

NTN IN AUTOMOTIVE

From blackspots to business growth:

What connected car applications matter most to drivers and where will ubiquitous connectivity be most valued?



The Great
Connectivity
Convergence

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CHAPTER ONE

Chapter 1: What is the Great Connectivity Convergence and how does it apply to automotive?

What is the Great Connectivity Convergence?

Until recently, satellite and terrestrial mobile networks operated as largely separate ecosystems, built for different conditions to serve distinct use cases. However, with the 3rd Generation Partnership Project (3GPP) writing satellite into the global mobile standard for the first time, that's all changing.

3GPP Release 17 introduced a standardized framework for non-terrestrial networks (NTN). This gives manufacturers, network operators and satellite providers a shared technical baseline to build to, replacing bespoke workarounds with something built to scale.

Devices can now connect to satellites using the same protocols they already use for cellular, and this is driving the convergence of these two connectivity layers. For the automotive industry, it means vehicles will now be able to switch between terrestrial and satellite connectivity. This is the basis for direct-to-automotive (D2A) satellite services, and its implications for OEMs and the broader automotive sector are the reason why the question of driver demand and willingness to pay matters now.

Devices can now connect to satellites using the same protocols they already use for cellular, and this is driving the convergence of these two connectivity layers.



The automotive opportunity in the Great Connectivity Convergence

Connectivity has become fundamental to modern vehicles: from navigation and safety alerts to entertainment and remote diagnostics, the applications drivers rely on all depend on a continuous connection to mobile networks. It's this assumption that automotive OEMs built their connected car strategies around.

While cellular networks deliver that connectivity across the routes most drivers travel, they have limits. And until recently, extending connectivity beyond those limits meant integrating proprietary satellite hardware, managing separate subscriptions and signing up to secondary service contracts – and absorbing those additional costs.

This made satellite a difficult proposition for the mass passenger vehicle market. D2A changes that by enabling vehicles to connect to both terrestrial and satellite networks with only limited hardware modifications. As a result, satellite-enabled connected car services become a practical and scalable option for the first time.

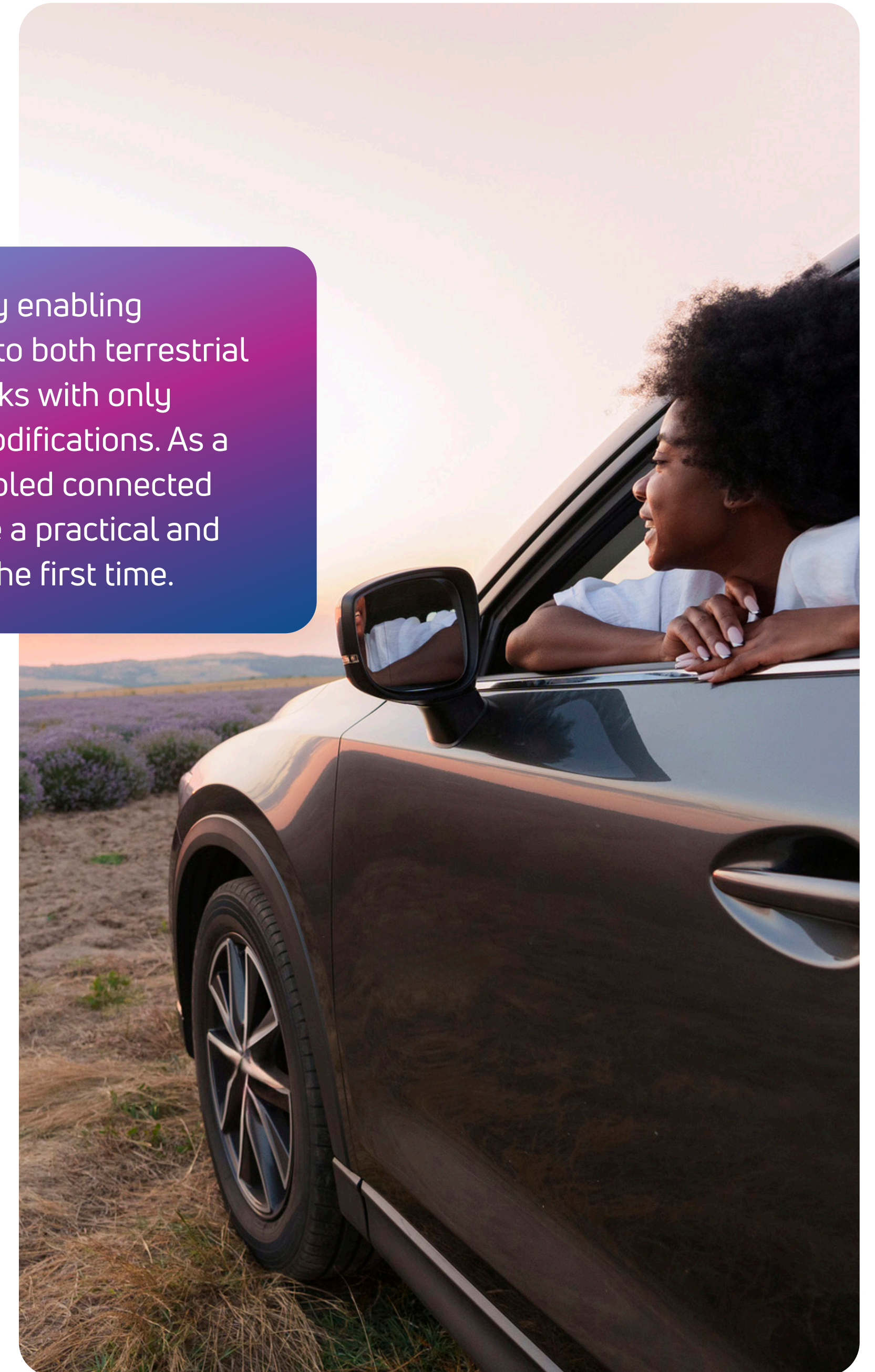
Since October 2022, the 5G Automotive Association (5GAA) has publicly communicated how important ubiquitous and seamless connectivity is for the automotive sector, with satellite connectivity seen as a complementary extension of terrestrial networks. This saw 5GAA develop what it calls the **NTN roadmap**, integrating use cases, service-level requirements

and potential deployment timelines to better align the connectivity ecosystem behind a joint vision. The latest 5GAA NTN roadmap is available on the next page.

