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**Project List BaSystem Martin Raabe**

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Status: November 8th, 2023

# Long Term Development Projects

## BaSystem Martin Raabe, Bechenheim, own engagement

**Co-development of the knowledge management and collaboration system ‘TWiki’**

Details: Perl, HTML, Open-Source Community

Duration: 2002 until today – 2 hours per week – total ca. 400 hours

**Co-development of the knowledge management and collaboration system ‘FOSWIKI’**

Details: Perl, HTML, Open-Source Community

Duration: October 2008 until today – 2 hours per week – total ca. 180 hours

## IBM Deutschland, Mainz

**Introduction of a RTOS and BSP abstraction layer for an already implemented telemetric application for trucks**

Details: pSOSystem ARM C/C++

Duration: 10 months in 2003-2004 – 16 hours per week – total ca. 750 hours

## Siemens PSE, Wien

**Evaluation of an alternative compiler environment for the ARM SDT 2.5.1 for pSOSystem**

Details: Diab 5.2, RVCS 2.1 ARM C/C++

Duration: 3 months in 2004 – 20 hours per week – total ca. 300 hours

**Evaluation, selection and introduction of a debugging environment for JTAG ARM with pSOS awareness**

Details: Trace32 ARM C/C++

Duration: 3 months in 2004 – 20 hours per week – total ca. 300 hours

**Design, implementation and test of a memory manager for a telemetric device for trucks**

Details: pSOSystem ARM C/C++

Duration: 3 months in 2004-2005 – 12 hours per week – total ca. 160 hours

## IBM, Mainz

**Consulting for and adaptation of the real time operating system embOS and of the file system embFile for a telemetric device for cars**

Details: CPU Philips (NXP) LPC2292/ARM 7

Duration: 3 months in 2006 – 12 hours per week – total ca. 160 hours

**Evaluation of the real time operating system smxOS and of the file system smxFile for a telemetric device for cars**

Details: CPU Philips (NXP) LPC2292/ARM 7

Duration: 3 months in 2006 – 12 hours per week – total ca. 160 hours

## Tektronix, Cambridge, UK

**Adaptation of a complex embedded C++ application to a new version of C++ Compiler/ STL library**

Details: Wind River Compiler PowerPC 5.5, Nucleus 1.1.2, Lauterbach Trace32

Duration: 4 months in 2007 – 8 hours per week – total ca. 75 hours

## Sirona Dental – X-Ray, Bensheim

**Design, implementation and test of a network protocol for a 2D X-Ray device for dentists**

Details: VxWorks PowerPC Diab 5.4 C++ / Win32 Visual Studio 6 C++

Duration: 4 years in 2003-2005 – 32 hours per week – total ca. 2900 hours   
(four days per week: two days on site – two days remote)

**Further development, maintenance and test of a network protocol for a 3D X-Ray device for dentists**

Details: VxWorks PowerPC Diab 5.5 C++ / Win32 Visual Studio 6 C++

Duration: 18 months in 2005-2006 – 32 hours per week – total ca. 2800 hours   
(four days per week: two days on site – two days remote)

**Further development, maintenance and test of a network protocol for an intra oral X-Ray device for dentists**

Details: VxWorks PowerPC Diab 5.4 C++ / Win32 Visual Studio 6 C++

Duration: 2 years in 2006-2008 – 32 hours per week – total ca. 1300 hours   
(four days per week: two days on site – two days remote)

## Sirona Dental – Super Sonic, Bensheim

**Creation and maintenance of a style guide – including the definition of the software development environment - for C programmers for medical devices**

Details: ATMega128, Eclipse, Subversion

Duration: 4 months in 2008 – total ca. 240 hours

Team size: 5 developers of embedded hardware and software

## Bombardier Transportation, Mannheim

**Development, maintenance and test of data acquisition software (onboard data base) for trains - multi platform project for: VxWorks 5.4, VxWorks 6.x, µC-Linux, Linux, Wind River Linux, Windows – IA32, PowerPC, ARM, 68K.**

Details: C/C++, release responsibility

Duration: 24 months in 2008-2010 – 35 hours per week – total ca. 1300 hours   
(four days per week: two days on site – two days remote)

**Handling of review and release meetings and processes of software (data base) for trains - onboard firmware and PC software - multi platform project for: VxWorks 5.4, VxWorks 6.x, µC-Linux, Linux, Wind River Linux, Windows – IA32, PowerPC, ARM, 68K.**

