cubic telecom

PACE
Global Connectivity Management Platform

FOR AUTOMOTIVE

Introducing Cubic Telecom's next-generation platform.
Connecting vehicles on a truly global scale.

Contents

1. Industry Challenges

The automotive industry is undergoing profound transformation. There is a rapid change in technology and a move towards high-speed data connectivity. This change is being driven by the megatrends of digitilisation, sustainability and urbanisation and it results in new challenges.

The number of cellular IoT connections will reach more than 5 billion by 2025*. Manufacturers and providers of connected products and applications expect to connect these services anywhere in the world. To be a global player, IoT device manufacturers (OEMs) must negotiate agreements with many different mobile operators around the globe, grapple with the complexities of connecting and managing their devices with many different mobile telecommunications technologies and be compliant with regulatory and operational constraints in each country. A complicated, expensive and time-consuming process for the OEM.

Cubic Telecom cuts through all of these complications to deliver a single global solution that offers:

- Global connectivity
- Remote device connectivity management
- Minimal embedded SIM SKUs across the manufacturing and supply chain
- Seamless integration with OEM IT business systems
- Access to our global portfolio of Tier 1 mobile network partners
- Data management and analytics
- End to end security

Types of customers we serve:

Vehicle Manufacturing	Global Enterprises	Energy Customers	Automotive	Logistics	Devices	Heavy Industry	Fleet Services

* Source Ericsson, Nov 2019

2. Take Control

Our Global Connectivity Management Platform offers unique device connectivity management and service enablement capabilities, all in one package. We remove all the complications of integrating with complex management platforms and telecommunications networks in different regions, making it easy for you to integrate your business systems and manage your global connected devices.

Cubic Telecom's connectivity products and services for connected device manufacturers consist of the following elements:

PACE:
Global Connectivity Enablement Platform

Connectivity Management Platform implementing automated business processes and workflows. A best-in-class management and engineering web-portal, advanced connectivity analytics service, provided on demand. An industry-first Wi-Fi Hotspot end-user experience, including Carrier of Choice (User Carrier Selection) and pair-to-plan feature.

One global Multi-MNO SIM and open MNO ecosystem

Cubic Telecom provides a GSMA-compliant subscription management solution fully open and interoperable enabling participation of any MNO.

Care, Operations & Service Management

24/7 Customer Care, operations, maintenance and support.

Full regulatory compliance

Cubic Telecom has a dedicated wholesale and telecom regulation legal team that is critical in designing **locally compliant solutions** (compliant with Telecom and Tax regulations) for all services in all countries.

Cubic-direct LTE footprint

LTE connectivity services in countries where Cubic Telecom has local Wholesales integration, i.e. use of radio access from the wholesales partner network combined with Cubic's LTE Core Network

Future-proof voice services

Cubic Telecom operates it's own IMS core for VoLTE services (PoC phase).

Differentiated Data Services

Cubic Telecom's LTE Core Network implements Multi-APN traffic differentiation with no restriction on the number of concurrent APNs. The associated split billing capability is also available. Furthermore, Cubic Telecom's **PLXOR** provides the unique capability to enable service classification and associated billing separation on a single APN.

