

Age Group: 1967

Education: Engineer (University) electronics
Automation and control
IT - (μ C, μ P, DSP)

Languages: German, English (fluent), French (extended basics),
Romanian (born and 22 years in Romania)

IT - Experience: since 1998 (Engineering)

Availability: 13th of February 2017

Salary: EUR (EUR - EUR depending on duration, location and
responsibility)

IT-Knowledge

Emphasis:

- **Testing: Integration, functional and system testing** (embedded, automotive), test specification, test automation, HIL, **diagnosis** (KWP2000, UDS), error recognition, bus diagnosis (**CAN, FlexRay, MOST**). **Module tests**.
- **Software development and integration** for technical applications (everything, especially with application of general mathematical or physical knowledge, electronics or automation), **embedded (for ECUs), real time** (assembler, emulator, oscilloscope, debugger-simulator) in **C (C++ and Assembler, modular and reusable, QAC, MISRA, etc.)**. **Control Engineering: simulation, control algorithms, identification. AUTOSAR with standard SW integration.**
- **Software development PC** (GUI, etc.) **Borland C++ builder, Microsoft Visual Studio (2008, 2010) C++, Microsoft Visual Studio .Net (2.0 / 3.0) and C# (.Net 2.0 - 3.5)**
- **UML SW system modelling, modelling of module tests and specification with test result documentation: Enterprise Architect, Matlab / Simulink / TargetLink.**
- **Test and evaluation:** SW testing (**black box**, but also grey and white, SW evaluation, system and integration testing), **HW tests** (EMC, chemical, mechanical), diagnosis, bus diagnosis (CAN, FlexRay, MOST)
- **Hardware development:** analogue sensor boards, μ C (just in/out), power circuits, digital IO.

Special Experience:

- Test: Software integration testing, system tests, functional test, test specification, test automation, requirements, customer interface. SW module testing.
- Programming: ECU μ C and DSP programming (C, assembler, embedded), automotive and other branches, QAC, MISRA, modular, reusable, C++. Also Engine Control Units. OOP, Windows application software: C++, C# for .Net, further see projects. Development of new and adaptation of existing filtering and control algorithms. Implementation in C, C++ and Assembler also for DSP units (Microchip).
- Software Integration: Standard SW, AUTOSAR and other delivered SW modules, reusable, modular.
- Diagnosis and Bus Systems: Bus diagnosis (CAN, FlexRay, MOST) SW integration and adaptation of CAN and Diagnostic Layers, KWP2000, UDS, ODX(PDX), CAN and FlexRay Stack.
- Modelling: Matlab / Simulink / TargetLink testing of modelled and generated SW, modelling of test environment and test automation. UML Enterprise Architect, modelling of a SW system with 20 modules, modelling of all module tests, specification of these tests and test result documentation.
- System Evaluation and Optimisation: (Hardware - Software): Identification, automation and control, Sensor units (analogue), power circuits, digital IO, Eagle 4.08, PADS.
- Black Box Evaluation of Hard- and Software of electronic devices (pharma sector).

Operating Systems:**MSDOS 6.2**

Windows 3.11, Windows 95, Windows NT 4.0, Windows 2000, Windows 98, Windows XP, Windows 7, Windows 8

RMOS 3

OSEK, OSEK/time

Self-made (in projects)

OSE Real Time OS**Programming Languages:**

C (ANSI and extended)

Assembler (see hardware)

C++

C# for .NET

Pascal, Turbo Pascal
HTML
Matlab, see also in projects
Python
Perl
Delphi, XE7

Hardware:

µC: 8048, 8051, 80537, 80C166, M3062, MSP430F – series
MPC/PPC - series, HC12 / S12X, NEC V850
DSP: 96000, 56001, dsPIC30F - series
µP: 8088 (Intel)
Microprocessor board: IMC05 (Siemens)
82526 CAN bus controller, MFR... - FlexRay controller

Software:

MS Office (97, 2000, XP, 2011), **MS** Works
Matlab / Simulink / TargetLink
ControlDesk, AutomationDesk (dSpace)
INCA von ETAS
PADS, Eagle 4.08
Borland C++ Builder 5.0, Microsoft Visual Studio C++
CANape, Canalyzer, CANoe, Mostolyzer
Busdoctor for FlexRay and CAN (HW / SW)
TRACE32 for Lauterbach, different emulator / debugger - SW

