Testing Embedded Systems

verifysoft TECHNOLOGY

2-day workshop with Prof. Dr. Daniel Fischer (Professor at the University of Applied Sciences Offenburg, Germany)

This workshop provides the essential skills to test efficiently and effectively high-quality-value and reliable Embedded Software.
In addition to test management, this workshop provides technical and procedural practices. Through concrete exercises and examples participants will be able to enhance their own projects.

Target group: Developers, Test engineers and Decision makers

Agenda:

Part 1: **Overview „Testing Embedded Systems“**

- What is an Embedded System?
- Important trends in the environment of Embedded Systems
- Significance and particularity of Embedded Systems Tests

Part 2: **Development process (Lifecycle)**

- Important software development processes for Embedded Systems (V-model XT, Multiple V-model, concurrent V-model, W-model)
- Development of a test plan
- Capability maturity models

Part 3: **Techniques of test**

- Overview of test procedures (static and dynamic tests, White-Box- and Black-Box-Tests, test levels)
- Risk analysis and risk management
- Security (FMEA and Fault Tree Analysis) and reliability
- Basis of test principles (Equivalence partitioning, Boundary analyses, Specific value testing, Stress testing, Regression testing, Random test, CRUD, etc.)
- Important test principles for Embedded Systems (State oriented Test, Control flow oriented tests, Classification-Tree Method (CTM), Evolutionary testing, Rare event testing, Fault seeding, etc.)
- Test coverage (Requirements coverage and C0, C1, C2/C3 coverage)
- Software metrics and their interpretation
- Checklists
- MISRA rules

Part 4: **Test environment**

- Usage of test environments (MiL, SiL, PiL, HiL)
- Tools and testing automation
- Mocks, stubs & Co.
- Example: test environment for run time analysis

Part 5: **Organizational Measures and Test Management**

- Various roles of testers and setting up of a testing team
- Organizational structures
- Piloting and supervision of the test process

About the lecturer

Dr. Daniel Fischer studied communication engineering at the University of Applied Sciences Offenburg (Germany) and electrical engineering at the University of Hagen (Germany). He did his PhD in the Institute of Applied Computer Science at the Research Center in Karlsruhe / Karlsruhe Institute of Technology (KIT) in the field of 3D-image processing and artificial intelligence.
He worked as a software engineer, as a software quality engineer and as a software project manager for Hewlett Packard and Heidelberger Druckmaschinen AG.
Since 2001 he is professor for information and computer technologies at the University of Applied Sciences Offenburg. His main research fields are Software Testing, Embedded Systems and Software Development Processes.

"Testing of Embedded Systems" is also available as inhouse workshop.

For further information please do not hesitate to contact

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