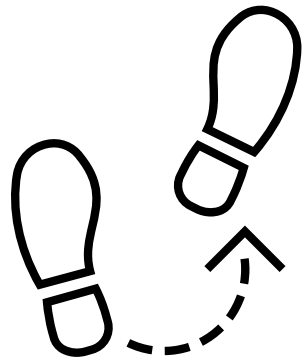
intacs.info
International Assessor Certification Scheme

SANSEI

Systems ANd Software-Engineering Education Initiative

Education and Training Initiative for INTACS®

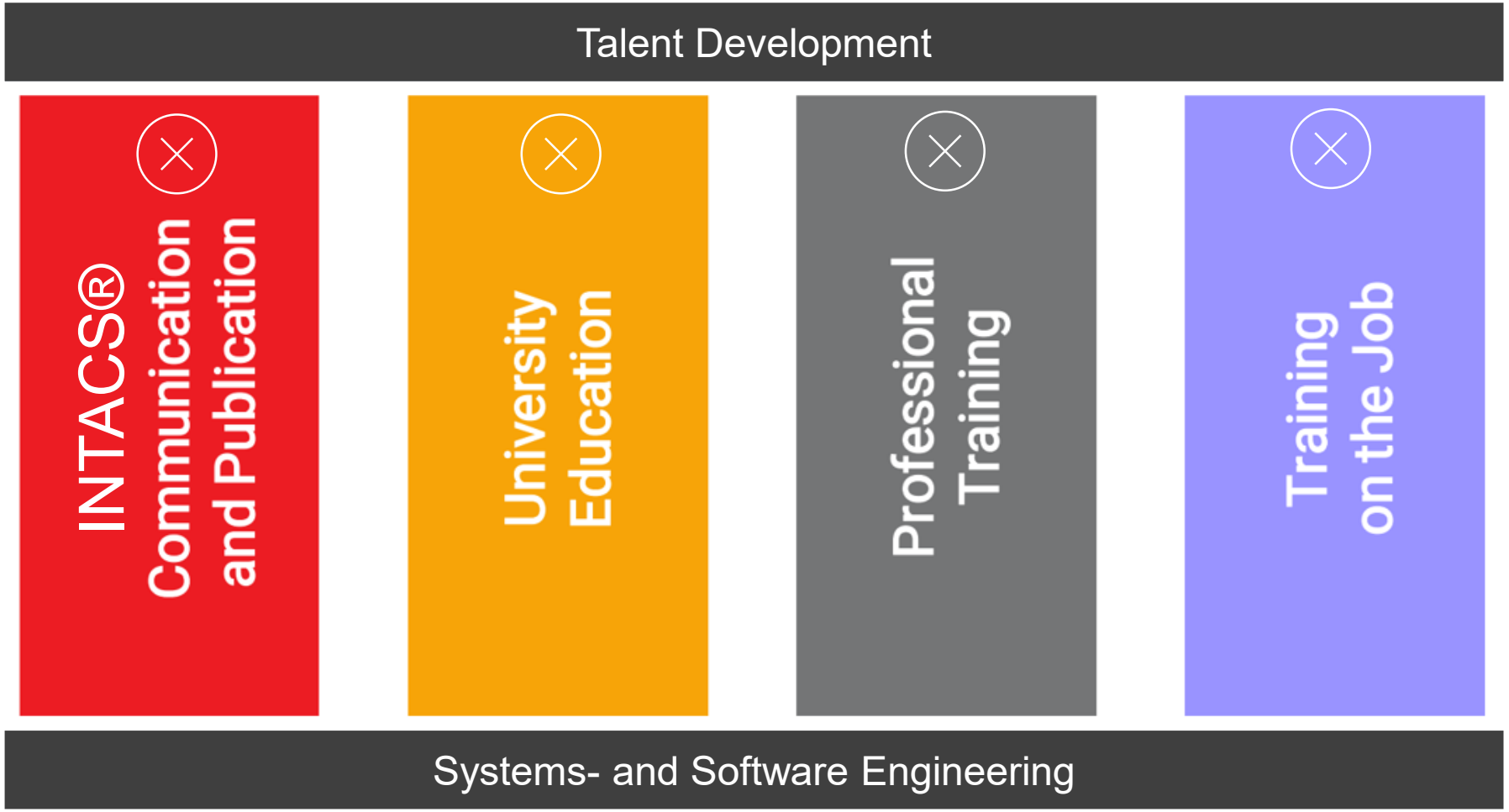
Dr. Isabella Stilkerich



Agenda

- INTACS® SANSEI
  Systems **AN**d **S**oftware - Engineering **E**ducation **I**nitiative
- INTACS® SANSEI‘s Modular Curricula Concept
- Example Cooperation Constellations
  - International Software Architecture Qualification Board (iSAQB)
  - International Requirements Engineering Board (IREB)
- Outlook