Details: release responsibility

Duration: 2 months in 2011 – 20 hours per week – total ca. 130 hours   
(two days per week: one day on site – one day remote)

## DePuy Synthes, Innomedic, Rheinsheim, a Johnson&Johnson Company

**Development and migration PC software**

**(Calculation of 3D visualization of medical systems from 2D X-ray images).**

Position: Developer (Software) – pre-market

Details: Porting of an algorithm incl. GUI from C#/DirectX to C++/Qt/OpenGL/vtk and C++ (unmanaged and managed code)/.Net/WCF/Unity

Tools: Visual Studio 2008 and 2012, C++ (unmanaged and managed code), C#, DirectX, OpenGL, vtk, Qt, .Net, WCF

Duration: 2011 bis 2014 – 32 hours per week  
(four days per week: zero to one day on site – three to four days remote)

**Further development of the software incl. unit tests**

**(Calculation of 3D visualization of medical systems from 2D X-ray images).**

**Integration of a web application.**

Position: Chief-Developer (Software) – pre-market

Details: Further development of the software incl. unit tests  
(Calculation of 3D visualization of medical systems from 2D X-ray images)  
Integration into a web environment ASP.Net MVC (MAXFRAME)  
(external supplier: web-application on IIS)

Tools: Polarion, svn, Visual Studio 2012, C++ (managed und unmanaged code), C#, .Net, Parasoft C++

Duration: 2014 - 2016 – 32 hours per week  
(four days per week: zero to one day on site – three to four days remote)

**Further development of the software incl. unit tests.**

**Takeover of the web application.**

Position: Developer (Software) & DevOp – pre-market

Details: Further development of the software incl. unit tests  
(Calculation of 3D visualization of medical systems from 2D X-ray images)  
Takeover of the web application (Windows / MacOS) and further development until product maturity (MAXFRAME – five languages)

Tools: Polarion, svn, Visual Studio 2012, C++ (managed und unmanaged code), C#, .Net, Parasoft C++

Duration: 2016 - 2017 – 32 hours per week  
(four days per week: zero to one day on site – three to four days remote)

**Further development of the software incl. unit tests.**

**Further development of the web application.**

Position: Chief Developer (Software) & DevOp – pre-market / post-market

Details: Further development of the software incl. unit tests  
(Calculation of 3D visualization of medical systems from 2D X-ray images)  
Product-ready further development of the web application (Windows / MacOS) (MAXFRAME – five languages)

Tools: AWS, IIS, Windows Server 2012, Polarion 2018/2021, svn, Visual 2012, C++ (managed und unmanaged code), C#, ASP.Net, Unity 2017, JavaScript, CSS, jQuery, KendoUI, ReSharper, TeamCity (CI/CD), Veracode Cyber Security Scan

Duration: 2017 - 2022 – 32 to 40 hours per week  
(four days per week: zero to one day on site – three to four days remote)

**Support of the algorithm and web application for a follow-up product (MAXFRAME II).**

Position: Developer (Software) – pre- market / post-market

Details: Support of the product-ready algorithm and web application for a follow-up product (MAXFRAME II)

Tools: AWS, IIS, Windows Server 2019, Polarion 2021, svn, Visual 2017, C++ (managed und unmanaged code), C#, ASP.Net, Unity, JavaScript, CSS, jQuery, KendoUI, ReSharper, TeamCity (CI/CD), Veracode Cyber Security Scan

Duration: 2019 – 2022

## AESKU.SYSTEMS – Test Laborautomat, Wendelsheim

Position: Embedded Software Developer

Details: Support of a test application for testing a laboratory automation device to analyze human fluids.

Tools: Linux, Qt, C++, GitLab, Visual Studio Code, CAN-bus

Duration: 3 months in 2023

Team size: 4 Embedded Software Developers

## SME Informatik GmbH – Test Windows Gerätetreiber, Weingarten / Baden

Position: Software Developer

Details: Extension of a test environment for testing a Windows device driver for Coprocessor PCI cards.

Tools: Windows 10 und 11, Jira, Confluence, Visual Studio Code, C++, HLK,   
PCI-Karte

Duration: 3 months in 2023

Team size: 2 Software Developers

# Training Projects

**Lectureship for the Multimedia-Akademie Mainz e. V.:**

**Professional training class networking**

Details: Basics of networking for web developers

Customer: Multimedia-Akademie Mainz e. V.

