

Profile: Hardware and software development  
Vintage: 1960  
Training: Dipl.-Ing (Computer Engineering, RWTH Aachen University)  
Foreign languages: English, French and Luxembourgish  
Professional experience: since 1982

#### IT skills

- Main areas of activity: Software development / programming
- Beratung / Consulting
- Coaching / Schulung / Training
- Project Management / Organization / Coordination
- Hardware development and hardware-related programming
- Operating System Implementation
- Training documents can be created on a project-specific basis
- Training also possible in English
- Documentation only in the context of the project
- Hardware development in cooperation with ISO9001 certified companies
- Technical focus: Project planning / project management - hardware-related software projects (real-time systems)

#### Main areas of experience:

##### Operating systems:

- CP/M for Z80 and 68k
- Real-time operating systems: OS/9, pSOS+, VxWorks and Windows CE
- Real-time core: OSEK
- Embedded Linux: Creating your own LINUX variants
- Automotive Entwicklungs- Tools: Davinci, Tresors
- Unix: LINUX, PikeOS, Solaris and HPUX

##### Programming languages:

- Assembler: 6502, 68xx, 680x0, PPC and 80x86

- Basic: Visual Basic 4 (User Interface/Visualization)
- C: Ansi-C and C++
- Delphi: Basic knowledge
- Forth: Basic knowledge
- Java, JavaScript: Java In Industrial Applications
  - Python: Automotive Test scripts

#### Hardware:

- Real-time systems: OS-9, pSOS+, VxWorks, Windows CE, Embedded Linux
- Embedded System: Motorola 680x0, Motorola 68HC11, PPC, 680x, Z80, I386, I486, ARM7, ARM9, ARM11, Zynq, MPC55xx, MPC56xx, MPC555, ST62F40, NEC78K, V850, STM32, LM3S9B96 und Tricore
- Development of hardware: ECB, VMEbus, microcontrollers, special inter-faces
- Microcontrollers: 68HC11, 680x, Z80, S12X
- Modem: Radio modems (shortwave)
- Motorola: 68HC11, S12X, MC680x0, PPC
- PC: Driver, Interface and Software Development
- Control systems: Control systems in the mechanical engineering industry

#### Networks:

- DDP (Descriptive Data Protocol) for Weather Stations
- Ethernet, TP/IP, Client/Server, NFS, RPC
- Internet, Intranet
- Parallel interface
- RS232: Connection of external devices for real-time use
- Drivers and system programs for communicating embedded systems with Windows networks

#### Bus:

- CAN-Bus
- VME-Bus
- Ethernet
- Interbus-S

- FlexRay
- Lin-Bus

#### Databases:

- Access: Industrial Applications
- DB-Fast: Industrial Applications
- mSQL / MySQL: Industrial Applications
- MySQL: Porting to OS-9
- Oracle: Industrial Applications

#### Products, Standards:

- Visual C
- Visual Basic
- Visual Java
- OSEK
- PikeOS
- Davinci Developer/Configurator, CanOE, Canape, etc.
- Tresors von Elektobit
- AutoSAR
- Hawk (OS-9)
- Oracle
- MAPI
- HTML and Java in Embedded Systems
- EAGLE
- Wort, Excel, Project, Powerpoint
- Eclipse, Java
- Eclipse RTDruid
- Automotive SPICE
- Basic Software Developer
- Qt

#### Industries:

- International consulting for the OS-9 operating system (over 17 years of experience)
- Hardware
- Engineering
- Mechanical engineering
- Measurement data acquisition
- Medical
- Automotive

## Projects

- 2026
  - SMB 2.0/2.10/3.0/3.11 Protocol implementation for OS9 (Microware)
- 2025
  - ICAS2 Stellar Software Creation/Correction/Misra and Testing
  - BCM Chorus MPU integration
  - SMB3.11 Protocol implementation for OS9 (Microware)
- 2024
  - UWBSW project for Conti (BMW), SWATT Test/CTC/Rhapsody
  - ICAS1/evo/MQB/Gateway FlashBootloader (FBL) Chorus 10M / RL78
  - BCM Chorus MPU integration
  - ICAS2 Stellar Software Creation/Correction/Misra and Testing
  - GW Chorus FBL integrator
  - Audi: WCU Bootloader integration von Vector
  - Audi: AURIX Multicore konfiguration + Integration
- 2023
  - UWBSW project for Conti (BMW), SWATT Test/CTC/Rhapsody
  - ICAS1/evo/MQB/Gateway FlashBootloader (FBL) Chorus 10M / RL78
  - BCM Chorus MPU integration
  - GW Chorus FBL integrator
  - Audi: WCU Bootloader integration von Vector
  - Audi: AURIX Multicore konfiguration + Integration
- 2022
  - UWBSW project for Conti (BMW), SWATT Test/CTC/Rhapsody

