

EXPERIENCES PER MILE 2030:

Ensuring the Next Decade of Mobility Transformation
Puts the Consumer First & Foremost



Foreword

Fast forward to 2030. Heavy investments in mobility systems over the past two decades across the global landscape have paid off. Mobility systems have been seamlessly integrated for the first time. Consumers have moved well beyond the sharing economy. The car is once again a favorite place, and now represents a personal, productive and pleasurable space that we all long for while on-the-move. And at the heart of this transformation is the consumer, who can plan and manage their journeys more efficiently than ever before.

As megacities and urbanization grows, consumers in transit feel safe, secure, and productive as they commute. Technology improves their ability to accomplish tasks, socialize, make

transactions and be entertained. And, as with this new way of commuting, they get precious time back in their everyday lives. This vision doesn't hinge upon the technology itself—which can afford owners and users this future mobility equation payoff—but rather the realization of a breakthrough consumer-centric mobility experience.

Often taken for granted by consumers in other industries such as smartphones or ecommerce, the consumer experience in mobility sits at a crossroads and needs the industry's immediate attention more than ever before. Experiences Per Mile (EPM) is a movement centered on addressing the mobility industry's transformation to an experience-driven vision which puts the consumer first.

It sets a global vision for the way cars and mobility solutions are designed, deployed and interact with a broader ecosystem of owners, users and experience contributors.

This whitepaper addresses the massive mobility transformation currently underway. It diagnoses why consumers are not getting the most out of today's mobility model and how collaborative consumer-centric innovation will promote a better experience and drive change. It will also define the role of the Experiences Per Mile Advisory Council in helping to re-define success by enabling this vision and in the months ahead, develop a common approach to measure EPM.



A woman with dark hair is seated in a car, looking forward. The image is partially obscured by a large, semi-transparent blue overlay that covers the lower two-thirds of the frame. The text is centered within this blue area.

**AN ENTIRE INDUSTRY
UNDERGOING MASSIVE
TRANSFORMATION**

Change Personified in Four Letters: C-A-S-E

After more than a century of business as usual, in which internal combustion cars were sold to private consumers through wholesale channels worldwide, the industry has aggressively shifted gears and has set forward on an ambitious new course: “CASE”—the push for more Connected, Autonomous, Shared, Electric vehicles and mobility solutions.



Connected: The vision that all cars will leverage built-in two-way connectivity capabilities. These capabilities will provide services to the driver, send data back to the cloud and provide over-the-air software updates. These capabilities will allow cars and mobility services to get better, not worse over time. Based on forecasts from automotive research firm SBD Automotive, built-in vehicle connectivity will grow sharply from 48% of all new global vehicles in 2020 to nearly 96% by 2030. With increased connectivity, the threat of malicious hackers and compromised cybersecurity also rises, increasing the need for more sophisticated in-vehicle and cloud-based security controls.



Autonomous: The increased ability for vehicles to safely operate with less, and eventually with no input from the driver. While the industry has defined autonomy by somewhat arbitrary levels such as L0-to-L5, present-day Advanced Driver Assistance Systems already are significantly reducing the risk of crashes through alerts and discrete system actuation, alerting drivers of approaching pedestrians and allowing intermittent “hands-off” control for brief periods of time. Full autonomy in defined geographic spaces promises greater productivity to engage in secondary tasks and will enable new business models via lowering the cost of operational human drivers.



