

A photograph showing the interior of a car from the driver's perspective. A person's hands are visible, one on the steering wheel and the other touching a large, wide infotainment screen. The screen displays a navigation map with various street names and a car icon. The background shows a road and trees through the windshield.

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MANAGING THE COMPLEXITIES OF CONNECTED CAR SERVICES

A Case Study from Hansen and Tech Mahindra

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Mahindra**



SUMMARY

- A major car manufacturer (MCM) required a connected car service subscription solution to overcome the increasing complexity of end-customer connected digital services and focus on new connectivity services, Tech Mahindra and Hansen were selected to deliver this connected car platform.
- Hansen Order Management (OM), supported by Hansen Catalog, enabled the manufacturer to move from a spreadsheet-based system, which involved a significant amount of manual intervention to a fully automated, digital activation process.
- SIM Subscription Management System [SSM] was built in compliance with the TM Forum Open Digital Framework, specifically the Business Process Framework (eTOM), the Information Framework (SID), and TM Forum Open APIs.
- The solution was required to optimize and orchestrate fulfillment of service and subscriptions as available today but also to accommodate future connectivity models, including 5G, satellite, or other connectivity modes mandated for Intelligent Transportation Systems (ITS).
- The final solution is fully automated, scalable, and cloud-enabled, as well, designed to meet the requirements of today's automotive market – while also providing the necessary scalability and rich feature set needed to support future growth.

THE FUTURE OF MOBILITY

Today's vehicle manufacturers are undergoing a period of dramatic transformation – one impacting their business from the way vehicles are manufactured to the way in which they are used. Now, we are experiencing a rapid shift in favour of electricity-powered vehicles (EVs) to lower pollution and implement the rapid maturity of driver assistance and automation technologies.

EVs are becoming a popular choice for drivers worldwide. In 2010 17,000 EVs were on the road, and by 2019 the number had grown to 7.2 million, accounting for 2.6% of global car sales and about 1% of global cars, a 40% YoY increase¹. By the end of 2021 there were approximately 16.5 million EVs on the road, and in 2022 EV sales have continued to rise further, with 2 million EVs sold worldwide in the first quarter, up 75% from the same period last year².

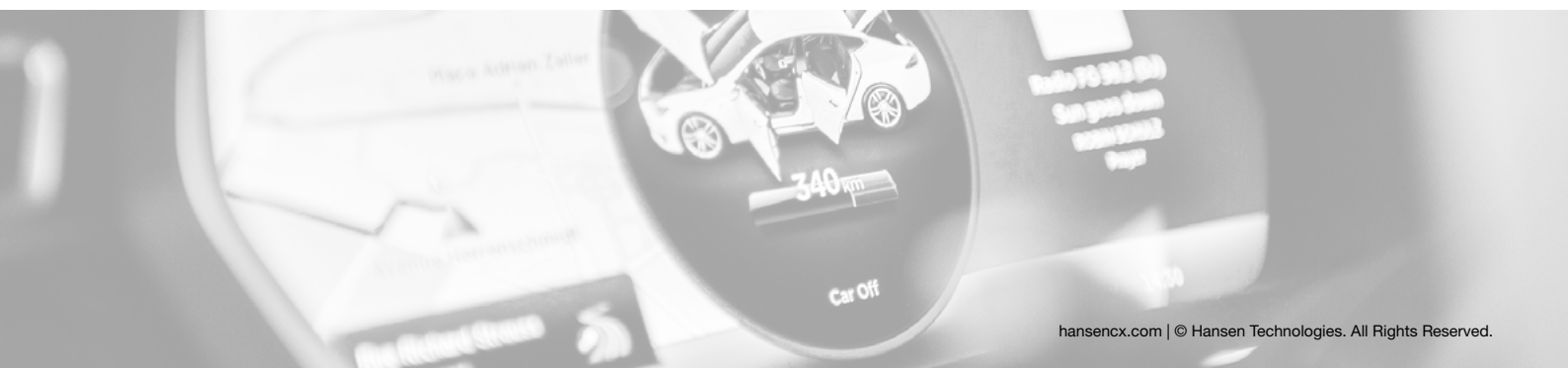
The widespread deployment and adoption of connected car technologies is also beginning to emerge and promote change. Starting with basic telematics services – vehicle tracking, diagnostics, and crash notifications.