Extended LTE footprint via Partner MNOs

88 Tier-1 MNO agreements globally to deliver coverage in over 190 countries, being fully regulatory compliant in all of the markets that we support, including: UAE, Brazil, Russia, Singapore, China, Turkey.
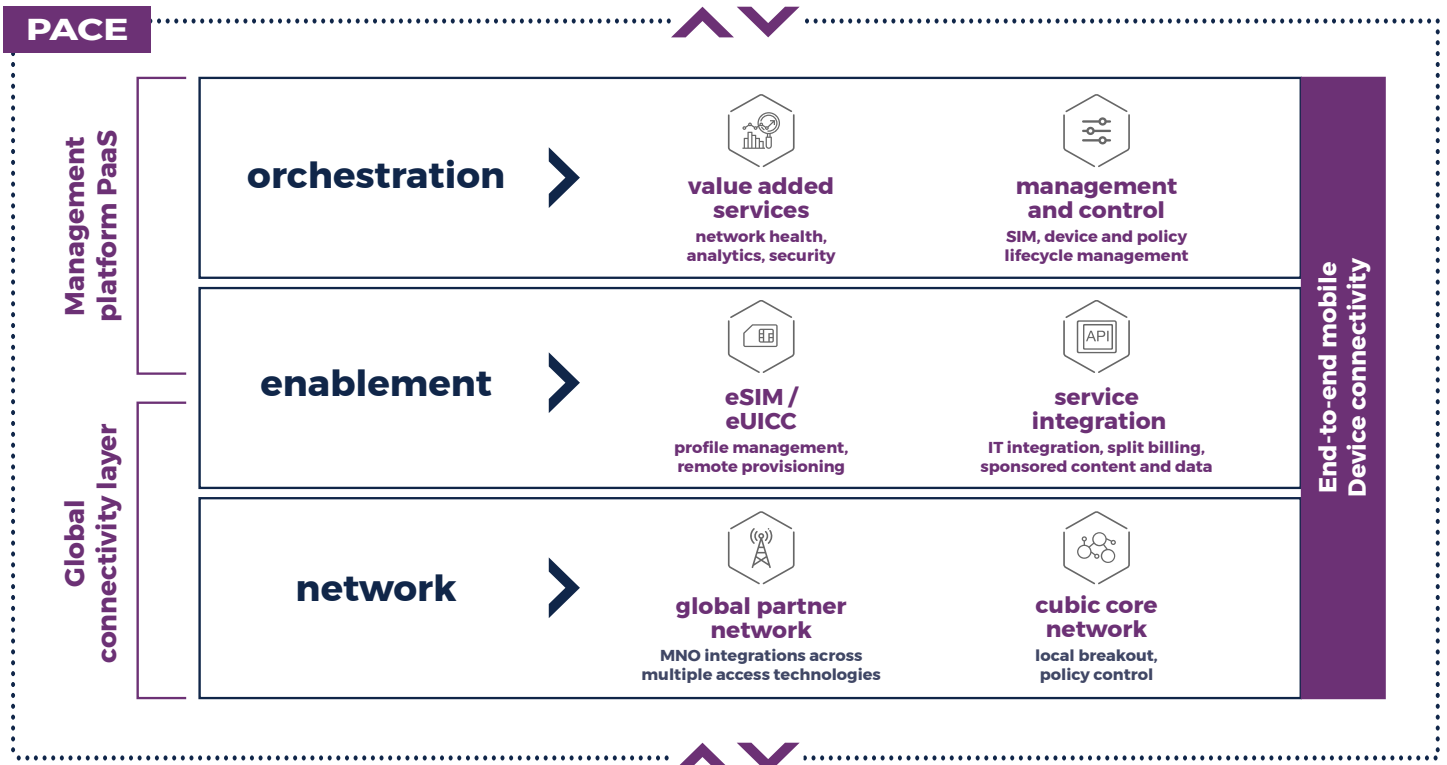
3. PACE:

Global Connectivity Management Platform

OEM back end IT systems

PACE

Management platform PaaS

| orchestration > | value added services
network health, analytics, security | management and control
SIM, device and policy lifecycle management |

| enablement > | eSIM / eUICC
profile management, remote provisioning | service integration
IT integration, split billing, sponsored content and data |

Global connectivity layer

| network > | global partner network
MNO integrations across multiple access technologies | cubic core network
local breakout, policy control |

End-to-end mobile Device connectivity

connected devices

Orchestration

Provides a single point-of-control that enables you to securely manage, update and monitor your connected device fleet from anywhere in the world. It abstracts the complexities of integrating with multiple service providers in different regions and scales flexibly from low device numbers to mass volume, in line with your business growth. Orchestration capabilities include:

- ✔ Zero-touch device registration
- ✔ Lifecycle management of SIMs and devices
- ✔ Flexible integration with your IT systems
- ✔ Customisable management portal
- ✔ eCommerce platform and web-shop
- ✔ Connectivity analytics, monitoring and diagnostics

