



Engineering Linux that Powers Intelligent Devices

**Embedded Linux Development Solutions**

# Custom Linux Systems Tailored for Performance

From smart factories to next-gen vehicles, modern devices demand custom, secure, and scalable embedded operating systems. At Powersoft19, we specialize in building Embedded Linux platforms optimized for specific hardware, performance targets, and real-time needs. Whether you're building a single-board prototype or deploying across thousands of units, our engineers deliver stable, lightweight, and production-grade embedded Linux solutions.

## Challenges Businesses Face

Today, many organizations struggle with:

- Overhead costs from generic or bloated Linux builds
- Security vulnerabilities due to poor configuration or patching
- Long build times and fragmented toolchains
- Complex BSP and device tree management
- Lack of in-house kernel or driver development expertise

## Our Approach

We work from the hardware upward—developing custom board support packages (BSPs), tuning the kernel for real-time behavior, and managing package selection for footprint and performance. Our team enables faster bring-up, robust middleware integration, and long-term support readiness with OTA update capabilities, diagnostics, and security controls baked in. We also leverage Yocto, Buildroot, and OpenEmbedded for scalable builds and automation.

## Full-Cycle Embedded Linux Development Services

 Linux Kernel & BSP Development	 OS Build Systems & Integration	 Security, Connectivity & Maintenance	 Testing, Debugging & Lifecycle Support
<ul style="list-style-type: none"><li>■ Custom BSPs for ARM, RISC-V, x86, and more</li><li>■ Device tree configuration and peripheral bring-up</li><li>■ Kernel configuration, real-time patching, and driver porting</li><li>■ Bootloader (U-Boot, Barebox) customization and optimization</li></ul>	<ul style="list-style-type: none"><li>■ Yocto Project setup and layer management</li><li>■ Buildroot-based minimal builds</li><li>■ Integration of systemd, busybox, and other init systems</li><li>■ Root filesystem design and package optimization</li></ul>	<ul style="list-style-type: none"><li>■ Secure boot and Trusted Execution Environment (TEE) setup</li><li>■ Firewall, SELinux/AppArmor configuration, vulnerability patching</li><li>■ OTA update frameworks (RAUC, Mender, SWUpdate)</li><li>■ Connectivity stacks (MQTT, BLE, Wi-Fi, Ethernet, Modbus, CAN)</li></ul>	<ul style="list-style-type: none"><li>■ Hardware-in-the-loop testing and remote debugging</li><li>■ Kernel crash dump analysis and performance profiling</li><li>■ Board validation automation with CI integration</li><li>■ Long-term support planning and maintenance scripts</li></ul>

# Tools and Tech Stack

Category	Tools and Technologies
Build Systems	Yocto, Buildroot, OpenEmbedded, BitBake
Kernel and Bootloaders	Linux Kernel, U-Boot, Barebox, initramfs, BusyBox, systemd
Languages and Scripting	C, C++, Python, Shell, Make, Bash
Toolchains and Debuggers	GCC (cross), Clang, GDB, JTAG/SWD, OpenOCD, Valgrind, strace, perf
Security and Updates	SELinux, AppArmor, IMA/EVM, RAUC, Mender, SWUpdate, dm-verity
Connectivity	MQTT, CoAP, Bluetooth, Modbus, CANopen, Ethernet, Wi-Fi
Testing and Profiling	QEMU, LTP, Autotest, kexec/kdump, oprofile, LTTng, Ftrace
CI/CD and DevOps	Git, GitLab CI, Jenkins, Docker, Bitbucket Pipelines


*Powersoft19 supports vendor-specific SDKs and adapts to your custom board and toolchain needs.*


## Why Powersoft19?


- Proven experience in real-time, safety-critical, and headless systems
- Expertise across ARM, RISC-V, x86 embedded platforms
- Strong understanding of low-level debugging, bootloaders, and hardware interfaces
- Optimized builds with rapid bring-up and minimal resource footprint
- Support for both open-source and enterprise-grade distributions
- Scalable across one-off boards to fleet-wide deployments


## Speed, Control, and Confidence in Every Deployment


### Benefits for You


 Faster time-to-market with expert Linux bring-up

 Flexible frameworks for OTA updates and connectivity

 Lean, reliable systems purpose-built for your device

 Customization without losing stability

 Lower security risks and easier long-term maintenance

 A partner who understands both the silicon and the system

## Your Devices Deserve a Smarter OS, Let's Build It Together

Partner with Powersoft19 for secure, optimized, and production-ready Embedded Linux development tailored to your hardware and mission. Visit our website or talk to our embedded Linux engineers today.



## Contact Us



Drop us a line and let us know what we can do for you. There is no limit to what can be made possible with our passionate team.

Here are some examples:



- Come up with ideas to solve challenging issues faced by your business.
- Execute complex project/product ideas.
- Take the burden of managing legacy products off your shoulders.
- Provide a skilled project team to augment your in-house resources.
- Provide consultancy regarding industry standards and market trends.
- Design a customized partnership model with *Powersoft19* that empowers you to beat the competition.



### USA/International:

 [www.powersoft19.com](http://www.powersoft19.com)  
 [info@powersoft19.com](mailto:info@powersoft19.com)

### Europe:

 [www.powersoft19.eu](http://www.powersoft19.eu)  
 [info@powersoft19.eu](mailto:info@powersoft19.eu)