



Executive Guide to Connected Vehicle Cloud

How Ericsson is helping Vehicle Manufacturers innovate, make connectivity easy, and manage the complexity for connected vehicles



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Introducing connected vehicle services

The nature of the vehicle is changing. It's no longer just transportation — it's also our smartphone, our sound system, our map, traffic report, weathervane and personal assistant. The modern smart vehicle can tell us what it needs before it needs it. It can tell us when we are connected and when we are not. It is a software-defined, network-aware, ultra-connected hive of data that is connected to the road, the cloud and every other vehicle. But building an ultra-connected vehicle requires an ultra-connected mindset that maximizes the power of data with software-driven production through specialized connectivity platforms.

The business potential for the connected vehicle services market is immense. [McKinsey & Co. estimates](#) that it could be worth \$1.5 trillion USD by 2030. Services are no longer a “nice-to-have,” but are now a business imperative if manufacturers want to capitalize on this megatrend.

At the heart of this industry transformation is connectivity, which will give stakeholders the ability to generate lucrative new revenue streams from advancements in telematics, fleet services, C-V2X (cellular-vehicle to anything), autonomous driving and advanced driver-assistance systems (ADAS).

Managing the lifecycle and deployment of connected vehicle services is a complex task, but it doesn't have to be. That's where Ericsson comes in. As the leader in connectivity, Ericsson is enabling innovation and flexibility in vehicle services by decoupling the software from the hardware and moving complexity to the cloud. With our specialized digital service platform, we're simplifying the management of connected vehicle systems, making connectivity easy for everyone, accelerating innovation and increasing the flexibility of new service roll-out.

All vehicle manufacturers are on a digital journey, but some are farther down the road than others. To take advantage of the incredible opportunity in connected vehicle services and prepare new service innovations to bring to market each vehicle manufacturer must keep the following in mind.

Think globally

Vehicle Manufacturers now need to think globally about their connected vehicle programs from day one, if they want to meet customer expectations. Vehicles today are shipped all over the world and will need to operate not just in the region where it will be registered, but anyplace to which it may travel. Connectivity handoff from one CSP (communication service provider) to another needs to be seamless to avoid a disruption in services that will only frustrate consumers or fleet operators. To ensure that vehicles are always connected, manufacturers must work with and manage countless CSPs around the globe.

Not only do vehicle manufacturers need to manage connectivity across continents, but they must also be aware of the local and regional regulations to ensure that compliance is met no matter where the vehicle may end up in a given day, even if it crosses borders.

Act locally

As vehicle manufacturers begin to think on a global scale, they cannot lose sight of local and regional matters like regulatory compliance requirements. Abiding by complicated regional regulations such as GDPR (General Data Protection Regulation) requires a trusted partner that can demonstrate expertise in security and the ability to ensure that each data-driven service deployed in their vehicles is compliant. Data must not only be secured, but properly stored according to local laws in each country or region.

Security and regulatory compliance must always be top of mind. Few things can damage consumer confidence in a brand more than a data breach or non-compliance with privacy requirements.

Data intelligence

Viable, accessible data is the lifeblood of new services innovation, services support and wise business decisions. After all, there is no point to collecting data if it's not going to be put to work. Through data analyses, organizations gain both a stronger understanding of the larger picture and access to different and rich data sources

Four megatrends for connected vehicles

With the convergence of connectivity, electrification and changing consumer requirements, there are four megatrends now shaping the future of connected vehicles. The acronym CARE captures the trends.

— Connected

Most vehicles rolling out of factories today are already 'connected.' This allows vehicle manufacturers and partners to control and share vehicle data, customize and provide critical updates, optimize vehicle systems, and predict maintenance.

— Automated

Connectivity is at the core of automated vehicles and enables the sharing of critical data, such as safety information to the cloud. But until fully autonomous vehicles become a reality, there will still be a need for human-autonomous vehicle interaction. Whatever the level of automation, connected cars require vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), vehicle-to-network (V2N), vehicle-to-pedestrian (V2P) and vehicle-to-everything (V2X) communication.

— Redefined

New business models are giving way to new revenue models that enable stakeholders to share economic gains. Vehicle manufacturers are being redefined as service providers for new on-demand, in-vehicle services to their customers. This new world calls for increased cross-border collaboration across all industries along with the formation of new alliances.