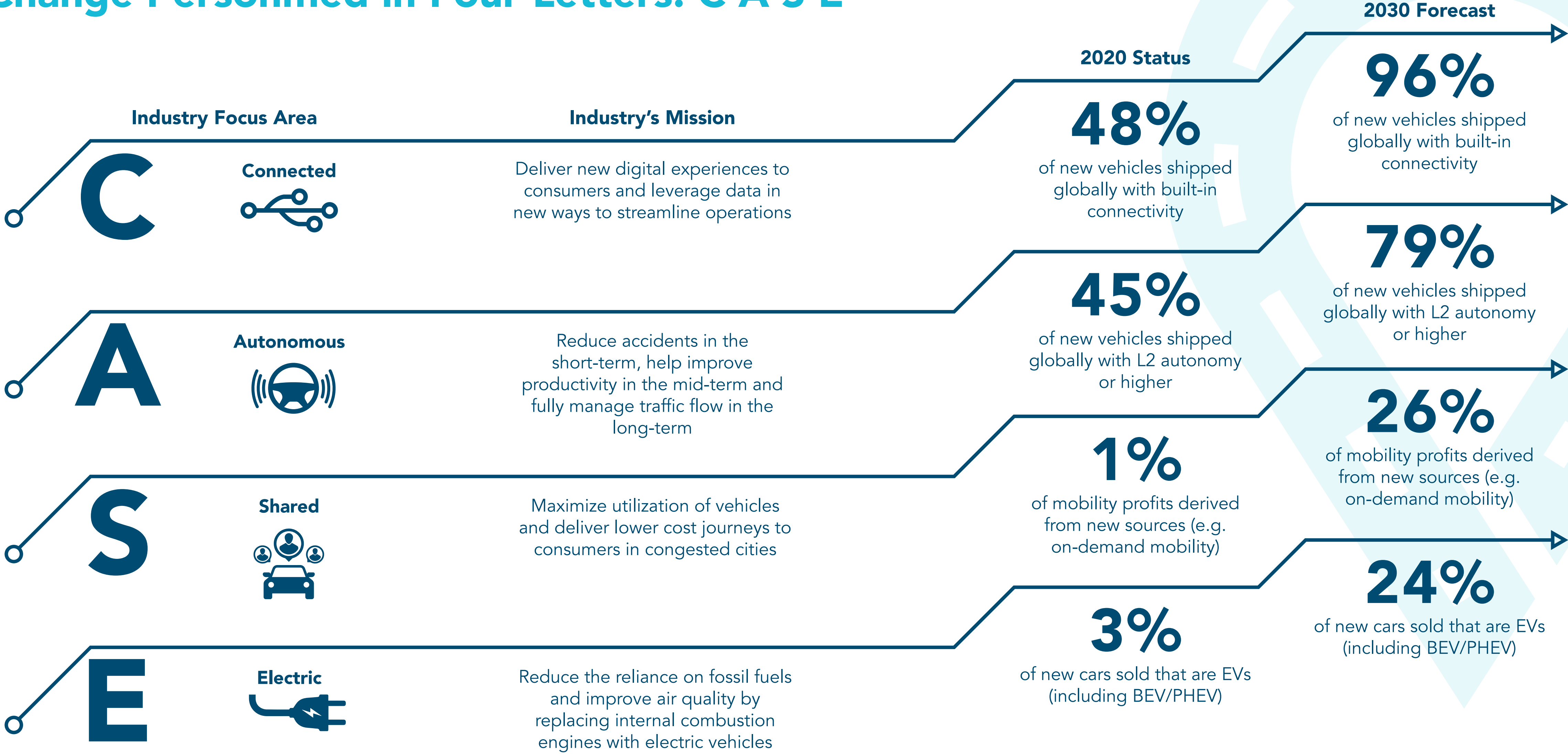
Shared: In major markets vehicles sit idly for significant portions of each day. In the United States alone, there are 1.3 vehicles per adult. The mobility industry is rapidly deploying new forms of carsharing, ridesharing and ride hailing services to lessen the importance of 1:1 ownership models, smooth demand throughout the day, enhance access to mobility by lowering the capital to participate and increase utilization rates of physical assets. Shared mobility services are also taking aggressive and positive steps to fully integrate into public transportation systems and smart cities, and offer more seamless multimodal experiences. This allows the consumer to focus on where they are going and less on how to combine a patchwork of disparate mobility solutions to get there.