SCM (Software Configuration Management) Tools:
MKS, CM Synergy, SCM Surround, Serena Dimensions, IBM ClearCase and ClearQuest,
VisualODX (In2Soft), Enterprise Architect (SPARX Systems)
DOORS, Innovator, DOORS Analyst, see **also in projects**

Bus Systems:

Profibus PA
CAN - bus (incl. diagnosis KWP 2000 + UDS, integration)
FlexRay (incl. diagnosis KWP 2000 + UDS, integration)
LIN (only testing)
MOST - bus (incl. diagnosis KWP 2000 + UDS)

Projects

- 30. *HIL Test, Functional SW Test, Test Automation for a Battery-ECU***
Period: June 2016 – December 2016
Industry / Automotive /
Activity: Functional SW Test on HIL, test automation and specification.
Contents: Writing test – specification from requirements and CRs, generating TAT for test automation, generating test scripts in for Provetech TA and the Micronova respective MBTech HIL. Test execution and Analysis. Functional safety ISO 26262, V-model, automotive SPICE.
Software: Provetech TA, DOORS, TAT (Excel VBA Macros), YDLog, MS Office, Serena Dimensions, CAN DB Editor
Hardware: Micronova HIL, AKKA MBTech HIL, ECUs, oscilloscope.
- 29. *HIL Test and Test Specification, also Test Automation of an Engine Control Device***
Period: October 2015 – Mai 2016
Industry / Automotive /
Activity: SW system testing and other SW tests with HIL and vehicle testing.
Contents: Creating test specification from SW requirements and design / specification. Creating test scenarios for ECU Test. Test of the HIL environment and then test execution of the SW tests. IO – tests, NET tests and diagnosis, functional testing for the entire SW. LIN, CAN. HIL – tests and partially vehicle tests. CDD, ODX, DBC, Office and similar standard software. 3 languages project: English and German fluent, French parts of the documentation and some information (project language English and French).
Software: CANoe, Diagalysr, Dianalyser, Package Generator (Excel VBA Macros), ECU Test, INCA, Control Desk.
Hardware: Vector CANCase XL, HIL, INCA ETK, power supply. Engine Control Device and peripheral for the HIL like glow plugs and glow plug unit, injectors (Diesel), urea injector, rail and gasoline pumps, intake air throttle, etc.
- 28. *Development and Test in Security Relevant Environment of Medical Technology***
Period: March 2015 – Mai 2015
Industry / Medical Technology /
Activity: SW development and test on security relevant medical technology device. Programming in Pascal / Delphi.
Contents: Development of a serial interface for communication with a laser source for a device for laser eye surgery. Development of a serial interface for communication with and data acquisition from a sensor for measurement of laser light energy in UV spectrum. Learning of the laser interface protocol. Writing the specification of the PC laser interface to the laser (English). Writing specification for the user interface to the application. Modelling of the interface in Sparks Enterprise Architect. Inserting the fine design with synchronisation to the written SW. Implementation of the software, modelling of the test environment, inserting the requirements for the SW, inserting the requirements for the test module, implementation of the automatized tests. Inserting the test cases as use case to EA. Test of the software first manually, then automatized which automatically creates a report. Adapting to new requirements and repeating automated testing and that in several cycles. Learning programming language Delphi programming of the interface and test environment in OOP Pascal = Delphi and getting used with

development environment Delphi 7 and XE7. Implementation of the interface to the sensor and of automated tests for the sensor interface. Learning the protocol and implementing all parts of it and of a quick data acquisition in multitasking with an additional thread. Using Semaphores for variables and the serial interface. Own concept for all these implementations. Test of the serial interface to the sensor. HW activity: Constructing an UV lamp for the automated test of the laser energy sensor. Implementation of visual GUIs for the manual and automatized test of both interfaces. Understanding of the whole laser system, security instruction and test on the real system (laser surgery device). Test of a delivered DLL for analysing eye scans.

Software: Sparks Enterprise Architect, Parallel Data Logger for serial PC Interfaces, Office 2013, Delphi 7, XE7

Hardware: MLase UV spectrum class 4 laser, Coherent Energy Max sensor, adaptor USB – optical fibre, Eye – Tracker, gas – system with pumps and valves for the laser, multimeter, soldering iron.