- ICAS1/evo/MQB/Gateway FlashBootloader (FBL) Chorus 10M
- BCM Chorus MPU integration
- VW ODIS
- Audi: WCU Bootloader integration von Vector
- Audi: AURIX Multicore
- Bugatti: FBL / Application
- 2021
- UWBSW project for Conti (BMW), SWATT Test/CTC/Rhapsody
- ICAS1/evo/MQB/Gateway FlashBootloader (FBL) Chorus 10M / RL78
- Audi: AURIX Multicore
- 2020
- UWBSW project for Conti (BMW)
- SMBF (Samba 4.x Filemanger) for real-time operating system OS9/OS9000 for Microware/Radisys
- Customization of the engine control system for Bugatti.
- Development and configuration of AutoSAR driver/application, FBL (Flash BootLoader) and integration for Conti (ICAS\_1/1.x project) based on MPC58xx and EB Stack (ICAS1 and ICAS1.x)
- 2019
- AutoSAR 4.x ASIL B/C für DCDC\_R Daimler, ASIL Review
- AutoSAR 4.x integration for Radar Daimler Truck, ADAS project
- SMBF (Samba 4.x Filemanger) for real-time operating system OS9/OS9000 for Microware/Radisys
- Customization of the engine control system for Bugatti.
- Development and configuration of AutoSAR driver/application, FBL (Flash BootLoader) and integration for Conti (ICAS\_1/1.2 project) based on MPC58xx and EB Stack (ICAS1 and ICAS1.2)
- 2018
- Development and configuration of AutoSAR driver/application/bootloader and integration for Helbako based on RH380 and Vector Stack
- Development and configuration of AutoSAR driver/application and integration for Conti (ICAS\_1 project) based on MPC58xx and EB Stack
- Adaptation of SMBF for OS9/OS9000 for Microware/Radisys to communicate with Windows 10
- Customization of the engine control system for Bugatti.
- 2017

- Development of AutoSAR driver/application/bootloader and integration for Helbako based on RH380 and Vector Stack.
- Development of AutoSAR driver/application/bootloader and integration for Marquardt based on RH380 and Vector Stack.
- AutoSAR Multicore integration based on TriCore Aurix in the safety automotive area for TRW/GM
- AutoSAR integration of an existing ABS system based on the TriCore Aurix in the field of safety automotive for TRW/Daimler
- AutoSAR integration for an Audi project for the Marquardt company

- 2016

- Development of AutoSAR driver/application/bootloader and integration for Helbako based on RH380 and Vector Stack.
- Development of AutoSAR driver/application/bootload and integration for Marquardt based on RH380 and Vector Stack.
- AutoSAR Multicore integration based on TriCore Aurix in the safety automotive area for TRW/GM
- AutoSAR integration of an existing ABS system based on TriCore Aurix in the field of Safety-Automotive for TRW/Daimler

- 2015

- Development of AutoSAR driver/application/bootloader for Helbako/Audi/Bugatti based on MPC5604P (Vector + EB).
- AutoSAR Multicore integration based on TriCore in the safety-automotive area for TRW/Daimler
- AutoSAR integration of an existing ABS system based on TI-ARM in the field of Safety-Automotive for TRW/BMW

- 2014

- Development of AutoSAR driver/application/bootloader for Helbako/Audi Gen\_III/Gen\_4 based on MPC5604P.
- AutoSAR integration of an existing parking system based on Zynq and iMX5x/iMX6x for Magna.
- AutoSAR integration of an existing ABS system based on TI-ARM in the field of Safety-Automotive for TRW/BMW
- Porting of an existing ultrasonic measurement system from OS-9 to Embedded Linux for GE.

- 2013

- Development of AutoSAR driver/application/bootload for Helbako/Audi Gen\_III based on MPC5604P.

- AutoSAR integration of an existing parking system based on Zynq and iMX5x/iMX6x for Magna
- Evaluation of the AutoSAR tools ArticStudio and Coco's Basis MPC5604P and iMX5x for Magna
- Porting of an existing ultrasonic measurement system from OS-9 to Embedded Linux for GE.