Electrification: Facing rising global energy costs and scarcer resources, global climate change and increased incentives/regulation, mobility providers are embracing electric vehicles and other forms of sustainable mobility. For example, nine automakers have promised a full-range of EV’s by 2030. Disruptive OEMs and start-ups are rapidly expanding ranges and demonstrating compelling options for the end consumer, which are inching closer to cost parity with internal combustion engine vehicles. Network infrastructures are expanding, reducing “range anxiety” for consumers and reducing the time it takes to recharge a vehicle. Existing manufacturers must support new software-based architectures capable of driving needed chemistry efficiencies.



Change Personified in Four Letters: C-A-S-E



Source: SBD Automotive

Who's Transforming and Why?

Developing a dynamic mobility experience cannot be achieved without the CASE building blocks, however, this simple acronym too often minimizes the complex and evolving eco-system that hides behind it.

Automakers are having to make difficult decisions about how much of the new mobility paradigm they want to develop and deliver, while in parallel continuing to deliver profits to fuel the investment and satisfy skeptical shareholders. It is still unclear which OEMs will continue to exclusively make and sell cars, how many will expand up the stack to deliver software and services and how effectively they will transition from manufacturing to operating services. Automakers are further looking at the sale of a vehicle as just the starting point. They are contemplating new models of value-added services, subscriptions and content for owners and users of their products. They are also trying to determine how to leverage partnerships to maintain or expand current market share.

Vehicle dealerships are in some ways the current "starting point" for many mobility experiences today as they manage the sale, activation and servicing of a car throughout its lifecycle. However, challenges with the dealership experience currently lead to the initial mobility experience promise being broken from the start. The good news is various dealerships are investing to ensure they are equipped to deliver technology experiences enabled by automakers, whether that is activating connected services or providing answers to consumer questions about their car's technology. Looking to increase utilization and capital optimization, savvy dealers have also enabled shared mobility services leveraging existing inventory and valued real-estate and parking in key markets.

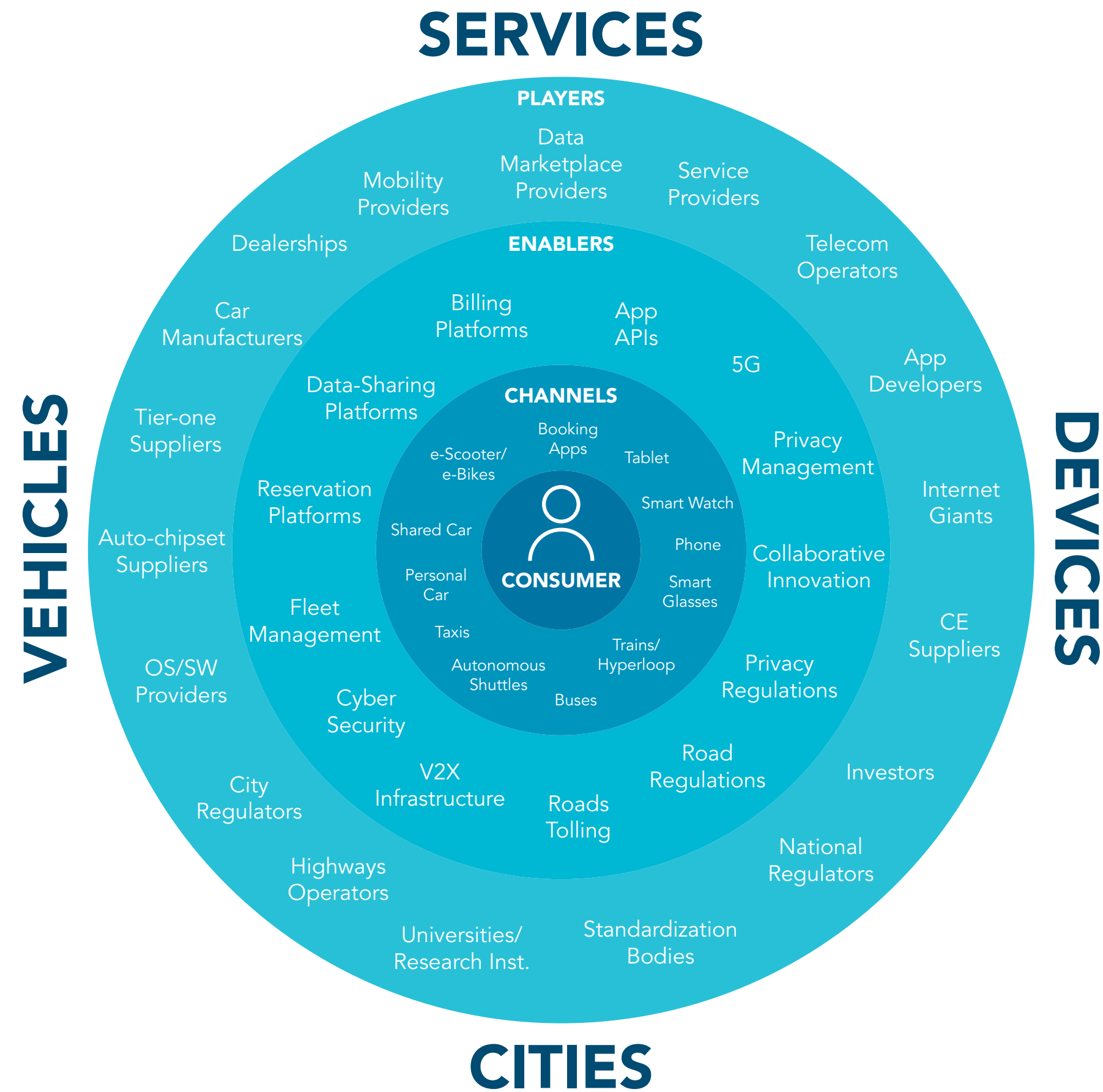
Mobility providers are experimenting and battling to find the right business models and transportation mix to scale up beyond a handful of cities and countries into sustainable corporate entities. Like automakers, mobility providers are further exploring how to achieve profitability while addressing increasing consumer and government scrutiny for greater safety, regulation and labor restrictions. Many mobility providers are moving in the opposite direction of automakers, and are just figuring out vehicle dynamics and design, efficient manufacturing and vehicle servicing challenges for the first time.

