

# Examination Regulations

## Certified Professional for Software Architecture (CPSA)<sup>®</sup> *Expert Level*

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# 1. Definitions

## 1.1. Involved Parties

People involved in the examination process

Name of the role	Description, position, task
Expert Level Candidate	Advanced-Level architect aiming for the Expert Level certificate CPSA-E
iSAQB	<p>iSAQB e. V. makes the following artifacts available:</p> <ul style="list-style-type: none"> <li>• List of (open) topics, on the website</li> <li>• Yearbook (collects, binds, publishes, and translates papers that were finally worked on in the topic working groups)</li> <li>• Completed topics for download</li> <li>• Website for registration for EL candidates</li> </ul>
iSAQB Expert Level WG	<p>Working group for the Expert Level at iSAQB</p> <p>The working group organizes and oversees the implementation of the processes.</p>
Examiner	<p>Examiners work for the certifying body and assess the results of a topic working group. The Expert Level WG provides the certifying body with examiners from its own working group. Other iSAQB members can also register as examiners and are included in the Expert Level WG for this purpose. Examiners must have the following characteristics:</p> <ul style="list-style-type: none"> <li>• They are members of the Expert Level WG.</li> <li>• They are recognized experts in software architecture.</li> <li>• They have extensive and in-depth knowledge in the field of software architecture.</li> <li>• They work as examiners on a fee basis.</li> <li>• They have sufficient time to perform their work as examiners.</li> </ul>
Examinee	A member of a topic working group who is going through the certification process.
Topic working group	Working group formed to work on an EL topic. The topic working group is composed of accepted candidates for a topic.
Person submitting a topic	Submits a (possible) topic, which should be worked on within the scope of an Expert Level certification.
Topic moderator	Each topic working group is guided by a topic moderator. They guide the topic working group, take delivery of the roadmap, answer questions, and assess the results based on formal criteria. They may organize rooms and presentation materials for in-person meetings.
Topic administrator	The topic administrator checks new topics and manages topics in the list of topics. They are an active member of iSAQB.
Training provider	Training providers are “training facilitators” accredited by iSAQB who appoint the topic moderator.

Name of the role	Description, position, task
Certifying body	Certifying bodies are institutes accredited by the iSAQB. They organize the entire examination process and issue the certificate.

## 2. Overview

### 2.1. Purpose and Intent

During the CPSA-E, you and other candidates bring together experience-based knowledge from your project work. Together, you supplement this with additional expert knowledge, research, and a discussion between yourselves. You then present this knowledge via publications within the scope of the CPSA-E. You thus actively help to disseminate expert knowledge and improve software quality through your contribution, even in other projects.

The topics were submitted in advance via the iSAQB website. Following approval by the topic administrator, the topics are available to be worked on.

### 2.2. Objectives

- You show that you are an expert in a specialist field of software architecture.
- You develop new knowledge with other experts.
- You show the ability to work in a team.
- You interact with other experts, thereby building a network for your professional future.
- You present the results at conferences or publish them in trade magazines.

### 2.3. Preconditions

As a qualification requirement, an Expert Level candidate must have successfully acquired the iSAQB Advanced-Level certification. There are no other qualification requirements. However, you should have extensive project experience and in-depth knowledge in the field of your chosen software architecture topic, which you would like to work on with the topic working group.

The practical experience does not need to be proven as it is already a requirement for the iSAQB Foundation and Advanced-Level certifications. There is also no minimum amount of time that must have passed between the Advanced and the Expert Level certification.

### 2.4. Examination Duration

The topic working group has 12 months from the first meeting with the topic moderator to submit the results to the certifying body for the first time. A period of 3 to 9 months is recommended. With valid justification, the topic working group can extend the period by individual months. The justification must be submitted to and accepted by the topic moderator.

### 2.5. Costs

The costs of certification at the Expert Level comprise the costs for the selected topic moderator, the certifying body and the two examiners. The prices can vary depending on the size of the group. The minimum cost per member of a working group is 2,800 €.

Possible additional costs, such as travel costs within the scope of the collaboration or extra costs due to rework or objections, are not included and are to be borne by the topic working group itself.