27. Development and Test related to AUTOSAR standards

Period: September 2014 – February 2015

Industry / Automotive /

Activity: SW Development and Test automotive, partially AUTOSAR Frame

Contents: Development of an ECU as a prototype and first development for image based Headlight– Control. Test of functionality and assembling. Whole SW for ECU developed. WLAN, CAN, power control 100W double PWM per channel, 2 channels Second project for workload: Error elimination for a gas sensor unit (Microchip Controller). 3 errors eliminated.

Software: C-Compiler, Eclipse for AUTOSAR project test environment. Operating system RTX (ARM), Whole SW for ECU.

Hardware: ARM LPC2294 (Phillips) Keil Debugger µVision 5, and Microchip PIC Controller with MPLAB and PICKit 3. Power supplies, oscilloscope, etc.

26. Integration – Testing in AUTOSAR Frame

Period: March 3rd , 2014 – August 31st , 2014

Industry / Automotive /

Activity: Integration testing preceding production start

Contents: Integration testing via CANoe, i-System debugger, QLogic analyser. Requirements – coverage, Complete and regression testing. White Box tests. Automatizing partially with Python, CAPL and iConnect for winIDEA. ASIL B/C, E2E, RAM and ROM tests, program flow, ECU: Lane and object detection with CCD. Was HIL test.

Software: C-Compiler, Eclipse, Notepad++, winIDEA, QLogic Software, CANoe, CANape, Python and Idle, CAPL programming, MS Office

Hardware: TriCore™ CPU Infineon TC1784, i-System Debugger, Vector Box VN7600, QLogic Logic Analyzer, Power supply, SPI Interfaces and manipulation - hardware. HIL equivalent HW.

25. UML SW Modelling, SW Test and Development Activities

Period: August 2013 – December 2013

Industry / Home Appliances /

Activity: UML SW + test modelling + SW test and development activities

Contents: Organization of the SW in modules. Modelling of the SW with Enterprise Architect. Development from UML model and parallel modelling and development. Test case modelling and test execution. Additionally some SW tests and development

activities to assure compliance to European standards for the verification by VDE. ASIL B/C in safety relevant area, stoves.

Software: Microsoft Windows XP, different compilers, EasyCode, Enterprise Architect, Lotus Notes, Office 2010..., LIN Monitor

Hardware: Microchip microcontroller, debugger, Power supply, LIN Monitor, LIN Simulator.

24. SW Development And Integration (Embedded, Automotive, C)

Period: September 2012 – June 2013

Industry / automotive /

Activity: SW – integration and maintenance, SW development

Contents: Development, integration and maintenance of SW Modules, UDS/KWP2000 CAN, BAC 3.x -> BAC4,1 ODX/PDX, Module Test.

Software: Microsoft Windows 7, IBM Clear Case und Clear Quest, Microsoft Visual Studio 2008 (V9.0), Microsoft Office Professional 2011, Vector CANoe, E-Sys (3.24.2), CAF Editor (3.11.0), Vector DaVinci Developer (3.1 (SP3) for BAC3, 3.4.6 for BAC4) / Configurator (4.2 for BAC3.x, 5.2.34 BAC4.1.2) (Ports, Interfaces, Components,...), Tresos, Geny, Sparx Enterprise Architect, CTC++, Visual Studio Test Module. Python. AUTOSAR!!

Hardware: PC, ECU, CANCard XL, power supply, USB Debug Port.

23. SW Test and Test – Automation, SW Specification (Embedded, Automotive, C)

Period: January 2012 – August 2012

Industry / automotive /

Activity: SW – Specification, SIL SW test execution and automation, (Engineering), C, Simulink / Target Link

Contents: SIL Tests Tempomat SW modelled with Matlab / Simulink / Target Link. Target Link SIL. Test automation in Matlab / Target Link.

Diagnosis module and gateway specification KWP2000* <-> UDS, DM1 status.

Software: Windows XP, SVN Tortoise, Matlab, Simulink, State Flow, Target Link, Excel, Word, CANalyzer, CANoe.

Hardware: PC, car (comparison of SIL tests with tests in the car): controller board and CAN connections.

