
ENG.8	Software Testing	H, Fi, Fo
ENG.9	System Integration	H, Fo
ENG.10	System Testing	H, Fi, Fo

Support Process Group		
SUP .1	Quality Assurance	H, Fo
SUP .2	Verification	Fo
SUP .4	Joint Reviews	Fo
SUP .7	Documentation	
SUP .8	Configuration Management	H, Fi, Fo
SUP .9	Problem Resolution Management	H, Fo
SUP .10	Change Request Management	H, Fo

Management Process Group		
MAN.3	Project Management	H, Fi, Fo
MAN.5	Risk Management	Fi, Fo
MAN.6	Measurement	

Process Improvement Process Group	
PIM .3	Process Improvement

Reuse Process Group	
REU.2	Reuse Program Management

Supply Process Griup	
SPL.1	Supplier Tendering
SPL.2	Product Release

H = HIS-Group, Fi= Fiat, Fo = Ford

CMMI vs ASPICE

In European Assessment Models (Automotive SPICE®, S4S, Medical SPICE,…) we assess more engineering than management processes

- HIS Scope = 10 Engineering and 5 management processes
- In CMMI at staged Level 2 there are no engineering processes and at staged level 3 the 21 processes are 15 management and 6 engineering related. (= weighting in the other direction)

CMM /I is based on 1987 views

At this time the most advanced car had one or 2 computers and no bus, no Internet developed was there at this time. Highest complexity for managers to learn to deal with SW as part of the product in general.

We need to base on 2012 views

Car with above 100 computers, real time bus, car functions distributed among many ECUs, protocols and Internet connecting. Highest complexity to manage the functionality, availability and safety of the system by engineering methods.

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Paradigm 3:

Expert Cluster Networking and Innovation Transfer

Collaborating Networks

Building on expert clusters and creating communities of SPI across different countries

- SPI (System, Service, Software) Network EuroSPI
- Packaging of Knowledge and Transfer Strategy by ECQA
- Systems and Product Engineering Network EMIRacle
- Industry Task Forces e.g. SOQRATES
- Assessor Network INTACS

EuroSPI²

European System & Software Process Improvement and Innovation

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  - History
  - Mission & Goals
  - Topics & Target Group
  - Membership
  - Partners & SPINs
- EuroSPI² Conferences
- EuroSPI² Library
- EuroSPI² Newsletter
- Trainings & Certification
- Publications
- Projects
- Contact

Mission & Goals

EuroSPI²'s mission is to develop an experience and knowledge exchange platform for Europe where SPI practices can be discussed and exchanged and knowledge can be gathered and shared. This mission is implemented by the following major action lines:

- An annual EuroSPI² conference supported by Software Process Improvement Networks from different EU countries.
- EuroSPI² supported the establishment of a world-wide SPI Manifesto with SPI values and principles agreed among experts world-wide. We build clusters of experts and knowledge libraries for these values and principles.
- Establishing an internet-based knowledge library based on hundreds of experience reports has been contributed to EuroSPI² since 1994.
- Establishing an European Qualification Framework for a pool of professions related with SPI and management. This is supported by European certificates, exam systems, and online training platforms (European Certification and Qualification Association).
- Establishing a world-wide newsletter with articles from key industry and key European research associations helping to implement the SPI manifesto world-wide.

News

>> 14.05.2012
VDA Automotive Sys Workshop, 14.5.2012, Berlin, Germany

>> 10.05.2012
SOQRATES General Meeting, 10.05.2012, Mattighofen, Austria

>> 25.-27.06.2012
EuroSPI 2012 Conference, 25. - 27.06.2012, Vienna, Austria

>> 12.-13.4.2012

News

>> 02.04.2012
WS 2012: SPI in SMEs - A Project Management Perspective
Read more...

>> 13.03.2012
WS 2012: Creating Environments Supporting Innovation and Improvement
Read more...

>> 13.03.2012
WS 2012: Business Process Management
Read more...

>> 13.03.2012
WS 2012: SPICE Assessors
Read more...

>> 13.03.2012
WS 2012: Measurement
Read more...

News Archive

Follow us

Workshop Communities and Workshops 2012

Key Speakers - Moderation - Discussion - Exercise

Since 2010 a set of continuously organised interactive workshops has been taking place at EuroSPI² conferences. Workshop communities are built up and results are published at this website.

Each workshop lasts a whole day, includes industry and research key note speakers and allows participants to contribute actively. The results of the workshops are outlined in workshop summaries concluding discussions and providing new ideas. These workshop summaries are published every year. **These workshops are interactive with open discussion. Participants work with the speakers to elaborate key statements for follow up research for the next year.**

Community 1: Creating Environments Supporting Innovation and Improvement more... »

- **Workshop 2012: Innovating Innovation: It is time to take the next step – come and take part**
- Process Product and Service Innovation
- Social Responsibility as a fruitful ground for innovation

Community 2: SPI and Product, System, Software Design more... »

- **Workshop 2012: Standards and Experiences with the Implementation of Functional Safety**
- Integrated Design Principles
- Agile Design Principles
- Functional Safety Standards and Design Principles

Community 3: SPICE Assessors: Exchanging Experiences across Assessment Models more... »

- **Workshop 2012: Experiences with Tailoring and Agile and Maturity Models** (in Cooperation with Gate4SPICE meetings organised by iNTACS™)
- Exchanging Experiences across Assessment Models

Community 4: Business Process Innovation and Improvement more... »

- **Workshop 2012: Business Process Management (CertiBPM)**

Community 5: SPI and Measurement more... »

SPI Manifesto

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

SPI Manifesto

PRINCIPLES

We trust that the following principles support the values

People 	Business 	Change 
Know the culture and focus on needs	Support the organisation's vision and objectives	Manage the organisational change in your improvement effort
Motivate all people involved	Use dynamic and adaptable models as needed	Ensure all parties understand and agree on process
Base improvement on experience and measurements	Apply risk management	Do not lose focus
Create a learning organisation		

EMI RESEARCH ASSOCIATION

WHO WE ARE | OUR OFFER | JOIN US | NEWS AND INFOS | CONTACT AND MEET US

Call for papers
- 12th International Design Conference - (...)
- Call for paper! EuroSPI Conference (...)
- Conference on Digital Enterprise Technology

Events
- The Visioanir Open-Forum: a great (...)
- 2nd IDON doctoral course

Job Opportunities
- PhD Offer in solid mechanic and surface (...)
- PhD Offer in Virtual Reality
- PostDoc Offer in Laser Materials Processing
- PhD-student Offer in Laser Materials (...)
- Looking for a Post-Doc in eco-design of (...)