— Electrified

The industry is already transitioning to a more sustainable, electrified model. As the shift occurs, vehicle manufacturers are creating more efficient electric engines, innovative electric vehicle battery technologies, and more durable drivetrain technologies. Before an all-electric future becomes reality, additional work must be done to refine data analytics, artificial intelligence and machine learning. These efforts will, in turn, optimize vehicle usage and performance.

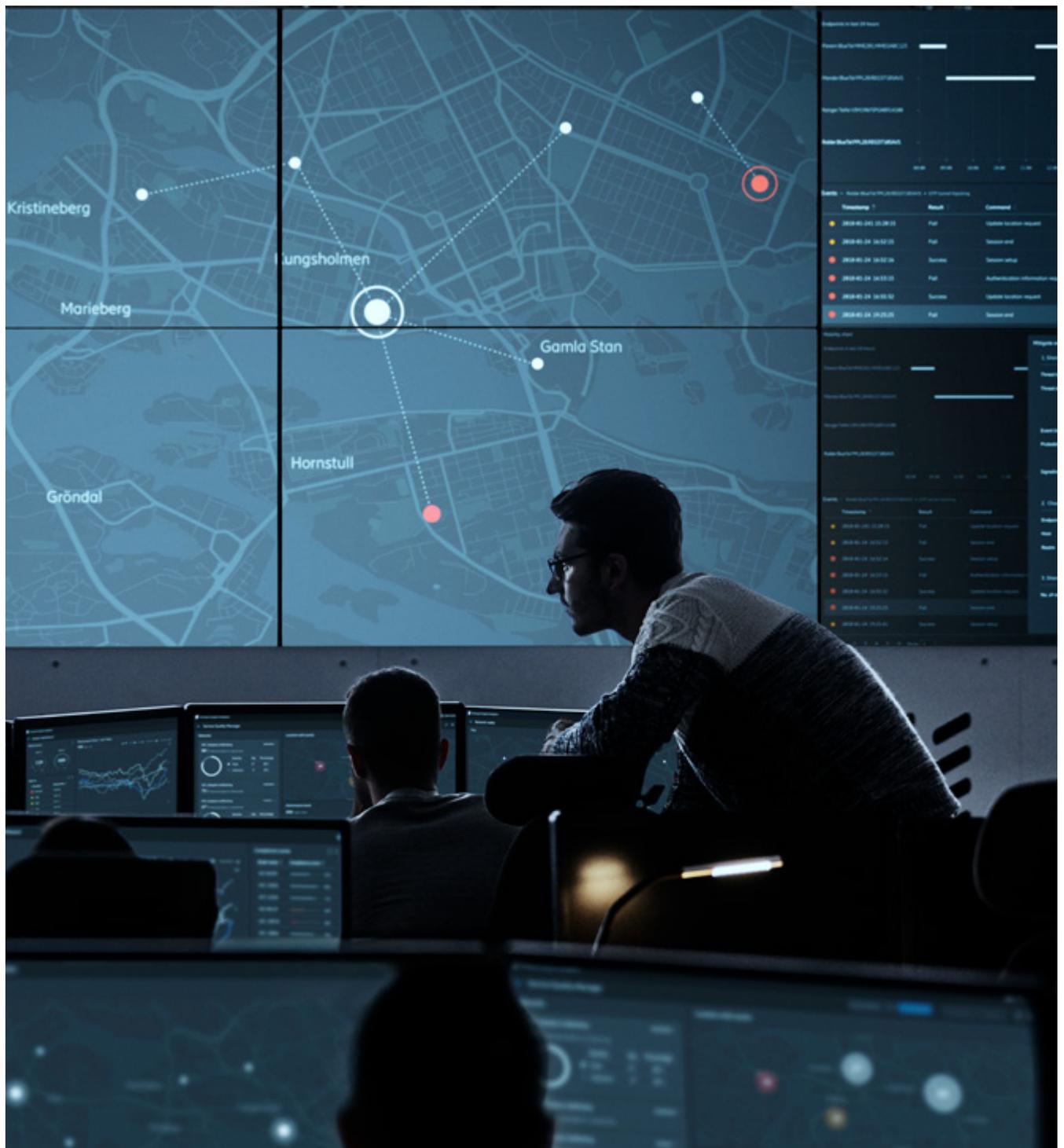
— including telematics, real-time and historical data — both of which are critical for business intelligence systems and improving business processes.

