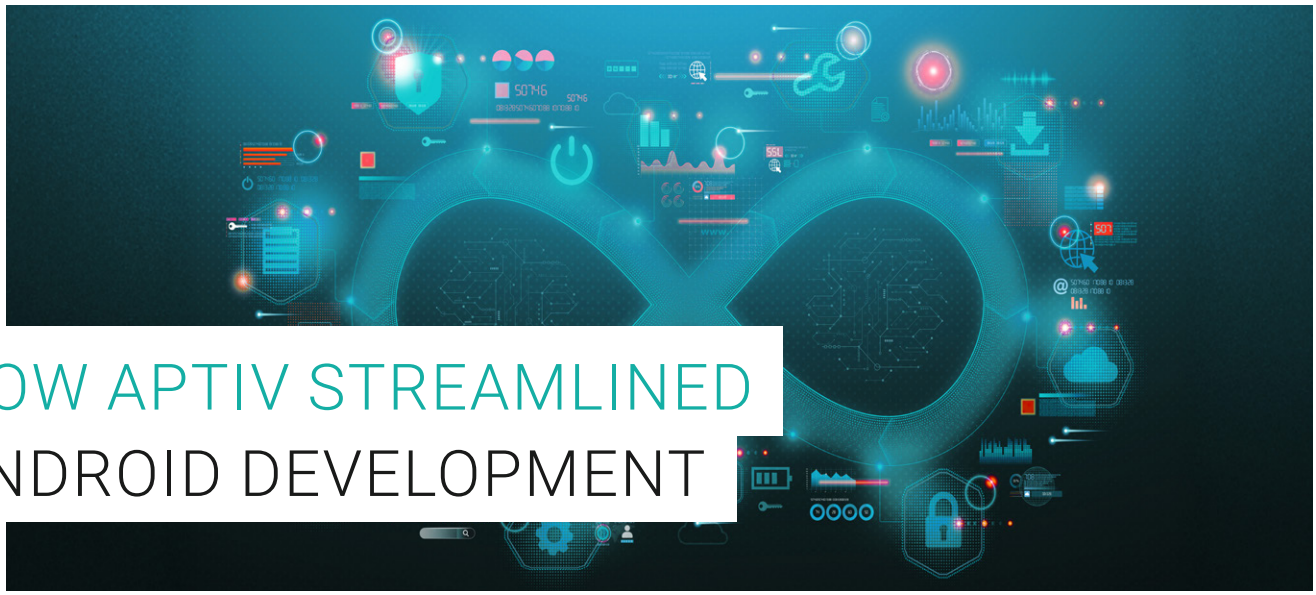

HOW APTIV STREAMLINED ANDROID DEVELOPMENT

Today's drivers expect their vehicle's infotainment system to be as feature rich, responsive, and continuously up-to-date as their smartphones, with features such as navigation, media, and app connectivity taken for granted. To support these expectations, Android has played a critical role in the evolution of the cockpit domain. It is redefining how automakers create a user-friendly, connected experience as they take advantage of familiar Android tools and a vast ecosystem of developers.

THE PROMISE OF ANDROID

The Android Automotive Operating System (AAOS) has changed in-vehicle experiences. The OS enables flexible, app-driven functionality that incorporates voice control, integration of third-party apps, and over-the-air updates. AAOS goes beyond basic infotainment. It enables deep integration with vehicle systems for navigation, media, climate control, and more.

Aptiv, a global leader in software for automotive and other industries, is at the forefront of this transformation. Android Automotive plays a central role in Aptiv's infotainment and connected services that elevate driving experiences.

However, developing Android-based systems can be complex. Engineering teams must manage more than a thousand code repositories, frequent OS and security updates, and intricate integration layers with customer-specific platforms. And they must do so while meeting rigorous safety, compliance, and performance standards. What should be a fast lane to innovation can become a maze of fragmentation if not properly managed.

Challenge

- Managing more than a thousand code repositories while keeping pace with frequent OS and security updates, which drove up cost and development time
- Integrating Android with customer-specific platforms and deeply embedded vehicle systems under tight timelines
- Meeting safety, compliance, and performance standards with fragmented DevOps tools and workflows

Solution

- Tooling for hardware integration testing, with no vendor lock-in
- Ability to reuse components from earlier iterations
- Virtual test environments that enable quality assurance checks earlier in the development cycle

Results

- Time to complete an Android OS integration project reduced from months to 48 hours
- Engineering performance increased by more than 15% and build times improved by more than 20%
- Integration processes sped up while improving software quality, delivery, and predictability

SIMPLIFYING THE COMPLEX

To overcome these challenges, Aptiv adopted Wind River® Studio Developer, a cloud-based platform that streamlines continuous integration, enhances security, increases automation, and enables earlier testing with full edge-to-cloud visibility.

Other tools, such as Jenkins and GitHub/GitLab, were considered, said Craig Turner, vice president and managing director, digital cockpit & middleware at Aptiv, but the alternatives either locked teams into rigid ecosystems or they did not support hardware-integrated testing. Studio Developer stood out for its platform-agnostic design, which is compatible with any OS, hardware, or cloud provider. Its seamless integration of virtual test environments through Wind River Studio Virtual Lab and Test Automation resonated, too, accompanied by a robust closed-loop feedback system.

By standardizing tasks and automating pipelines, Aptiv reduced Android OS integration time from months to just 48 hours. This remarkable improvement became the foundation for a broader DevSecOps standardization effort that streamlined new projects for developers, reduced infrastructure costs, and improved confidence in every release through greater consistency and automation.

As Turner noted, "Wind River Studio Developer helped us turn a fragmented, manual process into a streamlined, automated workflow that's scalable across vehicle programs and platforms."

SCALING SUCCESS WITH A PREMIUM GERMAN AUTOMOTIVE OEM

Following an initial success, Aptiv took on a high-stakes infotainment project for a German premium automotive OEM. With a hard deadline and no margin for error, the Aptiv team needed to move fast.

The team reused standardized components from its Android pilot project, such as modular CI/CD pipelines and standard task templates such as Repo Sync, Build Android, and compliance checks. Doing so helped the team enable rapid onboarding, activated continuous testing from day one, and drastically reduced setup time. With a strong internal knowledge base and consistent workflows, Aptiv sped up integration processes, improved delivery predictability, and created a scalable model that the company is now extending to Linux-based platforms.

PROVEN RESULTS ACROSS APTIV

By standardizing CI workflows and adopting a modular development approach, Aptiv achieved significant results across multiple projects. Organization-wide, CI setup time dropped, build times improved by more than 20%, and overall engineering performance increased by more than 15%. Now embedded software teams get started faster; pre-provisioned environments encourage productivity. Developers also begin testing earlier in the application development lifecycle and deliver more reliably on both Android and Linux platforms. These improvements have led to multimillion-dollar cost savings and laid the foundation for a scalable, software-defined development model for future programs.

Aptiv's use of Studio Developer shows how cloud-based tools can improve development by aligning teams around shared software assets.

Visit the Wind River Studio Developer product page to learn more.

WNDRVR

Wind River is a global leader of software for mission-critical intelligent systems. For 40 years, the company has been an innovator and pioneer, powering billions of devices and systems that require the highest levels of security, safety, and reliability. Wind River offers a comprehensive portfolio of software and expertise that are accelerating digital transformation across industries.