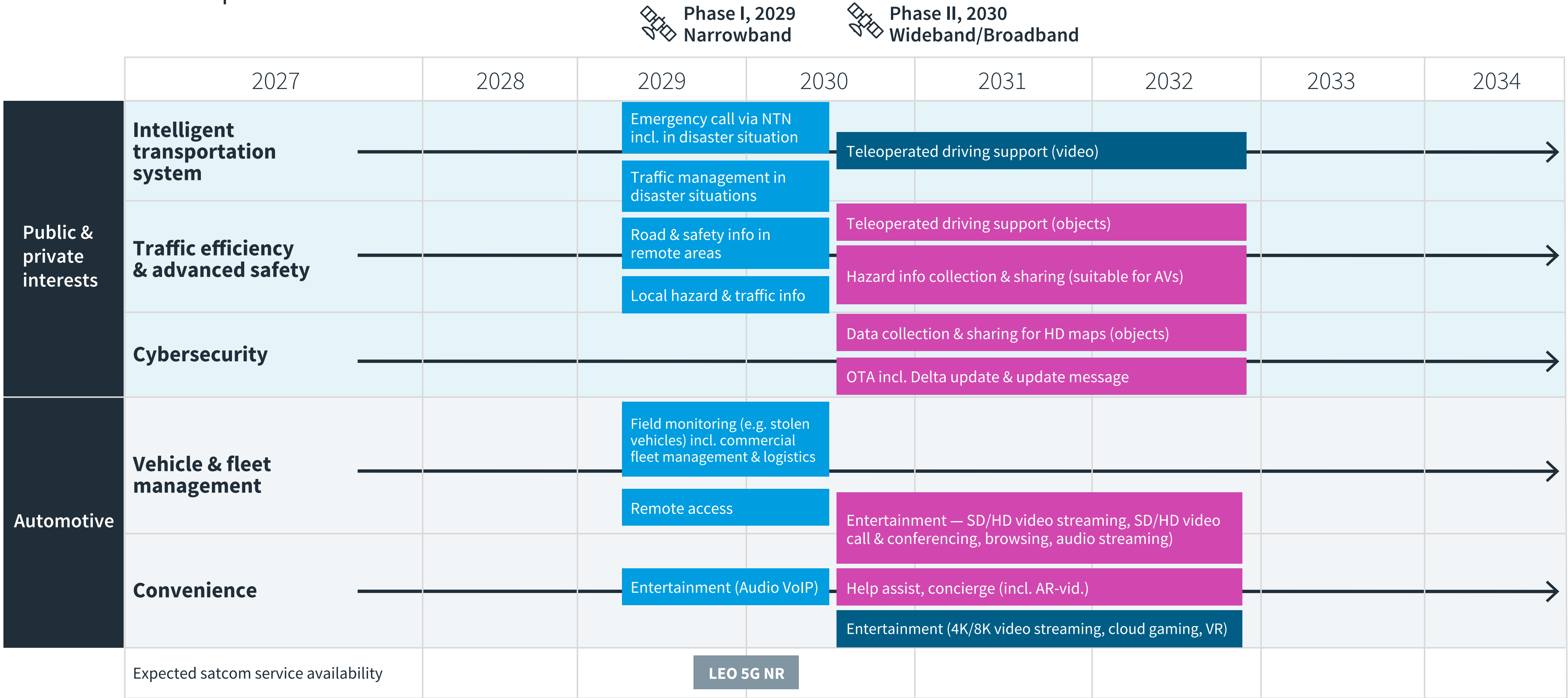
In the meantime, the necessary standardization framework for integrating NTN with terrestrial network is in place. Hardware capable of communicating across both terrestrial and non-terrestrial networks are in development, and many satellite operators have committed to switching from proprietary to standards-based technologies.

What has been missing so far was a business perspective. To address that, Viasat and 5GAA conducted an end customer survey to answer three questions: is there a market for satellite communication in automotive? What matters most to automotive customers? And who is willing to pay for connectivity, satellite or otherwise?

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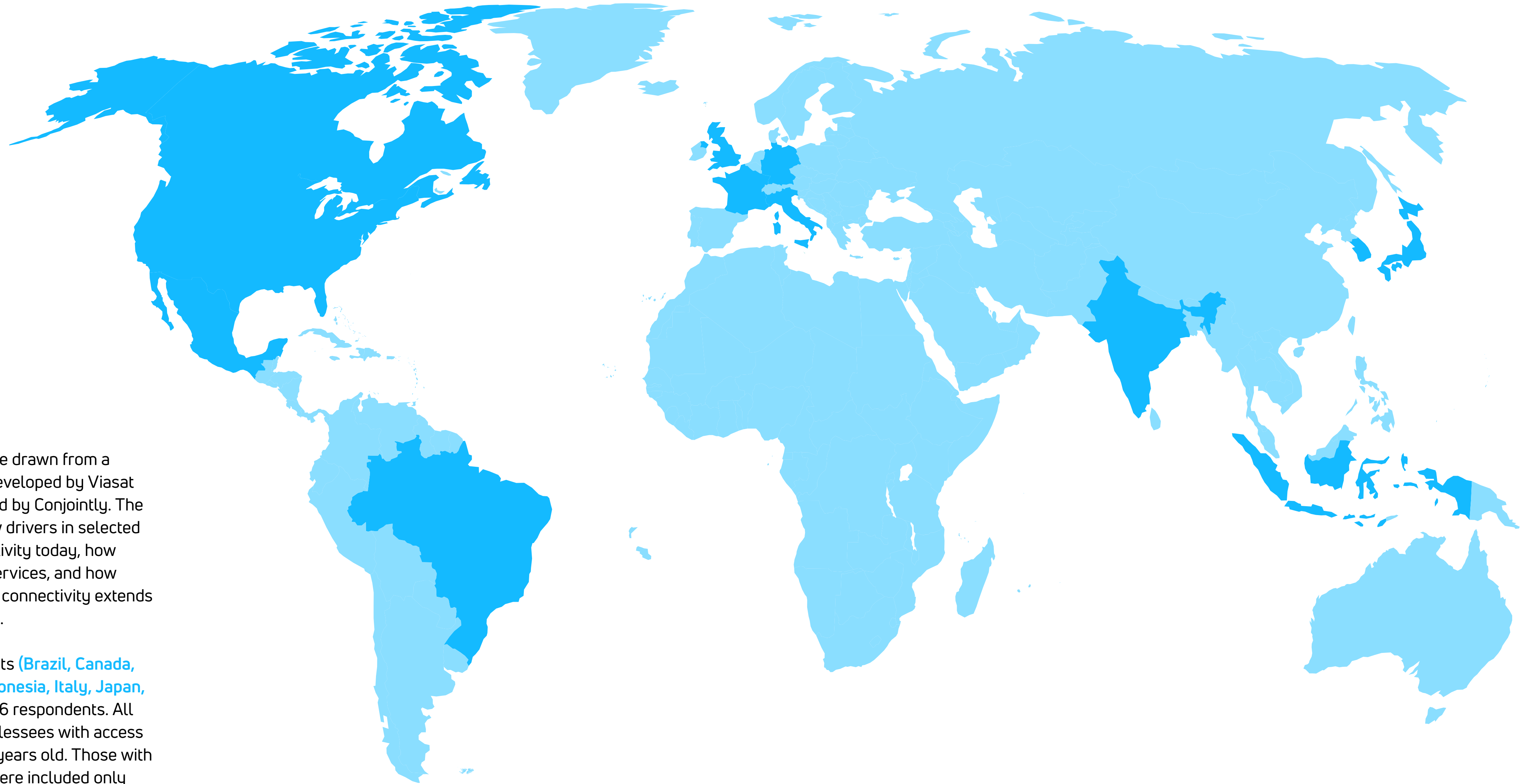
5GAA NTN roadmap 2026



■ Narrowband data rate to vehicle <400 kbit/s

■ Wideband data rate to vehicle <10 Mbit/s

■ Broadband data rate to vehicle >10 Mbit/s



Methodology

The insights in this report are drawn from a consumer research study developed by Viasat and the 5GAA and conducted by Conjointly. The goal was to understand how drivers in selected markets experience connectivity today, how they value connected-car services, and how their expectations evolve as connectivity extends beyond terrestrial networks.

The study covered 10 markets (Brazil, Canada, France, Germany, India, Indonesia, Italy, Japan, UK, USA), and included 1,606 respondents. All were current car owners or lessees with access to a vehicle less than three years old. Those with access to an older vehicle were included only if they were strongly considering purchasing a new car within the next 12 months. Personal leasing, corporate leasing, and company cars were all eligible. Fieldwork was conducted between October 16 and November 6, 2025.

Demographics

Respondents reflect a broad cross-section of drivers across the 10 markets, with representation across ages, genders and living environments, with some neighboring country-by-country variation. The average age was 43, and the analysis focuses on differences in driving behavior rather than on demographics alone, using factors such as access to premium or company vehicles to help explain service expectations and willingness to pay for upgrades, as discussed later in the report.

