1 common development challenges

Embedded systems are complex, with software development and debugging often the most critical steps in system development. Wi-Fi adds to the complexity. To help you, here are a few best practices to overcome common development challenges and deliver projects on time.
2. Example use cases

- Health and medical device connectivity
- Industrial IoT
- Video conferencing systems
- Home automation, smart thermostats & meters
- Wi-Fi in automotive: infotainment, EV wireless charging, diagnostics equipment
- Radio communication devices
- Farming: monitor animal health via Wi-Fi mesh
- Gas stations: monitor fuel pumps via Wi-Fi mesh
Balance tradeoffs between high-reaching specs and proven technology. Good engineering practice requires that you identify the real requirements.
4 understand that PCs and embedded ecosystems have different firmware and software requirements.

Consider using a real-time operating system (RTOS).

Consider code already verified on embedded platforms.

Cater for the need for embedded devices to be robust. Use an automated test architecture for a rock solid product.
5 make smart build-it or buy-it decisions

Time to completion and level of internal expertise may dictate the best choice.

Does building your own fit your project timeline? Or should you focus your efforts on application logic and end user requirements?

The silicon vendor’s driver and open source drivers for Linux may not meet the requirements of the RTOS and limited resource architectures.

Look for ways to acquire the expertise of Wi-Fi specialists. Experts may not only speed up the initial development but assist to resolve bugs and remedy vulnerabilities.
Use debug tools and logs provided by ClariFi essential.

Tip: Wi-Fi debugging requires experience and good tools. If you don't yet have the experience, consider working with experts in the field.

Build a proof of concept (POC), test early, test hard, fail, fix, and repeat.
7. manage the co-existence of Wi-Fi

Control from a single point in the same framework, the same application and the same API structure.

with

Bluetooth and/or Bluetooth Low Energy

Manage bandwidth actively.
Monitor the dynamic behavior of the target platform to gain high visibility of system performance without interference.

Find the optimal speed versus resource consumption for your project.
future-proof your software development life cycle

Use an abstraction layer over your RTOS, hardware interface and debugging architecture.

Use the same APIs, stacks, and applications to promote reusability when changing the target platform.¹

Plan how to follow the ever-evolving Wi-Fi standards: Wi-Fi-4, Wi-Fi-5, Wi-Fi-6, and/or Wi-Fi-6e.

¹ Combination of MCU/MPU, RTOS, and wireless chipset.
deliver innovative, trusted wireless connectivity and get to market faster with Clarinox solutions.
Clarinox Technologies Pty Ltd provides cost-effective and innovative Bluetooth and Wi-Fi solutions for embedded systems. We passionately deliver flexible and robust wireless protocol software for embedded systems developers.

Contact Clarinox today to discuss your next Wi-Fi integration project.

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