

F R O S T & S U L L I V A N

# 2024 ENABLING TECHNOLOGY LEADER

*IN THE EUROPEAN  
OVER-THE-AIR UPDATES  
INDUSTRY*

F R O S T & S U L L I V A N

2024  
BEST  
PRACTICES  
AWARD

**T Systems**

## Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. T-Systems excels in many of the criteria in the over-the-air updates space.

AWARD CRITERIA	
Technology Leverage	Customer Impact
Commitment to Innovation	Price/Performance Value
Commitment to Creativity	Customer Purchase Experience
Stage Gate Efficiency	Customer Ownership Experience
Commercialization Success	Customer Service Experience
Application Diversity	Brand Equity

### T-Systems: Revolutionizing the OTA Industry

The rise of connected vehicles drives the significance of over-the-air (OTA) update technology, enabling automotive original equipment manufacturers (OEMs) to ensure consistently optimal vehicle functionality, safety, and efficiency. Despite increased adoption over the years extending beyond non-critical updates, automotive OTA technology faces limitations (e.g., scalability restraints, single-tenant platform solutions, legacy systems integration, and compatibility issues). Rising data costs and evolving industry regulations further hinder widespread adoption, increasing the risk of vehicle downtime and non-

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**- Rubini Kamal**  
**Best Practices Research Analyst**

compliance. Harnessing cutting-edge technologies (i.e., automation, artificial intelligence [AI], data analytics, and intelligent software design) can effectively address OTA technology shortcomings.

Founded in 2000 and headquartered in Frankfurt, Germany, T-Systems is an industry-leading OTA solutions provider, empowering OEMs to provide customers with seamless, dependable, and optimized connected car experiences. Its innovative solutions facilitate efficient, reliable, and accurate OTA updates, ensuring optimal key vehicle functions and minimized

downtime throughout vehicle ownership. With T-Systems’ OTA solutions, OEMs can effortlessly implement regular critical firmware and software security updates without needing customers to visit the

garage, improving vehicle safety. T-Systems is a subsidiary of Deutsche Telekom, strengthening the company's ability to offer OEMs unparalleled OTA update capabilities.

### ***Integrated Solutions Bolster Customer Success***

T-Systems provides comprehensive OTA solutions, spanning platforms, integration support, data management solutions, and consulting services. Beyond its expertise in OTA technology innovation, the company possesses extensive capabilities and skills for integrating cutting-edge, intelligent features and functionalities with legacy applications. Additionally, as a Deutsche Telekom subsidiary, T-Systems offers OEMs access to superior network capabilities necessary for critical updates. By leveraging the telecommunication company's robust network infrastructure, advanced connectivity solutions, and network management and communication technologies expertise, the company helps OEMs facilitate efficient and reliable OTA updates. Moreover, it enables OEMs to optimize costs by conducting bandwidth analysis to identify the most cost-effective times (e.g., network conditions, on or off-peak time) for sending vehicle updates. Through its automated Dynamic Load Management feature, T-Systems enables OEMs to strategically target vehicles within their extensive fleets with a higher success rate for OTA updates based on optimal network conditions, thereby optimizing costs.

The company also provides support to OEMs in navigating regulatory and compliance requirements. T-Systems maintains a dedicated compliance team that monitors global regulations for the automotive industry and data privacy. Additionally, utilizing AI-driven capability, T-Systems diligently monitors regulatory developments, ensuring customers are informed on emerging regulatory standards while pioneering innovative solutions to help them adhere to new industry requirements.

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### ***Groundbreaking Innovation Delivers Unmatched Capabilities***

T-Systems distinguishes itself by providing a streamlined and flexible platform, resulting in substantial time and cost savings for OEMs. Recognizing each OEM's distinct business processes and operations, the company developed its OTA platform based on a modular architecture, catering to the needs of various OEMs. Its platform grants OEMs the flexibility to implement or customize changes according to their unique requirements at a fraction of the cost and time. While legacy platforms may demand up to a year and cost between \$500,000 to \$1 million to make a single modification, T-Systems' platform streamlines the process considerably.