## 3. Procedure

### 3.1. Submit Topic (optional)

The submission of a topic takes place on the iSAQB website via a form. The topic administrator assesses the submitted topic formally and in terms of content within one month. On acceptance, they approve the topic. The topic is then available for application on the iSAQB website. If a topic is rejected, it can be improved and submitted to the topic administrator again.

#### Criteria for a new Topic

A new topic must meet the following criteria:

Criterion	Requirement	Description
Originality	Must	Will the topic group provide new knowledge or insights to the community?  Is the topic not yet completely and publicly worked on (e. B. Wikipedia)?
Relevance	Must	Is the topic interesting for a larger group of people?
Innovation	Must	Does the topic generate new ideas and new knowledge that are of general interest?
Creativity	Shall	Does the topic show creativity, e.g. through synergies, analogies, ideas?
Effectiveness	Shall	Is it to be expected that the work in software architecture can be simplified or accelerated in the future by working on the topic?
Problem solving	Must	Can recurring and previously insurmountable problems in the software architecture be solved by topic processing?  Examples: <ul style="list-style-type: none"> <li>• Improve communication between management and software architects</li> <li>• Introduction of new methods, like e.g. architecture management, Domain-Driven Design, Green-IT, ...</li> </ul>

### 3.2. Step 1: Application for a Topic

iSAQB publishes the list of available topics and accredited certifying bodies.

Candidates can apply to a certifying body for a topic.

The certifying body checks the minimum requirements for participation in the CPSA-E.

#### Criteria for New Applicants

The CPSA-Expert Level (CPSA-E) is the highest qualification level awarded by the iSAQB. It is aimed at highly skilled and experienced software architects. The requirements for applicants are demanding: they must demonstrate long-term experience, have a clear area of expertise, be capable of developing innovative approaches and solution strategies, and actively contribute to the professional community.

To be eligible to participate in a topic group, applicants must satisfy the following criteria:

## Knowledge and Practical Experience

Applicants justify their suitability for the topic by summarizing their knowledge and practical experience.

Criterion	Description
Advanced Level Certifications	Applicants must confirm that they have the expert level certification, or they will get it until the topic group submits their results.
Practical Experience	Applicants can demonstrate at least 7 years of professional experience in the role of software architect within complex software projects. In particular, experience in architecture work that spans systems, domains, or organizational boundaries is required.
Knowledge	A solid understanding and practical application of the core concepts of software architecture, as outlined in the iSAQB curricula for the Foundation and selected Advanced-Level topics. Specialization typically takes place in specific focus areas such as Domain-Driven Design, Cloud Architecture, Architecture Evaluation, Documentation, or Modernization, depending on the individual's expertise and project context.
Knowledge Transfer and Community Contribution	Proof of knowledge transfer or community contribution, such as training and mentoring less experienced developers or architects, leading architecture or development teams, co-developing in open-source projects, as well as through publications or presentations.
Communication Skills	Applicants must be able to communicate complex matters clearly and understandably.

## Organization and General Conditions

Criterion	Description
iSAQB® can publish results	Applicants must agree that iSAQB® is allowed to publish and exploit the results of the topic group.
Willingness to travel	Applicants must confirm that they are willing to travel at their own expense to work together in the topic group.
Disclosure of contact data	The applicants grant permission to iSAQB® to forward the following contact details to the other members of the topic groups: first name, second name, e-mail address, and telephone number.

## Why Are These Requirements Important?

The CPSA-Expert Level not only validates technical expertise but also recognizes the ability to serve as a thought leader and expert within the software architecture community. Applicants must demonstrate their capacity to contribute to the evolution of the profession, going beyond architectural practice, and show that they can tackle complex challenges in dynamic and demanding environments.



*The following criteria may come into operation in the future*

iSAQB® may accept individuals as candidates for the expert level if they meet one of the following requirement:

- People who are distinguished experts on the topic.
- Members of iSAQB® who are not permitted to participate in the iSAQB® Advanced Level Certification since they know the examination question.



The iSAQB® strategy council and the members of the iSAQB® working group "Expert Level" make a majority decision on whether or not a person meets one of the stated requirements.

iSAQB® is able to actively invite luminaries to participate in a topic group and refund the cost.

The experts must work in the chosen topic group as well. Nobody gets a certification without active and successful work in a topic group.

### 3.3. Step 2: Assemble Topic Working Group

The certification body ensures that there are sufficient candidates in the topic working group.