Duration: 4 days in 2003

Participants: 14

**Training of a software development team in English language:**

**SNiFF+ - user’s and administrator’s training**

Details: Interdisciplinary software development in the team

Customer: Wind River Germany, Ismaning, for the customer Siemens, Birmingham

Duration: 3 days in 2005

Participants: 12 embedded software developers

**Training of a software development team:  
SNiFF+ - user’s and administrator’s training**

Details: New paradigms of the software development in the team

Customer: Sirona Dental Systems, Bensheim

Duration: 2 days in 2005

Participants: 10 developers of embedded software

**Training of a group of developers of hardware relates software in English language:   
Tips and Pitfalls in the Software-Development of 16-bit MCUs**

Details: Renesas M16C29, R8C1B

Customer: Neueda, Bristol, UK, for the customer Kostal, Ireland

Duration: 2.5 days in 2007

Participants: 8 developers of embedded hardware and software

**Training of developers of hardware related software:**

**Introduction into UML Embedded**

Details: UML Tools for deeply embedded device software

Customer: ml-consulting, Cologne, for a manufacturer of building automation equipment

Duration: 1 day in 2008

Participants: 12 hardware and 12 software developers of deeply embedded devices

**Training of developers of hardware related software:   
Introduction into Real Time Operating Systems**

Details: Software for deeply embedded devices, FreeRTOS, PIC, ARM, IA32, PowerPC

Customer: ml-consulting, Cologne, for a manufacturer of building automation equipment

Duration: 1 day in 2008

Participants: 12 hardware and 12 software developers of deeply embedded devices

**Training and consulting of a complete development department for hardware related software:   
C-Programming of micro controllers – Basic and advanced classes**

Details: PIC, ARM, IA32, PowerPC, department size 36 persons

Customer: ml-consulting, Cologne, for a manufacturer of building automation equipment

Duration: 5 times 2 days in 2008 + 5 days consulting

Participants: 12 hardware and 12 software developers of deeply embedded devices

**Training of the version control system CVS for members of different teams:**

**User’s and administrator’s training**

Details: Development process, version control system, team work

Customer: Moog, Böblingen

Duration: 2 days in 2008

Participants: 10 software developers und testers of embedded devices

**Lectureship of the University of Applied Science Mannheim, for the Summer School 2008   
Introduction into Real Time Operating Systems.**

Details: PowerPoint slides, interactive exercises, source code examples FreeRTOS

Customer: University of Applied Science Mannheim

Duration: 2 days in 2008

Participants: 12 students

**Lectureship of the University of Applied Science Mannheim, for the Summer School 2009   
Introduction into Real Time Operating Systems and Leadership.**

Details: PowerPoint slides, interactive exercises, source code examples FreeRTOS

Customer: University of Applied Science Mannheim

Duration: 2 days in 2009

Participants: 12 students

**Lectureship of the University of Applied Science Mannheim, for the Summer School 2010   
Introduction into Non-Violent Communication and Leadership.**

Details: Multimedia material, interactive team games

Customer: University of Applied Science Mannheim

Duration: 2 days in 2010

Participants: 12 students

**Lectureship of the University of Applied Science, Mannheim, for the Summer School 2010   
Introduction into Real Time Operating Systems and Leadership.**

Details: PowerPoint slides, interactive exercises, source code examples FreeRTOS

Customer: University of Applied Science Mannheim

Duration: 2 days in 2010

Participants: 12 students

**Teacher for the University of Applied Science Bingen  
Industrial Automation class for Bachelor of Electrical Engineering**

Details: Lecture and exercises

Customer: University of Applied Science Bingen

Duration: one semester (6 hours per week) in 2012, 2013 and 2014

Participants: 33 students

**Teacher for the University of Applied Science Bingen  
Microprocessor Technology class for Bachelor of Electrical Engineering**

Details: Lecture and exercises

Customer: University of Applied Science Bingen

Duration: one semester (6 hours per week) in 2012 and 2013

Participants: 33 students

**Teacher for the University of Applied Science Bingen  
Real Time Operating Systems class for Bachelor of Computer Science**

Details: Lecture and exercises

Customer: University of Applied Science Bingen

Duration: one semester (4 hours per week) in 2014

Participants: 12 students

**Beginner’s workshop Qt for embedded devices in English language**

Details: Lecture and exercises

Customer: Automation company in Switzerland

Duration: four days in 2014

Participants: 3 students (one from Thailand and two from China)