News from European Commission
- Europe 2020 Flagship Initiative
- New FP7 Calls: NMP - 'Factories of (...)
- European Research in the Future

News from the 7th Framework Programme

In our Co-Research service, we are invloved in:

The "Visionair" project

In the framework of the FP7 (Seventh Framework Programme in reasearch supported by the European Commission), the proposal we have initiated concerning an innovative research infrastructure in scientific 3D visualization has been accepted. Visionair flyer available here

Our Activities in Lifelong Learning

Education and Culture DG
Lifelong Learning Programme

In our Co-Academy service, we offer:

iDesigner (Certified Integrated Design Engineer):

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Password

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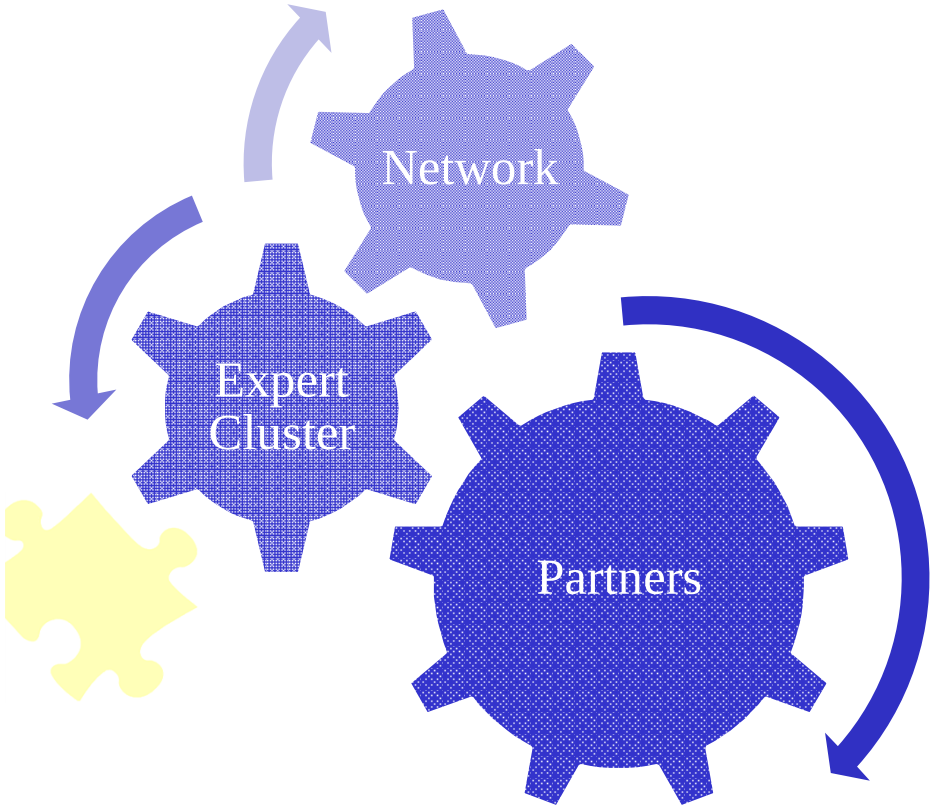
EMIRAcle Newsletter

Packaging Strategy



Training	• Course
Skills Set	• European Expert Committees
Recognition	• European Certificate • www.ecqa.org

ECQA

www.ecqa.org

A world wide unified certification schema for numerous professions:

- Experts from various markets **define the appropriate content** needed for a certain profession (a skill card).
- Exam committees **develop and update a related exam pool** for common usage on an international level.
- A certified examination body **offers and supervises exams**.
- A certification body (ECQA or accredited certification organization) **issues certificates**.
- Certified participants are **internationally promoted**

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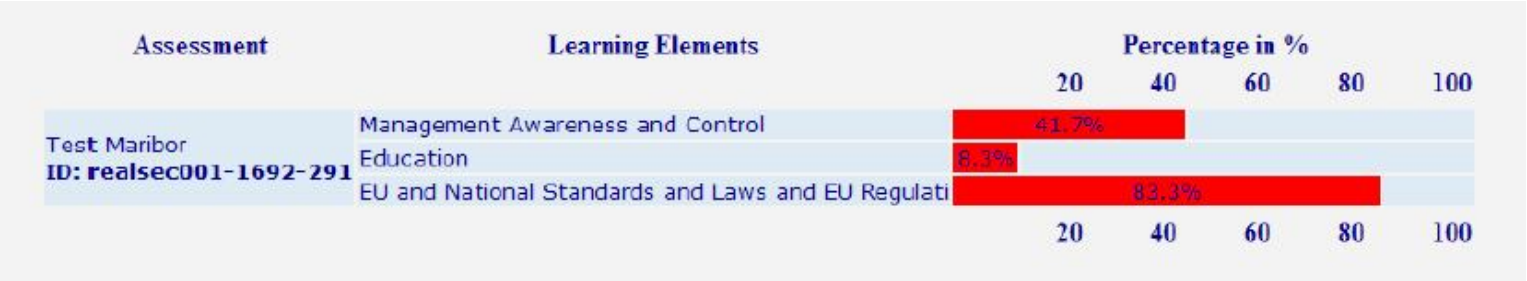
Infrastructure for **exams** and **courses**:

Exam Portal



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ECQA Certified SPI Manager

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ECQA
European Certification & Qualification Association

Select Domain

Software Process Improvement 2009

- ⊞ **SPI.U1 SPI Involvement and Commi**
- ⊞ **SPI.U2 Improvement Models**
- ⊟ **SPI.U3 Managing Process Improve**
  - SPI.U3.E1 Supporting Top Manager for Organisational Change Management
  - SPI.U3.E2 SPI Drivers Analysis
  - SPI.U3.E3 Alignment of SPI Goals to Business Goals
  - SPI.U3.E4 Process Measurement, Data Collection and Analysis
  - SPI.U3.E5 SPI Leadership
- ⊞ **SPI.U4 SPI Implementation**

