CUTTING CORNERS IN THE LAB-TO-MARKET WITH AUTOMATED EMBEDDED SOFTWARE DEVELOPMENT

T PHOTONICS+ June 2021 Alexander Wirthmüller aw@mpsitechnologies.com





- MPSI Technologies is a start-up based in Munich, Germany
- Founded in 2016
- Goal: get embedded software projects done ...

... faster and with better code quality

• Founder's background: photonics



How it started ...



even more integration >





< more integration <

actuators

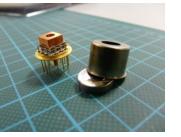
flashlight LED's

visible ligh cameras

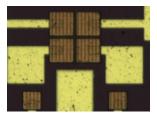
stereo vision)

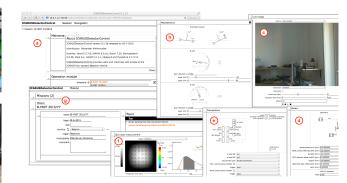
LWIR camera

QCD module with alignment laser (here: dummy)



< integration <





... useful detection application, at last.

Cutting some corners? Wishful thinking at the time!



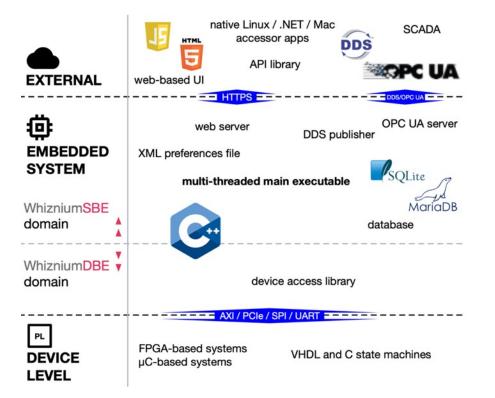
Why embedded software matters ... and why it may be hard

Embedded system in 1999

- Limited scope: data logging
- 16bit MCU @ 8MHz
- Trivial UART interface
- No operating system
- Programming in assembly and C

Embedded system in 2021

- Image processing & analysis
- RISC-V Quad CPU @ 667MHz and FPGA fabric
- Web / OPC UA interface over WiFi
- Embedded Linux OS
- Programming in C++ but also VHDL





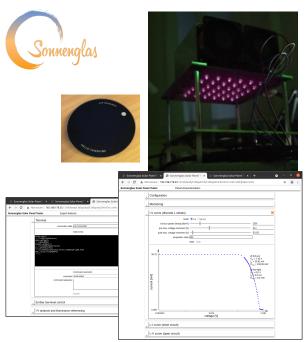
... and how it's going

Whiznium, a powerful **Open Source** software development tool for **model-based software development**

https://github.com/mpsitech

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Master	niumSBE Cheat Sheet The Service Builder's Edition Rich Embedded Linux Applications	1 0 1 1 0 1 1 0 1 MPSI
The Whierium Folder Structure nstallation scenarios for Whizmium as a developer tool are di levelopers to large corporate developer tearns, from workstate modedde target deployment - Whizmum offers full floodbillt requirement, as exemplified below.	Master The Devi	BE Cheat Sheet ce Builder's Edition k-/µC-Based Applications
	Code generation and host library builds take place within the Whiznium fol- ders. Device-level code is edited in the vendors' IDE's, as exemplified below.	the second where yes more that and the subflow defines and the subflow de
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	The WhiznkumDBE Master Database	

WhitriamDBE uses a comprehensive relational database structure into which model information is imported. Supported backnots include MarkaER, MpGG, an Postgor2Q, "Minimum ER algorithms manyer the inported data and derive additional required database retains. Once all information is completed persentance in the second sec Happy customers [with photonics applications]



Starter kit available – all major platforms running Embedded Linux; with or without FPGA





MICROCHIP



Ready to serve, ready to help you save time





How (and why) to engage

- We offer Embedded HW/SW and system integration services
- We help to maximize your customers' benefits with feature-rich embedded control software
- We work closely with your team to carry SW development forward

• We foster the adoption of Whiznium in the Embedded community





THANK YOU!

! VISIT OUR BOOTH !

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