INTACS® Working Group SANSEI



Inspired by I. Stilkerich and B. Mattner

Scope of Work - **INTACS** Communication and Publication

SANSEI assists INTACS® in identifying additional topics for informing different target audiences in order to describe fundamental aspects of training standardization and relate them to the wider educational offerings of INTACS® and its partnerships. The emergence of the SDV Ecosystem in particular should also put INTACS® in a position to answer fundamental questions, for example:

- What is global training standardization? How does it work and how can the results basically be applied?
- What are the goals of Automotive SPICE in the past and in the future, especially with regard to trends in collaboration and standardization?
- What are the advantages of the Automotive SPICE and the systems- software-engineering methodology for organizations?
- What is behind the basic principles for collaboration in the value chain?
- What impact do technical developments in different regions of the world have on training standardization?
- What are the specific requirements for standardization in the area of functional safety and cybersecurity?
- What are the upcoming topics (e.g., described as map and/or schedule) and information around Automotive SPICE releases.

Scope of Work - University Education

SANSEI relates to audience-based curricula, which are publicly available. These curricula should also cover aspects of university education and be harmonized with those for professional training.

SANSEI welcomes measures by INTACS® that promote worldwide support of universities in educating systems- and software engineering and Automotive SPICE.

This should be considered as an additional offer to the already existing activities of individual INTACS® partners in cooperation with selected universities in order to enable education opportunities worldwide and at the same time make the quality comparable.

Integrated engineering mindset: Students learn to treat software and data as one system, not as isolated disciplines.

Shared quality thinking: Common quality models foster consistent approaches to requirements, architecture, and validation across SW and data domains.

Better collaboration skills: Graduates are trained to communicate across roles, bridging developers, data engineers, and ML specialists.

Scope of Work - Professional Training

SANSEI relates to audience-based curricula, which are publicly available. These curricula cover aspects of professional training and be harmonized with those for university education.

The members of **SANSEI** are looking for exchange or cooperation with existing training organizations (iSAQB, IREB, ISTQB, universities, ...) to establish and promote the consideration of Automotive SPICE where possible. In addition, efforts will be made to bring the INTACS® training portfolio up to the level of industry-standard training standards.

Recommendations for INTACS® should be developed on whether accreditation of training providers can increase the quality and attractiveness of training in the Automotive SPICE environment and which accompanying measures would be necessary to achieve this.

This would also include an analysis of whether examinations and certifications can promote the dissemination of systems- and software engineering methodologies and which role Automotive SPICE could play in this context.

Cross-disciplinary upskilling: Professionals gain a shared understanding of software and data engineering practices in one coherent training approach.

Consistent quality standards: Shared quality and assessment models align expectations across SW, data, and ML activities.

Support for hybrid roles: Trainings prepare engineers for modern roles combining software, data, and AI responsibilities.

Scope of Work - Training on the Job

SANSEI can be the place where INTACS® training partners exchange on best practices in training on the job.

SANSEI appreciates, that INTACS® will maintain a specific section on the INTACS® website giving companies and other interested parties the chance to get an overview of the information, education and training offers around systems- and software-engineering methods and Automotive SPICE.