Connected cars also present the opportunity for car makers to offer additional value-added services, thus creating new revenue from cars after the point of sale and continuing across a long lifecycle.

CLIENT BUSINESS VISION

A major car manufacturer (MCM) produced a connected car service with a mission to make life easier, better, and safer for everyone by providing customers and society with the freedom to move personally, sustainably, and safely.

Aiming to create personalized, differentiated experiences that deliver value to its consumers using open standards-based digital and mobile-centric technologies over its award-winning automobile platform. To meet its customer's needs around convenience, safety, and sustainability, when, where, and how its customers want, the MCM's vision is to develop experiences that build more robust, direct relationships with its customers.





KEY REQUIREMENTS

The MCM required a connected car service subscription solution to overcome the increasing complexity of end-customer digital services and a focus on new connectivity services. One that met the following key requirements:

- Provides services offered by a mobile virtual network operator (MNVO)
- Secures a future-proof system to manage subscriptions for connected car services
- Drives consumer experience change while being mobile network operator (MNO) agnostic using eUICC SIM
- Manages resources including Telecommunications Control Unit (TCU), the new eUICC, conventional SIMs, and MNO subscriptions
- Accurate information available on car performance and condition
- Inventory Management for the hardware and software
- Increased pace of innovation and go to market
- A unique selling proposition over their competitors
- Car usage metrics managed with real-time information
- Meet compliance requirements in different global markets

CONNECTING A GLOBAL CAR MAKER

Appreciating the increased significance of connectivity services to its current business, and the potential to grow its digital services revenue by offering new subscription services in the future, a leading global car manufacturer selected Hansen and Tech Mahindra to deliver its connected car platform.

The first step was a global connectivity platform to power the connected car strategy – converting the car into a mobile device on wheels, one that would also lower customers' friction when looking to conduct business with the MCM.

The platform would not just look at connectivity, but also manage the personalization and complex service and subscription lifecycle requirements from entertainment and information apps. Including Real-Time Traffic Information (RTTI), for efficient journey planning, and cutting-edge, connected safety services required as the MCM offers a connected car offering globally to its customers.

Success in managing these requirements was essential in providing a consistent experience and guaranteeing outcomes to customers as the MCM innovates, reimagines, and reinvents the connected car strategy for the next normal.

The MCM SIM Subscription Management System (SSM) manages the global connectivity for all products and services offered by the connected car solution as part of the Connected Car strategy. It enables the Connected Car (CC) solution to link with connected cars anywhere, anytime, enabling the MCM with the ability to provide telematics to mitigate problems in cars before they happen, while addressing customer requirements around convenience, entertainment, education, and safety consistently and contextually.

The system provides the CC solution with the option of becoming a global MVNO and with complete control of the customer journey and customer experience for its digital services rather than relying on third parties.

“We wanted to deepen and extend the brand experience.”

The goal was to enhance our customers' experience, trust, and loyalty as they looked at buying a new car, as owners of our brand of car, or as any other stakeholder interacting or engaging with our brand. By deepening the relationship with our customers through a direct channel, we could allow the business to respond to our customer's needs around convenience, safety, and sustainability – when and where they want.

– MCM





THE CHALLENGE OF ENABLING SERVICES GLOBALLY

A key challenge for the MCM was the ability to activate connectivity for vehicles being sold in multiple countries, each of which has its own local connectivity requirements. Hansen OM and Hansen Catalog ensure that the correct connectivity provider is selected for the market the car is sold in based on defined eligibility rules.

