L&T Technology Services

Accelerating digital cockpit innovation through a cloud-native digital twin

Driving 70% faster software development cycles

CASE STUDY



Purposeful. Agile. Innovation.



ABOUT THE CLIENT

The client is a leading global automotive technology provider specializing in advanced electronic systems, including infotainment and digital cockpit platforms.

THE CHALLENGE

As vehicle architectures became increasingly software-defined, the client sought to transform its infotainment and digital cockpit development processes through a Digital Twin–driven engineering approach. However, extensive reliance on physical hardware constrained scalability, slowed software innovation, and limited testing flexibility.

Developing and validating applications across complex E&E architecture resulted in longer development cycles, increased costs, and challenges in supporting advanced connected capabilities such as real-time diagnostics and cloud-enabled vehicle experiences. The dependence on physical systems also restricted the ability to rapidly validate new software features.

The client required a more agile and scalable development environment capable of reducing hardware dependencies while enabling continuous validation, connected services integration, and accelerated software delivery.

THE SOLUTION

L&T Technology Services (LTTS) partnered with the client to develop a cloud-native Digital Twin platform that virtualized the vehicle's infotainment and digital cockpit ecosystem. By creating a synchronized environment between physical systems and their digital counterparts, LTTS enabled real-time simulation, validation, monitoring, and software development within a scalable cloud-based framework.

The solution established a comprehensive virtual representation of the vehicle's E/E architecture, providing end-to-end visibility across critical systems while supporting faster development and validation cycles.

01 Cloud-Native Digital Twin Framework

LTTS' engineers developed a cloud-native Digital Twin architecture for infotainment systems, enabling continuous synchronization between the physical Domain Control Unit (DCU) and its digital twin. Enabling real-time data exchange, monitoring, and system visibility.

02 Digital Cockpit and E/E Architecture Virtualization

Virtualized key elements of the vehicle's electronic architecture, including infotainment systems, instrument clusters, Zonal Control Units, and vehicle body functions. This holistic digital representation enabled engineers to evaluate system interactions and behavior within a unified virtual environment.

03 Simulation and Virtual Validation

The platform enabled extensive virtual testing through instrument cluster and Head-Up Display (HUD) simulations. By shifting validation activities into a virtual environment, it helped reduce dependence on physical prototypes while improving efficiency.

04 Connected Infotainment Enablement

LTTS' team of engineers enhanced infotainment functionality, navigation performance, and overall user experience through the integration of connected services. Enabling more advanced digital cockpit capabilities while improving connected vehicle experiences.

05 Cockpit SoC and Cloud Integration

The solution also integrated automotive-grade cockpit System-on-Chip (SoC) platforms with cloud-based virtualization infrastructure. This approach improved platform scalability, supported higher performance requirements, and enabled efficient deployment of Digital Twin capabilities.



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THE RESULTS

The cloud-native Digital Twin platform transformed the client's infotainment and digital cockpit development lifecycle, delivering measurable business and engineering outcomes across:



70% faster software development cycles through virtualized validation and rapid iteration



30% reduction in prototype costs by minimizing reliance on physical systems



Accelerated validation cycles with greater testing flexibility



Enhanced scalability through a virtualized development environment

LTTS ENGINEERING INTELLIGENCE EDGE

Through its Engineering Intelligence approach, LTTS helped the client modernize digital cockpit engineering by combining Digital Twin technology, cloud-native platforms, virtualization, and connected vehicle expertise into a unified development ecosystem. By creating a scalable virtual environment for simulation, validation, and software innovation, LTTS enabled faster development cycles, reduced hardware dependency, and enhanced connected vehicle experiences.

LTTS' Engineering Intelligence advantage included:

- Cloud-native Digital Twin platform development
- Digital cockpit and E/E architecture virtualization
- Real-time synchronization between physical and digital systems
- Virtual validation and simulation enablement
- Connected infotainment and navigation integration
- Automotive SoC and cloud platform expertise
- Accelerated software development and validation workflows

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