The platform's flexibility stems from its OEM integration layer, empowering T-Systems to tailor the platform for each customer without delving into the underlying complex algorithms. It translates each OEM's technical terminologies into the platform's standardized language, eliminating the need for major, time-consuming, and expensive customization at the code level. By enabling customization at the OEM integration layer, the company delivers a unified platform solution adaptable to diverse OEMs and their unique processes and standards. Moreover, owing to its modular architecture, T-Systems' OTA platform empowers customers to adopt features selectively instead of committing to the whole platform. If an

OEM requires only one feature from the entire stack, they can license that specific functionality to integrate into their existing platform.

T-Systems employs automation to bolster OEM capabilities, offering an industry-leading platform with advanced features that ensure consistent and reliable OTA updates. Among these features is the innovative update loop, which targets software updates to specific vehicles within a diverse portfolio. The feature comprises an eligibility engine to identify qualified vehicles for new updates and a prescription engine to compile update bundles based on the vehicle clusters' need. Previously, for a major OEM, car owners had to visit the showroom to install any missed updates. In contrast, T-Systems' prescription engine bundles new updates with any previously missed updates before sending them to the car. This automated process saves OEMs considerable time, costs, and manpower while boosting customer experience. T-Systems' update loop reportedly maintains a 99.9% first-time-right result.

Another notable feature is the digital loop, which allows OEM software developers to test software in development on a virtual vehicle before transitioning to real-world testing. Completely automated and running on a loop, software that passes the virtual vehicle test goes to the test bench for more testing,

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**- Thirumalai Narasimhan  
Industry Analyst**

followed by the test VIN, when all the log files will be sent back to the developer. Any issues detected (e.g., a bug, behavioral change in the vehicle, or impact on the dependent Electronic Control Unit [ECU]) prompt immediate alerts to stakeholders (e.g., ECU engineers and developers) for resolution, streamlining the homologation certification process and accelerating go-to-market significantly.

T-Systems conducted a proof of concept for a large OEM's Advanced Driver Assistance System (ADAS) function, demonstrating a remarkable timeline reduction for software update issue identification

from six months to one month. Typically, an ADAS update generates 10 to 15 issues, necessitating extensive coordination with dependent ECUs. It also requires physical vehicle testing, which is time-consuming due to limited test vehicle availability. Impressively equipped with T-Systems' digital loop and virtual vehicle POC, the OEM completed the testing within a month, facilitating faster issue resolution.

T-Systems' continuous success in delivering precise solutions lies in its comprehensive research exercises, including quarterly qualitative customer interviews to understand their needs and pain points. Furthermore, the company hosts workshops with different teams within its customers' organization to grasp their requirements and comprehensively understand the vehicles in development before tailoring solutions. Moreover, it constantly monitors industry trends, which helps it identify opportunities for innovation to offer customers improved OTA performance or enhance capabilities continually.

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### ***Superior Customer Support Earns Trust and Promotes Enduring Relationships***

T-Systems demonstrates a strong customer focus, prioritizing open communication, close collaboration, and continuous support. The company works closely with its customers throughout the lifecycle, spanning OTA systems' development, integration, and operation. It has representatives embedded within certain OEMs (e.g., over 150 engineers and product managers working on a Build Operate Transfer [BOT] model in one OEM) to provide hands-on support in refining and implementing their OTA systems. Further exemplifying its steadfast commitment to ensuring customer success, T-Systems continuously offers OEMs new innovative ideas to enhance their OTA capabilities beyond project completion. Moreover, the company helps OEMs identify and address issues early to ensure seamless go-to-market journeys. It also openly shares its knowledge, empowering OEMs to leverage valuable insights and expertise to deliver superior service to vehicle owners.

T-Systems provides superior customer support through a proactive troubleshooting approach and a multiple timezone customer service operation, ensuring 24/7 assistance for global Europe-based OEMs. Leveraging an advanced monitoring system that automatically generates tickets upon detecting issues with a customer's OTA system and complemented by its expert customer support teams it ensures swift resolutions and minimizes downtime. Additionally, T-Systems employs advanced bots, facilitating quick search and information retrieval from technical documentation to assist the customer support teams in delivering resolutions within a 24-hour. T-Systems is committed to transparency, promptly informing customers of any systemic issues discovered and coordinating downtime for bug fixes to minimize disruptions. Furthermore, T-Systems employs regional sales teams and dedicated accounts managers to handle customer feedback and assist OEMs in addressing their specific needs (e.g., compliance). Through its comprehensive customer support framework, T-Systems ensures seamless support for OEMs worldwide, earning customers' trust and fostering enduring customer relationships.