Survey respondent's demographic

	All	BR	CAN	DE	FR	IDN	IND	IT	JPN	UK	US
Age (mean)	43	35	43	46	50	36	36	50	52	41	44
Gender											
Female	42%	52%	47%	41%	45%	40%	42%	38%	25%	40%	49%
Male	58%	48%	53%	59%	55%	60%	58%	62%	75%	60%	51%
Other	0%		1%		1%						
Home area											
Rural	12%	1%	13%	19%	32%	4%		11%	7%	12%	16%
Suburban	25%	2%	27%	25%	18%	18%	9%	18%	50%	41%	44%
Urban	63%	97%	59%	56%	49%	78%	91%	71%	44%	47%	40%
Car class											
Economy class	83%	93%	81%	76%	82%	86%	92%	83%	80%	78%	80%
Luxury class	40%	37%	44%	50%	34%	38%	34%	33%	37%	44%	47%
Access to company car in P3Y	36%	51%	28%	44%	24%	59%	44%	22%	44%	28%	20%

Comparison with "All"



Driving plays a vital role in the lives of countless people around the world, helping them get to where they need to go, whether that's commuting to work, running errands or simply traveling for leisure. And driving is rarely an occasional activity; most people do it frequently, spending long periods on the road.

Our research found that more than half of respondents (53%) say they drive every day, while 75% drive at least five days a week. And their time on the road is substantial, with 42% reporting driving at least two hours a day.

Those frequent drivers are especially likely in markets such as Indonesia (69%) and Brazil (62%), compared with France (22%) and Canada (38%). These differences likely reflect local commuting patterns and infrastructure, including the availability of public transport and the distances people travel between home, work and essential services. In sprawling urban areas, such as Jakarta and São Paulo, longer daily journeys and high levels of traffic can make driving more time-consuming.

Unsurprisingly, commuting is the most commonly cited main reason for driving, selected by 55% of respondents. This is followed by shopping and running errands (27%), which are no less critical: they're the routines that keep people connected to work, services, and everyday life.





CHAPTER TWO

Chapter 2: What drivers told us

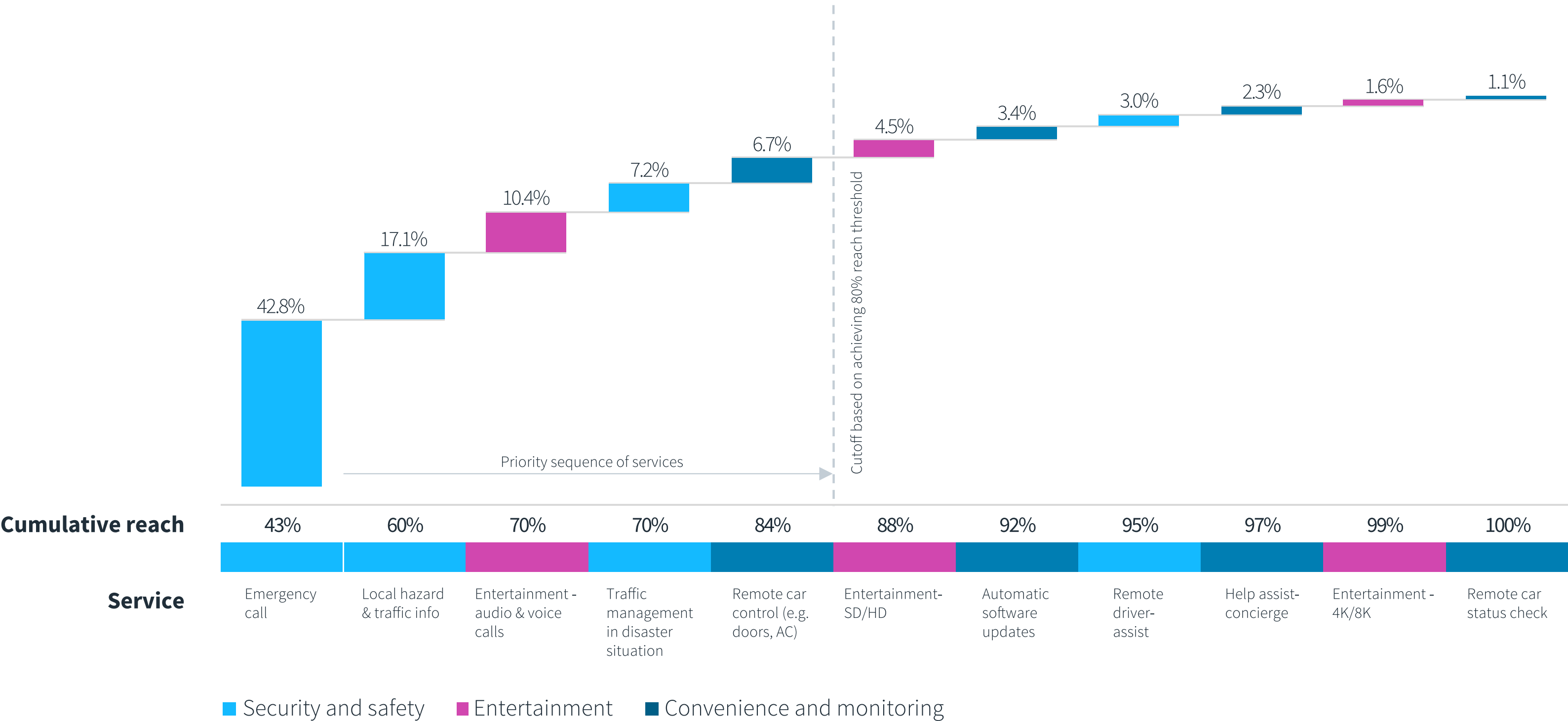
1. Which connected car services matter most?

Drivers across all 10 markets show strong awareness of connected car services, though familiarity varies significantly by service type. The total unduplicated reach and frequency (TURF) analysis shows that **a combination of five services (as shown below) is enough to reach 84% of consumers, with ‘emergency call’ alone reaching 43%**, the single highest of any studied service.

Adding **‘local hazards and traffic information’, ‘audio and voice entertainment’, ‘traffic management during disasters’ and ‘remote car control’ brings the cumulative reach to 84%.** And these results are consistent across economy and luxury car classes, as well as frequent and rural drivers.

Only 9% of respondents say they are completely unaware of any connected-car security and safety services. Awareness of other connected-car services such as ‘convenience services’ (19%) and ‘entertainment’ (11%) remains relatively low, underscoring that core connectivity functions largely define driver expectations.

Services TURF analysis



The services drivers can't do without – and the ones they'll pay most for

For automotive manufacturers, safety and security services are becoming a baseline expectation among customers. These are the services that operate in the moments that matter most: when drivers are vulnerable, disoriented, or in need of immediate help. Whether it's a serious collision, a breakdown on an isolated road or an unexpected medical emergency, these are situations where connectivity is no longer about convenience or entertainment. It becomes a matter of reassurance and response.

When drivers are vulnerable, disoriented, or in need of immediate help, connectivity is no longer about convenience or entertainment. It becomes a matter of reassurance and response.

This context helps explain why emergency calls (eCalls) rank so highly in the data. When asked which connected-car services would impact them most if lost due to poor mobile connectivity, respondents ranked emergency call as the most consequential, above all 10 other services tested.

Impact score per services

Rank	Service	Category	Impact score
★ 1	Emergency Call	Security and safety	21.7
★ 2	Local Hazard & Traffic Information	Security and safety	15.2
★ 3	Traffic Management in Disaster Situation	Security and safety	13.2
4	Remote Driver-Assist	Security and safety	0.7
5	Remote Car Control (e.g. doors, AC)	Convenience and monitoring	-0.5
6	Remote Car Status Check	Convenience and monitoring	-0.5
★ 7	Entertainment - Audio & Voice calls	Entertainment	-1.5
★ 8	Help Assist-Concierge	Convenience and monitoring	-4.5
★ 9	Automatic Software Updates	Convenience and monitoring	-8.0
★ 10	Entertainment - SD/HD video streaming, video calls, (...)	Entertainment	-13.1
11	Entertainment - 4K/8K video streaming, gaming	Entertainment	-22.5

★ indicates a statistically significant difference with the service below

Based on results of a MaxDiff exercise, n=1606

The value of being able to summon help automatically or at the push of a button, and to share critical information when a driver may not be able to do so themselves, is intuitively understood by most.