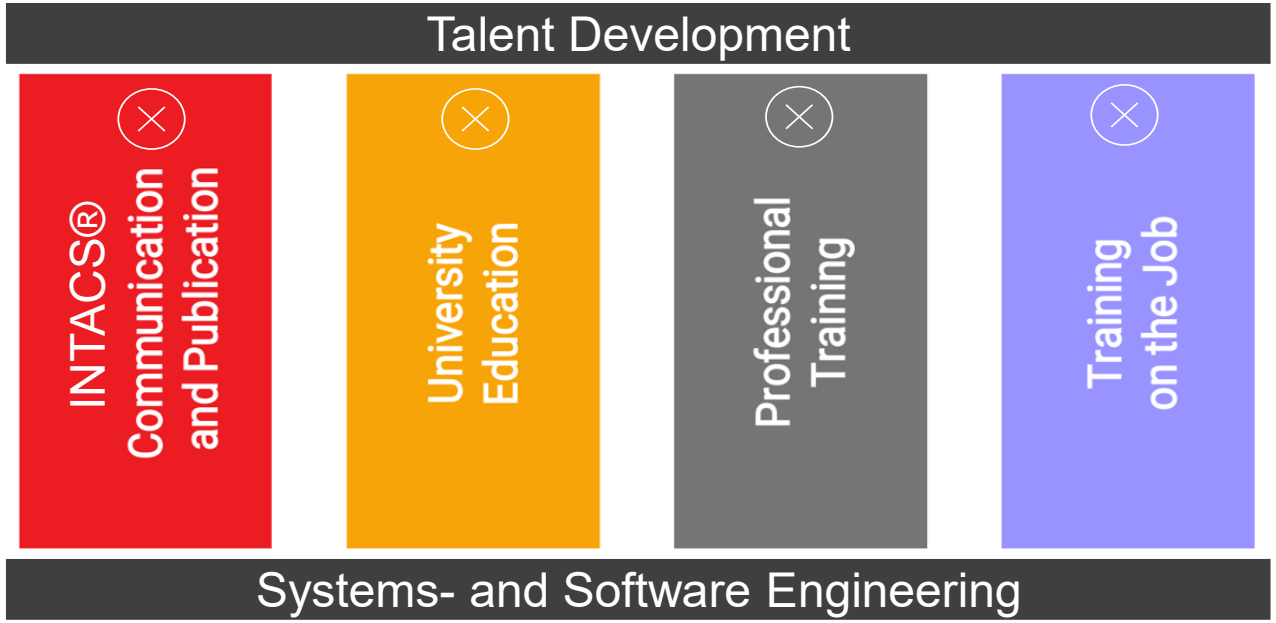
Learning in real project context: Engineers apply integrated SW and data practices directly within their daily work.

Immediate value creation: Improvements in collaboration and workflows are visible during ongoing projects, not after training ends.

Practical quality assurance: intacs-based practices help teams embed quality thinking into both code and data pipelines.

Sustainable knowledge transfer: Training outcomes remain embedded in processes, tools, and collaboration patterns.