- 2012

- AutoSAR integration of an existing parking system based on MPC5604P, Zynq and iMX5x/iMX6x.
- Development of customer-specific engine control system for Bugatti Veyron model.
- AutoSAR support and advice for Audi in Ingolstadt.
- Integration of existing software (engine control) to new hardware for Bugatti based on MPC555/MPC554.
- Development of AutoSAR drivers for Helbako/Audi based on MPC5604P

- 2011

- SIL2 software development for Rheinmetall land systems (driver + application) of CAN/TCP/UART on the real-time core of Sciopta for MPC5121e/MPC5643L and MOC5668G
- Development of AutoSAR drivers for Conti based on MPC564xC
- Integration MCAL in Tresors (AutoSAR Tool von EB)
- MCAL driver creation for FreeScale DIO, ADC, PWM, LIN and CAN drivers. Integration of application software to customer-specific hardware MPC5644A.

- 2010

- Software integration (driver + application) of CAN/TCP/FlexRay/Most for automotive control units from Lear
- Development of AutoSAR drivers for Conti.
- MCAL driver creation for FreeScale DIO, ADC, PWM, LIN and CAN drivers. Integration of application software to customer-specific hardware MPC5644A.

- 2009

- Software integration (driver + application) of CAN/TCP/FlexRay/Most for automotive ECUs.
- Development of AutoSAR drivers for Conti.
- OSEK porting to PPC (MPC560x/MPC566x), DIO, ADC, PWM, LIN and CAN drivers. Integration of application software on customer-specific hardware MPC5607, MPC5668, ARM7 and NEC V850.
- Battery management system (MPC5121e) for Rheinmetall. Porting OS-9 to customer hardware. Creation of documents.

- Porting OS-9 to the LM3S9B96 of Luminary Micro. Creation of all drivers + integration of demo application software

- 2008

- Software integration (driver + application) of CAN/TCP/FlexRay/Most for automotive ECUs.

- OSEK porting to PPC (MPC5517), CAN drivers and application software.

- Creation of AutoSAR MCAL (PPC) drivers for FreeScale.

- Battery Management System (MPC5605) for AUDI. OSEK porting to customer hardware and integration Customer-specific ASCET models.

- 2007

- Software integration on customer-specific ARM7+ PPC hardware (driver + application) from CAN/TCP/FlexRay/Most for automotive ECUs. Integration of DI/O, analog measurands.

- OSEK porting to PPC (MPC5516), CAN drivers and application software.

- Analysis of measuring instruments (hardware ARM9 (AT91RM9200), basic software and application software) for Hommelwerke.

- Battery management system based on S12X + PPC for BMW. OSEK Integration. Integration of DI/O and analog measured values. Integration of a LIN network.

- 2006

- Automotive control units based on S12X and CAN/LINT gateway for Siemens VDO. OSEK porting to PPC, CAN drivers and application software.

- Analysis of measuring instruments (hardware ARM9 (AT91RM9200), basic software and application software) for Hommelwerke.

- PLC control for Homag AG

- 2005

- Automotive control units (S12) for Siemens VDO. OSEK porting, CAN drivers and application software.

- DLC (Double Layer Cap) monitoring and control for BMW based on NEC78K microprocessor. Integration of algorithms to calculate capacity, internal resistance and service life.

- OS-9 port for Coldfire family for Radisys

- 2004

- Automotive control units (S12) for Siemens VDO. OSEK porting, CAN drivers and application software.

- Porting of OS-9 programs to Linux for the company Bruker Bio-Spin GmbH (Rheinstetten).

- 2003

- Creation of software and hardware components based on MC68040 (Freescale) for Rheinmetall Landsysteme GmbH

- Software development for production test benches for the company Nord Micro AG (Frankfurt)

- Porting of OS-9 programs to Linux for the company Bruker Bio-Spin GmbH (Rheinstetten).

- 2002

- Creation of test bench software for various car manufacturers (VW, Ford, Audi and BMW).

- Creation of communication software based on MVME with PowerPC for ultrasonic measuring devices of the company Krautkrämer (AGFA).

- Creation of a test bench software for Phillips.