Our analysis identified **an optimal five-service bundle that appealed to 84% of respondents. At its core are three safety and security services: emergency call, local hazard and traffic information, and traffic management in disaster situations. These are complemented by an entertainment service (audio streaming and voice calls) and a convenience service (remote vehicle control).**

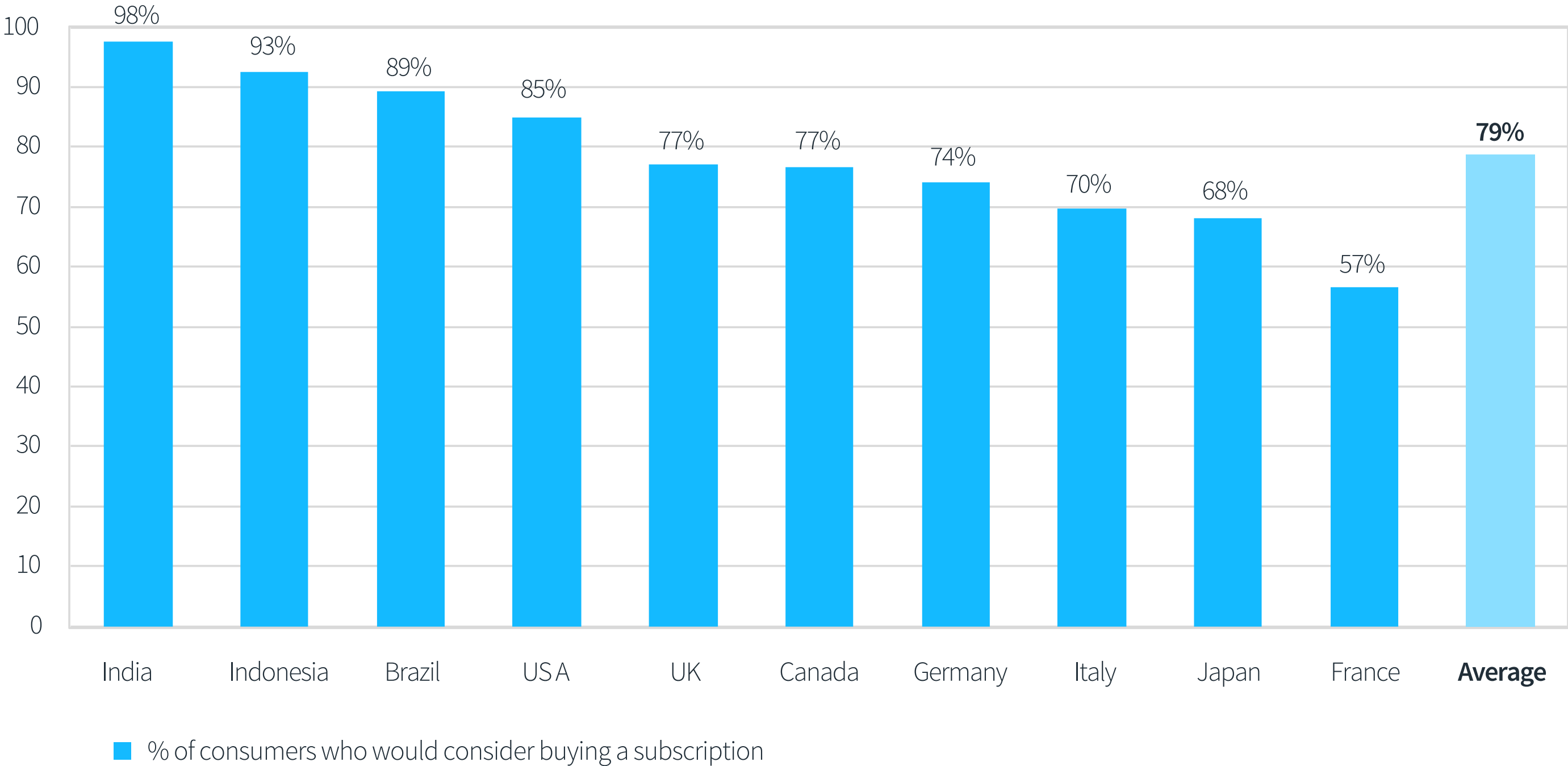
Together, these services combine reassurance with practical, everyday utility. They represent the services drivers are least willing to forgo and could be considered ‘hygiene’ features, according to the behavioral hierarchy of needs, for any OEM seeking to compete effectively in the connected car market.

That doesn’t mean the appeal of the bundle is narrow, as the study found consistent preferences between economy- and luxury-vehicle users, or between frequent and regular drivers, indicating that safety-led bundles could scale across vehicle segments.

As the size and value of the opportunity varies by country, this should be weighed against local average revenue per user (ARPU) expectations.

However, **willingness to pay for a bundle of connected car services varies by market, with higher intent levels in countries where respondents spend more time driving, such as India (98% willing to pay) and Brazil (89%), compared with Canada (77%), Japan (68%) and France (57%).**

Willingness to pay for all respondents



2. How often do drivers experience coverage gaps?

Research showed that three-quarters of respondents (76%) experience at least some gaps in coverage while driving. Nearly half (44%) spend more than an hour each week driving without mobile network coverage, and close to one in five (18%) spend at least four hours outside coverage during an average week.

These coverage gaps are not evenly distributed, with the issue more pronounced in developing markets such as India, Indonesia and Brazil. For example, twice as many respondents in Indonesia spend at least an hour a week outside coverage (66%) compared with France (33%). This likely reflects a combination of longer driving times and less comprehensive mobile network coverage across routes.

As such, it's difficult to quantify exactly how coverage gaps shape drivers' perceptions of connected services in everyday life. But the data make one point clear: the services respondents would feel the greatest impact from losing during a connectivity outage are overwhelmingly safety-led.

Services designed to provide reassurance will struggle to earn trust if drivers know they regularly pass through connectivity dead zones. In that context, the promise of "always-on" safety becomes harder to believe, even if emergencies are rare.

For automotive manufacturers, the gap between expectations and reality presents both a challenge and an opportunity: to extend service continuity beyond the limits of terrestrial networks and to set a higher standard of trust for connected services.