The candidates are welcome to promote the topic among colleagues and acquaintances. iSAQB will also regularly draw attention to open topics and encourage participation.

As soon as enough candidates for the topic working group are available, the certification body will inform the candidates about the start of the topic working group and send all the members' contact details to the topic working group.

The topic working group chooses a training provider and informs the certification body about the selection. iSAQB publishes a list of accredited training provider.

The training provider will provide a topic moderator for the topic working group.

### 3.4. Step 3: Contract Certifying Body and Training Provider

The certifying body concludes a contract with the training provider.

The certification body concludes a contract with each member of the working group.

Now, the topic working group can start working.

### 3.5. Step 4: Create Roadmap

The topic working group creates a roadmap, in which they put down in writing their plan for their procedure in terms of content and timescale. The topic moderator provides support and checks whether the roadmap fulfills these criteria:

#### Criteria for a Roadmap

Criterion	Requirement	Description
Objective, mission	Essential	<ul style="list-style-type: none"> <li>Are the objective and mission of the topic working group described comprehensibly?</li> </ul>
Topic working group	Essential	<ul style="list-style-type: none"> <li>Are the contact details of all members of the topic working group stated?</li> </ul>

Criterion	Requirement	Description
Procedure	Essential	<ul style="list-style-type: none"> <li>• Are the roles and tasks of the members of the topic working group described?</li> <li>• Is a timetable with milestones provided?</li> <li>• Are the times and locations for the optional in-person meetings stated?</li> <li>• Are the times and resources for the virtual meetings stated?</li> <li>• Are the tools for electronic communication listed?</li> <li>• Are work packages and responsibilities defined?</li> <li>• Is the review process determined?</li> </ul>
Literature	Essential	<ul style="list-style-type: none"> <li>• Is there a bibliography?</li> <li>• Does the bibliography comprise at least 7 sources?</li> <li>• Are the sources of academic value?</li> </ul>
Results	Essential	<ul style="list-style-type: none"> <li>• Is the mandatory article discussed?</li> <li>• Is at least one additional result stated (e.g., instructions, example, ...)?</li> <li>• Are the form and structure discussed for each result?</li> <li>• Does the topic working group attempt to present the results at at least one conference?</li> <li>• Does the topic working group attempt to publish the results in at least one trade publication?</li> </ul>

After the topic moderator confirms that the roadmap meets the criteria, he/she forwards the roadmap to the examiners.

The examiners verify that the intended results are measurable and adequately and clearly described. The examiners can adapt the roadmap if needed.

If the examiners are not satisfied, the topic working group has one chance to submit an improved version of the roadmap.

The topic working group can start working after the topic moderator and the examiners approved the roadmap.

### 3.6. Step 5: Develop Topic

The topic working group comes together for meetings, where they coordinate with each other and work on tasks from the roadmap. They are supported in this by the topic moderator. Meetings can also be held online.

The topic working group must set up a central repository where it saves all working results, for example a GIT repository or a Wiki. The topic moderator, the examiner and, on request, also the certifying body must have access to this repository.

The topic working group brings together its experience on the selected topic, consolidates it, and derives

new insights from it. The necessary work includes collection of data, literature research or writing. It is recommended that topic working groups publish their results at conferences or in professional journals. iSAQB will support and promote the publications.

To ensure that each member contributes to the working group to approximately the same extent, all members must record their activities. These criteria must be met:

### Criteria for Participation

Criterion	Requirement	Description
Time tracking	Mandatory	<p>The members of a working group must record their activities in a central list that can be viewed by every group member and must at least document this information for each activity:</p> <ul style="list-style-type: none"> <li>• Date and duration</li> <li>• Activity</li> <li>• Work result</li> <li>• Names of members involved in the activity.</li> </ul>
Validation	Mandatory	At meetings, the members validate whether the recorded activities are plausible.
Total working time	Mandatory	Each member of a working group must have worked at least 40 hours in the working group.
Deviation from the group average	Mandatory	A mean value provides information on how many hours on average each member has worked in the working group. Each member must have worked at least 60% of the group average.
Different types of activity	Mandatory	A member may only count up to 20% of the hours for organizational activities.
Three types of activity	Mandatory	<p>Each member must have performed at least three different types of activity, including</p> <ul style="list-style-type: none"> <li>• Organization</li> <li>• Research</li> <li>• Creating a result</li> <li>• Creating a presentation</li> <li>• Writing an article for a specialist journal</li> <li>• Create conference contribution</li> <li>• Presentation at conference</li> </ul>
Travel time does not count	Must	Travel time does not count as an activity.