PACE **Puts you in control**

Seamless global device connectivity with zero-touch remote management and provisioning enables you to securely manage and monitor your connected device fleet from anywhere in the world.
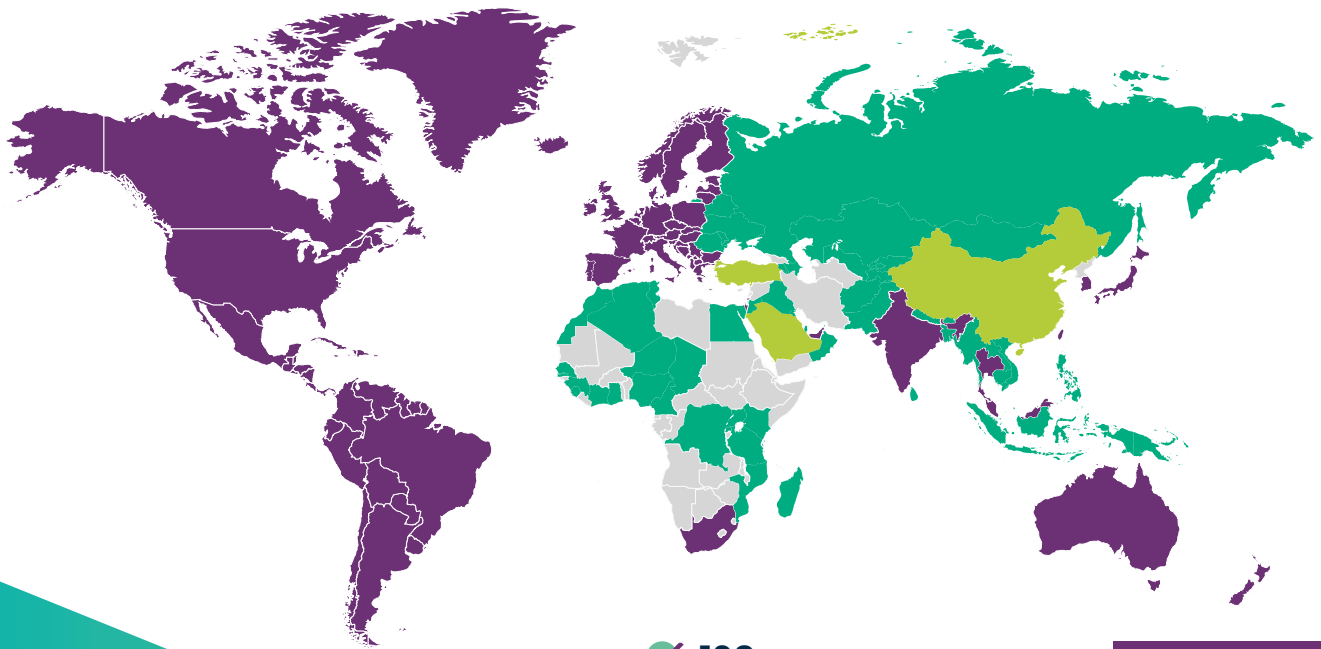
Enablement

Offers the platform APIs to enable seamless integration with IT infrastructure and a suite of GSMA standards compliant network interfaces to facilitate global connectivity through a central access point. Benefit from split charging and billing capabilites, zero rating, and sponsored services. In addition, our GSMA compliant and vendor-neutral Subscription Management solution enables remote SIM provisioning and eSIM localisation with any SIM provider.

Network

Provides seamless global device connectivity across all wireless technologies. Our highly scalable core network includes our HLR/HSS, DNS, SMSC and OTA infrastructure with regional Packet Gateways providing local breakout for minimal latency and PCRF for policy management and control. Global radio access network coverage is provided through integration of Cubic Telecom 2G, 3G and LTE Core Networks with our worldwide portfolio of Tier 1 MNO partners.

Global Coverage Footprint

Using a portfolio of integration types...

