



Enabling Web-Based User Experiences for Embedded Linux Systems



Wind River and Igalia WPE WebKit Joint Solution

Wind River, a leading provider of embedded Linux solutions, and Igalia, a specialized open source consultancy with deep expertise in Web engines and system software, are collaborating to enable a production-ready Web Platform runtime for embedded devices.

This joint solution combines Wind River® Linux, a commercially supported Yocto-based platform, with WPE WebKit, an open source Web engine port created and maintained by Igalia for embedded environments.

Together, Wind River and Igalia provide embedded developers and product teams with:

- A production-grade embedded Linux platform integrated with WPE WebKit
- A standards-based Web runtime designed for constrained and headless devices
- Direct access to upstream maintainers of WebKit and the WPE stack
- A fully open source solution, minimizing dependency on proprietary frameworks

Modern embedded devices, such as smart TVs, set-top boxes, industrial human-machine interfaces, and automotive systems, are adopting Web-based runtimes to enable:

- Rich, interactive user experiences
- Frequent updates and iterative feature delivery
- Cross-device application portability

A Web engine effectively provides a full application runtime, including rendering, scripting, networking, and multimedia support, making it a compelling alternative to proprietary UI stacks.



ECOSYSTEM COMPONENT

Web engine integration and open source engineering for embedded systems

Solutions

- WPE WebKit development, maintenance, and upstream integration
- meta-webkit Yocto layer for building and validating WebKit in embedded Linux environments
- Open source consulting across Web engines, graphics, multimedia, the Linux kernel and system integration

Value

- Direct access to upstream maintainers of WPE WebKit and contributors to major Web engines
- Reduced integration risk through a validated Yocto layer aligned with upstream WebKit CI
- Accelerated time-to-market with proven Web Platform technologies for embedded devices
- Long-term flexibility with a fully open source, standards-based solution
- Deep expertise across the full software stack, from Web runtimes to the Linux kernel and system integration

WIND RIVER AND Igalia: BETTER TOGETHER

Wind River and Igalia bring highly complementary capabilities across the embedded stack.

Wind River

Wind River is a global provider of software for the intelligent edge, with over four decades of experience delivering secure and reliable platforms for embedded and mission-critical systems across industries, including automotive, aerospace, industrial, and telecommunications.

Key differentiators:

- Wind River Linux, a commercially supported, Yocto-based platform for building and maintaining embedded systems
- A long-term lifecycle support model, with 10-plus years of maintenance, continuous CVE monitoring, and proactive security mitigation
- An extensive ecosystem of pre-validated board support packages across Arm®, x86, and other architectures
- Integrated toolchain, development environment, and lifecycle services to support development, deployment, and operations
- Active leadership and contribution within the Yocto Project ecosystem, including upstream collaboration and sustained investment

Wind River complements its platform with a comprehensive services portfolio, including design consulting, engineering, security hardening, and long-term operational support, enabling customers to build, certify, and sustain production systems with reduced risk and complexity.

Igalia

Igalia is an open source engineering company with 25 years of experience building and maintaining Linux-based systems and contributing to upstream projects.

Key differentiators:

- Over 15 years of experience with Web engines, including WebKit, Chromium/Blink, Gecko, and Servo
- The creator and maintainer of WPE WebKit, originally introduced in 2014
- A long-standing maintainer of WebKitGTK and an active contributor to upstream WebKit
- Expertise beyond browsers, including graphics, multimedia, compilers, the Linux kernel, and system integration

Igalia also maintains critical integration infrastructure around WPE WebKit, including the meta-webkit Yocto layer, and actively contributes to upstream WebKit continuous integration (CI) and release processes.

COMBINED VALUE

Wind River delivers a stable, commercially supported platform for productization, while Igalia provides deep upstream ownership and runtime expertise. This combination reduces integration risk and ensures long-term alignment with the evolution of upstream open source technologies.

WPE WEBKIT ON WIND RIVER LINUX

WPE WebKit is a WebKit port specifically designed for embedded Linux systems, with a focus on performance, modularity, and minimal system requirements.

Key characteristics:

- Full implementation of modern Web standards
- Multiprocess architecture for security and stability
- Designed for headless and composited environments
- Flexible back ends, including Wayland and DRM
- Optimized for hardware acceleration and embedded graphics pipelines

Unlike desktop browser stacks, WPE WebKit is designed for integration into device-specific environments, without imposing a UI framework.

YOCTO INTEGRATION VIA META-WEBKIT

A key component of this joint solution is the meta-webkit layer, maintained by Igalia since 2017.

This layer provides:

- Recipes for building WPE WebKit and its dependencies
- Support for multiple Yocto releases, including LTS and current versions
- Additional components required by WebKit that aren't available in standard layers

Igalia maintains a strict update policy:

- Active support for the latest Yocto Long Term Support (LTS) releases
- Support for the latest development release
- Backporting of critical fixes, including security updates, to previous LTS versions

The meta-webkit layer tracks WPE WebKit versions across Yocto branches, ensuring compatibility while maintaining the most up-to-date runtime feasible per release.

CONTINUOUS INTEGRATION AND VALIDATION

The meta-webkit layer is not just a build artifact. It is used to generate SDK images that power upstream WebKit CI infrastructure. This ensures that:

- WPE WebKit builds are continuously validated on real hardware targets
- Regression testing is executed on each upstream commit
- Issues are identified early and fixed upstream

This level of integration with upstream CI significantly reduces downstream risk for product teams. The solution is primarily optimized for Arm-based embedded platforms, including both 32- and 64-bit architectures, with reference validation typically performed on widely used hardware such as Raspberry Pi 3, 4, and 5.

VALUE TO CUSTOMERS

Reduced Time-to-Market



- Pre-integrated Web runtime on a production-ready Linux platform
- Reuse of Web technologies and developer skills

Lower Integration Risk



- A maintained Yocto layer with validated build configurations
- Continuous upstream testing through WebKit CI infrastructure

Long-Term Maintainability



- Strong alignment with upstream WebKit
- Regular updates, including security fixes, across Yocto releases

Access to Upstream Expertise



- Direct collaboration with maintainers of WPE WebKit and meta-webkit
- Faster issue resolution and optimized performance tuning

Open and Flexible Architecture



- Avoidance of proprietary UI frameworks
- Full control over system integration and customization

More Information

- Detailed technical information about Wind River Linux can be found at www.windriver.com/products/embedded/linux
- Additional information about Igalia, including its open source expertise and services, can be found at www.igalia.com
- Detailed information about WPE WebKit, including features, supported platforms, and releases, can be found at wpewebkit.org
- Information about the meta-webkit Yocto layer, including source code and integration details, is available at github.com/igalia/meta-webkit

SUMMARY

The collaboration between Wind River and Igalia enables a robust and scalable approach to bringing Web technologies into embedded systems. By combining Wind River Linux with platform stability and lifecycle support, Igalia's leadership in WebKit and long-term stewardship of WPE, and a well-maintained Yocto integration layer with upstream validation, this joint solution provides a strong foundation for building modern, Web-based embedded applications. It allows product teams to accelerate development, reduce integration complexity, and maintain long-term control over their software stacks using open source technologies.

WINDRIVER