Software Process Improvement 2009	**Software Process Improvement Manager 2009**
Managing Process Improvement	**Unit Managing Process Improvement (MPI) contains three elements: top management support, needs and drivers for process improvement, alignment of SPI goals with business goals, process measurement and data collection and analysis. <p> The goal of SPI management unit is to link process improvement with relevant business goals of the organization.**

SPI.U3.E3 Alignment of SPI Goals to Business Goals:

SPI.U3.E3.PC1	She/he can create structures that define process improvement goals from business goals.
SPI.U3.E3.PC2	She/he can demonstrate how the PI activities benefit the business strategy for all levels in the organisation.
SPI.U3.E3.PC3	She/he can create a measurement framework that allows to correlate business factors with improvement factors.
SPI.U3.E3.PC4	She/he can assure that senior managment has the process performance information they need to relate process performance to process improvements.
SPI.U3.E3.PC5	She/he assure that the PI strategy is aligned with senior management strategies.
SPI.U3.E3.PC6	She/he uses measures to show how the PI activities support business strategies at all organisational levels.

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ECQA Certified Integrated Designer

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European Certification & Qualification Association

VDA QMC
AUTOMOTIVE SPICE®
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ECQA
European Certification
Qualification Associatio

Select Domain

Integrated Design Engineer

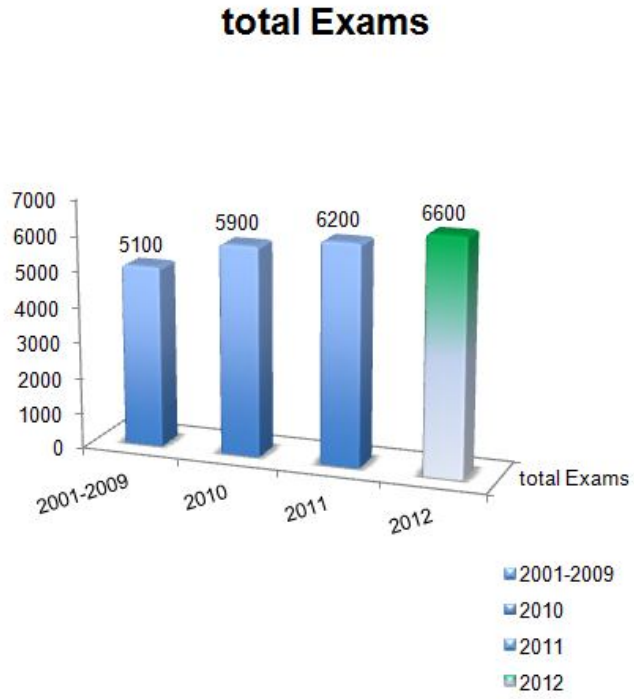
- ⊞ **iDES.U1 The Reasons for Integratic**
- ⊞ **iDES.U2 The Targets of Integration**
- ⊞ **iDES.U3 Essential Methods of Integ**
- ⊟ **iDES.U4 Mastering Complexity and**
  - iDES.U4.E1 Integration as a Means to master Complexity
  - iDES.U4.E2 Functional Re-Use aware Design Principles
  - iDES.U4.E3 Requirements Engineering in Integrated Design
  - iDES.U4.E4 Design Thinking for Innovation
  - iDES.U4.E5 Solving Design Problems and Innovating using TRIZ
- ⊞ **iDES.U5 Knowledge Management f**
- ⊞ **iDES.U6 Collaborative Integrated D**
- ⊞ **iDES.U7 Selected Aspects of Integ**

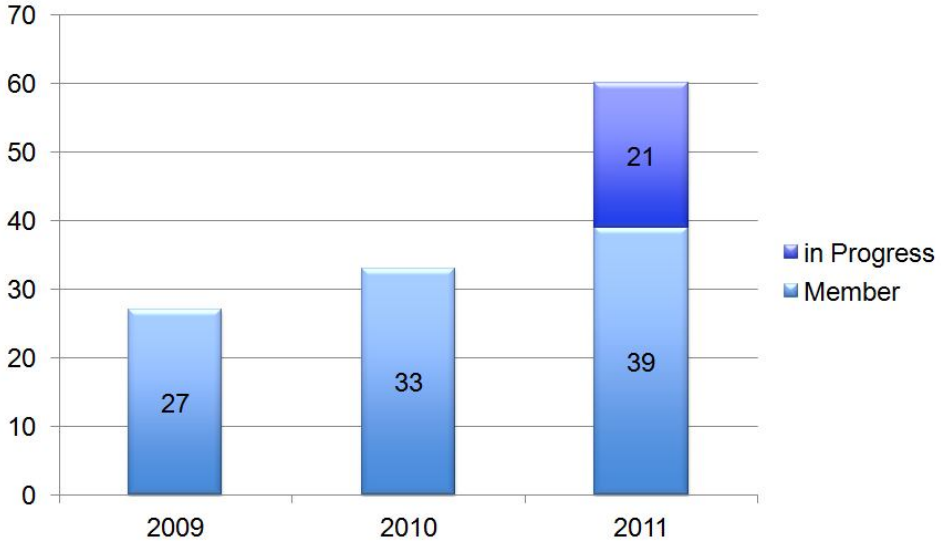
Integrated Design Engineer	Integrated Design Engineer
Mastering Complexity and Innovation	Nowadays mechanics can no longer control and repair a car with their own competences in mechanics and technology. Today, a car is so complex that we need to merge competences in mechanics, electronics, computer sciences, automation, etc. to be able to understand a minimum before starting to repair it. Systems engineering is an interdisciplinary field of engineering that focuses on how complex engineering projects should be designed and managed. Issues such as logistics, the coordination of different teams, and automatic control of machinery become more difficult when dealing with large, complex projects. Systems engineering deals with work-processes and tools to handle such projects, and it overlaps with both technical and human-centred disciplines such as control engineering and project management. Systems Engineering focuses on defining customer needs and required functionality early in the development cycle, documenting requirements, then proceeding with design synthesis and system validation while considering the complete problem: the system life-cycle. Depending on their application, although there are several models that are used in the industry, all of them aim to identify the relation between the various stages mentioned above and incorporate feedback. Examples of such models include the Waterfall model and the VEE model. System development often requires contribution from diverse technical disciplines. By providing a systems (holistic) view of the development effort, systems engineering helps meld all the technical contributors into a unified team effort, forming a structured development process that proceeds from concept to production to operation and, in some cases, to termination and disposal. This unit focuses on the key role that design has in systems engineering with a focus on systems that should be turned into products that are successful on the market.