22. SW Reviews (Embedded, Automotive, C)

Period: October 2011 – December 2011

Industry / automotive /

Activity: SW – Reviewer (Engineering), C, adaptations

Contents: Bootloader und application SW. Review, peer review, Implementation of changes from review. Safety relevant area, brake ECU. ISO 26262

Software: Windows XP, Office 2007, SCM tool MKS, Doxygen, Polyspace, PCLint

Hardware: FBM HW Freescale HC08.

21. SW Development In C, SW Test And Diagnosis, Specification And Requirements

Period: April 2011 – September 2011

Industry / automotive /

Activity: SW – Developer C (Engineering), SW integrator C, SW and diagnosis adaptations (SW UDS, ODX / PDX), test result processing and error correction, specification and requirements

Contents: Bootloader and application SW after Test results from customer and the own integration testing department: Error detection and elimination. Communication with

specification and requirements responsible intern und extern. Especially diagnosis and conformity to standards. ODX / PDX adaptations. CAPL programming.

Quality assurance of existing SW: among others rewritten and tested a whole module and integrated in the SW package of a project.

Software: Windows XP Professional, Office 2007, CANoe, CANape, CANdito, SCM Tool Serena Dimensions, VisualODX (In2Soft) Designer and Checker, VAS, VDT Tester (VW), Enterprise Architect (SPARX Systems).

Hardware: Parking assistance – Control Units, Oscilloscope, EDIC for VAS, CAN Card XL.

20. SW Test for Control Devices: Dashboard, Multimedia (Navigation, Radio, SAM)

Period: January 2011 – March 2011

Industry / automotive /

Activity: SW –Tester (Engineering), programming test cases in C#.

Contents: Test case development in C# for .Net. Integration- and system testing. Field test und data analysis. CAN tracing and test, routing, gateway. Card and key pairing. Safety critical area, functional safety.

Software: Windows XP Professional, Office 2007, Memory Configurator and CanKingdom for Kvaser, CANoe, Visual Studio for .NET and C#, SCM tool MKS.

Hardware: Kvaser CAN tracer, CANcase XL, HIL with all components of the system.

19. Engine Control: ECU Software Adaptation For Preliminary Development

Period: October 2010 – December 2010

Industry / automotive / SW – developer, MISRA, ANSI C, coding guidelines (Engineering)

Activity:

Contents: Adaptation of C code for a test run: removing several modules, adding other modules, BUILD, test of functionality. Safety critical area, functional safety.

Software: Windows XP Professional, Office 2007, Compiler TC17xx, Eclipse build Environment with DD (data dictionary) and automatic a2l generation, Trace 32 debugger, INCA (ETAS), ControlDesk.

Hardware: Oscilloscope, power supplies, measurement instruments, TriCore TC17xx controller, Lauterbach debugger, AutoBox, other dSpace Simulation HW, ETK from ETAS. Power train, engine control unit.

18 Embedded C SW – Development and Test

Period: January 2010 – September 2010

Industry / automotive / SW – developer, SW – architect, algorithms, automatic control

Activity: (engineering)

Contents: SW - development in C for driving a BLDC motor, basic – software, CAN – bus, application, error detection, diagnosis, flash procedure. Activities: system identification and modeling, development of control algorithms, BLDC commutation, driving the motor with gear and actuator. Complete SW development of drivers, application, communication, error detection and diagnosis services. Test on the device. Requirements concretization from customer requirements, specification of the implementation. Commutation and positioning with MR sensor and sensor free commutation for a pump. Algorithms: Improvement for Cordic algorithm -> 20% faster worst case and 50% in the average on arbitrary controller with same ALU and cycle time independent from DSP engine and fractional format, inclusive scaling and calibration in comparison to the optimized assembler implementation for the DSP engine and using fractional format from Microchip. Programming of DSP engine for control algorithms.

Software: SCM tool MKS, Windows XP Professional, Office XP, Compiler, Debugger
Microchip.

Hardware: Oscilloscope, power supplies, measurement instruments, Microchip dsPic30Fxxx
Controller, MR sensor.

16 – 17 **SW – Integration Testing**

Period: March 2008 – February 2009 + end of (Mai) June 2009

Industry / Activity: automotive / tester (engineering),

Contents: Integration test (Black Box / Grey Box tests) in the engine control area. Specification, test automation and testing. Windows executables through Visual C++ for automated oscilloscope access from AutomationDesk via TekVisa (Tektronix). Programming Matlab functions for test evaluation. 17: Putting into service of successor, employee and user of the automated test environment developed by me in the project. Test effectuated on HIL.

