George Waller - Senior Embedded Software & Systems Engineer

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Summary

Senior embedded systems engineer with 10+ years of experience in RTOS, baremetal and Linux based systems, C development, and electronics design. Proven track record across aerospace, medical, and industrial sectors. Focused on low-level Linux development, hardware enablement, system architecture, and embedded software for constrained environments.

Core Skills

- Embedded C (10+ years) - Linux user space, FreeRTOS, RTEMS, NASA cFS
- Python (9 years) - Automation, scripting, backend deployment
- Electronics Design - High speed DDR, PCBs, MCU communication and analogue circuit design
- Verilog/SystemVerilog - Fluent in digital design and implementation
- Toolchains & Testing - Make, CMake, GTest, Ceedling, CI/CD pipelines
- Communication Protocols - Bluetooth Low Energy (BLE), UART, I2C, SPI, USB, CAN, Ethernet, RS-485, Modbus RTU, SpaceWire (SpW), MIPI CSI-2, GSM
- Architecture & Concepts - Publish/subscribe messaging, state machines, interrupt- and DMA-driven design, bootloaders and OTA update, power-fail-safe storage
- Open Source - cpubsub, a lightweight cFS-inspired pub/sub messaging library in C
- QA & Certification - MISRA, ISO 13485, ISO 9001, safety-critical systems

Professional Experience

Osprey Measurement Systems Ltd - Senior Embedded Systems Engineer (Freelance)
Jan 2026 - Present

- Sole firmware engineer on a unified baremetal STM32L4 platform powering Osprey's geotechnical sensor range (tilt strings, settlement profilers, piezometers) - 8 build targets from one codebase
- Designed a dual-slot bootloader with firmware-over-RS485 field updates and power-fail-safe, triple-redundant settings storage
- Implemented multi-protocol RS-485 comms (Modbus RTU, ASCII, legacy logger emulation) for daisy-chained strings of up to 200 sensor nodes
- Built Python register/command code generation and hardware-in-the-loop CI: pytest suites flashing real hardware via remote J-Link on self-hosted runners, MISRA C static analysis

Soke Engineering - Founder & Engineer
Oct 2025 - Present

- Designing and building Knokke, a commercial 35 mm film scanner (4,064 DPI, 48-bit colour, a full roll in under 3 minutes) as sole engineer - custom 6-element lens, mechanics, electronics, firmware, and software
- Dual-MCU firmware in C: Cypress CX3 (ThreadX) streaming MIPI CSI-2 image data over USB3, STM32 handling motion control, illumination, and sensing, with whole-product field firmware update over a single USB cable
- Five custom PCBs up to 6 layers (image sensor, power, closed-loop LED backlight) plus a Python toolchain generating Gerbers, BOMs, and pick-and-place from the CAD source
- Host application in Rust: from-scratch USB3 driver, streaming tiled BigTIFF writer with live GPU-rendered preview, ACES-based non-destructive colour pipeline

- ML dust and scratch removal: U-Net segmentation trained on synthetic data, shipped in-product via ONNX Runtime

Reflex Aerospace - Senior Embedded Systems Engineer
Feb 2024 - Oct 2025

- Developed flight-ready Linux software for Zynq SoC deployed on defense satellites
- Implemented telemetry pipelining and global timekeeping with NASA cFS
- Designed integration tests, automation systems, and release pipelines
- Focus: Power control, SpaceWire (SpW) communications, custom Linux tooling, embedded systems for aerospace

Aergo Health Ltd - Engineering Freelancer
2021 - Feb 2024

- Overhauled a BLE-based medical product from unstable prototype to production-ready device
- Consolidated MCU architecture, improved safety systems, achieved EMC certification
- ESP32 + FreeRTOS, C, esp-idf, Python automation for production testing

Truphone - Backend Engineer (Contract)
Jan 2023 - Aug 2023

- Backend performance optimization: 4× throughput improvement on Python/Django stack
- Technologies: Python, Django, MySQL, Celery, RabbitMQ, Docker

Osprey Measurement Systems Ltd - Systems Architect
2018 - 2021

- Designed and deployed IoT sensors for London Underground/National Rail safety systems
- Delivered ultra-low-noise, low-drift, long-battery-life devices
- Full lifecycle responsibility: concept to production
- Extensive use of C, Python, embedded Linux tools

Education

- BEng Electrical and Electronic Engineering, UCL, 2017

References

- Available on request

Notes

- UK citizenship and the right to work in the UK and Portugal
- Native English speaker, currently based in Peterborough, UK