Adaptation of new blood glucose measuring strips to existing measuring devices

- 2001

- Creation of an embedded control unit for public transport

- Creation of a concept and implementation of mobile measuring systems for household and medical technology for the company I.E.M. GmbH (Stollberg)

- Realization of 3 marketable blood glucose meters. Hardware (ST62F40) and software up to the creation of production documents (100,000 units). For the duration of the project Project Manager for Glucose Devices at the company I.E.M. GmbH (Stollberg)

- Creation of a communication software (embedded Linux) on X86 hardware for Swiscom (Switzerland)

- 2000

- Software development for weather measuring stations

Creation of a DDP API, DDP applications for weather measuring stations

Connection of meteorological and radar systems to airport operating software

Simulation software for system tests based on: Linux/C++/Java/OS-9 (68k, PPC and Ix86). For the duration of the project of 8 months as Head of Software Development at Euren GmbH (Aachen)

Hardware and software development of VMEbus cards based on MC680x0

-Development of AD/DA and IO interface cards

- Embedded Java training for the automotive and mechanical engineering industry

- Porting of CANOpen for OS-9

Customer support and project planning of special solutions in the hardware and software area (VMEbus, measurement technology, OS-9) in cooperation with project departments of large international companies

- Customer-specific operator terminal under Windows CE

Porting Linux for Embedded Systems

- 1999

- Software development for projects in the airport environment

Connection of subsystems to airport databases

- Development of hardware and software for embedded Linux systems

Development of drivers and system programs for embedded Linux systems

- Development of remote update software for satellite systems

Customer support and project planning of special solutions in the hardware and software area (VMEbus, measurement technology, OS-9) in cooperation with project departments of large international companies. For a period of 9 months hardware and software manager at Dressler GmbH (Aachen)

- Customer-specific operator terminal under Windows CE

Porting Linux for Embedded Systems

- 1998

- Planning of network-based aircraft noise and weather measurement stations for use at airports

- Conception of the hardware and software of stationary and mobile measuring points

- Implementation of embedded firewall systems for the automotive industry

Network Base: LAN, ISDN, Firewall (OS-9)

Preparation of documents for the award of contracts and procurement

System Basis: QNX/LINUX/OS-9/pSOS+ und VxWorks

- Porting and implementation of VMEbus drivers for Solaris

- Realization of an NFS server for Windows NT in the industrial sector. Used by the Homag Group as an embedded NFS server.

- Porting of Linux for embedded systems from Ruhrgas AG. The systems are used for remote maintenance of the Ruhrgas pipelines.

- 1997

- Software development for the LAN/email connection of shortwave data radio systems. Development of RS232 protocol software in C (Windows95/NT) for data radios. Creation of Visual C-based software for Windows95/NT for coupling to a Novell-based LAN

- Porting Linux for embedded systems

- 1996

- Software development for the visualization of weather data on Windows-based systems

- Viewer - software for displaying special (GIF) images in approx. 70 different formats from weather radar technology

- Coupling to radar systems via TCP/IP and modem connections.

Porting Linux for embedded systems.

- 1992-1995

- Conception as well as hardware and software development for the petroleum industry

- Creation of multi-computer systems under OS-9. The control systems were based on 680x0

- Processor systems based on VMEbus cards. The operating software implemented in C was based on the OS-9 real-time operation system

- Creation of communication programs for data exchange between OS-9 and Unix

- Porting Linux for embedded systems. Creation of new file system drivers. First Linux port for 80386 CPU with 4MB DRAM, 4MB Flash, and 2MB SRAM

- 1991

- Commissioning of computer systems for companies in the oil industry in the USA

- Monitoring of the installation of process computer systems based on VMEbus systems and real-time operating system OS-9, for German and French companies

- Functional tests of hardware and software in laboratory and production areas

- Implementation of measurement systems for the simulation of aircraft

- 1987 - 1991

- Development and maintenance of software products and process automation systems

- Organization and implementation of the emergency service for foreign customers

Customer support and project planning of special solutions in the hardware and software area (VMEbus, measurement technology, OS-9) in cooperation with project departments of large German companies

Commissioning of Process Control Systems ( 680x0, OS-9/68k )

- Development and support of computer networks (LAN / Novell)

Connection of real-time operation systems to Novell networks

- 1984 - 1987

- Hardware and software development of VMEBus based on Motorola's 68k processor family and real-time operating system ( 68000 / OS-9 ), customer support and service work

- Construction and implementation of a universal module for fast measurement data acquisition and processing based on VMEbus systems and under the OS-9 operating system

- Porting of OS-9 to various hardware systems

- 1982 - 1984

- Development of hardware and software of a MICROTELEX based on MC6803. It was here that the first commercial fax machine for the BENELUX countries was developed.

- Supervision of student assistants at the Luxembourg University of Applied Sciences