Luxoft accelerates development of software-defined vehicles

Industry

IT consulting & services

Headquarters

Zug, Switzerland

Size

17,000 employees

"Luxoft and Red Hat are a match made in heaven. We use Red Hat technology to give customers a complete, end-to-end solution to develop software-defined vehicles."

Damian Barnett
CTO, Luxoft Automotive

Software-defined vehicles are the future of the automotive industry, but developing and running them can be complex. The design, data, and development branch of DXC Technology, Luxoft, partnered with Red Hat to launch an open source software factory for the automotive ecosystem. Red Hat products and technologies accelerate development, simplify compliance, and enable interoperability. That means car makers and automotive suppliers spend less time developing and maintaining core operating systems, and more time focusing on developing applications to enhance the driver experience, seizing more opportunities to connect with partners, and maintaining a scalable, cost-effective platform that supports innovation.
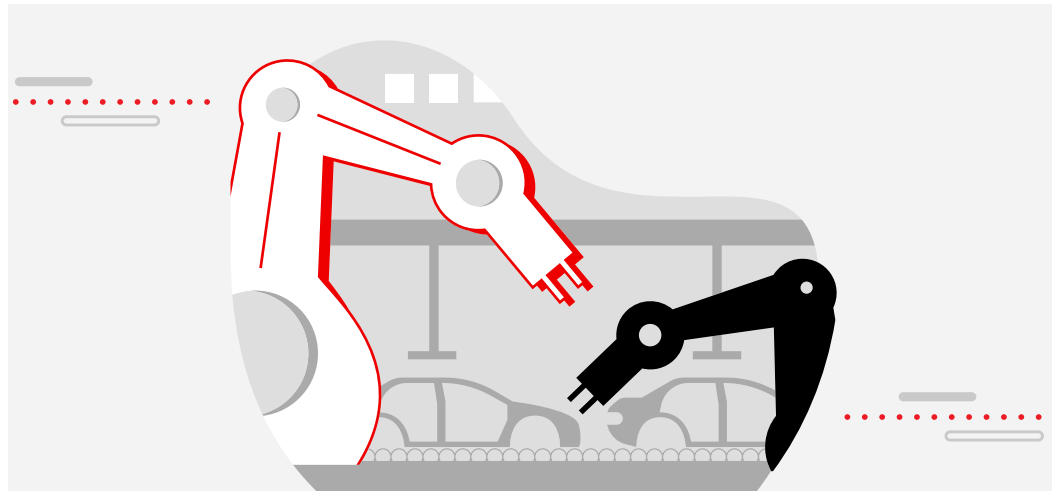
Software and services

Red Hat® In-Vehicle Operating System

Red Hat Enterprise Linux®

Red Hat OpenShift®

Partner resources

Red Hat GSI Partner Program

Benefits

▶ Simplified development and secure running of software-defined vehicles (SDVs) for the automotive industry

▶ Removed the barriers to innovation, enabling new services and revenue streams

▶ Reduced costs through process optimization and component reuse

About Red Hat Innovators in the Open

Innovation is the core of open source. Red Hat customers use open source technologies to change not only their own organizations, but also entire industries and markets. Red Hat Innovators in the Open proudly showcases how our customers use enterprise open source solutions to solve their toughest business challenges. Want to share your story? Learn more.

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Leading the way to a software-defined world

Luxoft, a global provider of enterprise technology services, delivers mission-critical software and advanced analytics across various sectors. It empowers customers to build scalable, resilient businesses and drive revenue growth.

The company is known for its tailored software solutions and high-level industry expertise. In the automotive industry, Luxoft is driving the shift towards software-defined vehicles (SDVs). Its end-to-end automotive services range from in-vehicle services, assisted driving, entertainment, and over-the-air (OTA) solutions to back-end connected vehicle platforms. Luxoft works with eight of the top 10 automotive companies in the world, helping them to adapt and pivot to the software-defined future.

Combining automotive expertise with Red Hat technology

Luxoft is uniquely positioned to understand the challenges that car makers are facing. SDVs, connected vehicles, and autonomous driving are all topics for discussion. Car makers are defining new business models to tap into these markets. But developing SDVs requires the right tools and processes. As an emerging technology, they need to be safe, reliable, cost-effective, and compliant with industry regulations.

"Mastering SDVs means bringing different components, methodologies, and technologies together, connecting in-vehicle technology with the cloud, and capturing data from development to aftersales to feed into a cycle of continuous innovation," said Damian Barnett, CTO of Luxoft Automotive. "Car makers also need to manage over-the-air updates as well as adopt virtual validation and testing."

Yet many new solutions tailored to the automotive market are vendor-specific, which means OEMs need to invest wisely to balance the requirements of different departments. Having complex, multi-cloud environments is expensive and unscalable.

"We live and breathe automotive, and we're not affiliated with any one hyperscaler," said Ulrich Wurstbauer, Chief Technologist for Autonomous Driving at Luxoft. "We build solutions on cloud-agnostic data fabric and help car makers connect their systems in a more sustainable way."

With Red Hat, Luxoft understands that using open source technology instead of proprietary operating systems can help the automotive industry avoid the challenges associated with vendor lock-in. By extending Red Hat Enterprise Linux (RHEL), the world's leading enterprise Linux platform, to the automotive industry through Red Hat In-Vehicle Operating System (RHIVOS), automakers will be able to better adopt rapid innovation on an open and functionally safe platform.

"We partnered with Red Hat 3 years ago to combine its knowledge and experience around backend infrastructure with our vehicle expertise. Red Hat is the global leader in open source, which can help car makers innovate faster and collaborate with other developers across the ecosystem," said Barnett. "Luxoft and Red Hat are a match made in heaven. We use Red Hat technology to give customers a complete, end-to-end solution to develop SDVs."