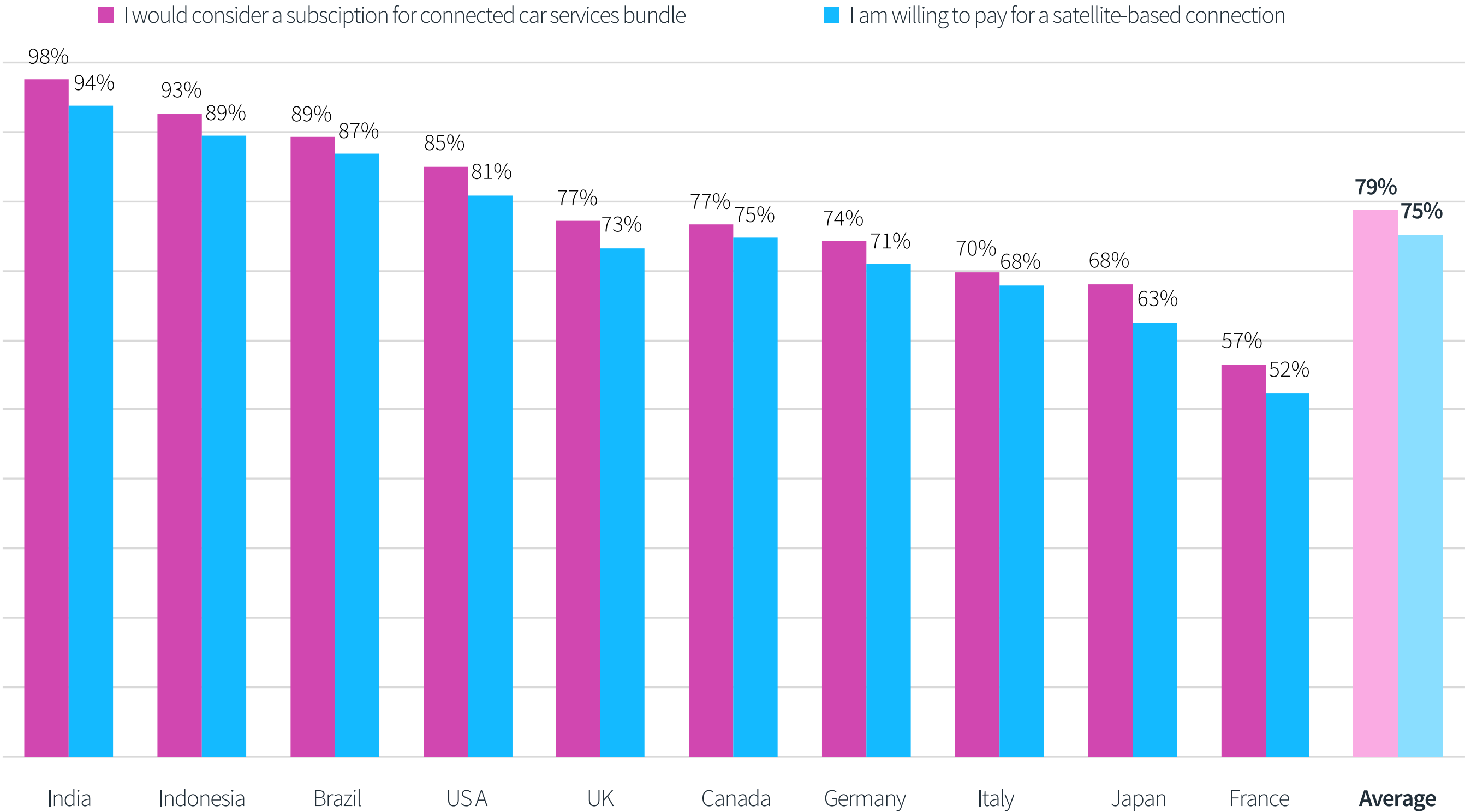
3. What are drivers willing to pay for satellite-enabled services?

The ongoing deployment of NTN is making it increasingly practical and cost-effective to extend connected-car services beyond the limits of terrestrial coverage. This enables vehicles to maintain critical service continuity when cellular signal drops via a hybrid experience regardless of the driver’s location.

But automotive manufacturers should also understand the commercial implications of this shift: **the study shows that many drivers open to paying for connected-car services are also willing to pay to upgrade those services with satellite-enabled capability.**

This suggests hybrid cellular-satellite service delivery can function not only as a competitive differentiator, but also as a meaningful revenue lever for automotive OEMs.

Willingness to pay for satellite-enabled services*



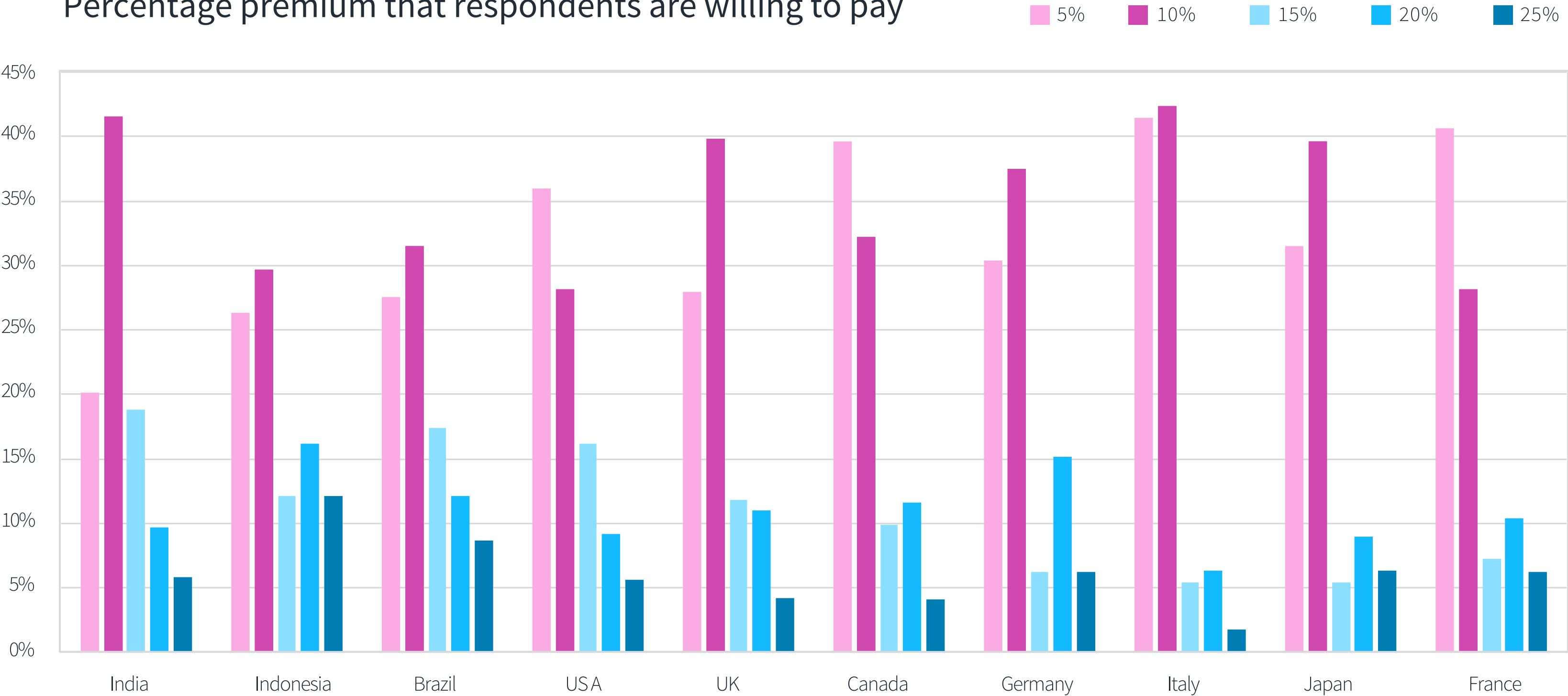
*The question was shown only to respondents who first answered that they would consider a subscription for car services bundle

Among respondents who would consider subscribing to a connected-car services bundle, nearly 95% say they would also be willing to pay for a satellite-based connection, equating to three-quarters (75%) of all respondents.

As in previous findings, **willingness to pay varies by market maturity, with India (94%) and Indonesia (89%) leading for satellite-based connectivity. This reinforces the link between time spent driving, exposure to coverage gaps, and the perceived value of continuity.**

That willingness to pay is also reflected in the level of subscription premiums that drivers are prepared to consider for satellite enablement. And with **62% of respondents willing to pay a 5% to 10% premium for an upgrade to satellite-enabled services**, the data highlights a clear sweet spot for initial pricing strategies.