Overcoming launch risk

Vehicle manufacturers take on risk whenever they launch new services in new markets. Service launches are complicated, and the longer they take, the costlier they become.

There are ways to reduce the risks and complexity associated with the introduction of new offerings, starting with conducting smaller pre-launches to a smaller subset of end users. Being able to target and test services based on specific criteria — such as the make and model of a vehicle, the local area in which it will operate and driver demographics — can help refine a solution much faster. By analyzing service usage and uptake, vehicle manufacturers can adjust the scope and target markets.

This agile approach can help vehicle manufacturers gain a competitive advantage by reducing time-to-market and costs, thanks to time and resource savings. Perhaps most important, the larger customer base is sure to be happier with a more finely polished product, which increases the probability of success.



Providing and operating connected vehicle services

Once vehicle manufacturers have introduced a new service, ensuring that customers can continue to take advantage of it no matter where their vehicle takes them is no small task. It requires strong support from a wide array of operators, constant management of software lifecycles and a host of other needs that can distract from innovation. As manufacturers look to support their services after launch, they should keep in mind:

— Software lifecycle management

Operating and maintaining a connected car platform is expensive for a vehicle manufacturer and managing the software and lifecycle of the platform is especially cumbersome. Software lifecycle management, scaling and ensuring interoperability with third-party applications all require dedicated teams with very specific knowledge sets, which can be costly to maintain.

Once introduced, a solution needs to work as promised. Operations will need to ensure scalability and reliability. Connected vehicle services can also require the support of multiple software providers, with each one providing updates and patches at irregular and inconsistent times. Managing these updates can quickly grow overwhelming, but they must be made or service delivery may experience disruptions.

— Connectivity

Success with an innovative connected vehicle program will require that connectivity is there to support the services. No matter how groundbreaking a vehicle manufacturer's innovations may be, they will fail to impress if the connectivity infrastructure can't keep up. Managing connectivity is yet another major item that

must be considered by vehicle manufacturers, when deploying and supporting new service innovations.

— Global visibility and transparency

Regardless of where a vehicle travels vehicle manufacturers benefit from knowing which CSP is providing the connectivity service and at what cost. This transparency is easier said than done. A single point of contact for an established CSP ecosystem solves the complexity of global connectivity for connected vehicles and creates a uniform experience for vehicle manufacturers to procure and manage global connectivity.

— A world of new possibility

Advances in Subscriber Identity Module (SIM) technology open up new possibilities for vehicle manufacturers. The advent of the Embedded Universal Integrated Circuit Card (eUICC) SIM affords both greater flexibility in the choice of connectivity service providers to meet application performance requirements, regulatory constraints and business objectives. Changes to the communications service provider can be made over-the-air (OTA) without having to change the physical SIM in the car. For the global vehicle manufacturer eUICC helps in three ways; it

can reduce the potential expense incurred when using a model that relies on roaming and cuts the overhead of sourcing and managing multiple SIM SKUs while most importantly increasing flexibility to choose the connectivity providers.

— Single console management

Having the option to select the preferred combination of carriers worldwide does provide more cost-effective global coverage, but it also introduces complexity when it comes to managing all those networks applications and updates.

Vehicle manufacturers would benefit from a platform with a single interface that unifies all aspects of vehicle connectivity management. The more platforms and interfaces a vehicle manufacturer's operations team must operate in a siloed manner, the more cumbersome and time-consuming management becomes.

There is a lot to think about when operating connected vehicles, and it can get overwhelmingly complex. Thankfully, Ericsson can be relied upon to help make all aspects of the connected vehicle services journey simple to manage and easy to implement.



Ericsson's Connected Vehicle Cloud platform

Connectivity must be easy to use, easy to implement and easy to manage.