- **190** Countries Available
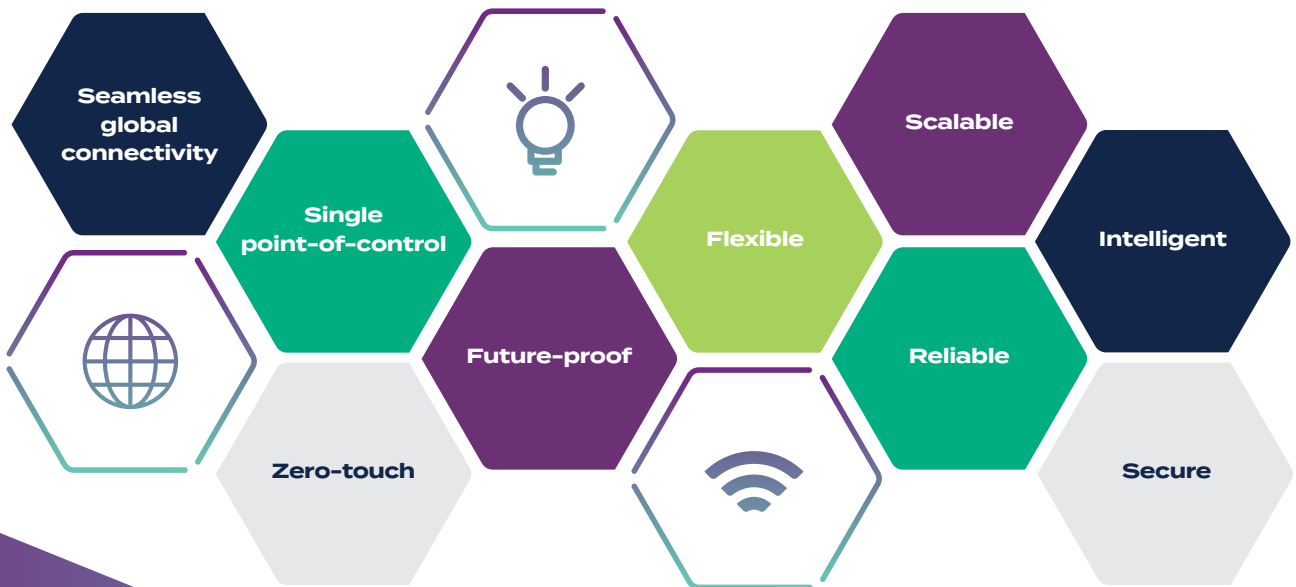- **94** Countries with LIVE devices
- **88**+ MNO Agreements

| Connectivity - Live Vehicles |
| Connectivity - Primed |
| Pending Regulation |
| Planned |

Platform Capabilities

Greater Choice	Centralised Control	Future-proof
Open portfolio of global tier-1 MNOs (via remote SIM provisioning)	Seamless global connectivity through our Tier 1 ecosystem of MNO partners	Maintains compliance with local tax regulations and industry standards
Platform access via customisable portal or API integration	One contract, one bill across multiple MNOs	Network technology agnostic
Simple device fleet migration to preferred MNO partner	Remote SIM lifecycle management (OTA)	Vendor-neutral subscription management
Flexible data plans	Global connectivity control platform	Open, no lock-in
Easy integration with customer preferred MNO IT platform	Single customer product integrated across multiple MNOs	Scales in line with customer growth
Add devices to an existing plan	Rich diagnostic monitoring & altering	Easy integration with customer preferred IT platforms
Split billing across multiple entities on one SIM	Intelligent analytics	Sponsored content and services enabled

Customer Benefits

Seamless global connectivity

Single point-of-control

Scalable

Intelligent

Flexible

Future-proof

Reliable

Zero-touch

Secure

3.1. PLXOR

Unlocking the true value and potential of the connected car

PLXOR is a one-stop global solution for optimising car performance, personalising connected services, enriching customer experience and unlocking revenue streams.

By leveraging Cubic Telecom's wide range of automotive technology solutions, IP, and expertise in complex systems engineering, PLXOR is designed to help automakers improve cost efficiencies, create service revenue opportunities throughout a vehicle's lifecycle and provide advanced user experiences for customers and drivers.