A second challenge for the MCM was the need to comply with data residency requirements for vehicles sold into China – software and data need to be physically hosted in China to comply with national requirements. Hansen OM and Hansen Catalog are deployed in the cloud (with AWS), meaning a separate instance was needed to support sales in China.

- Building ecosystem or marketplace platform-based business models around its connected cars. With around 700,000 vehicles sold annually by the MCM, SSM provides them with a solid foundation to become a global MVNO with the tools to bundle additional digital services over its connected car platform.
- Cars are manufactured and assembled in a few countries but sold globally. Services Status Monitor (SSM) allows complete management of the associated components at a resource level globally – SIM/eUICC cards and profiles, TCU, and MNO plans and subscriptions.
- Life cycle management of the MCM Connected Car services and subscriptions, allowing them to personalize and contextualize offerings and base them on customer requirements rather than existing subscriptions.
- Management of the Mobile Network Operator (MNO), including when the car travels across different countries and roams multiple operators.
- Maintain consistent customer experience across all customer interactions and engagements with CC to drive customer loyalty and trust in the MCM brand.

APPROACH

Hansen approached the project with the use of out-of-the-box (OOTB) APIs of the commercial-off-the-shelf (COTS) product, instead of a bespoke solution, which helped in a faster rollout of the connected solution.

- Use of COTS product based solutions:
 - Move from existing bespoke solutions to ready-to-use, COTS products from leading TM Forum-approved vendors with a focus on utilizing OOTB functionalities for faster time to market
- Digital Solution with Faster implementation
- Deploy configurable solutions from vendors and partners instead of building customisable capabilities

SOLUTION

The solution required an architecture that would allow agility and flexibility in meeting future business and operating model requirements without corresponding cost increases, therefore an SSM platform development was proposed to offer connected cars on a SaaS model. The solution was based on a best-of-breed architecture to eliminate single vendor dependency and incorporated micro-services for futureproofing and enabling plug-and-play of new functions.

To avoid the need to refactor applications in the future, the SSM was built in compliance with the TM Forum Open Digital Framework, specifically the Business Process Framework (eTOM), the Information Framework (SID), and TM Forum Open APIs. The goal was not only to simplify, optimize and orchestrate fulfilment of service and subscriptions as available today but also to accommodate future connectivity models, including 5G, satellite, or other connectivity modes mandated for Intelligent Transportation Systems (ITS).

The Business Process Framework helped the team standardize all the processes involved in the journey, while the Information Framework provides a standard data model. Then, Open APIs are used to enable seamless interoperability across all ecosystem partners. A standard-based information model and TM Forum Open API reduce the barriers to integration between ecosystem partners, including product specifications or consistent patterns in API models.

Together TechMahindra and Hansen developed a joint solution to power the manufacturer's connectivity services that is agnostic to mobile network operators – enabling it to seamlessly select the correct providers for the market in which cars are being sold. The combination of products and services defined in Hansen Catalog, with order workflow and orchestration from Hansen OM, enables connectivity to be fully automated, avoiding costly and time-consuming order fallout.



The fully automated, scalable, and cloud-enabled platform delivered by Hansen and TechMahindra is designed to meet the requirements of today's automotive market – while also providing the necessary scalability and rich feature set needed to support future growth.

While the focus of the platform is currently on supporting telematics-type services, it will provide the platform with additional value-added services as the market matures. This includes the creation and fulfilment of orders incorporating partner services, for example, related to in-car media and entertainment.

STREAMLINED CONNECTIVITY MANAGEMENT

A key factor in the selection of the platform is its ability to offer a central point from which to manage connected car services. Previously services had been delivered in the somewhat disjointed way that is often seen as a result of organic growth, which led to a number of problems related to efficiency and agility.

The adoption of Hansen OM, supported by Hansen Catalog, enabled the MCM to move from a spreadsheet-based system, which involved a significant amount of manual intervention to a fully automated, digital activation process. This enables faster and more efficient management of car connectivity, with reduced potential for order errors.