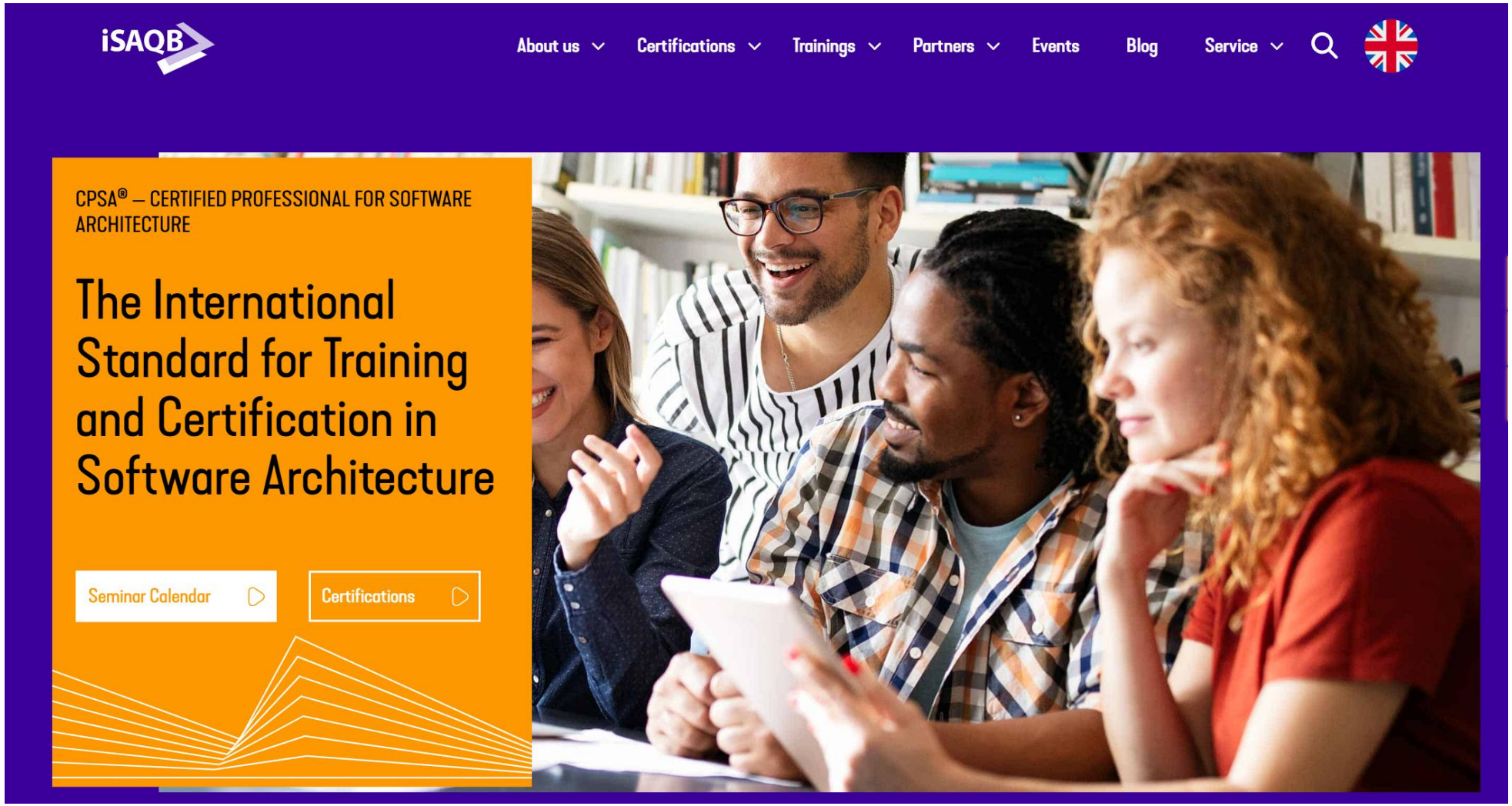
Purpose and Objectives



a. The purpose of the SANSEI working group is to support the structuring and harmonization of a holistic, consistent and high-quality knowledge transfer for system- and software-engineering standards and Automotive SPICE.

b. The purpose of the SANSEI working group is to support the structuring and harmonization of holistic, consistent, and high-quality knowledge transfer across system, software, data engineering, AI, cybersecurity, and functional safety aligned with relevant standards and SPICE.

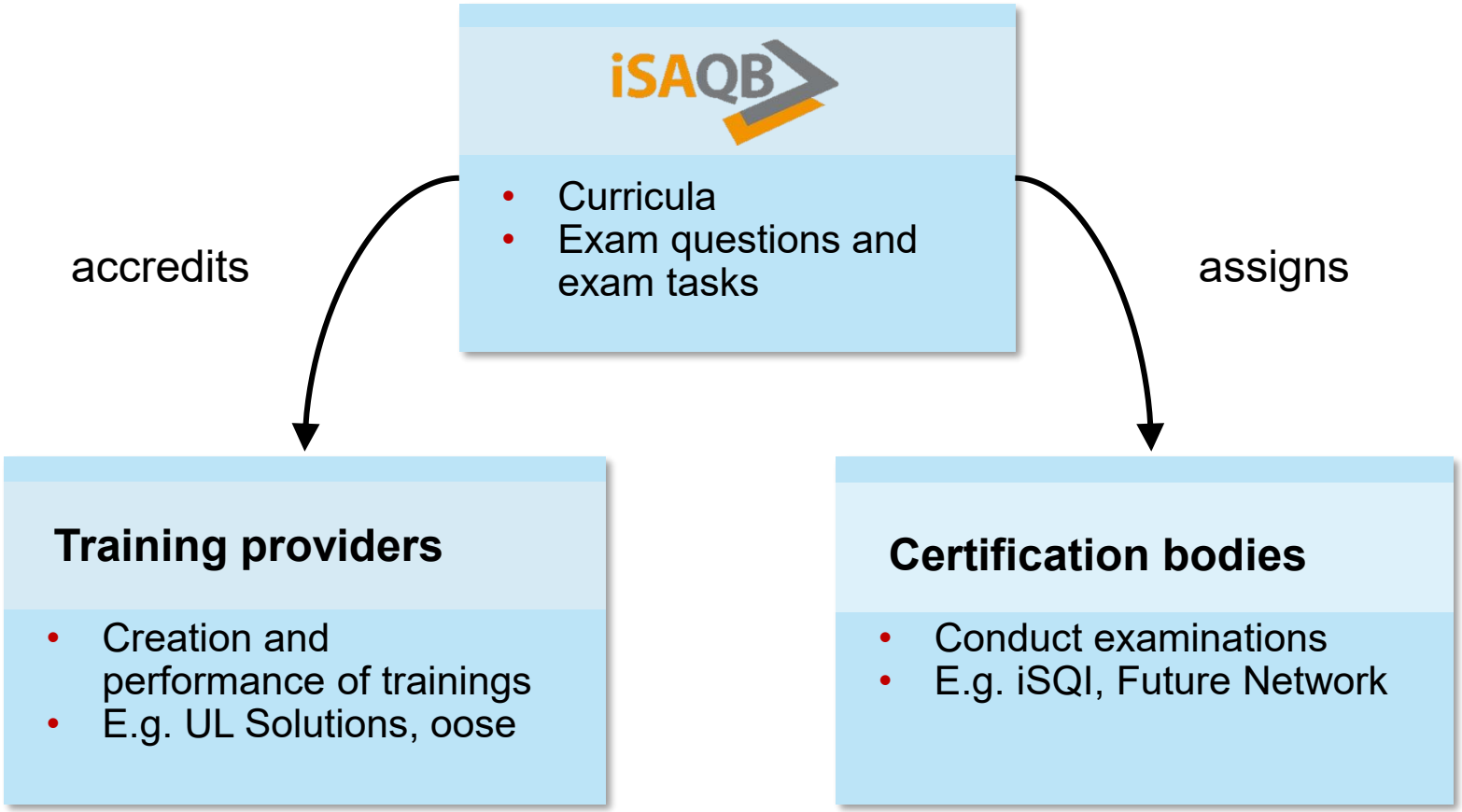
International Software Architecture Qualification Board (iSAQB)



