powersoft



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

- Custom BSPs for ARM, RISC-V, x86, and more
- Device tree configuration and peripheral bring-up
- Kernel configuration, real-time patching, and driver porting
- Bootloader (U-Boot, Barebox) customization and optimization



OS Build Systems & Integration

- Yocto Project setup and layer management
- Buildroot-based minimal builds
- Integration of systemd, busybox, and other init systems
- Root filesystem design and package optimization



Security, Connectivity & Maintenance

- Secure boot and Trusted Execution Environment (TEE) setup
- Firewall, SELinux/AppArmor configuration, vulnerability patching
- OTA update frameworks (RAUC, Mender, SWUpdate)
- Connectivity stacks (MQTT, BLE, Wi-Fi, Ethernet, Modbus, CAN)



Testing, Debugging & Lifecycle Support

- Hardware-in-the-loop testing and remote debugging
 - Kernel crash dump analysis and performance profiling
 - Board validation automation with Cl integration
- Long-term support planning and maintenance scripts

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

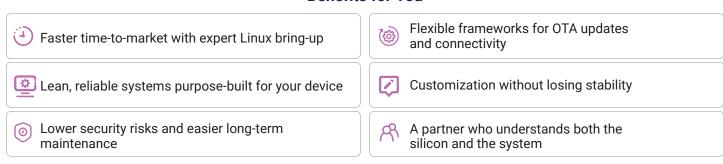
Powersoft19 supports vendor-specific SDKs and adapts to your custom board and toolchain needs.

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



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.



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