Orders for car connectivity are placed by dealers using a Microsoft Dynamics CRM platform, with orders then passed into Hansen OM for orchestration. In addition to activating services for new vehicles, the Hansen platform is also used to disconnect vehicles where the service is no longer required, for example, if it is sold to a new owner.

This consolidation and optimisation of systems also gave the MCM full oversight of its costs related to the provision of connectivity to its vehicles, as opposed to having data distributed across systems and requiring subsequent reconciliation and allocation.

OUTCOMES

Together, Hansen and TechMahindra were able to deliver a consolidated and optimised connected car management platform. One that manages connectivity for more than 1.4 million vehicles, with a plan to extend to 10 million+, with support available across EMEA, North America, and APAC (including China).

The final solution met the following requirements:

- Addresses the end-to-end process orchestration of all service requests arising from a connected car with a single platform helping reduce costs
- Enables the OEM to clearly define all services that can be offered and monetized from the end customer on top of a connected car infrastructure
- Flexibility to choose a network without hardware change
- Superior customer experience with added convenience
- Single point ownership of the program
- SaaS model with per vehicle billing
- Faster addition of MNO to the stack, enabling coverage for the MCM cars worldwide

Tech Mahindra

ABOUT TECH MAHINDRA

Tech Mahindra is a multinational information technology and consulting services business operating in 90 countries across the globe. As a global leader in the Telecom space, TechM offers services in sales automation, marketing automation, E2E B2C/B2B BSS transformations, end-to-end partner management, commerce care and overlay solutions, and much more to help drive growth and digital transformation for customers.

For more information visit: techmahindra.com

1. <https://www.iea.org/reports/global-ev-outlook-2020>
2. <https://www.globalfleetmanagement.com>

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ABOUT HANSEN

Hansen Technologies (ASX: HSN) is a leading global provider of software and services to the energy, water, and communications industries. With its award-winning software portfolio, Hansen serves 600+ customers in over 80 countries, helping them to create, sell, and deliver new products and services, manage and analyse customer data, and control critical revenue management and customer support processes.

For more information, visit hansencx.com

HansenSuite

for Communications, Technology & Media

HansenCatalog

- Product/Service/Resource Master Data Management
- Active distribution of product, service and resource throughout your business
- Product Lifecycle Management

HansenCPQ

- Omni-channel quote and order creation
- Dynamic catalog-driven query/offer selection/configuration/validation

HansenOM

- Order validation, decomposition and über-orchestration
- Dynamic configurable workflow to reduce new service roll-out time

HansenProvision

- Network service and device provisioning
- Multi-protocol/multi-vendor activation solutions

HansenPortfolio

- Single point of truth for installed customer products, services and resources
- Shares and manages portfolio inventory data with any fulfillment system

HansenCCB

- Customer care and billing capabilities for new-entrant and specialist communications service providers.
- Scalable and precise calculation of customer usage and integration with ERP and financials.

BENEFITS

Grow New Revenue

Overlay the most modern technology to create new business models and generate new revenue from your product innovation.

Lower Cost-of-Sale

Speed time to revenue by reducing time-to-quote and order/delivery efficiency.

Lower Cost of Operations

Automate key operational processes and reduce order fallout, minimizing the need for manual intervention.

Happier Customers

Eliminate misquoted and incorrectly delivered orders that undermine customer satisfaction.

Improve Operations Quickly

Make decisions with real-time operational data helping you act fast to improve commercial and operational performance.

Reduce Time-to-Deliver

Accelerate product innovation by empowering the business to configure (not code) new offerings to meet market demand.

Powered by Hansen



Hansen Technologies (ASX: HSN) is a leading global provider of software and services to the energy, water and communications industries. With its award-winning software portfolio, Hansen helps over 620 clients from over 30 offices worldwide to create, deliver and engage with their customers, to manage and analyze customer data, and control critical revenue management and customer support processes.