International Software Architecture Qualification Board (iSAQB)

- Registered association (iSAQB e.V.) with the goal to improve the **education** and **training** of software architects
- Creation and maintenance of curricula for the “Certified Professional for Software Architecture” (CPSA)
- Definition of certification examinations based on the curricula
- Quality assurance

iSAQB Certification Program



Source: UL Solutions

Certification Levels

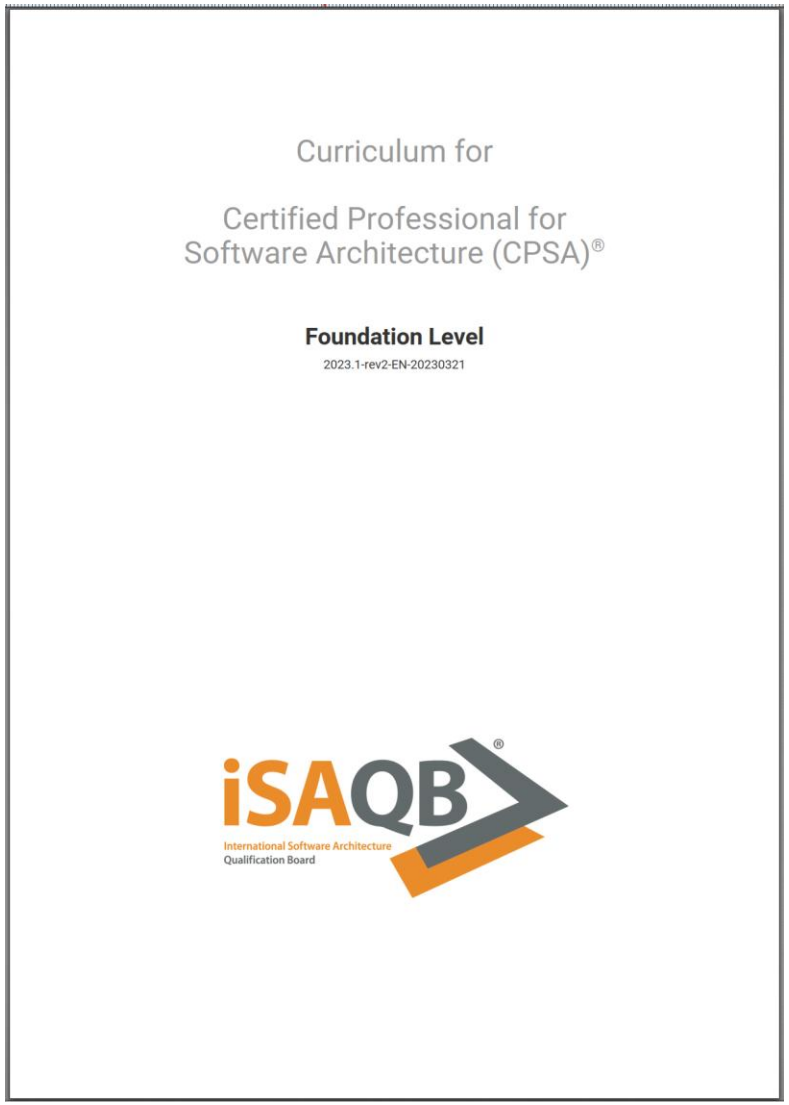
Foundation Level
You have the knowledge to create, document, and evaluate architectures.