Building an open source automotive industry software factory with Red Hat

Luxoft provides tailored offerings for car makers. These are optimized with Red Hat OpenShift, Red Hat In-Vehicle Operating System, and other Red Hat products to enhance the control, functionality, and management of processes such as OTA updates, vehicle fleet management, and AI developments.

"Red Hat offers assurance and helps customers to reduce technical debt. We don't have to reinvent the wheel with every development; we use Red Hat building blocks. By partnering with Luxoft and Red Hat, car makers can focus on differentiating the driver experience because they know the basic in-vehicle applications developed on our platform work seamlessly," said Barnett.

Red Hat In-Vehicle Operating System provides a secure, Linux-based foundation for SDVs. It targets level ASIL-B of ISO 26262 for functional safety and is compatible with AUTOSAR architecture standards. Designed with SDV development in mind, it establishes a continuous safety certification process approach, modern, open source toolchains, development workflows, and reusable components to reduce time to market.

Containers, crucial for software-designed vehicles, allow applications to be isolated for development and deployment. Red Hat OpenShift gives Luxoft the flexibility to offer its automotive software factory across different public and private clouds, as well as on premise environments. Its ability to orchestrate and run hundreds of simultaneous tasks is vital for functionality such as autonomous driving, virtual validation, and OTA updates.

Empowering OEMs to pioneer next-generation vehicles

Simplified development and secure running of SDVs for OEMs

Luxoft and Red Hat collaborate to leverage Red Hat open source technologies, with an emphasis on Red Hat In-Vehicle Operating System, Red Hat OpenShift, and Red Hat Connected Vehicle Community Pattern to streamline many of the complexities associated with SDVs. For example, the joint offering enables a reliable and compliant update and rollback mechanism for OTA updates. This enters the car via a gateway electronic control unit (ECU) and can update drivers across a fully embedded software stack. "In SDVs, being up to date is crucial to reduce the risks of a cyberattack and to keep the car running. The update mechanism needs to be robust as we can't risk an update failing and therefore rendering crucial functionality useless," said Wurstbauer.

The joint offering, due to the nature of the cloud based platform, enables the global orchestration of an SDV fleet, allowing regional and country-specific updates. As it runs on Red Hat OpenShift the joint offering enables virtualized ECUs and therefore the verification and validation at scale. It also supports native integration with common IoT protocols and third-party use cases, such as e-grid stabilizations and in-vehicle entertainment systems.

The joint offering also offers scalability, which is essential for feature development. OEMs often need to develop multiple components simultaneously and are under pressure to deliver shorter release cycles. This leads to parallel development of hardware and software with testing much later in the cycle. With modern toolchains and DevOps, the platform is optimized for continuous integration and continuous development (CI/CD).

"With Red Hat, we can more easily enable a complete ecosystem of new applications running on top of the vehicle's operating system and seamlessly interacting with the backend and therefore creating a hot bed for innovation and new revenue streams. For example, AI supported real-time translation as shown through Luxoft's LuLingu solution," said Wurstbauer.

Case study   Luxoft accelerates development of software-defined vehicles

Removed the barriers to innovation, enabling new services and revenue stream

Leveraging the foundation of Red Hat Enterprise Linux, the collaboration between Red Hat and Luxoft is helping to accelerate the shift to SDVs using open source technology. The agnostic platform removes the risk of vendor lock-in, giving car makers greater choice and a scalable, modern, end-to-end solution.

"Car makers want to run hybrid hyperscaler environments, including an on premise component. We're empowering them with an agnostic solution that does everything," said Barnett.

Free from worrying about basic SDV functionality, OEMs can focus on giving drivers more intuitive and personalized experiences in their own connected ecosystem. Red Hat In-Vehicle Operating System provides a common, updatable platform to empower developers to release new features, upgrades, and tap into new revenue streams – all while improving the driver experience and building loyalty.

With a clear path to innovation, OEMs can go to market faster with the assurance that new updates, features, and services will be high performing and follow consistent, repeatable processes.

Reduced costs through process optimization and component reuse

Using a Linux based in-vehicle operating system means OEMs can make financial savings by optimizing development and reusing components. And because Red Hat In-Vehicle Operating System is specifically tailored to the automotive sector, it comes with time saving automations, such as automated compliance checks.

"OEMs can reinvest their time and cost savings into more innovative projects – such as differentiating the driver and passenger experience," said Wurstbauer. "The beauty of the open source community is that everyone contributes to improving software quality, so everyone benefits from reduced development and maintenance costs in the future."

Driving innovation with an open and honest partnership

It's an exciting time for the automotive industry, and with Luxoft and Red Hat, car makers have the building blocks to achieve their vision for the future and the resources to step back and think about the driver experience.

As the platform matures, it's expected to accelerate the 'container on wheels' concept - bringing the vehicle closer to backend systems. This will significantly simplify processes such as testing, validation, and deploying functionality to the car. It will also give drivers the possibility of a more individualized user experience.

"We're really proud of everything we've achieved with Red Hat. The team is enthusiastic and understands where we should focus to make sure we're meeting the needs of car makers and offering something they can't get anywhere else," said Barnett.

About Luxoft

Luxoft is a software design, data, and development branch of DXC Technology. It empowers business leaders with enhanced analytics and software engineering capabilities that stabilize enterprises and help them thrive in shifting and complex markets. The company has 17,000 employees and works with 425 global clients, including 75 Fortune 500 companies.

About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers develop cloud-native applications, integrate existing and new IT applications, and automate and manage complex environments. A trusted adviser to the Fortune 500, Red Hat provides award-winning support, training, and consulting services that bring the benefits of open innovation to any industry. Red Hat is a connective hub in a global network of enterprises, partners, and communities, helping organizations grow, transform, and prepare for the digital future.

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