# Short Term Development Projects

**Development of a Bus Trap Error Handler for OS-9000/68040**

Details: PowerPC, Interrupt Vector Table

Customer: OS-9 user, Hungary

Duration: 2 days in 2003

**Introduction into the knowledge management tool ‘TWiki’ for a software development project with 20 team members**

Details: Wiki basics, open document management, team work

Customer: Sirona Dental Systems, Bensheim

Duration: 3 months in 2003 – 2 hours per week

**Integration of the Diab Compiler V5.0 into pRISM+ 2.0 PowerPC**

Details: Extension of a deprecated development environment

Customer: Wind River Germany, Ismaning, for a customer in Norway

Duration: 10 days in 2004

**Development of a subversion adaptor for SNiFF+ 4.2**

Details: Extension of a deprecated development environment by an adaptor for the version control system svn

Customer: Kieback & Peter, Berlin

Duration: 80 hours in 2008

**Extension and maintenance of a PC application for the 3D handling of a cube and a tetrahedron**

Details: Extension and maintenance of a Windows application (GUI, GPL licensed, openGL, Qt 4.6) for 3D programming of a LED cube and of a LED-tetrahedron including the construction of the tetrahedron and layout. The application has been ported to Linux.

Customer: BaSystem Martin Raabe, Bechenheim

Duration: 250 hours in 2010

# Complex Consulting

**Support of the development of drivers of PCI devices (PowerPC) for pSOSystem and VxWorks.**

Details: Debugging, concept, architecture and design of device drivers

Customer: Bruker Daltronik, Bremen

Duration: 3 days in 2003

**Introduction into the knowledge management system ‘TWiki’ for a small software development company.**

Details: Project documentation, collaboration of the members of distributed teams

Customer: uib GmbH, Mainz

Duration: 10 days in 2004

**Introduction into the version control system CVS for a small software development company.**

Details: Team work, project planning, project controlling, version control

Customer: uib GmbH, Mainz

Duration: 10 days in 2004

**Support for the introduction of a new real time operating system for a mobile medical device.**

Details: Migration from pSOSystem to VxWorks

Customer: Dräger Medical, Lübeck

Duration: 3 days in 2005

**‘Fire Fighting’ for pSOSystem 2.3 PowerPC, network interface card driver, reboot:   
Analysis and solving of the problem.**

Details: Error investigation without source code, 4 error situations per year,   
highest problem-solving pressure, exclusively executed via phone and email

Customer: Siemens, Bern, CH

Duration: 8 days in 2005 (across 8 months – total 50 hours)

**Support of the migration of a real time operating system of a mobile medical device.**

Details: Migration of boot time, configuration and device drivers from pSOSystem x86 2.1 to 2.5, exclusively executed via phone and email

Customer: Versamed, Israel (GE Healthcare)

Duration: 400 hours in 2002-2006

**Adaptation of the software development environment SNiFF+ for a team of   
20 members. Migration to Eclipse/SVN/CVS.**

Details: Use of development tools in distributed teams

Customer: Robert Bosch, Salzgitter

Duration: 4 days in 2008

**‘Fire Fighting’ for pSOSystem 2.3 PowerPC, network pNA+ memory leak problem: Analysis and solving of the problem.**

Details: Error investigation without source code, highest problem-solving pressure

Customer: Wind River Deutschland, Ismaning, for automotive customer, Stuttgart

Duration: 5 days in 2008

**Support (Software development) for and extension of the development processes of a supplier of devices for the radio broadcasting infrastructure.**

Details: Teamwork, project planning, project controlling, revision control

Customer: Qbit GmbH, Bruchsal

Duration: 20 days (by phone and on site) in 2014 – 2016

**Support for Software Architecture Review of a new Device Product Line (Medical Device).**

Details: Workshop with 12 Software developers and managers

Customer: Sirona Dental Systems GmbH, Bensheim

Duration: 2 days in 2016

**Support (Selection of a service provider for a Linux distribution) for a supplier of devices for the radio broadcasting infrastructure.**

Details: Teamwork, project planning, project controlling, revision control

Customer: Qbit GmbH, Bruchsal

Duration: 2 days (by phone and on site) in 2017

**Extension of the software review processes of a supplier of devices for the radio broadcasting infrastructure.**

Details: Teamwork, project planning, project controlling, revision control

Customer: Qbit GmbH, Bruchsal

Duration: 3 days (by phone and on site) in 2017

**Support for a test application for a laboratory automation device for the analysis of human fluids.**

Details: Teamwork, software development, revision control

Customer: AESKU.SYSTEMS, Wendelsheim

Duration: 6 weeks in 2023