iDES.U4.E2 Functional Re-Use aware Design Principles:

ECQA

- www.ecqa.org





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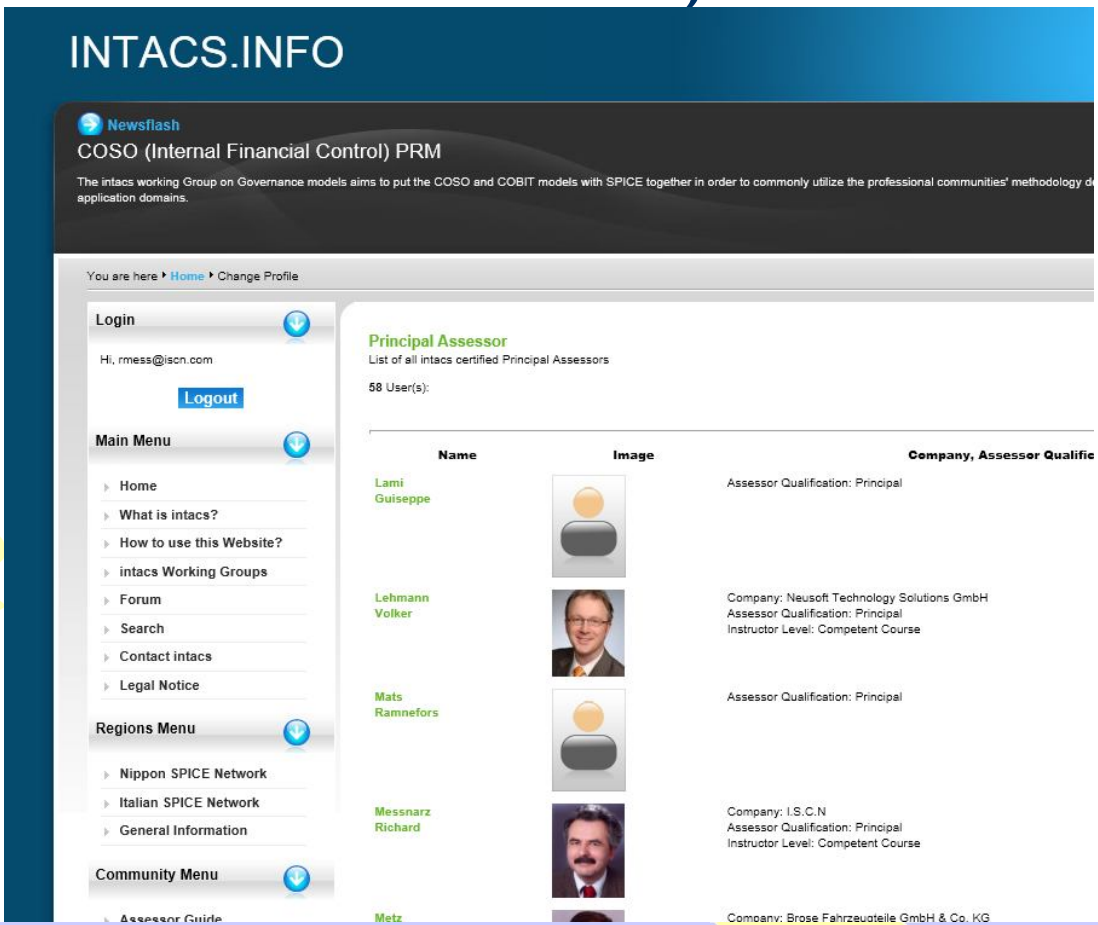
www.intacs.info (International Assessor Certification Shema)



More than 600 assessors

Board of multinational companies
(you can join)

Support for market Launch of SPICE PAMs

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SOQRATES

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Industry Task Forces

Continental Automotive, Elektrobit, Giesecke & Devrient, Grenoble INP, HELLA, ISCN, KTM, Magna, Methodpark, SIBAC, SQS, TU Graz, ZF Friedrichshafen AG, Software Factory, EDV GesmbH, Etc.

More than 24 multinational companies

Knowledge Topics

Annual Knowledge Releases

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Paradigm 4:

Human Empowerment Schema

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HR Innovation

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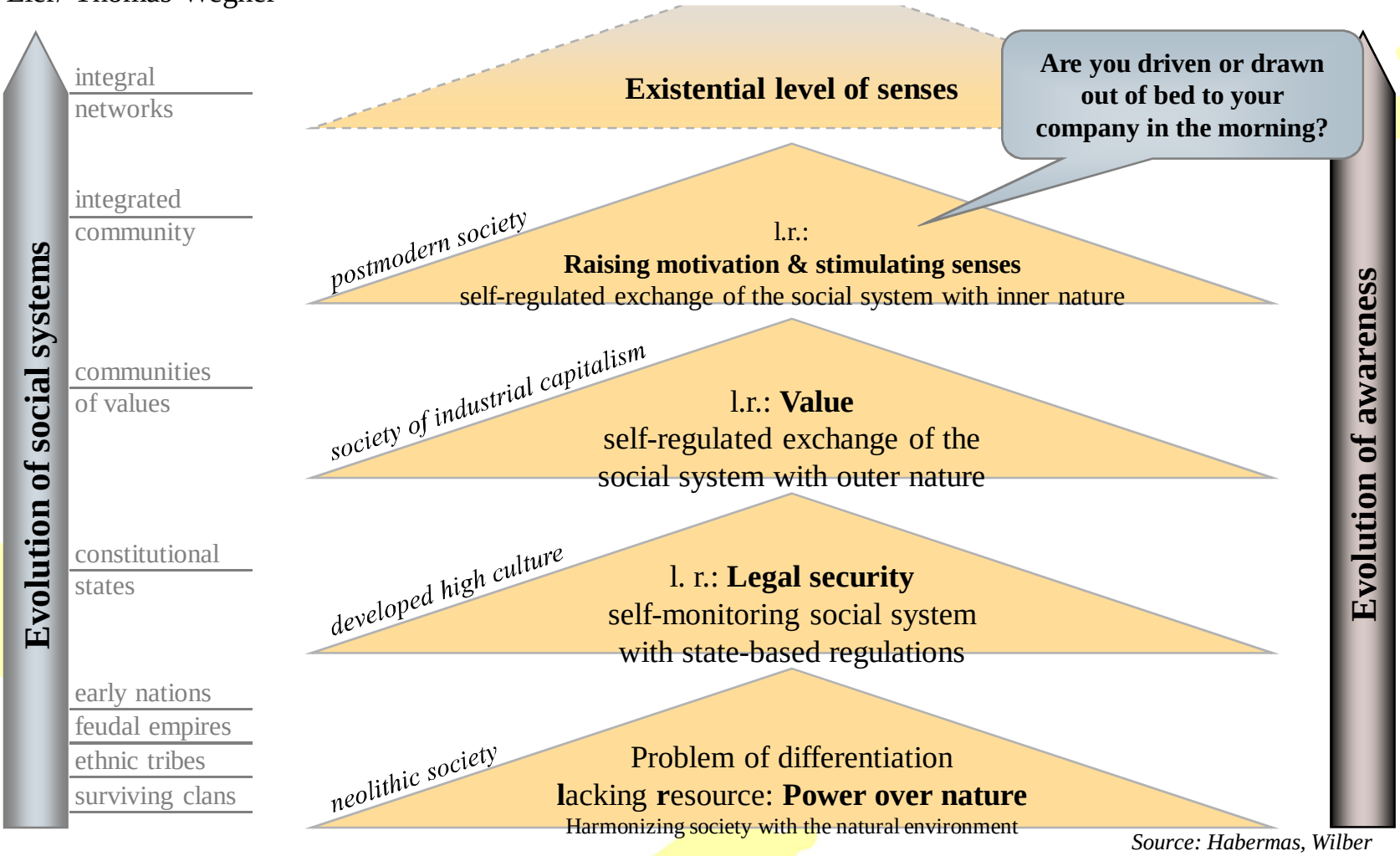
ZF Friedrichshafen AG
Key Note at EuroSPI 2011
Stefan Lier/ Thomas Wegner



Source: Habermas, Wilber

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HR Innovation

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Key Note at EuroSPI 2011
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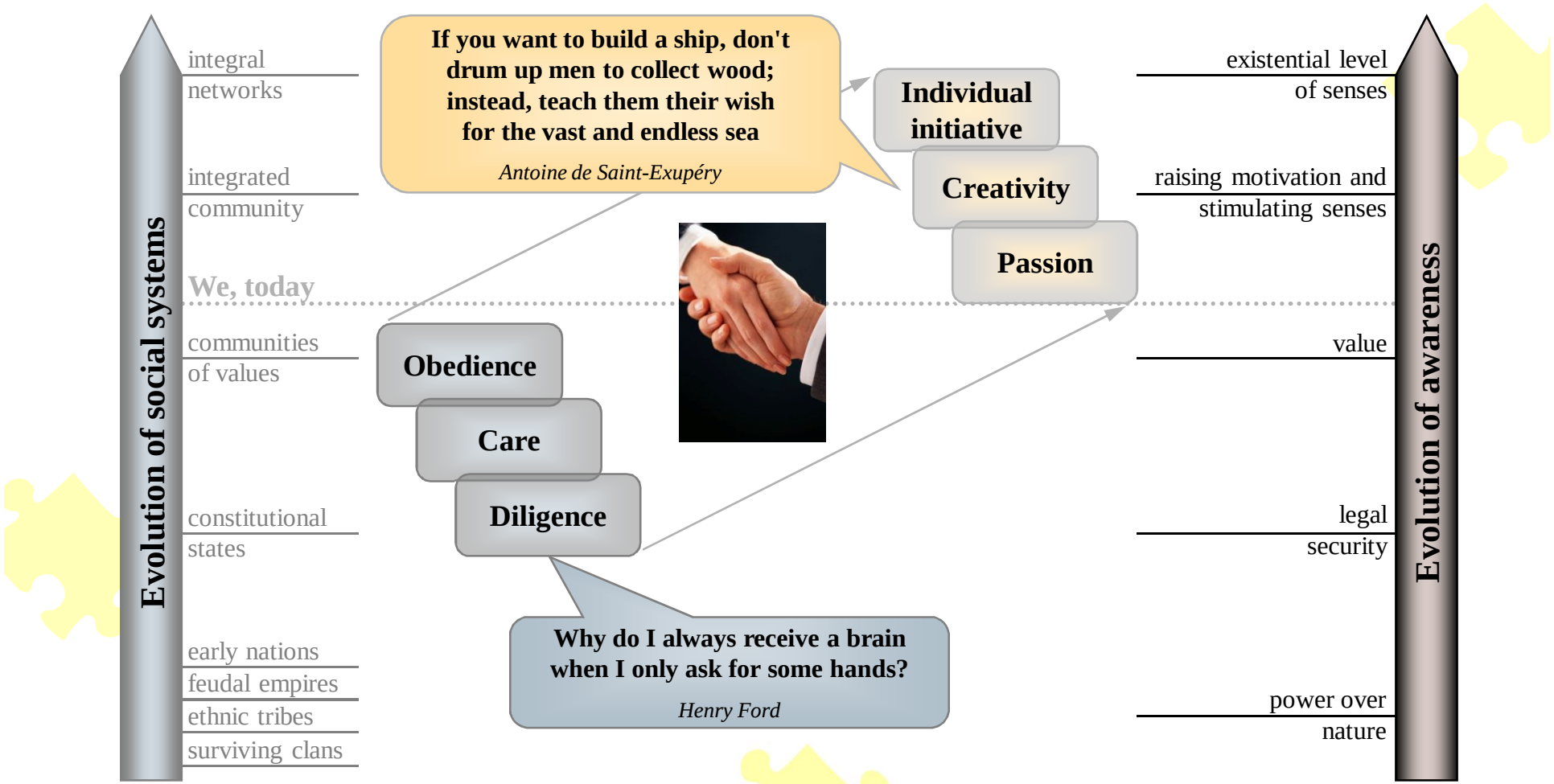