## **4. Certification**

### **4.1. Overview**

The certification process consists of the following steps:

1. The topic moderator verifies that the results of the topic working group meet formal criteria.
2. Two examiners evaluate the results according to the content criteria. The topic working group can improve the results once. Only if the examiners approve the topic working group's results can its members join the individual exam interview.
3. Two examiners conduct individual verbal exams with each topic working group member. As certificates are issued individually, the result of the certification depends solely on the individual verbal exam.
4. The certifying body issues the certificates.

The entire certification process should be completed within six weeks, excluding rework and appeals.

The following sections provide a more thorough description of the steps.

### **4.2. Formal Check**

Once the roadmap has been fulfilled, the topic working group submits its results to the topic moderator.

The topic moderator assesses the results according to subsequent formal criteria and, if necessary, requests corrections.

#### **Formal Criteria**

Criterion	Requirement	Description
Article	Essential	<p>Does the article have the following structure and content?</p> <ol style="list-style-type: none"> <li>1. Title <ol style="list-style-type: none"> <li>a. Does the title suit the topic discussed?</li> </ol> </li> <li>2. Authors <ol style="list-style-type: none"> <li>a. Are the authors named?</li> <li>b. Are the authors' e-mail addresses listed?</li> </ol> </li> <li>3. Abstract <ol style="list-style-type: none"> <li>a. Is the problem described briefly?</li> <li>b. Does the abstract describe the main theses or results?</li> <li>c. Is the description short and understandable?</li> </ol> </li> <li>4. Introduction <ol style="list-style-type: none"> <li>a. Does the introduction describe the current state of knowledge?</li> <li>b. Is the motivation discussed?</li> <li>c. Is there a description of the existing knowledge gaps that are to be filled by this academic article?</li> <li>d. Is there a description of the research questions that are to be answered in the article?</li> </ol> </li> </ol>

Criterion	Requirement	Description
		<p>5. Main section (chapter name(s) can be chosen freely)</p> <p>a. Materials and methods</p> <p>i. Is there a description of the information sources?</p> <p>ii. Is there a description of the methods used to answer the research question?</p> <p>b. Results</p> <p>i. Is there a description of the findings?</p> <p>ii. Are the findings substantiated with sufficient plausible data?</p> <p>c. Discussion</p> <p>a. Is there a description of how the findings are interpreted?</p> <p>b. Is there a discussion of questions that arise from the results?</p> <p>c. Is there a discussion of the impacts that the findings have in practice?</p> <p>6. Summary</p> <p>a. Is there a brief summary of all of the research questions and their answers?</p> <p>b. Is there a brief discussion of the effects of the findings?</p> <p>7. Acknowledgments</p> <p>a. Are supporters mentioned?</p> <p>8. Conflicts of interest</p> <p>a. Are conflicts of interest mentioned?</p> <p>9. Bibliography</p> <p>a. Is there a list of all of the literature used?</p> <p>b. Is the literature cited correctly?</p>
Additional result	Essential	<ul style="list-style-type: none"> <li>• Do the form and content fulfill the purpose of the result (e.g., a new pattern according to the pattern language context, problem, solution)?</li> <li>• Is there a comprehensible description of the result?</li> <li>• Is it evident that at least two person weeks were necessary for the creation of the additional result?</li> </ul>
Submissions	Desired	<ul style="list-style-type: none"> <li>• Has the topic working group submitted a talk or a workshop to at least one conference?</li> <li>• Has the topic working group attempted to publish the results in at least one trade publication?</li> </ul>

Criterion	Requirement	Description
Experience report	Essential	<ul style="list-style-type: none"> <li>Has each member of the topic working group submitted an experience report?</li> <li>Are all the points in the experience report completed?</li> </ul>

After the topic moderator approves the results, the topic working group can submit them to the certifying body.

The certifying body only accepts those members for certification who have fulfilled the criteria for participation. If a member fails to meet the criteria, they will not be reimbursed.

