RECONNECTING DEVOPS TO PROFITS
IN THE AUTO INDUSTRY

Creating new innovations, business models, and revenue with embedded software doesn't have to be so complicated.

April 2024 Interview with Jegan Arthanari

In talking with global automotive OEMs and their partners, one question inevitably arises: How can we get back to profitability through software?

For many auto OEMs and Tier 1 suppliers, DevOps has turned into a source of cost, risk, and delay rather than a centerpiece of innovation and source of new revenue, competitive advantages, and great customer experiences. Why is that?

Recently we spoke with Jegan Arthanari, vice president of Global Field Engineering at Wind River®, to learn more about the challenges and opportunities that the auto industry currently faces. We've consolidated his main points below.

Assessing the Learning Curve

Jegan Arthanari: All too often the answer is: It's complicated. First, you have to have full organizational commitment to make a change and embrace DevOps. This is a mindset and a culture sea change. You then actually have to implement it. You have to integrate the tools. The processes. The compute power. The data. The safety and security measures.

There will be a long learning curve for your DevOps team. You'll have to master the art of cloud-scale development. Learn how to build the optimal CI/CD model. How to make the best use of containers, microservices, and virtualization. How to create and deploy new OTA (over-the-air) and V2X (vehicle to everything) communication apps that are safer and greener.

All of the above is true. But it's also true that the move to modern DevOps for mission-critical embedded software does not have to break the bank, reduce time-to-market, or diminish the morale of the development team. Integrating software development technologies, processes, and partners can be accomplished in a way that also connects auto OEMs to new sources of revenue, quickly — without throwing away what they already have and without a loss of control.

Integrating Without Compromising

The key is standardizing the DevOps environment with one suite of modular tools specifically built for cloud-native development and multidimensional integration. But how does that happen?

Successful adoption of a cloud-native environment is the critical first step. The cloud model offers the scale, the flexibility, and the common packaging of multiple technologies and practices that can deliver immediate efficiencies to embedded software development. And many of these technologies and practices are already in use by key partners.

For example, cloud-native CI/CD and DevSecOps models are now widespread within the telco industry, as are container technologies. With containers, DevOps teams can deploy lightweight microservices, which can scale quickly as demand grows, and add new functionality that can be delivered in real time. These and other cloud capabilities have enabled telco enterprises to build and deploy next-generation 5G/6G, over-the-air (OTA) updates, and V2X (vehicle to everything) innovations — which, in turn, can complement and stimulate innovation from auto OEMs and Tier 1 suppliers.

Simply put, cloud native has the potential to change the way the auto industry works with its partners to deliver embedded software innovations to the vehicle and the fleet — *if auto OEMs can find a way to standardize the DevOps environment*.

Which brings us to the next question: how to adopt a single platform that contains integrated tools, technologies, and practices that are accessible to multiple DevOps teams via the cloud.

This has been the singular vision and focus of the Wind River Studio Developer suite. It is a cloud-native, modular, end-to-end lifecycle management platform that enables users to scan, build, debug, test, deploy, and manage devices and data, automate processes, and optimize key workflows.

By increasing standardization, automation, and component/code reusability, Studio Developer helps cut development costs and timeframes. Application engineers from multiple divisions within a company or partner companies can migrate between environments without constantly having to learn new tools and processes. This is increasingly valuable as teams move from one generation or vehicle-type auto platform to the next. Studio Developer also enables shift-left testing with simulation to test earlier and at greater scale, as well as real-time visibility into conditions and usage patterns in vehicles in the field.

By providing these capabilities, Studio Developer makes it possible to simplify and accelerate the DevOps process and collaborate with partners, without losing control and without compromising on safety, security, or other key requirements.

The Vital Link to Monetization

When new embedded software innovations can be built, tested, secured, and delivered to vehicles sooner, the opportunities for monetization grow exponentially. And when the innovations of partners in other industries can be complemented by additional capabilities, new sources of revenue emerge.