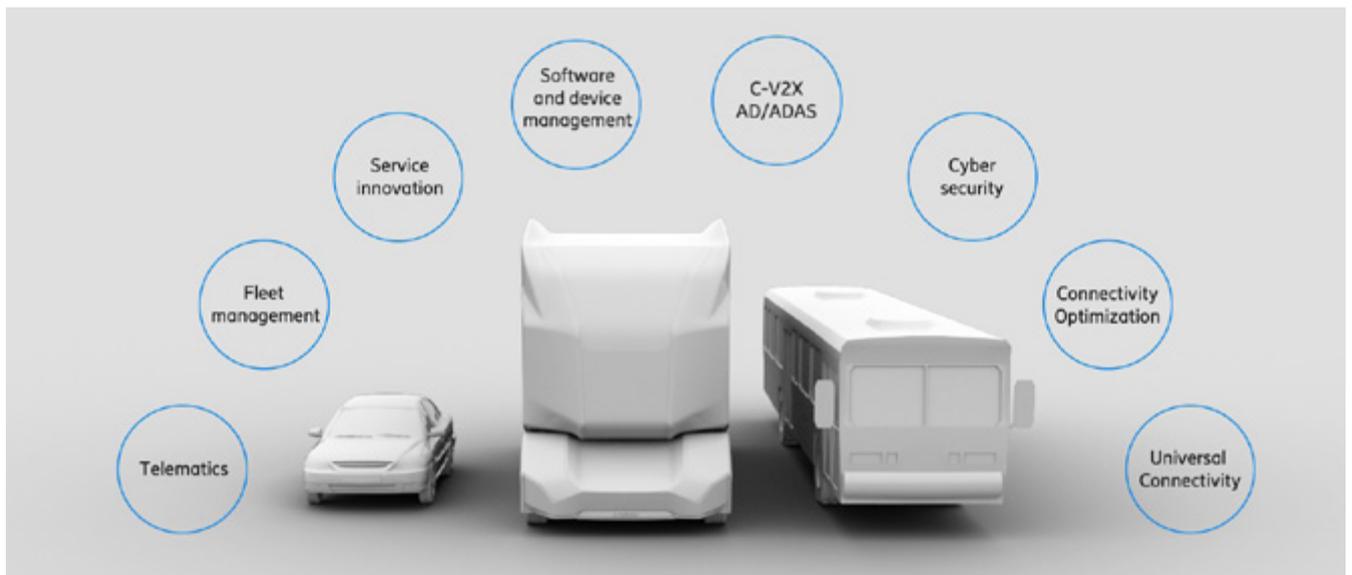
Ericsson has provided connectivity solutions to the world for 140 years and, along the way, has gained the knowledge and expertise required to help vehicle manufacturers simplify creating and supporting millions of connected vehicles, no matter where they are made or where they travel.

Connected Vehicle Cloud allows vehicle manufacturer to think globally and easily manage security, global data legislation, connectivity, data management, analyses and everything else required to bring a new connected service to market and beyond.

Connected Vehicle Cloud is a digital service platform that enables the vehicle manufacturer to rapidly develop and manage new services for connected vehicles. The platform is tailored to fit the vehicle manufacturers' growing demand for scalability and flexibility with the necessary capabilities to support any connected vehicle service.

Ericsson's Connected Vehicle Cloud offers packages for telematics and cyber security, service innovation for flexible rollout, fleet management for autonomous and non-autonomous fleets, universal connectivity for subscription handling, software and device management for over the air updates and C-V2X for safety and improved driver experience use cases.

As a trusted partner of global vehicle manufacturers from Europe, U.S and Asia, Ericsson's Connected Vehicle Cloud solution is connecting more than 100,000 new vehicles each month. The platform offers value packages for both established basic functions as well as advanced, 5G-ready use cases.



The platform allows vehicle manufacturers to:

— **Leverage new capabilities and services**

For the vehicle manufacturers of tomorrow, differentiators will no longer be in traditional vehicle hardware, but in the user interface and elements powered by software and advanced electronics.

Ericsson's Connected Vehicle Cloud, an automotive platform-as-a service, empowers vehicle manufacturers to take advantage of continuous improvements, new features and up-to-date software. Ericsson's global roadmap also provides access to new innovations across the worldwide market.

