

Project Portfolio and References

Projects done as Independant Software Consultant

28/05/2023: Slint Workshop at Oxidize Conference

Full-day workshop using Slint on ESP32.

Use case: Implementing a user interface for a DHT-22 sensor on ESP32 IDF platform.

Topics: Slint, Microcontroller programming, Rust, Embedded Systems, User Interfaces

01/2024 – present: Liebherr

I continue to support Liebherr with their LiXplore with LiXplore, a touch HMI with camera monitors for their construction machines.

10/2023 – present: Focke & Co.

Continue to support Focke with technical advice and implementation of new features. I also supported them by implementing customized Qt control elements.

Projects done for Qt Group

03/2023 – 09/2023: Heinzinger Automotive

Heinzinger Automotive is a hardware company that produces devices to test and verify electrical motors. The main task was to port the existing legacy HMI written in Codesys to C++/Qt6/QML on Windows 10 IoT.

- Conducted a 3-day on site workshop in which I set up the repository and defined the application architecture
- Ported the legacy HMI based on Codesys to QML within 300h
- Helped with integration of CAN Bus communication with DSP
- Provided technical advice to customers about technical risks and potential future obstacles

11/2022 – 01/2023: Inelteh

Inelteh produces lighting control equipment for vessels. I supported them for 80h to eliminate performance bottlenecks and gave technical advice.

- Replaced Canvas-drawn Quick Items with custom QQuickImageProvider which solved most performance issues
- Fixed a broken drag and drop Implementation for light positioning
- Technical advice on various topics, e.g. remote control via websockets, integration of Qt Serial Bus

10/2022 – 12/2022: Wacker & Neuson

Wacker & Neuson produces construction machines. I helped them for 120h to fix various issues for their touch HMI for a telescopic handler.

- Implemented a control displaying tool position of the telescopic handler
- General code review and advice on best practices in software engineering

02/2022 – 07/2023: Focke & Co.

Focke & Co. is a mechanical engineering company and market-leader in designing and producing packaging machines. They are developing a Windows desktop application that acts both as engineering tool and also as digital twin for their packaging machines.

- Supported the customer for over 300h with general advice on usage of Qt and consulting about the application's general architecture
- Implemented a SolidEdge-like behaving camera controller
- Developed a QGraphicsScene integration for Qt3D
- Conducted a 3-day on-site workshop in Verden, Germany
- Integrated a MQTT client for machine-to-machine communication

09/2021 – 09/2022: Liebherr Electronics and Drives

Liebherr Electronics produces electronic equipment for construction machines. Together with another developer and two UX designers, we implemented two touch application to be used for operators of construction machines.

- Implemented two applications on Yocto Linux for camera monitoring based on Design Studio
- Camera output integration via Qt Multimedia and GStreamer
- Integration of a 3rd party rendering engine
- Conducted a 5 Day onsite-Workshop for project finalization in Lindau, Germany

05/2021 – 06/2023: MedSteer

MedSteer develops EasyTIVA, a medical device for closed loop anesthesia.

- Bug fixing of multi-threading issues between UI and backend
- Implemented parts of the user interface with Qt Widgets
- Gave technical advice on git version control and usage of modern C++
- Set up Google Test Framework and wrote unit tests

03/2020 – 12/2020: Hyundai

Hyundai used Qt and Qt Design Studio to build a prototype for an IVI and wanted to generate UI specifications as PDF from the QML code.

- Implemented a plugin for Qt Design Studio that generates a PDF based on the QML input
- Output was produce has HTML that was rendered via LiteHTML and eventually transformed into a PDF

04/2019 – 11/2020: RedBag

RedBag develops software for petro-chemical industry.

- Performed a code review to investigate technical feasibility to compile the existing software to WebAssembly
- Refactored parts of the software to simplify port to WebAssembly
- Conducted a workshop about WebAssembly and Qt Meta Object system

02/2019 – 04/2019: Kromberg & Schubert

Kromberg & Schubert produces wiring for electrical components for the automotive industry.

- Ported a Qt4 Widget application to Qt5 on a Solaris 11 Workstation
- Fixed issues in the XCB platform plugin on Solaris

01/2019 – 04/2021: Schmidt Technology

Schmidt Technology produces mechanical presses that have a touch screen HMI based on Yocto Linux and Windows platforms.

- Conducted a 5-day on-site workshop and Qt Beginner training
- Implementation of a custom chart based on QtQuick scene graph and OpenGL to display measurements
- Conducted a 3-day on-site workshop to fix various bugs
- Implemented a drag and drop mechanism for configuration of the press

04/2018 – 07/2018: Raytheon Anschütz

Raytheon Anschütz develops navigation and maritime systems.

- Conducted a 2-day-Workshop with consulting on transition from QtQuickControls 1 (Qt 4.8) to QtQuickControls 2 (Qt5)
- Implemented custom controls in OpenGL via QtQuick scene graph

10/2017 – 12/2017: Hyundai Mobis

Hyundai Mobis develops IVIs for passenger cars using Qt and Yocto Linux. They had several performance and memory issues that had to be solved.

- 6 day on-site visit in Seoul, Korea to investigate the issue
- Detected a memory leak in the WindRiver subsystem
- Spotted a bug and found a workaround for CJK font rendering
- Investigated technical feasibility of texture compression

09/2016 – 09/2017: Bosch Manufacturing Solutions GmbH

Bosch Manufacturing Solutions operates factories to produce Diesel injectors. In the project *DruckmessWT*, a hardware device was developed that assures that produced Diesel injectors are always calibrated.

