Quality Assurance

**Software development
at SCHUMANN**

Software with quality

As a market-leading IT company, the development of software is part of the daily business of SCHUMANN. Whether innovations or individual customer requirements, the software development takes place in a clearly structured process divided into five phases. Continual quality assurance is thereby an integral component of each stage of development, from specifying the scope of the software to its release, and also during its productive use as part of your system.

QUALITY ASSURANCE

Our quality assurance for the development of our standard software and for customer-individual projects includes

- ✓ Standardized acceptance procedure
- ✓ Comprehensive documentation
- ✓ Authoritative test structures
- ✓ Manual and automated tests
- ✓ Transparent ticket system
- ✓ Safeguarding of data protection conformity and data security

TESTS AND CERTIFICATION

Software is a man-made product. Therefore, quality assurance begins with our employees. A motivated, competent team, flat hierarchies and uncomplicated decision-making procedures are essential factors in our success. Working in a responsible and trustworthy manner is important to us, but we also know that checking is essential. In order to make our quality assurance transparent, objective and convincing, our standard software is certified. The following tests and certifications have been carried out:

- ✓ Diverse penetration tests of the software and the development environment
- ✓ MaRisk conformity
- ✓ EU GDPR conformity
- ✓ Diverse tests by auditors
- ✓ „Safe Code" through financial services
- ✓ Minimum requirements MRCM
- ✓ Confirmation of auditing acceptability

What is software quality?

High-quality software is especially characterized by its high stability and functionality. At SCHUMANN the basis for this is provided by a high-quality software development process.

Functionality
- ✓ Security
- ✓ Reliability
- ✓ Testability
- ✓ Compatibility

Stability
- ✓ Ease of use
- ✓ Adaptability
- ✓ Efficiency
- ✓ Conformity

What does quality assurance mean for SCHUMANN?

Under the heading quality assurance we group together diverse tests designed to secure the quality requirements on our software products. We understand quality assurance not as the sum of the relevant measures, but as a living part of our company philosophy. We identify ourselves with our products and services.

Guidelines and requirements

In order to be able to achieve the highest possible quality of our products, despite room for creativity, there have to be clearly defined requirements that apply to both the standard software and customer-specific projects. These requirements are set down in two sets of mandatory guidelines that complement the development process and provide every employee with clear standards in every stage of development. We thus secure the best possible quality for you in CAM.

STYLE GUIDE

The style guide defines the fundamental design of the user interface in CAM. With this we make sure that the software meets the latest requirements on functionality, especially in relation to ease of use.