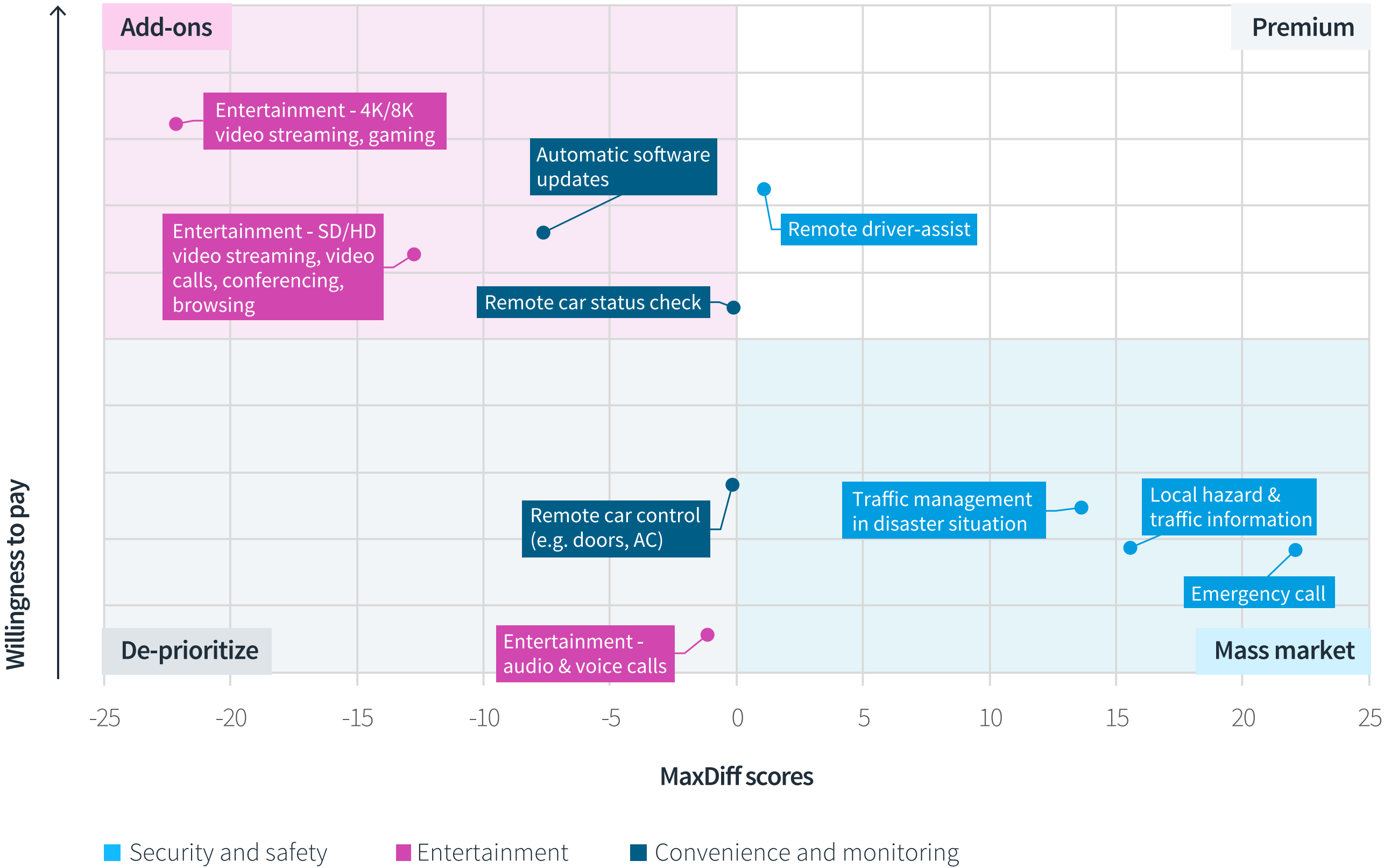
Percentage premium that respondents are willing to pay



And while subscription premiums of 5-10% have the broadest appeal, there's also evidence of higher willingness to pay among drivers of premium vehicles. These users report **greater willingness to pay for more data-intensive, high-bandwidth entertainment services**, such as 4K/8K streaming and gaming.

These **higher bandwidth applications, which require broadband NTN connectivity are expected to take longer to reach mass market deployment** due to the increased integration complexities and costs associated with fully integrating broadband NTN. Initially, services dependent on **broadband NTN are likely to only be offered as an optional extra add-on and remain the preserve of the luxury segment.**

Automotive services breakdown



Water vs champagne

On reflection, there appears to be a contradiction between services rated as highly 'important' to drivers and the most 'valued' services. This can be likened to asking people whether they would be more negatively impacted if they lost access to water or champagne. Even the most enthusiastic champagne drinker will tell you that it would be much worse to lose access to water. Then ask the same person how much they would pay for a large bottle of mineral water and how much they would pay for a chilled bottle of bubbly and of course they will pay ten, twenty, more than thirty times as much for the champagne.

We see this same situation with connected services. Drivers understand that safety and security services are the most critical to maintain service continuity, but they also have a level of expectation that these services should be provided at a very low cost. Respondents also understand that additional entertainment services are a 'nice to have' luxury, which they can more comfortably manage without but in many cases are willing to pay extra for.

This correlation is also valid in terms of scale. Everyone wants to be safe and secure for negligible extra cost, and a smaller number of people also want continuous access to additional convenience and entertainment services.

Everyone wants water. Some people will pay a lot for champagne.

NTN service delivery framework

Mass market

Narrowband and Wideband services are the foundation of any competitive connected car offering. Emergency call, hazard alerts, traffic management, audio and remote vehicle control are services drivers value most but expect as standard.

Narrowband and wideband NTN make these services practical to deliver at scale today.

Luxury add-on

Broadband-enabled services such as 4K/8K streaming, gaming and remote driver assist are a premium opportunity. However, while there's proven demand among higher-end vehicle owners for these features, they're unlikely to reach mass market deployment in the near term.

Broadband NTN requires greater hardware adaptation, making it a longer-term proposition for the upper end of the market.



CHAPTER THREE

Chapter 3: How driving habits, geography and vehicle class shape demand

Beyond the market differences outlined earlier, the strongest determinant of demand for connected services is how often people drive. The study found that driving frequency is an even stronger differentiator than whether someone drives an economy or a luxury vehicle.

This is an important distinction for OEMs, as it makes frequent drivers a compelling primary segment for differentiation, retention, and upsell.

In this report, a “frequent driver” is defined as someone who drives for at least two hours a day. The data suggests this driver is typically in their early 40s and more likely to live in a city (63% of respondents). They drive at least five days a week, most commonly for commuting, with additional trips for shopping and errands.

These are the kinds of drivers whose car sits at the center of a busy routine, supporting work, family responsibilities and tightly scheduled days. And while work-related travel beyond commuting is not a primary reason they drive, frequent drivers are still 2.75 times more likely than the average respondent to cite it as their main reason for driving.

So, it’s no surprise that frequent drivers are more exposed to coverage gaps, with 60% spending more than two hours a week outside cellular coverage, compared with 51% across the full sample. They’re also more than three times as likely to spend more than four hours outside coverage.

As a result, this cohort is more likely to say that losing access to safety-led services would have a major impact on them, including emergency calls (57% vs 51% overall), traffic information (52% vs 47%) and audio/VoIP services (40% vs 35%).

Importantly, frequent drivers’ ranking of safety, convenience and entertainment services closely mirrors that of the broader sample.

What differs is exposure: frequent drivers spend more time on the road and therefore more time outside coverage, which amplifies the value of service continuity. This means the same service framework can be applied across segments, while the commercial emphasis and messaging can be adjusted based on how often each group encounters coverage gaps.

The study found that driving frequency is an even stronger differentiator than whether someone drives an economy or a luxury vehicle.



Matching services to segments

Matching services to segments

Broadband NTN services introduce an additional layer to this segmentation: while narrowband safety and security services remain the highest priority for most drivers, nearly half of respondents (45%) report they would consider a one-time payment for an antenna capable of supporting broadband services.

Yet within this group, a smaller but distinct luxury/premium segment emerges, with these respondents indicating a willingness to pay up to three times more for broadband-enabled experiences such as 4K/8K video streaming, gaming or remote driver-assist scenarios.

However, broadband NTN services typically require greater technical adaptation than narrowband or wideband services, including more significant changes at the chipset and system level.