PLXOR also provides automakers the opportunity to unlock new revenue streams throughout the lifecycle of a vehicle with over-the-air (OTA) updates, on-demand unlocking of features, bundled as well as pay-as-you-use services, while gathering valuable vehicle and usage analytics.
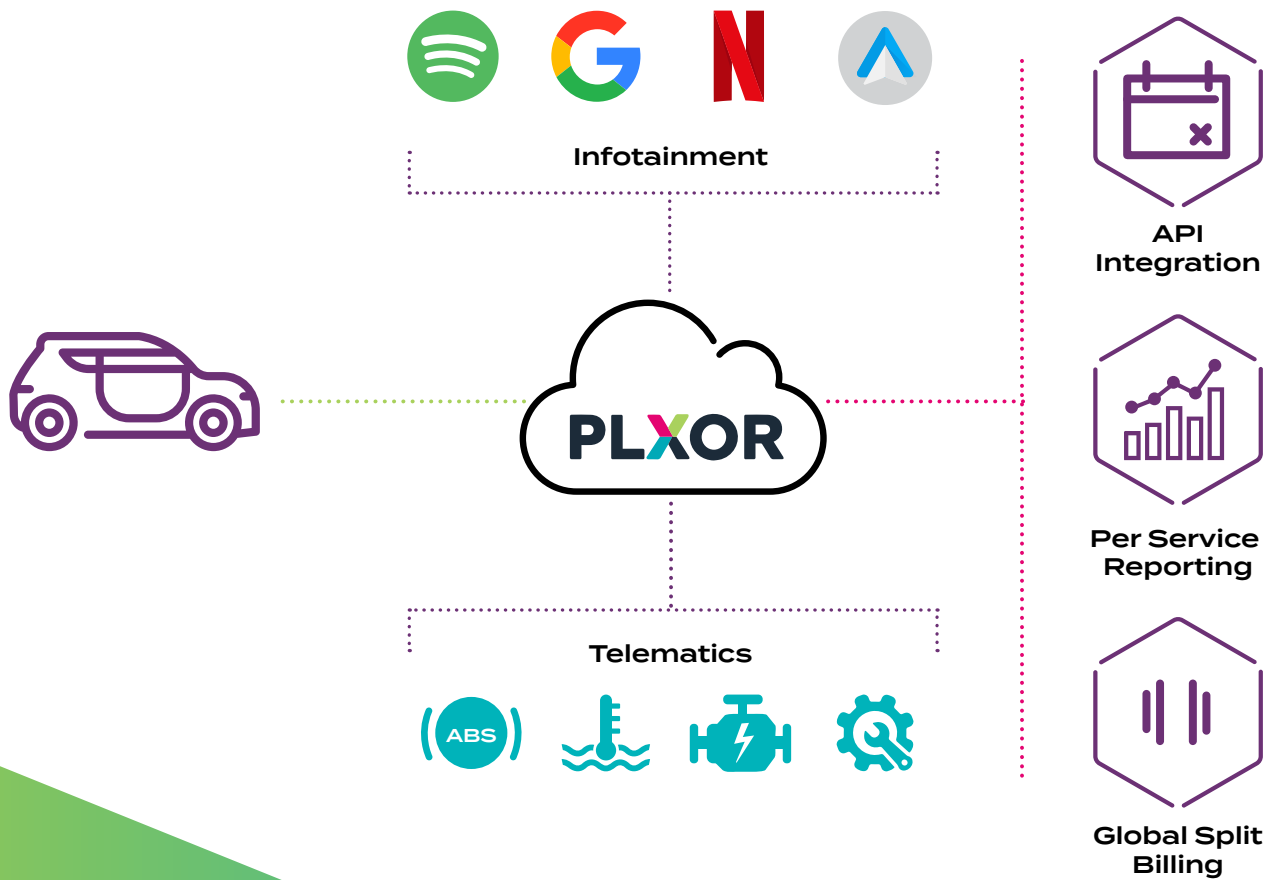
Business Value