Software: SCM tool Synergy, DOORS, Windows XP Professional, Office XP, AutomationDesk (dSpace), INCA (ETAS), ControlDesk (dSpace), Python, TRACE32, Perl, Microsoft Visual Studio C++, Matlab, etc.

Hardware: Oscilloscope, power sources, measurement instruments, dSpace HW, Lauterbach debugger, etc. Power train, engine control unit, valve control. HIL system.

15 **Software - System Testing**

Period: July 2007 – February 2008,

Industry / Activity: automotive / tester (engineering)

Contents: System test (Black Box tests) in the infotainment area. SW system with OSE and MOST - bus. MOST oriented testing.

Software: SCM tool Synergy, DOORS, Windows XP Professional, Office XP, CANoe, OSE, CANalyzer, Optolyzer4MOST professional SW, customer - own SW-tools, SW for MOST Compliance Tester by GADV.

Hardware: Power PC, CANCase XL, Optolyzer diff. types, oscilloscope, power sources, measurement instruments, MOST Compliance Tester by GADV.

14 **Software - Integration And Test, CM Management**

Period: October – December 2006 (addition: January - March 2007, second addition: June 2007)

Industry / Activity: automotive / tester (engineering)

Contents: SW integration of components and modules building a system, integration - tests (Grey Box tests) and management of the dynamic project software in the CM System. SW contained OSEK, CAN - bus + LIN bus. Comparison with and extension of SW - architecture, design, UML. Safety critical area, functional safety.

Software: SCM tool MKS, Innovator, DOORS, DOORS Analyst, Multi - environment for NEC V850, Doxygen, Cygwin, Windows XP Professional, Office XP, CANoe, OSEK, ControlDesk from dSPACE. SW in C.

Hardware: NEC V850 FG2/FG3, CAN - interface, SBC, LED, keyboard, sensors etc., HIL (with CAN and LIN), CANCard X, CANCard XL, MiniCube Debug - interface, oscilloscope, etc.

13 **Testing Electronic Devices: HW-, SW-, EMC- Tests Etc.**

Period: May – July 2006

Industry / Activity: Railed vehicles, automotive / tester (engineering) telecommunication, GPS, GSM

Contents: Test of functionality, error detection HW / SW and diff. EMC- and other tests.
New test board.

Software: serial interface - terminals, Excel, Eagle

Hardware: Motorola microcontroller, MSP430, different sensor systems, GSM - modules (Motorola, Siemens, Nokia), GPS modules und antenna, DC / DC - converter, RS232

11 + 12 **Software - Integration, -Adaptation And Test**

Period: January – August 2005, September - March 2006

Industry / Activity: automotive (car manufacturer), activity: developer (engineering)

Contents: Adapting different software packages to another and to certain HW – platforms, creating new functionalities, placing into operation of bus systems CAN and FlexRay, placing into operation and improvement of diagnosis and error management, working with databases

Software: Several C-Compiler for Motorola and Freescale microcontrollers, Windows XP Professional, CANape, CANalyzer, CAN – bus, FlexRay – bus systems and stacks integration, OSEK, OSEK/time, CM Synergy, TargetLink (training), Best2 Compiler EDIABAS, AUTOSAR and standard SW BMW.

Hardware: Motorola and Freescale microcontroller diff. series, (Sx12, HC12, MPC / PPC) EEPROM: external, serial, internal; MFR – components, MOSFET, A/D – converter, PWM, controls, different sensor systems

10 **Controller And PC Software Development And Tests**

Period: August 2004 - December 2004

Industry / Activity: medical engineering / automotive (Electronic devices for different purposes, also automotive); developer (engineering)

Contents: Writing software in C for the MSP430F... TI microcontroller: driving a sensor system, gathering measurement values, processing of measurement data, error detection, functional mode switch, communication through serial interface with the PC, writing a PC - software in C++ with Borland C++ Builder 5.0: user interface, communication with sensor board through COMx, display for received data, automatic communication modes with graphical data representation and storage.