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HR Innovation

ZF Friedrichshafen AG
Key Note at EuroSPI 2011
Stefan Lier/ Thomas Wegner

Companies Must Provide the Space for Their Employees' Initiative, Creativity and Passion

What we need are **Answers, Answers, Answers**

- How ORGANIZATIONS are capable of being changed
- How PEOPLE will cooperate in the future
- How SUCCESS will be defined in the future
- How I can use my employees' POTENTIAL
- How I can make the best out of the ABUNDANCE of available human KNOWLEDGE
- How TECHNOLOGICAL and SOCIAL change are intertwined and reinforce each other
- How CULTURAL changes can be overcome

A Company that doesn't manage this successfully, will disappear!

Source: Förster, Kreuz

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Social Responsibility Manager

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Select Domain

Social Responsibility Manager

- **SRM.U1 Understanding social resp**
  - SRM.U1.E1 Understanding and recognizing SR
  - SRM.U1.E2 Principles of SR
  - SRM.U1.E3 Stakeholder identification and engagement
- **SRM.U2 Core subjects of SR**
- **SRM.U3 Processes for SR manager**

Social Responsibility Manager	Social Responsibility Manager
Understanding social responsibility (SR)	Globalization and several crises fortified the impression that organizations exist in a legal and moral vacuum and that they are not responsible for the impacts of their decisions and actions. The examples of negative behaviour induce a loss of reputation for many organizations. Both, ethical and strategic considerations motivated social responsible behaviour to encounter these negative developments. The Unit "Understanding social responsibility (SR)" consists of the following elements: - Understanding and recognizing SR - Principles of SR - Stakeholder identification and engagement

SRM.U1.E3 Stakeholder identification and engagement:

SRM.U1.E3.PC1	The student understands organization's sphere of influence.
SRM.U1.E3.PC2	The student knows how to identify organization´s stakeholders.
SRM.U1.E3.PC3	The student knows how to analyze relationship between organization and stakeholders.

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Paradigm 5:

A Multidimensional Store for Improvement

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EuroSPI²

European System, Software & Service Process Improvement & Innovation, www.eurospi.net

Since its beginning in 1994 in Dublin, the EuroSPI initiative has outlined ***that there is not a single silver bullet to solve SPI issues, but that you need to understand a combination of different SPI methods and approaches to achieve concrete benefits.*** *Therefore each proceedings volume covers a variety of different topics, and at the conference we discuss potential synergies and the combined use of such methods and approaches.*

Reference:
EuroSPI Strategy
1994 - now

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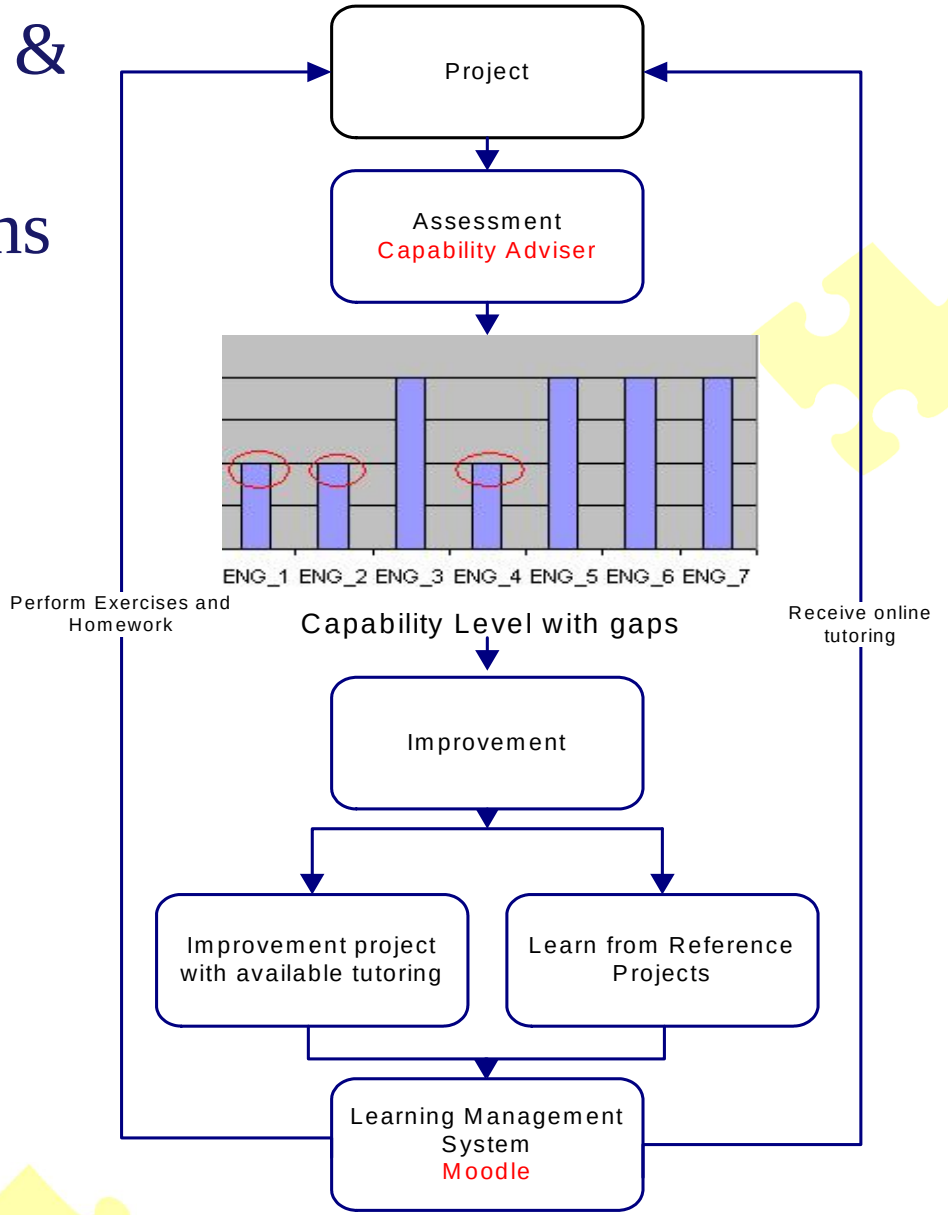
ZF Friedrichshafen AG
Key Note at EuroSPI 2011
Stefan Lier/ Thomas Wegner