1 Cost efficient connectivity services and over-the air updates

2 Actionable insights – opportunity to receive insights about application and feature usage, and make informed decisions based on monitoring hardware and feature usage

3 New service and revenue opportunities – upsell opportunities after lease return

4 Global operators for global connectivity, regulation compliance and integration with local operators and differentiate traffic for sponsored connectivity offerings
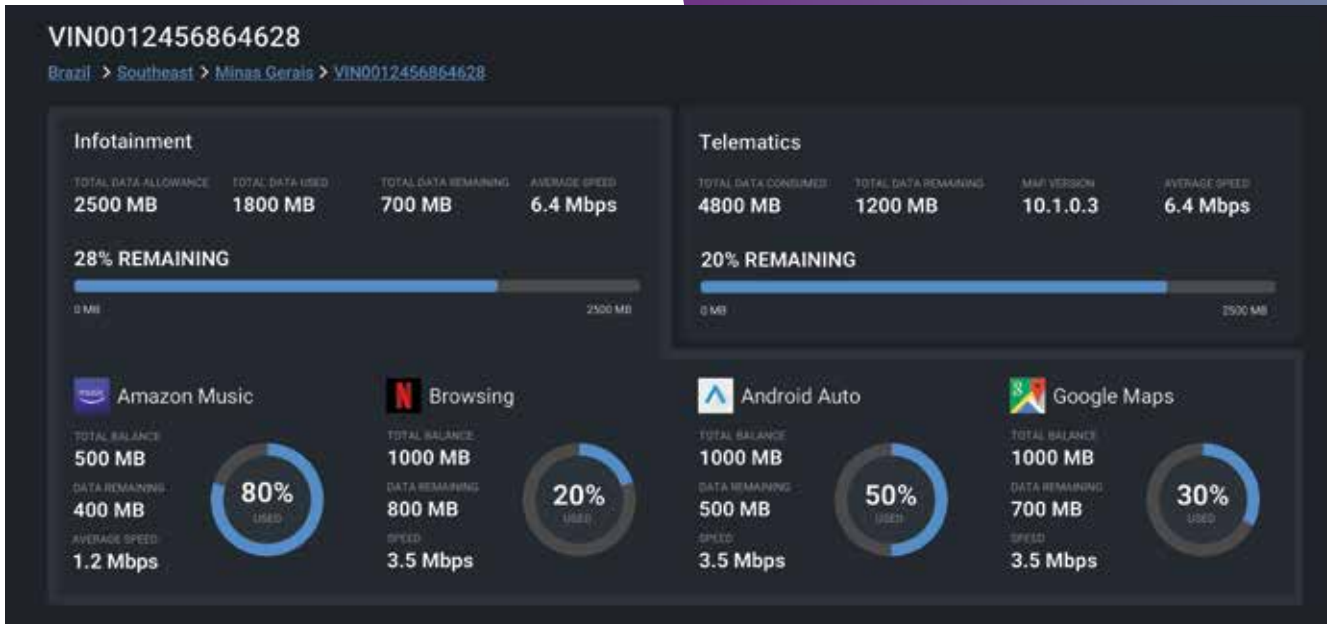
Key Capabilities

- ✅ Single point of control over what services are consuming your data flow; be the gatekeeper of your connected vehicle
- ✅ Realtime automation enables dynamic throttling, notifications and back-end updates as assigned buckets and bundles are depleted
- ✅ Prioritise and control your connectivity; each separated traffic category can be assigned separate Quality of Service settings and bandwidth priorities
- ✅ Global split billing
- ✅ Highly redundant and configured over web-standard API's
- ✅ Quick and simple configuration by the customer without complex IT integration

