

Mobility technologies reshape the nature of vehicle use

Digital transportation experience

Mobility – a strong force spurring change in the automotive industry – takes different forms, tackles different challenges, and is enabled by different technologies that often provide complementary capabilities. Personal mobility – the convergence of the connected car and extended personalized services – elevates the automobile beyond basic transportation to a combination of intelligent assistant, concierge, coach, communication hub, and safety inspector. Ride-hailing services, powered by mobile applications, were originally available only in dense urban areas. These services are now expanding to smaller cities and towns. Other applications of mobility that reshape personal transportation continue to evolve as new technologies develop, and Red Hat is a leader in this space.

Technologies underlying the connected car

Digital technologies, lifestyle expectations, and personal mobility options are changing the outlook on how consumers will move around and what they expect from companies that support them. Advances in mobility are providing innovative new customer experiences, connected car advances, and unprecedented communication capabilities. These accomplishments are not confined to the connected car alone, but extend across connected things in the [Internet of Things \(IoT\)](#) space, including the digital home, the smart city, the travel and hospitality industry, the automotive parts and service ecosystem, and other areas. Automakers are rethinking the ways new services can be delivered to customers and are using mobile services as a mechanism to push information, guidance, and warnings to users.

Red Hat works on many of the technologies that are powering mobility evolution. Among the mobility milestones are advances in 5G communication, comprehensive mobile app development tools, middleware applications that enable IoT deployments, improvements in Wi-Fi communications, advanced analytics coupled with artificial intelligence, in-vehicle telematics, and enhanced machine learning.

Mobility is now an integral part of automotive operations. Recent advances promise to change the ways in which automakers develop, design, and manufacture vehicles, as well as maintain connections with car owners over the lifetime of their vehicles.

5G enables many connected car capabilities

Cars are evolving from a mode of transportation to a new kind of moving datacenter with sensors and electronics. Mobile communications in the automotive sector rely on massive volumes of data transfers. [IDC estimates](#) that there will be 41.6 billion connected IoT devices generating 79.4 zettabytes of data in 2025.¹ 5G, the rising de facto standard for mobile and wireless communications, can handle voluminous data transfers to and from vehicles.

Aggregated and analyzed data is the information source for enabling connected car capabilities, which support autonomous driving, safety warnings, weather advisories, route selection, predictive vehicle diagnostics, and more. This technology can be applied across three categories of communication services: enhanced mobile broadband, massive machine-type communications, and ultrareliable and low-latency communications. These services are discussed in greater detail in “IMT Vision – Framework and overall objectives of the future development of IMT for 2020 and beyond,”



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¹ IDC. “The Growth in Connected IoT Devices Is Expected to Generate 79.4ZB of Data in 2025, According to a New IDC Forecast,” 18 June 2019.

produced by the ITU Radiocommunication Sector. Many of these communication services support the capabilities of the connected car. For example, smart city services can notify drivers of available parking spots, recommended routes free of congestion, or problem areas during natural disasters. Industry automation links partners across supply chains, helping keep auto manufacturing lines efficient and productive.

Red Hat® technologies are enabling widespread 5G technology as the basis for greater connectivity, including IoT solutions and wireless links to the cloud. Solutions based on [Red Hat Cloud Suite](#) support the development of massively scalable datacenters that adapt and respond dynamically to bandwidth and resource demands of IoT-based networks.

Technologies that support mobility services

Many supporting technologies to enable digital services for automotive uses, ride-sharing services, intelligent electric vehicles, and personal mobility are in areas where Red Hat provides industry leadership. These technologies include:

- [Red Hat OpenShift®](#). This container application platform delivers connected car applications via container technology and Kubernetes management capabilities, as well as streamlined development on public or private clouds.
- [Red Hat Gluster® Storage](#) and [Red Hat Ceph® Storage](#). Software-defined storage simplifies the handling of rapidly changing storage requirements encountered in 5G networks and IoT infrastructures.

The path going forward

The growing importance of mobility in the automotive sector has led to an increase of innovative solutions, offering practical, real-world implementations of IoT and helping advance 5G network infrastructure development as a foundation for next-generation mobility. Red Hat is committed to developing co-engineered solutions that capitalize on these trends and help shape the future of the automobile industry.

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 integrate new and existing IT applications, develop cloud-native applications, standardize on our industry-leading operating system, and automate, secure, and manage complex environments. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500. As a strategic partner to cloud providers, system integrators, application vendors, customers, and open source communities, Red Hat can help organizations prepare for the digital future.



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