— **Create new innovative services**

Ericsson enables vehicle manufacturers to greatly increase innovation with a flexible solution for faster service rollout. By allowing Ericsson to handle the day-to-day operations of a connected vehicle services program, manufacturers can focus their attention on developing new services that will delight customers, increase loyalty, generate additional revenue streams. Innovation must always continue, because a program that goes stagnant will not last very long, because it will sacrifice share of the very lucrative connected vehicle services market to more inventive competitors. Top level management at vehicle

manufacturers push for new innovative services, new business models and new revenue streams. Ericsson's Connected Vehicle offers capabilities in service innovation that helps validate new models from a business perspective. These capabilities empower vehicle manufacturers to develop new services and improve existing services at a much faster pace than traditional vehicle program-centric methods can.

— **Launch with flexibility to increase success**

By allowing new services to be rolled out to a smaller, specific set of users, for instance, drivers of a

certain make and model of vehicle, in a particular region or of a certain demographic, manufacturers are able to refine and perfect services based on the collected data, before a mass rollout.

By testing services to smaller user-base, they can streamline research and development efforts and increase the success of the launch.

— **Simplify complexity**

The easy-to-use platform is delivered as a service and helps vehicle manufacturers reduce the complexity and costs in managing their connected vehicle services. Ericsson understands the challenges created by complicated issues related to security, identity management, global data legislation and 24/7 operations of connected vehicles worldwide. As a result, the CVC services are specifically designed to remove this complexity for the vehicle manufacturer through the as-a-service set-up and platform capabilities.

Vehicle manufacturers also save costs by not having to worry about the operational challenges of man-

Our value pillars to enable the connected vehicles of the future are:

- **Enable innovation.** Relying on our cost-efficient, scalable connectivity platform will enable vehicle manufacturers to focus on their core business and make investments that will generate new revenue streams, build customer loyalty and cut time to market.
- **Manage complexity:** Making it easy for vehicle manufacturers to handle complex issues — such as security, identity management, global data legislation, 24/7 operation of connected services worldwide — and exceeding customer service and mobility expectations are our key differentiators. Using Ericsson's platform for connected vehicle services helps simplify complexity for vehicle manufacturers.
- **Connectivity made easy.** Thanks to our technology leadership in cellular connectivity, Ericsson is helping to reshape the automotive industry landscape, with connectivity as the game-changing component required for vehicle manufacturers adapt to a new world.

aging their global solution, or having to recruit or nurture the specific skill sets required to support the complexities of a connected vehicle program, in-house. Manufacturers can therefore better control costs and spend more time and resources on R&D, instead of operations.

While working with Ericsson, vehicle manufacturers can capture a 90% saving in resources spent on maintaining the back end of their connected vehicle platform.

— **Partner strategically**

It is impossible for vehicle manufacturers to be the best in everything, so they must choose strategic partners who can provide value and support. The combination of cellular connectivity, connectivity management and the Connected Vehicle Cloud creates a strong ecosystem that can provide vehicle manufacturers with innovation and R&D support to bring the fully connected vehicle to market.



Don't just take our word for it

Innovation with Connected Vehicle Cloud

Volvo Cars.

Ericsson's highly scalable, connected vehicle platform allowed Volvo to enhance the overall customer experience while improving service delivery and overcoming obstacles such as data legislation and storage management.

LYNK & CO.

Ericsson and LYNK & CO teamed up to deliver a connected vehicle platform that features an application programming interface (API) open to third party developers, which provides limitless opportunities to personalize, enrich and expand the automobile experience. LYNK & CO vehicles are designed to meet the preferences of the connected generation of consumers around the globe.

Scania One.

With our connected vehicle platform, Scania was able to define, orchestrate and expand the digital ecosystems around their connected vehicles. It enabled Scania to create new business models and explore new revenue streams by fostering creative and secure ventures with third-party developers.



Innovation with 5G

Einride and Telia

Einride, Telia and DB Schenker are creating a more sustainable transport ecosystem. Einride's connected autonomous, all-electric vehicles are on the roads in Sweden, making short-haul deliveries and cutting carbon emissions. 5G is a key enabler of sustainable transport, providing the connectivity and reliability needed to safely introduce fully-autonomous trucks onto public roads.



Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.

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