OEMs may therefore need to vary their approach by segment, balancing commercial opportunity against technical readiness and investment priorities. According to the Technical Report “Maximizing the benefits of satellite communications for Automotive”, it would indeed need a different technical approach for delivering broadband data rate services than for narrowband and wideband data rate services.

But taken together, this framework allows OEMs to anchor connected services strategies around safety and service continuity for all drivers, while selectively using broadband-enabled services to differentiate, upsell and engage the upper end of the market.



CHAPTER FOUR

Chapter 4: Viasat and 5GAA's approaches to D2A

Viasat's approach to D2A

Much like it takes a village to raise a child, bringing an emerging technology market at a meaningful scale requires an ecosystem. No single entity can turn technical capability into something that works reliably, safely, and consistently for real users.

That ecosystem needs a dependable foundation, including infrastructure and shared standards that allow different players to build together. It also requires regulators and policymakers to ensure services align with national priorities, safety requirements, and the public interest.

But more than anything, it depends on a wide mix of industry participants: automotive OEMs and Tier 1 and Tier 2 suppliers, alongside chipset and module manufacturers, platform and operating system providers, software and cloud partners and the broader group of automotive solution providers.

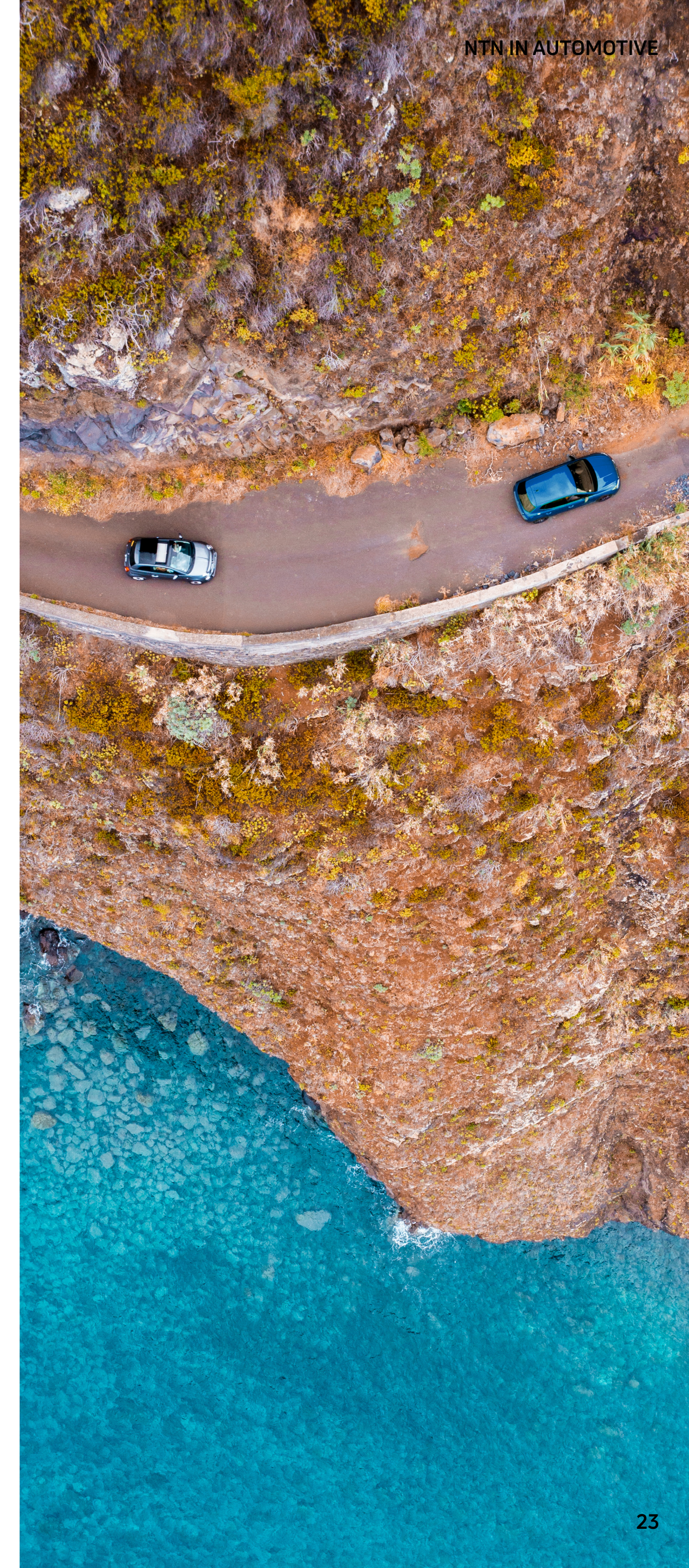
Collectively, these players bring the pieces together and build the applications and services drivers actually use. No single layer can deliver D2A alone; the value comes from the way these layers connect.

This is why we believe in an open, standards-based approach to D2A. Shared standards create a common platform for growth, giving the ecosystem a foundation for interoperability and making it easier for organizations to integrate satellite capability without bespoke workarounds.

Viasat operates within established relationships and regulatory frameworks, creating a trusted foundation for new participants while respecting the sovereign interests of nations. That approach draws on decades of experience delivering safety-critical connectivity across aviation and maritime environments, where reliability is essential.

This experience shapes how we approach NTN in automotive, with resilience, compliance, and long-term trust built in from the start. And with our global satellite network, existing infrastructure and established relationships, Viasat is already helping automotive players navigate the world of D2A through initiatives including:

- › Joining the 5GAA, the co-sponsors of this report, along with some of the world's largest technology firms and automotive companies, to enable connected transport applications such as autonomous vehicles, predictive safety and maintenance.
- › Working with BMW Group to demonstrate — for the first time — how connected vehicles can use NTN for emergency messaging as well as a variety of other safety use cases in a series of trials on the roads of Paris and voice over NB-IoT NTN in Sacramento.
- › Partnering with GuardianSat, Quectel, Accelaronix, and Skylo to demonstrate how D2D can be implemented in a variety of vehicles in Brazil. This first-of-its kind D2D trial underlines how the technology can help drivers stay safe and how it can enable the automotive industry to become more efficient and effective.



5GAA's approach to D2A

From 5GAA's point of view, there is a compelling case for the automotive industry to embrace the upcoming Direct to Automotive (D2A) services as the ideal way to provide continuous connectivity to the automotive sector.

From a technology point of view, it is becoming increasingly apparent that NB-IoT can only be a first step. The impressive demonstrations of voice over NB-IoT and geostationary satellites have shown that voice transmission, using ultra small data packages is possible, even if applied on geostationary satellites.

But Satellite communication will probably have its breakthrough on the market if based on New Radio NTN (NR-NTN), allowing the automotive industry to reuse the existing radio equipment.

If NR-NTN is applied in combination with Low Earth Orbit constellations, even wideband data rate use cases seem to be feasible with this technology.

Taking the lead times for the construction of large satellite constellations and in parallel the integration of 3GPP Release 18 modem technology into account, mass deployment of D2A can be expected from 2029 onwards.

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Conclusion and recommendations

The research has shown just how much drivers want connected car services, how much they rely on them and would be willing to pay for satellite-enabled continuity. Because when the services that matter most fail due to coverage gaps, drivers notice.

Drivers notice when the services that matter most fail due to coverage gaps.

Features such as emergency call, hazard alerts and traffic management are already well understood and widely expected. So, the gap between what connected car services promise and what terrestrial networks can reliably deliver is often felt most acutely in the moments that matter most.

NTN offers OEMs an opportunity to close that gap, with narrowband and wideband roadmaps already developing at pace. The mass market case has been made and drivers across 10 markets have indicated willingness to pay a premium for satellite-enabled continuity. 5GAA's internal members survey demonstrates that OEMs are

listening to this feedback, with a number of OEMs stating a plan to deploy NTN services starting from 2029 onwards.