- Implemented a QML interface with a zoomable chart view
- Implemented logic to process measurement values
- Implementation serial bus communication with microcontroller
- Testing and bug fixing for Qt WebGL plugin

Workshops and Trainings done for Qt Group

10/12 – 12/12/2019: European Southern Observatory

3-day Qt Workshop in Garching, Germany.

Use case: User interface to control large-scale telescopes

Topics: Qt Essentials, Qt for Python, Qt Model/View Framework.

Prior to the workshop, I conducted a review on the GUI guideline documents.

12/02 – 14/02/2019: Sielaff

3-day QML workshop in Herrieden, Germany.

Use case: Linux-based touch panel for vending machines

Topics: Advice on transition from widgets to QML, Qt Model/View Framework, Qt Test Framework

28/01 – 01/02/2019: BoWa

5-day QML training and workshop in Gomaringen, Germany.

Use case: Touch-UI for surgery equipment

Topics: QML basics, Qt Model/View Framework, Interprocess communication, Qt Test Framework

10/1/2019: Bosch Automotive

One day technical workshop in Hildesheim, Germany.

Use case: Car IVI based on Yocto Linux

Topics: QML optimizations, Qt Wayland, Qt Design Studio introduction, Qt Platform Event Handling

10/12 – 14/12/2018: Paradigm

5-day Qt Widgets and QML beginner workshop, in Groot-Ammers, Netherlands.

Use case: QNX-Photon-based control panel for oil drilling equipment and Windows-based data analysis software

Topics: Qt Essentials, QML basics, QML/C++ bindings, Qt Model/View Framework, Qt Multimedia

27/11 – 29/11/2018: Gonicus

3-day Technical Workshop in Neheim, Germany.

Use case: Home automation device running WebAssembly and Linux

Topics: Qt WebAssembly, Qt Model/View Framework, various advanced QML topics

22/10 – 26/10/2018: Kavo Dental

5-day QML training and workshop in Biberach a.d.R., Germany.

Use case: Linux-based touch panel for dentist chairs

Topics: C++ introduction, Qt Essentials, Qt QML, Qt Quick Controls, Qt Model-View Framework, QML/C++ bindings, QThreads and Interprocess

09/10 – 11/10/2018: Rational

3-day Workshop for technical evaluation in Wittenheim, France.

Use case: Yocto-based large-scale canteen kitchen cookers.

Topics: Architecture review, consulting on best practices for using Qt and software development in general. Ahead of the workshop, I conducted an extensive code review.

04/09 – 06/09/2018: ASEM

3-day Qt QML Workshop in Arterga, Italy.

Use case: Yocto-based touchscreen panel used in industrial automation contexts, Windows-based editing software.

Topics: Qt QML performance and link-time optimizations, consulting on client's architecture.

02/07 – 06/07/2018: Voith

5-day Qt Widgets Beginner Training in St. Pölten, Austria.

Use case: Windows-based touchscreen operator panels for a tramway vehicle.

Topics: Qt Widgets, Qt Meta Object System, Qt Model-View Framework, Qt Widget Designer plugin development.

14/05 – 18/05/2018: DigSILENT

5-day Qt Widgets Training and Workshop in Gomaringen, Germany.

Use case: Windows desktop software *PowerFactory* for simulating electricity networks.

Topics: Qt Widgets, Qt Meta Object System, Serialization and QSettings, Qt Model-View Framework, consulting on transition from StarView GUI Framework to Qt

03/03 – 06/04/2018: Securitas

4-day Qt QML Beginner and Advanced training in Madrid, Spain.

Use case: Alarm system running on Linux/Android

Topics: Qt QML, OpenGL and rendering, Qt Multimedia and GStreamer, Qt Android

13/02 – 15/02/2018: Skysoft ATM

3-day Qt QML Beginner Training in Geneva, Switzerland.

Use case: Windows desktop software to read and display data for flight data recorder

Topics: Qt QML, JavaScript, Dynamic QML, Qt Model-View Framework

05/02 – 09/02/2018: ITK Engineering

5-day Qt QML Training in Rülzheim, Germany.

Use case: Device for cooling and monitoring medical samples running on Windows

Topics: Qt QML, Qt Model-View Framework, QML desktop integration

29/01 – 30/01/2018: Steinberg Media Technologies GmbH

1.5-day Workshop on technical feasibility of porting Cubase DAW to Qt.

Use case: Digital Audioworkstation for Windows and Mac

Topics: Qt Widgets, Qt Linguist, Rendering and Desktop Integration

23/01 – 24/01/2018: Ehrhardt & Partner Group

2-day Qt Creator plugin development workshop in Boppard, Germany.

Use case: HMI for warehouse logistics

Topics: Qt Creator plugin development, consulting on new Qt-based customer architecture

29/08 – 31/08/2017: MTA s.p.a.

3-day Workshop about advanced Qt and graphics-related topics in Codogno, Italy.

Use case: Dashboard for Lamborghini and other automotive brands.

Topics: Boot time optimization, QML rendering OpenGL integration, Wayland, Yocto.

24/07 – 28/07/2017: DMG Mori AG

4-day Qt Beginner Training for Qt Windows in Pfronten, Germany.

Use case: HMI for CNC milling machines (CELOS)

Topics: C++ basics, Qt Meta Object System, Qt Widgets, Multithreading with QThreads, Qt Model-View Framework

Other projects

Flowciety

I helped developing a web application using VueJS for Flowciety, a startup in Berlin that develops software for managing business processes.

GWP

I completed the development of a web application for GWP, a manufacturing company in Teltow. The application is used to calculate the costs of manufacturing parts and to generate offers for customers. The application is written in PHP and uses the Laravel framework: <https://www.getaquote.gwp-ag.de/>