For example, telco companies are already exploring ultra-load-intensive connectivity services for vehicles. Auto manufacturers can add value to these innovations and deliver killer new pervasive connectivity services and create new subscription-based services or revenue models.

Each of the five modules of Studio Developer contributes to faster development, testing, and deployment of new innovations and expands the opportunities for collaboration — and monetization. To cite just a few examples:

- **Wind River Studio Pipelines** makes it possible to integrate popular embedded software tools, from scanning tools to security threat modeling to testing, with complete digital traceability of the configuration. And it provides automation tools that can be integrated with all existing environments. Existing automation tools can be invoked as-is or repartitioned into smaller pipelines that can be reused in multistage environments. The result: Automation scenarios can be shared and reused among teams, providing greater visibility into their automation environment. And with the traceability features, 20 years down the road automakers can reproduce their pipelines or software builds from a repository.

- **Wind River Studio Virtual Lab** helps eliminate the high costs and unpredictable schedules that result from having to delay software testing until development hardware is manufactured. It provides cloud-based management of simulated and physical hardware resources to automate embedded testing, which accelerates development and release cycles.

- **Wind River Studio Over-the-Air Updates** helps cut the complexity and expense of securing and maintaining compliance by making it possible to update fielded, embedded software OTA, which in turn reduces maintenance costs and the risk of recalls.

- **Wind River Studio Digital Feedback Loop** gives auto OEMs visibility into conditions and usage on edge devices. By establishing feedback loops between edge and cloud systems with flexible pipelines and analytics, it proactively identifies maintenance and performance problems so they can be resolved sooner. This is particularly useful in post–vehicle-deployment monetization, because automakers are able to convert aggregated data into insights and actions that improve the customer experience as well as the overall development process.

Managing Change Through Managed Services

One key question remains: How to accelerate the actual implementation and adoption of an integrated DevOps environment? With the amalgamation of tools, processes, and partners, combined with the specific and unique requirements of each company, moving to a simplified model can be a nightmare of complexity in its own right.

That is why Wind River has assembled an expert team to deliver managed services that help auto OEMs quickly and easily take their next steps on the road to modern DevOps — and take a lot of risk off the table in the process.

As a first step, the managed services team assesses the current environment. How is the code developed? How is it tested? What parts of the workflow are automated, and what could be automated? Specifically, how could each phase of the workflow be optimized? What needs to change so the DevOps team can focus on high-value activities rather than managing current tools and processes?

The managed services team then provides a center of excellence for the DevOps team to migrate its legacy tools to modernized tool sets so they can ramp up quickly onto the modern DevOps platform. This includes active participation by the DevOps team with education and training as needed.

Finally, the managed services team can help each customer operate the entire DevOps platform, which includes enabling Studio Digital Feedback Loop and other analytics tools, including bringing in best practices and expertise accumulated over decades of helping major automotive enterprises around the world modernize their software environments. For more information, visit www.windriver.com/services.

Don't Let Inertia Eat into Your Profits

The allure of the software-defined vehicle, V2X communication, OTA deployment, and other compelling capabilities has been around for years. What's holding up the journey to a modern DevOps environment that can transform software innovations into profits?

Clearly, the complexities of moving to an integrated DevOps platform can be daunting for automakers. They don't have to be. Accelerate your journey by contacting Wind River. We can offer customized guidance and proven products based on decades of experience, so you can connect DevOps to profits quickly and without compromise.

ABOUT WIND RIVER

Wind River is a global leader in delivering software for the intelligent edge. The company's technology has been powering the safest, most secure devices in the world since 1981 and is found in more than 2 billion products. Wind River offers a comprehensive portfolio supported by world-class global professional services and support and a broad partner ecosystem. Wind River software and expertise are accelerating digital transformation of critical infrastructure systems that demand the highest levels of safety, security, performance, and reliability. To learn more about DevOps for automotive use cases, visit Wind River at www.windriver.com/studio/developer or www.windriver.com/solutions/automotive.

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