

Embedded systems & firmware

Firmware engineering across bare-metal and real-time systems. We connect hardware, drivers, application logic, and update paths into software your team can test, maintain, and own.

WHAT WE CAN DO

- 01

Board bring-up & drivers

Clocking, memory, peripheral initialization, and device interfaces, with diagnostics that make hardware integration easier to verify.
- 02

Real-time architecture

Task design, interrupts, synchronization, and resource budgets for predictable behavior on constrained targets.
- 03

Boot & update systems

Bootloaders, image verification, rollback strategies, and OTA delivery adapted to your hardware and connectivity.
- 04

Embedded integration

Application state machines, HAL and middleware integration, test hooks, and reproducible build environments.

TECHNOLOGIES & WORKING AREAS

C / C++ / Rust / FreeRTOS / Zephyr / STM32 / ESP32 / I2C / SPI / UART / Bootloaders / OTA

A CLEAR PATH TO HANDOVER.

WHAT YOU RECEIVE

- Firmware source and reproducible build instructions
- Driver and interface documentation
- Agreed unit and on-target verification results
- Boot and update integration where scoped
- Technical handover and known-limitations register

HOW THE WORK PROGRESSES

- 01 **Review the target**
Hardware, existing code, and timing requirements.
- 02 **Define the architecture**
Interfaces, resource budgets, and acceptance tests.
- 03 **Build on hardware**
Bring-up, driver integration, and regular demos.
- 04 **Verify & hand over**
Test evidence, builds, and documentation.

RELEVANT ENGINEERING

Rivet RTOS

A zero-allocation Rust RTOS spanning Cortex-M, RISC-V, and Xtensa targets.

ESP32-C3 Secure Bootloader

Rust second-stage boot firmware with integrity checks and OTA rollback.

TO SCOPE YOUR PROJECT

- / MCU or SoC and board documentation
- / Existing firmware and build tools
- / Timing, memory, and power constraints
- / Required interfaces and release goals

LET'S DISCUSS YOUR PROJECT

hello@embedly.dev