Advanced Level
You have the methodological, technical, and communicative architectural competencies to create mission-critical systems.

CPSA - Foundation Level

- Architecture in the development context
  - Stakeholders, organizational constraints
  - Role definition and assigning the architecture role
- Approach
- Requirements analysis
- Impact factors
- Design:
  - Approach
  - Principles
  - Models and views
  - Patterns and aspects
- Documentation and communication
- Quality and evaluation
- Implementation of architectures

https://isaqb-org.github.io/curriculum-foundation/curriculum-foundation-en.pdf



intacs.info
International Assessor Certification Scheme

CPSA - Advanced Level

Methodology

A systematic approach to architectural tasks, regardless of the technologies used

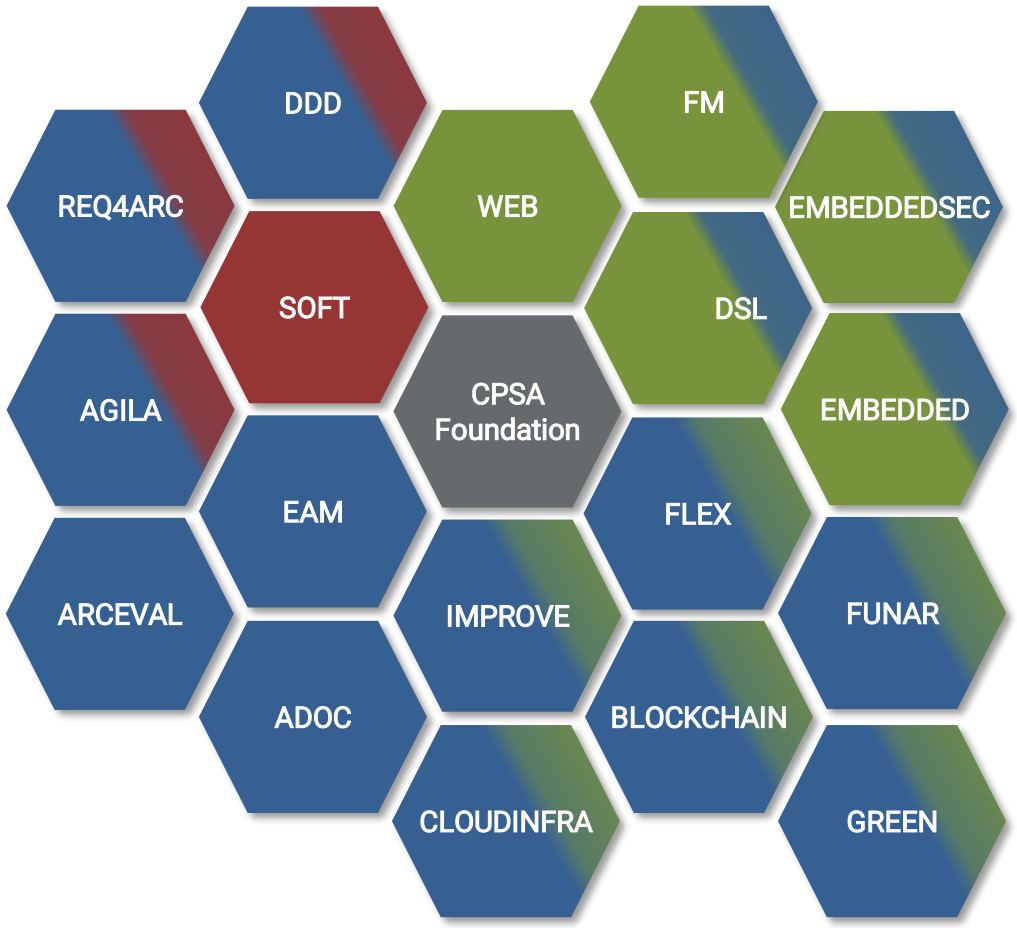
Technology

Knowledge and implementation of technology solutions used in design tasks

Communication

Communication, presentation, argumentation, and moderation skills and the ability to work productively with different stakeholders

CPSA Advanced Level Modules



Certification Requirements

- Courses are valued at 10-30 Credit Points
- A minimum of 70 credit points, and at least 10 credit points from every competency area, are required for certification

technological

communicative

methodological

intacs.info
International Assessor Certification Scheme

CPSA – Advanced Level: Dependable Embedded Systems

System development for embedded systems

- Importance of system architecture for key topics such as timing, reliability, and functional safety
- Modeling and analysis of functional and technical architectures