That means the direction of travel is the same for the satellite and automotive industries: build for the mass market first, with safety and continuity as the anchor and develop the premium services opportunity in parallel for the segment of drivers willing to pay for it.

Taken together, the findings make a compelling case for a standards-based approach, built on existing hardware architectures, as the right path forward for the industry.



About Viasat

Viasat provides a global satellite connectivity platform that enables automotive OEMs to extend connected services far beyond the reach of cellular networks.

Built using Direct-to-Device (D2D) connectivity and powered by Viasat's reliable, weather-resilient global L-band satellites, the platform allows vehicles to switch seamlessly to satellite when cellular coverage drops, helping keep drivers connected, secure, and productive wherever they are.

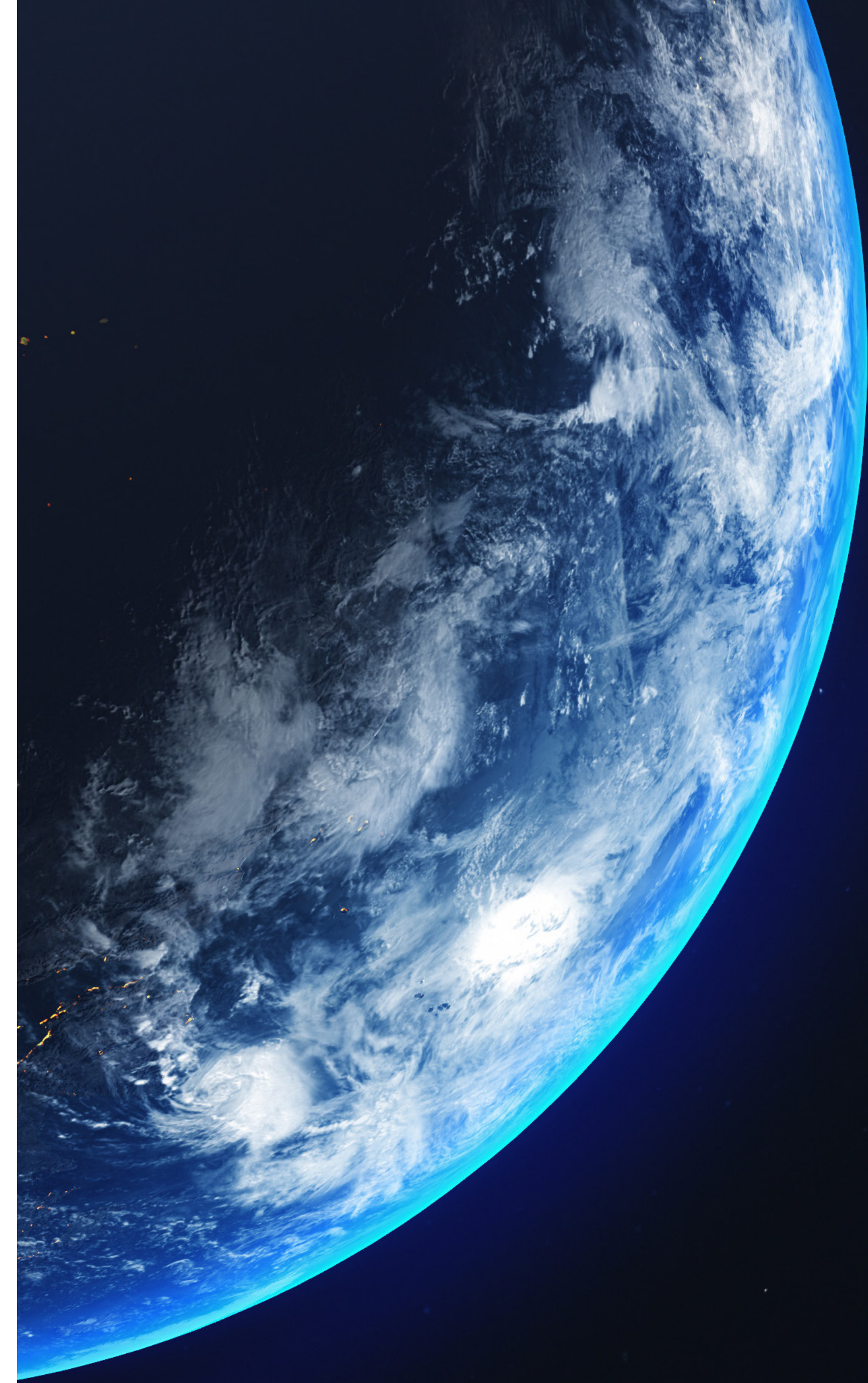
Compliant with 3GPP Release 17 and designed for compatibility with Tier 1 and Tier 2 hardware, Viasat's NTN services enable straightforward embedding of native satellite-cellular switching in vehicle systems. This allows uninterrupted telematics, remote access, SOS, and theft-tracking capabilities without the need for complex or proprietary components.

So, as the D2A ecosystem accelerates, Viasat is positioned to help automotive players move from pilots to scalable services, with safety, interoperability and global consistency built in from day one. This lays the groundwork for a future in which connectivity follows the vehicle wherever it goes, supporting new services and transforming the driving experience.

About 5GAA

The 5G Automotive Association (5GAA) is a global, cross-industry organization of companies from the automotive, technology, and telecommunications industries (ICT), working together to develop end-to-end solutions for future mobility and transportation services.

Created in September 2016, 5GAA has rapidly expanded to include key players with a global footprint in the automotive, technology and telecommunications industries. This includes automotive manufacturers, tier-1 suppliers, chipset/communication system providers, mobile operators, and infrastructure vendors.



Glossary: connected car services

Security and safety

Emergency call (eCall)

Automatically contact emergency services after a collision or can be manually activated by the driver, sharing key data such as vehicle location and direction of travel to support faster response.

Connectivity type: Narrowband

Local hazard and traffic information

Provides real-time alerts about hazards and traffic conditions along the route, including accidents, roadworks, weather hazards, obstacles or broken-down vehicles ahead.

Connectivity type: Narrowband

Traffic management in disaster situations

Supports traffic flow during large-scale emergencies by providing information on congestion, road blockages, and disrupted routes.

Connectivity type: Narrowband

Remote driver assist

Enables a remote human expert to view the vehicle’s surroundings using cameras, sensors or digital maps and provide real-time guidance in complex or unsafe situations.

Connectivity type: Broadband

Convenience and monitoring

Automotive software updates

Delivers software and firmware updates automatically to vehicle systems, helping keep features, performance and security up to date.

Connectivity type: Wideband

Help assist / concierge

Provides live assistance while driving, including travel support, route guidance or booking services, accessed directly through the vehicle interface.

Connectivity type: Broadband

Remote vehicle status check

Allows drivers to remotely monitor vehicle conditions such as battery charge, fuel level or tire pressure via an OEM-managed mobile application connected to the vehicle.

Connectivity type: Narrowband

Remote vehicle control

Enables drivers to perform actions such as locking doors or adjusting cabin temperature when away from the vehicle.

Connectivity type: Narrowband

Entertainment

Audio streaming and voice calls

Enables music playback and voice communication through supported applications using the vehicle’s built-in connectivity.

Connectivity type: Narrowband

SD/HD video streaming, video calls and browsing

Enables video playback, conferencing and internet browsing through in-vehicle systems for drivers and passengers.

Connectivity type: Wideband

4K/8K video streaming and gaming

Supports high-resolution video streaming and interactive gaming experiences for passengers using in-vehicle systems.

Connectivity type: Broadband

Connectivity requirements

Narrowband: Designed to reliably deliver essential alerts and status updates using minimal data, even when signal quality is limited.

Wideband: Designed to support moderate data use, such as software updates and interactive services, under normal driving conditions.

Broadband: Designed to enable data-intensive services such as live video, high-resolution streaming, and immersive in-vehicle experiences.

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