Assessments & Learning Organisations

Assessment

Learning System

Best Practice Roll Out



Integrated Portals

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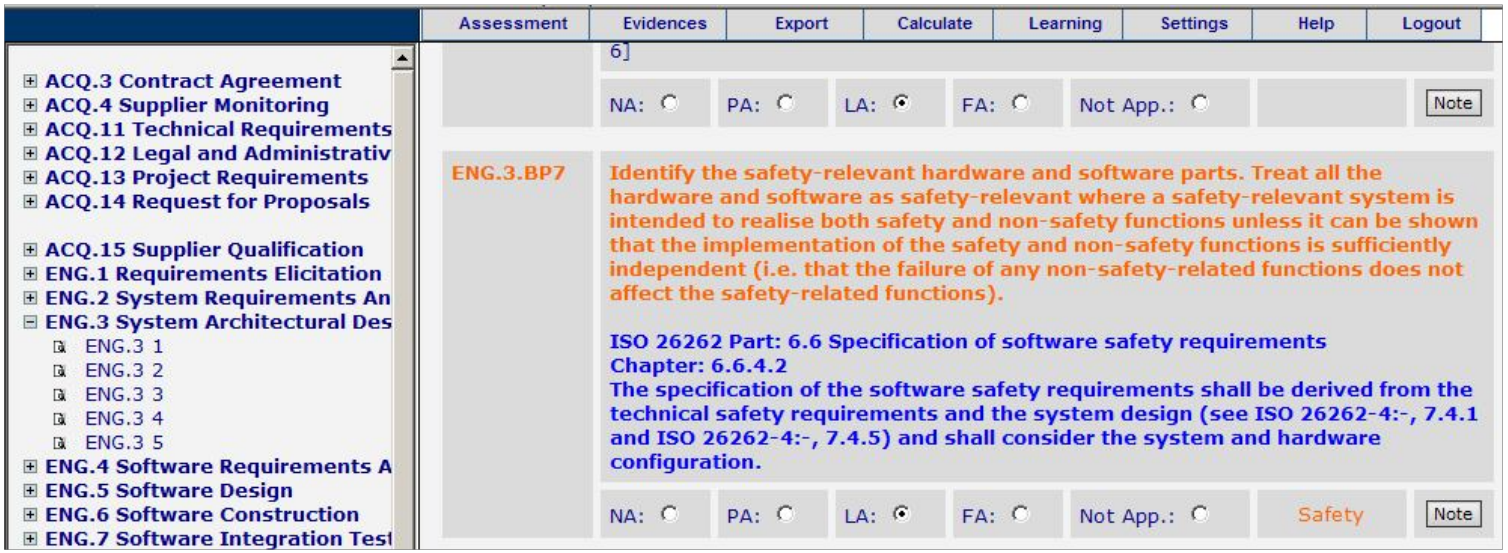
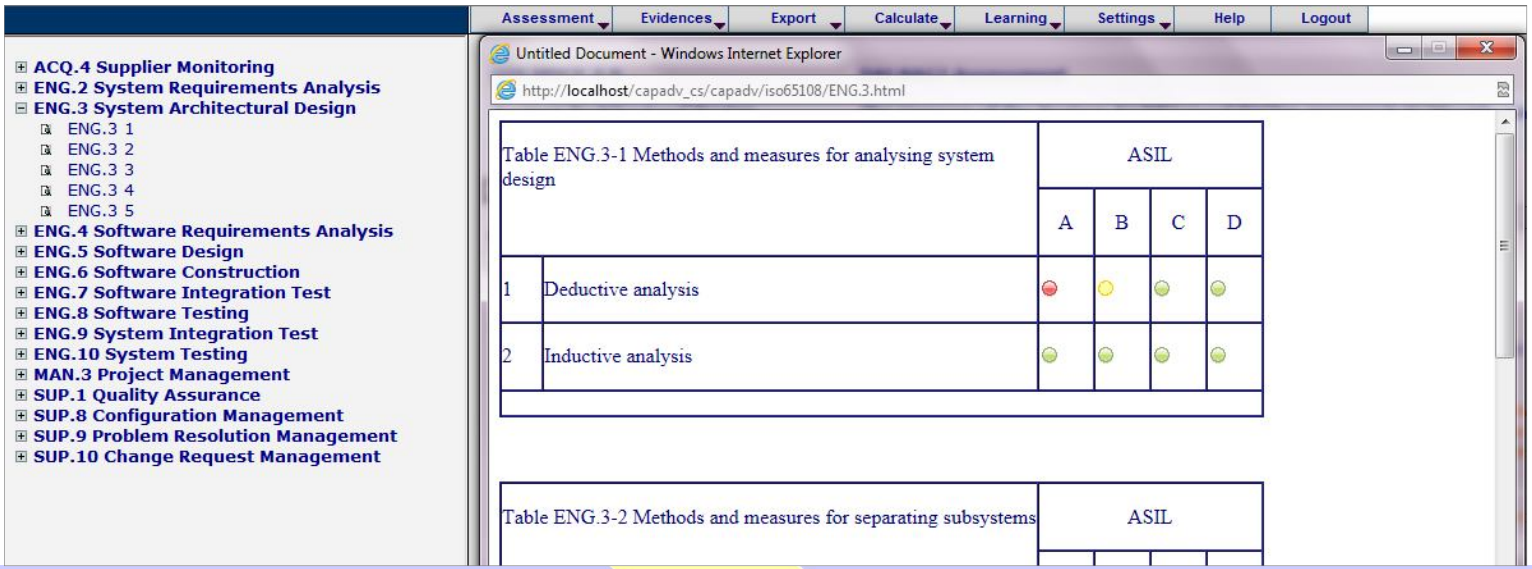