Software development for embedded systems

- Software modeling for embedded systems
- Approaches and paradigms for implementation and verification

Reliability and functional safety

- A systematic approach to the development of reliable and safety-critical embedded systems
- Solutions at the architecture level

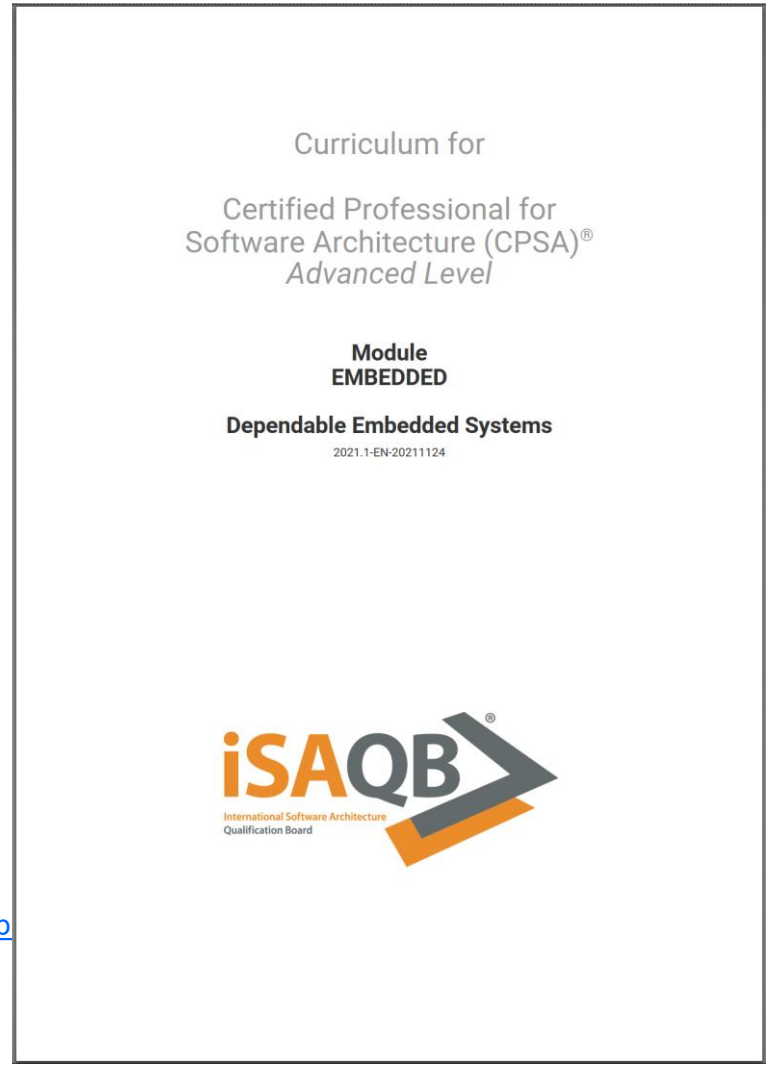
Real-time and concurrency

- Analysis of real-time requirements
- Architectural solution approaches for real-time and concurrency
- Analysis of real-time properties