Infotainment

PLXOR

Telematics

API Integration

Per Service Reporting

Global Split Billing

PLXOR –
User Cases

VIN0012456864628

Brazil > Southeast > Minas Gerais > VIN0012456864628

Infotainment

TOTAL DATA ALLOWANCE	TOTAL DATA USED	TOTAL DATA REMAINING	AVERAGE SPEED
2500 MB	1800 MB	700 MB	6.4 Mbps

28% REMAINING

0 MB — 2500 MB

Telematics

TOTAL DATA CONSUMED	TOTAL DATA REMAINING	MAP VERSION	AVERAGE SPEED
4800 MB	1200 MB	10.1.0.3	6.4 Mbps

20% REMAINING

0 MB — 2500 MB

Amazon Music
TOTAL BALANCE
500 MB
DATA REMAINING
400 MB
AVERAGE SPEED
1.2 Mbps
80% USED

Browsing
TOTAL BALANCE
1000 MB
DATA REMAINING
800 MB
SPEED
3.5 Mbps
20% USED

Android Auto
TOTAL BALANCE
1000 MB
DATA REMAINING
500 MB
SPEED
3.5 Mbps
50% USED

Google Maps
TOTAL BALANCE
1000 MB
DATA REMAINING
700 MB
SPEED
3.5 Mbps
30% USED

Remote Access

PLXOR collects real-time data for telematics reporting and monitoring.

- Avoid additional visits to your car dealer with time-limited remote monitoring that uses identity tokens
- Configure per-car, per device telematics reporting with appropriately allocated bandwidth
- Enable performance-boosts and feature-upgrades across a range of product segments
- Use a single point of management for multiple in-car telemetry services

Global Identity

PLXOR identifies active multiple carriers on a global scale.

- With Cubic's advanced eUICC capabilities reporting/monitoring across multiple carriers provides a single unified view of the car regardless of the carrier
- Local content providers and regional preferences set up prior to shipment; new regional service and revenue opportunities can be added over the air
- Global bill splitting for different data streams and carriers

Personalised content delivery, reporting and billing

Using PLXOR content and services consumed by the connected car can be controlled on a per-car, per-fleet or per-region basis.

- Service and data traffic categories are separated to receive different QoS (Quality of Service) and priority settings
- Each service can be billed separately with customised restrictions, policies and automation rules
- Customer-specific connectivity offerings can be individually fine-tuned while keeping the core mobile service generic and standardised

Case Study: **Audi**

Vehicles are going through a period of digital transformation. The future of cars is autonomous, shared and electric. Implementing each of these requires connectivity, with 5G set to play a major role. Audi, a leader in adopting advanced technologies is now firmly established on its digital journey with the help of Cubic Telecom.

cubic telecom

100 markets worldwide

90K employees worldwide

60K employees in Germany

connectivity with Cubic in **90+** markets

Audi is one of the leading Automobile manufacturers in the premium segment. Audi focuses on sustainable products and technologies for the future of mobility. Audi aims to move to the forefront of electric mobility and to create an open digital ecosystem through consistent connectivity.

Challenge

- Drivers have come to expect integrated connectivity
- Pressure to stay ahead of competitors
- Pressure to be "best in class" in user experience
- Must negotiate agreements with many different operators around the globe
- Regulatory compliance in each country they sell

Cubic Solution

Cubic delivers a software platform across multiple cellular networks to simplify the management of connectivity for Audi vehicles. With Cubic's end-to-end solution Audi drivers enjoy local connectivity no matter where they travel, through one global GSMA-compliant eSIM.

Drivers enjoy reliable and secure up-to-date information and entertainment integrated with the Audi Virtual Cockpit, and advanced internet connectivity, powered by Cubic.

Highlights

Cubic simplifies connectivity management for the automotive manufacturer through its secure PACE platform.

- One global SIM
- Remote device connectivity management
- Data management and analytics
- Local connections and content
- One contract (no need to negotiate multiple contracts with a multitude of operators and suppliers)
- Integration with OEM IT business system
- Music streaming services, navigation, route guidance and mapping features
- Infotainment apps available in real-time such as news, weather etc.

"Cubic's technical solution allows Audi to drive efficiency and competency in our delivery of connected services, enhancing the ultimate driving experience Audi customers have come to expect."

Jens Kötz, Connected Architecture, Energy and Security Lead at Audi AG.

We are connected

+353 1 486 0600
info@cubictelecom.com

cubictelecom.com