Trial Assessments Combining at ZF DAIMLER/BOSCH

Now starting in other partner companies

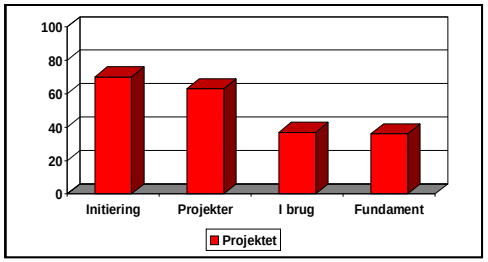


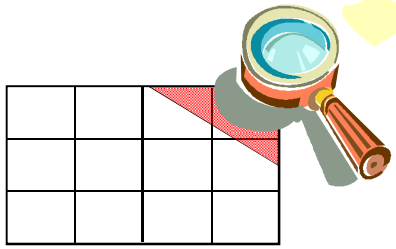
Improvability Model

Analysing the improvement approach with the highest probability of success.

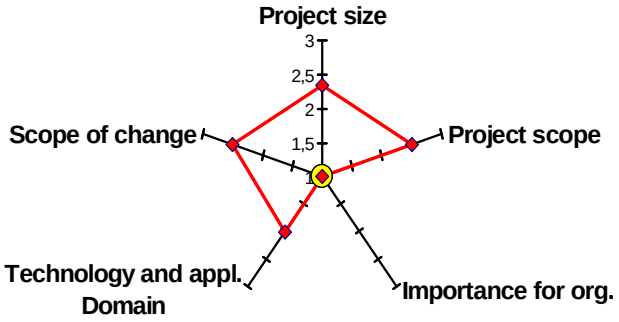
Improvement Strategy Analysis
Developed by
DELTA /EuroSPI

- Foundation1 Expectation management
  - Foundation1.1
  - Foundation1.2
- Foundation2 Knowledge management
- Foundation3 Management competences
- InUse1 Deployment Strategy
- InUse2 Product Quality
- InUse3 Deployment means
- InUse4 Roles and responsibility
- InUse5 Operations and maintenance
- Init1 Sensing urgentcy
- Init2 Idea processing
- Project1 Project team
- Project2 Process
- Project3 Competence and Knowledge
- Project4 Prioritising
- Project5 Goals and Requirements
- Project6 Management commitment
- Project7 Involvement of others

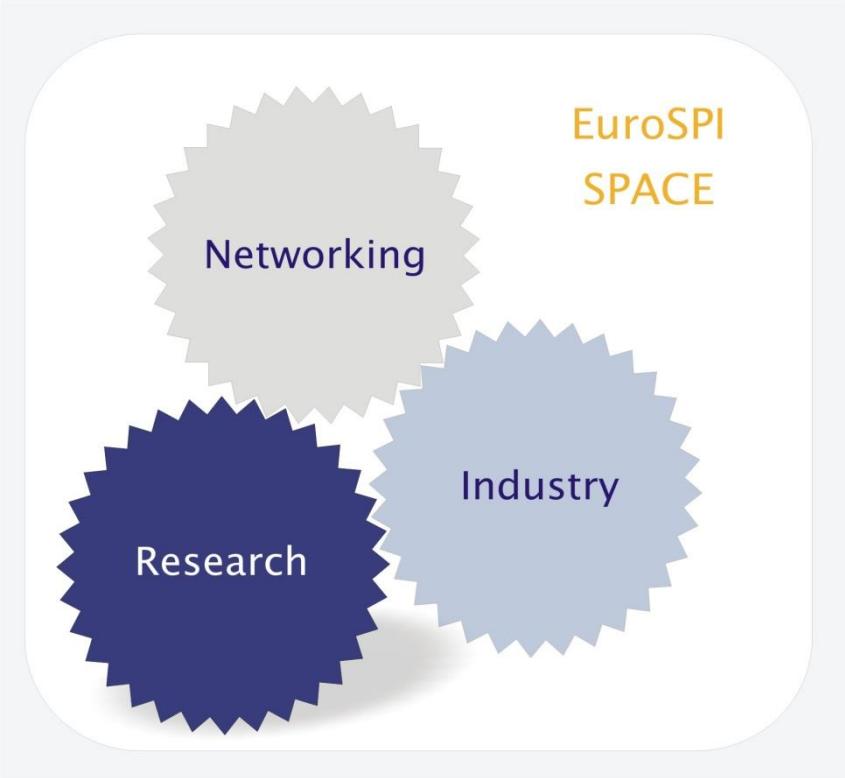




Matrix



Vision



Building a Dynamic Continuously Growing and Innovating Space of SPI Best Practices

No focus on just one method, a store of methods!

Entry Points

- System design experience exchange
  - www.emiracle.eu
- European Certification and Qualification Association
  - www.ecqa.org (>6700 certified worldwide, growing)
- SPI experience exchange
  - www.eurospi.net (> 30 countries)
- Assessor Experience exchange
  - www.intacs.info (>600 assessors)
- Industry Task Forces Collaboration
  - SOQRATES - Leading central European industry (by request and invitation) > 24 multinational active companies

Invitation

- Join the Job Role Cimmittee ECQA Certified SPI Manager
  - Based on SPI Manifesto
  - JRC leader: tomas.schweigert@sqs.de
- Actively create win-win experience exchange with European industry and research
  - EuroSPI 2013 in Ireland, 26.-28.6.2013
  - Chair: rmess@iscn.com
  - Adrienne Clarke, aclarke@iscn.com
- Get current free trial access to the forthcoming ISO 26000 CSR education online
  - JRC representatives: Adrienne Clarke, aclarke@iscn.com, Sonja Koinig skoinig@iscn.com

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Discussions

Contact

rmess@iscn.com