Adaptability and variability

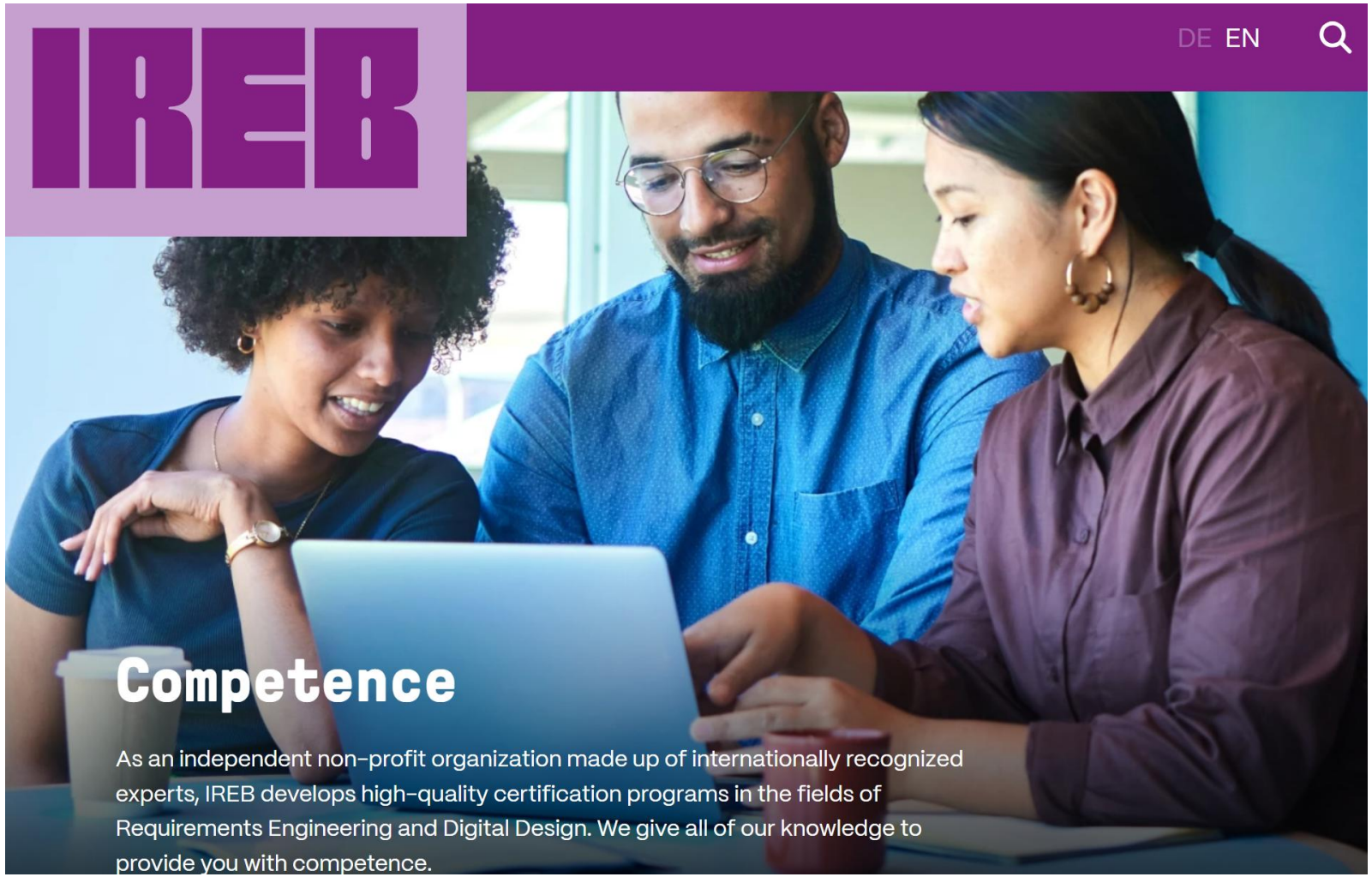
- Analysis and modeling of variability
- Methods, principles, and solutions for adaptability and variability

Curriculum forCertified Professional forSoftware Architecture (CPSA)®Advanced Level: ModuleEMBEDDEDDependab Embedded Systems



intacs.info
International Assessor Certification Scheme

International Requirements Engineering Board (IREB)



International Requirements Engineering Board (IREB)

Working Group “SANSEI”

IREB and INTACS® Join Forces: Requirements Engineering meets Automotive Process Excellence

IREB is contributing its Requirements Engineering expertise to a joint initiative with INTACS® to shape a modular qualification scheme for software quality in the automotive sector. The goal is to connect established competencies from process quality and Requirements Engineering in a practical and role-based learning framework.

For IREB, this is an important step to make proven CPRE content even more relevant in complex automotive contexts. For INTACS®, it strengthens the foundation assessors and process experts need most - solid Requirements Engineering competence to conduct sharper assessments and drive more effective process improvement.

A stronger link between requirements, processes, and assessment helps professionals build shared understanding across disciplines - and raises the quality of development projects.

Contact:
Dr. Isabella Stilkerich isabella.stilkerich@intacs.info
Working Group Lead Systems and Software-Engineering Education Initiative

Next Steps

- Extending cooperation with IREB, iSAQB and ISCN
- Initiating and growing collaboration with further relevant organizations (e. g., INCOSE, iSTQB etc.)
- Initiating and growing collaboration with universities
- Work on public appearances, e. g.,
  - Conferences
  - Papers and articles
  - Gate4ASPICE

intacs.info
International Assessor Certification Scheme

DO YOU HAVE ANY QUESTIONS?

Icons: http://www.1001FreeDownloads.com Photos: www.unsplash.com, © Fotolia.de, kasko