PROGRAMMING GUIDELINES

The programming guidelines define the formal framework conditions for our developments. They guarantee a high quality of programming in relation to non-functional requirements such as readability, testability and compatibility.
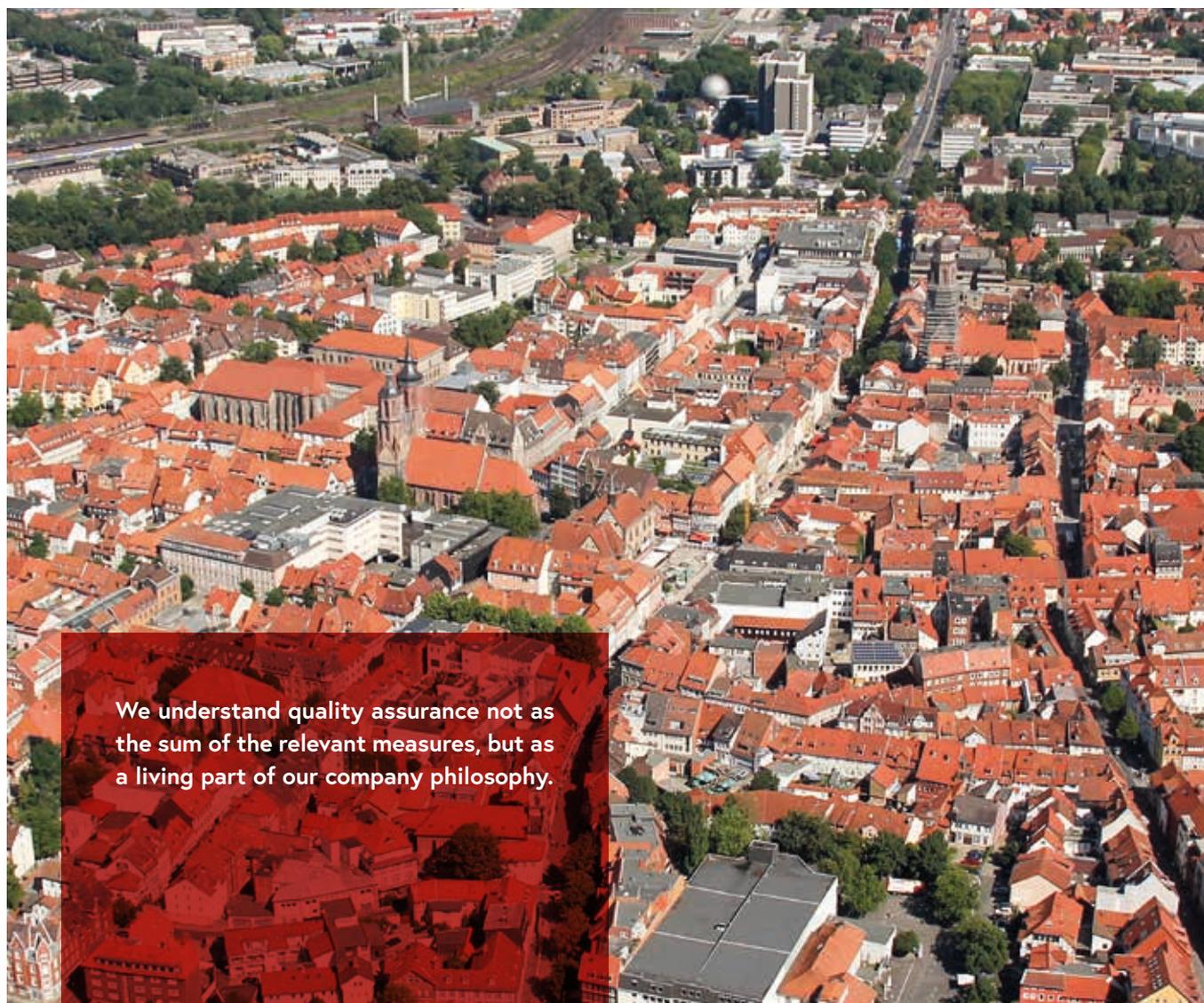
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Automated test procedures

UNIT TESTS

Automated tests that are created during development and possibly complement manual tests, making an essential contribution to continual quality assurance. With unit tests, individual functions are comprehensively tested in detail according to various scenarios after every individual change.

STATISTICAL CODE ANALYSIS

Automated examination of the code quality and the compliance with defined requirements, with flexibility for individual decisions. Sections of code that do not conform to the guidelines are automatically marked for the developers to check.

LOAD AND PERFORMANCE TESTS

Special, constantly running tests of the system performance when using large volumes of data and with frequent access.

Manual test procedures

DEVELOPER TEST

Test of new or adapted sections of code in a local development environment.

CODE REVIEW

Technical check of new or adapted sections of code, performed by other developers.

COMPLETENESS TEST

Specialist and technical tests of the complete realization of the specified requirements, performed by the project leader.

SPECIALIST TESTS

Comprehensive tests of the coherence of new functions:

- ✓ Defined basic test cases from the development brief
- ✓ Ad-hoc tests (which do not follow any predefined „script")
- ✓ User interface tests (compliance with the style guide for the user interface)

POST-RELEASE TEST

Examination of the functionality on the productive system.

Quality assurance in our software development process

👤 SCOPE

At the beginning of every development process a basis for decisions is created that includes all the essential aspects from functionality and strategic benefits to performance and security. The feasibility of this definition of scope is tested using a comprehensive, standardized procedure, the results of which are approved by a committee.

👍 DEVELOPMENT BRIEF

All the requirements are described in the form of a development brief according to defined guidelines, which is then examined again by the committee. These checks include clearly defined test cases and a fixed test concept as well as data protection considerations.

✏ REALIZATION

All the technical and specialist requirements are realized according to clear guidelines. If the requirements change, the development brief is adapted and the approval process is performed again if necessary. The quality of the realization is secured through continual, standardized, automated test procedures.

🔍 TEST PHASE

The realized software is comprehensively tested using standardized, manual test procedures. All general and customer-specific test concepts are run through in a structured manner until all the quality standards can be shown to have been fulfilled. Any necessary adaptations are put through all test phases again.

❂ RELEASE

After the successful test phase the development process is completed. The new or further development is integrated into the standard software or the customer project and from this point onwards is subject to continuous quality assurance.

⏱ CONTINUOUS QUALITY ASSURANCE

Our products are subject to the highest quality standards and even after the development process are constantly checked using diverse quality assurance measures. These include automated tests and code analyses as well as regular manual testing.

Enabling Success.

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