teoresi med tech

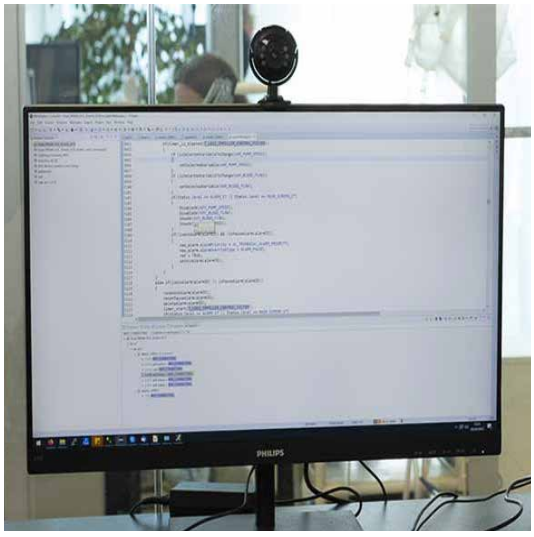
Software Design

Leading *Advanced Medical Solutions*

Paradigms

Software is represented through the following coexistent and functional paradigms regarding software development in embedded, real-time applications.

- Software = data structures and algorithms that operates on them, formalized with pseudo language. : “Algorithms + Data Structures = Programs”, by Niklaus Wirth, Prentice-Hall Series in Automatic Computation.
- Software = sequenced and structured processes. Rif.: “Structured Development for Real-Time Systems”, by Paul T. Ward, Stephen J. Mellor, Prentice-Hall.
- Software = finite state machines.



Processes

All processes related to the software are based on internal procedures, which regulate:

- Objectives
- Inputs
- Outputs
- Responsibilities
- Methodologies

The software development process is based on of the following activities, managed within an iterative and incremental model:

- Specification of software requirements
- Software architectural design
- Software detailed design
- Implementation of software units
- Verification of software units
- Integration of software units and hardware-software integration
- Integration verifications
- System verifications

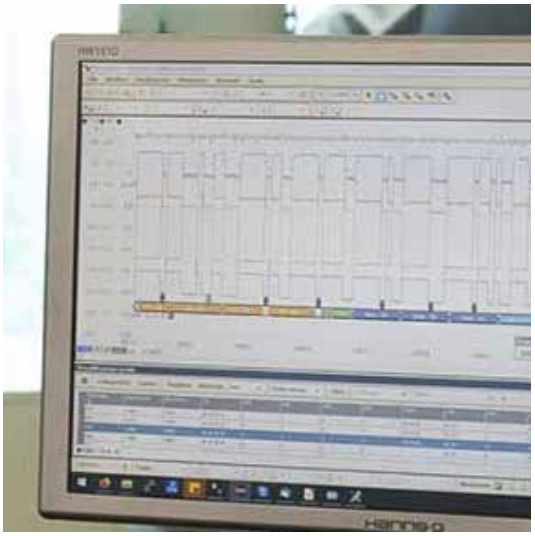
Furthermore, the following software-related processes are managed:

- Risk management
- Problem management
- Maintenance
- Validation and release

Standards

The development and, more generally, the entire software life cycle is managed in compliance with, and with reference to, the most recent international standards, including:

- IEC 61508-3 – Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 3: Software requirements
- IEC 62304 – Medical device software – Software



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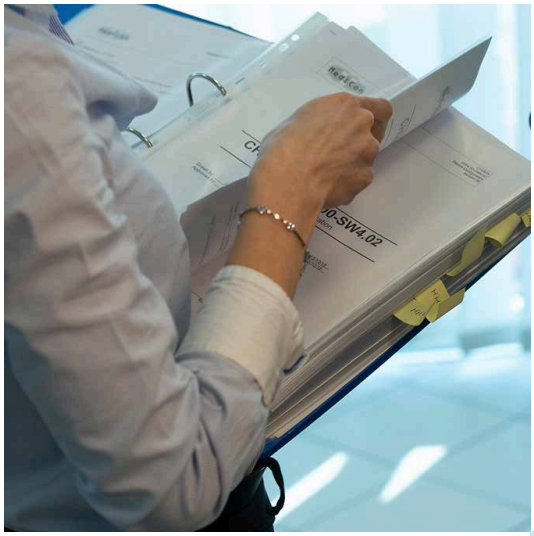

Tools

As part of the processes related to the software, we use software tools to support the following activities:

- Specification of requirements
- Verification/Testing
- Traceability
- Configuration management and versioning
- Static and dynamic code analysis
- Advanced debugging

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