### 4.3. Content Assessment

#### Submission

A topic working group must submit the following results to the certification body:

Result	Requirement	Description
Article	Essential	The article describes the results of the topic working group. iSAQB provides a template.
Additional result	Essential	The topic working group must create at least one freely selectable additional result, such as instructions, best practices, and evaluations of surveys.
Submissions	Desired	The topic working group should submit their results to conferences or publish them in professional journals. As evidence, the topic working group submits an abstract or a copy of the published article.
Experience report	Essential	Each member of a topic working group creates an experience report to enable iSAQB to further develop the processes. iSAQB provides a template for this.

The topic working group permits iSAQB to publish their results. Each member of the topic working group can also use the results freely, stating the collaborators and iSAQB. iSAQB publishes the article on its pages, naming all of those involved, and translates it into various languages.

#### Assessment by Two Examiners

The certifying body orders two examiners. The examiners use the subsequent content criteria to assess the results.

#### Content Criteria

Criterion	Assessment Scheme
Importance for theory and practice	10 - Outstanding importance 08 - Important 06 - Not unimportant 04 - Rather weak importance 02 - Of low importance 00 - Absolutely no relevance

Criterion	Assessment Scheme
Originality and degree of innovation	10 - An important and meaningful contribution to the topic area 08 - A clear contribution to the topic area. 06 - A small contribution to the topic area. Added value may result from it in the future. 04 - There is better work on this topic. 02 - Already said many times. 00 - Contributes little or nothing at all to the topic area.
Quality of the presentation	10 - Excellently written 08 - Well written 06 - Readable 04 - Should be edited 02 - Still significant work required 00 - Unacceptable

At least 20 of the 30 points must be achieved. 4 out of 10 points must be achieved in each category. The examiners can provide justification for each criterion.

### One-Time Retry

If the examiner find out that the results don't meet the criteria, the topic working group can improve the results once and submit them again to the certification body. The certification body is free to charge for the extra effort.

## 4.4. Oral Exam

If the examiners have assessed the results positively, they invite each member of the topic working group to an individual verbal exam (interview). The verbal exam takes thirty to sixty minutes and can be done online.

The examinee has to defend the results and must show that he/she has sufficient understanding of the topic.

The following table lists the schedule and criteria used by the examiners for evaluation:

### Criteria for Verbal Exam



Age nda	Dur a- tion	Description	Criteria
1	10- 20 min	The examinee presents the topic with self-created resources.	<ul style="list-style-type: none"> <li>• Results and findings conclusively summarized</li> <li>• Recognizable common thread, expediency and consistency of the steps</li> <li>• Appropriate use of resources (charts, diagrams, models, ...)</li> <li>• Presentation style (language and expression)</li> <li>• Illustrations are legible and understandable</li> </ul>
2	10- 20 min	The examiners ask about the content of the results of the topic working group.	<ul style="list-style-type: none"> <li>• Ability to explain and clarify the content</li> <li>• Answering at least three open questions</li> <li>• Complexity and depth of answers</li> <li>• Questions answered comprehensively and presented in a clear and logical manner.</li> </ul>
3	10- 20 min	The examiners test whether the candidate has understood the content, knows the background and understands the context.	<ul style="list-style-type: none"> <li>• Present their own opinion well and comprehensibly in the discussion</li> <li>• Statement on the criticism of the results of the topic working group.</li> </ul>

## 4.5. Certificate

### Issuing

The certifying body informs the examinees about the results of the certification. The following criteria must be satisfied to receive the certificate:

- The examiners have assessed the results of the subject working group as positive.
- The examiners assessed the oral exam as positive.

The certificate is issued for the working group's topic.

People can obtain several Expert Level certifications by collaborating in several topic working groups.

The Expert Level certification is valid for an indefinite period.

### Objection

The examinee may object to the assessment within four weeks. The objection must be justified in writing and submitted to the certifying body.

The certifying body picks two new examiners at random. The certifying body gives the new examiners

access to the assessment protocols and topic working group outcomes.

The objection examiners confirm the assessment or issue a new one. The result of the objection procedure cannot be contested.

If the examiner issues a new assessment, the examinee can apply for a new oral exam for a fee of €1500 plus VAT.