Software: IAR C-compiler, assembler for MSP430F..., Borland C++ Builder 5.0, Windows 98, Windows XP Professional

Hardware: TI MSP430F..., converter serial interface, PC, Schmitt - Trigger, MOSFET, sensors

9 **Development And Simulation Of Control- And Filter Algorithms**

Period: January 2004 - April 2004

Industry / Activity: automotive / developer (engineering)

Activity:

Contents: Software development for a brushless dc motor control, 5 new control algorithms (1 no standard method, not available in books), new signal filtering algorithm. Simulation in Excel. Implementation in C and Assembler. New method for quick fractional calculations (not from books).

Software: C, Assembler for DSPic3060..., Excel

Hardware: DSPic3060..., peripherals

7 + 8 **Hard-, Software And Endurance Tests**

Period: March 2003 - July 2003 and August 2003 - November 2003 (similar activities on two different devices)

Industry / pharmaceutical / evaluation, tester (engineering)

Activity:

Contents: Evaluation hard- / software of an electronic device: new test specifications, software for data acquisition and storage and statistical evaluation of the measurement data, endurance tests

Software: Word 2000, Excel 2000, VBA for Excel 2000

Hardware: electronic devices for medical diagnosis

6***Adaptation And Expansion Of Software In Safety Area***

Period: August 2002 - October 2002

Industry / producer automatic self-riveting tools / developer (engineering)

Activity:

Contents: changes in their own software for access in the operation menu when protection circuit is open, with regards to the software and hardware implemented safety directions. Safety critical area, functional safety.

Software: C, BIOS for IMC05 from Siemens, RMOS3

Hardware: IMC05 μ P system with 3 communication channels (CAN or Interbus S, RS232, Ethernet), safety hardware, GTO power control

5***SW Evaluation And Employee Training***

Period: July 2002

Industry / producer board - computer and handy interfaces for cars / evaluation, training

Activity:

Contents: consulting, estimation of the written software, documentation, tests

Software: C

Hardware: PIC controller (16 bit), RS232

4***HW Development Analogue***

Period: September 2001 - Mai 2002

Industry / engineering office, hard- and software development / developer (engineering)

Activity:

Contents: Development of switching and not switching power supplies for a complex electronic circuit with many voltage levels from the 230V / 50 Hz supply and of two analogue sensor systems for the same device.

Extension of an existing homepage.

Software: Eagle 4.08 (hardware development), HTML (direct language commands and Office97)

Hardware: bipolar and FET transistors, FET - Ops, different semiconductor sensors, diodes, timers, special ICs, passive electronic components

3***Specifications, Effort Estimation, Planning, HW - Development And Tests***

Period: September 2000 - September 2001

Industry / Electronic devices, own / management, sourcing, development

Activity:

Contents: Development of an electronic door system, which should be produced together with partners (reason: money and market). Unfortunately my partners dropped the idea. More on www.henatel.de .

Software: Matlab, DMM Profilab, Bauelemente - Lager 200 1.20, TARGET! 8.1.2.75, WIN - Elektronik 2.05 (simulation-tool)

Hardware: FET OP, FET and bipolar transistors, logic circuits, thermistors, IR - transistors, IR - diodes, timer, ISD and other special chips, LED, photo - transistors, etc.

2 **SW Development And Porting**

Period: March 1999 - end march 2000

Industry / mechanical engineering / developer (engineering)

Activity:

Contents: Rewriting existing software for a new microcontroller (M3062), development of a new control strategy for a mechanical device, connection of the system to a Profibus, programming the communication through I²C Bus (with EEPROM). Programming in C und in assembler (!). In/Out: LCD, keyboard, Profibus PA, RS232 (Diagnoses).

Software: simulator, emulator software, debugger M3062

Hardware: M3062 μ C, emulator, measurement devices, PC

1 **Comparison Of Control Algorithms On A Real System**

Period: July 1998 - February 1999

Industry / Institute

Activity:

Contents: Identification and optimization of non-linear systems. For the implementation of the control algorithms and for the real time in/out of the mechanical system I used **Matlab / Simulink and Real - Time - Workshop (RTW) and Real - Time - Interface (RTI)** from dSpace (communication using a DSP).

Software: **Matlab / Simulink and Real - Time - Workshop (RTW) and Real - Time - Interface (RTI)** (dSpace)

Hardware: PC, DSP - DS1102: dSpace, mechanical device