T-Systems drives commercial adoption of its platform through a diverse product and pricing model tailored to meet the needs of various automotive players. Clients can opt for pay-per-update or monthly subscription plans through Software-as-a-Service offerings. Alternatively, they can choose licensing models such as per vehicle update or BOT model. This flexible approach ensures accessibility for manufacturers, including small-scale OEMs like electric vehicle startups and niche vehicle producers (e.g., sports car manufacturers), benefitting from the platform's multi-tenancy capability. For larger OEMs seeking specific features, T-Systems offers custom development, operation, and transfer services alongside flexible technology licensing options.

T-Systems has secured clients from major global OEMs to startups due to its versatile product offerings. In 2023, the company added a major European car manufacturer to its customer base, owing to its BOT model offering, which proved more cost-effective for the sizable automotive player than the traditional as-a-service business model. Building on this momentum, in 2024, T-Systems also secured a partnership with a new energy truck manufacturer, further expanding its reach within the industry.

With applications beyond the automotive sector (e.g., renewable energy) and T-Systems' unmatched platform and expertise, Frost & Sullivan believes T-Systems is well-positioned to drive the OTA space into its next growth phase, capturing market share and sustaining its leadership in the coming years.



## Conclusion

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Critical software and security updates are crucial in ensuring connected vehicles' optimal performance and safety. T-Systems provides comprehensive over-the-air (OTA) update solutions encompassing development, integration, data management, and consulting services. Its expertise lies in developing intelligent, agnostic solutions that integrate into legacy platforms seamlessly. Its platform delivers precise and reliable OTA updates owing to a modular architecture and automated processes, enabling OEMs to achieve consistent first-time-right update deliveries.

Moreover, its platform offers unmatched flexibility, allowing OEMs to choose tailored solutions or customize combinations according to their needs, saving OEMs significant time and cost by tailoring solutions to individual OEMs' distinct business processes. T-Systems stands out from competitors based on its commitment to innovation, creativity, and ability to launch new solutions with significant impact, exemplified by solutions like the digital loop and virtual vehicle solution, reducing software testing time from six months to a month. The company also employs AI models to anticipate emerging automotive standards, helping customers comply with industry requirements. With a focus on technology and customer-centric values, T-Systems has earned a strong reputation in the OTA market.

With its strong overall performance, T-Systems earns Frost & Sullivan's 2024 Europe Enabling Technology Leadership Award in the over-the-air updates industry.

## What You Need to Know about the Enabling Technology Leadership Recognition

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Frost & Sullivan's Enabling Technology Leadership Award recognizes the company that applies its technology in new ways to improve existing products and services and elevate the customer experience.

### Best Practices Award Analysis

For the Enabling Technology Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *Technology Leverage*

**Commitment to Innovation:** Continuous emerging technology adoption and creation enables new product development and enhances product performance

**Commitment to Creativity:** Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

**Stage Gate Efficiency:** Technology adoption enhances the stage gate process for launching new products and solutions

**Commercialization Success:** Company displays a proven track record of taking new technologies to market with a high success rate

**Application Diversity:** Company develops and/or integrates technology that serves multiple applications and multiple environments

#### *Customer Impact*

**Price/Performance Value:** Products or services provide the best value for the price compared to similar market offerings

**Customer Purchase Experience:** Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

**Customer Ownership Experience:** Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

**Customer Service Experience:** Customer service is accessible, fast, stress-free, and high quality

**Brand Equity:** Customers perceive the brand positively and exhibit high brand loyalty

## About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at <http://www.frost.com>.

## The Growth Pipeline Engine™

Frost & Sullivan’s proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

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### Key Impacts:

- **Growth Pipeline:** Continuous Flow of Growth Opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



## The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

### Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