Tier-one suppliers and system integrators are under increasing pressure to support the transformation of vehicle architectures—a key enabler to each CASE technology—as well as supporting upstream software/services demanded by their automotive and mobility customers. Innovative Tier-one suppliers are partnering with leading automakers on sensor strategies enabling value added services, and implementing innovative human-machine interfaces. This will enable consumers to safely engage with larger screens and more technology than ever before while effectively managing cognitive workload within a mobility experience as it happens.

"For us, the customer journey represents hundreds of thousands of dollars over the lifetime of a single customer."

North America Customer Satisfaction Manager – Global Automotive Manufacturer
Source: SAP

Who's Transforming and Why?



Tech and IT giants are bringing advancements traditionally found in mobile and consumer devices to the automotive industry to enable drivers and passengers to more effectively communicate, increase productivity and engage in social experiences. To satisfy consumer demands to extend their digital lives into the vehicle, providers are racing to adapt voice, content, navigation and connectivity advancements to maintain continuity in the car for drivers and passengers. They are determining the best way to extend the loyal audiences within their digital ecosystems into the car, offering joint services with automakers or launching mobility services of their own.

Local and national governments are ramping up Smart City initiatives to try to balance the mobility load across networks with limited budgets, while undergoing huge societal changes (e.g., access, aging and automation) and environmental challenges (e.g., global climate change). Cities are becoming more connected and the impact of gridlock and vehicles is impacting the health of cities. EVs have rapidly increased demand on grids and local infrastructure and the interaction between mobility systems and city operations are more symbiotic than ever before.

Beyond these players, **a broader ecosystem of important players** is also being increasingly affected by the push towards CASE, each of which has a role to play in defining and delivering future mobility experiences. For example, insurers, fleets, leasing companies and telecommunication providers are adapting their offerings to increase the velocity of mobility innovation while sustaining current business models.

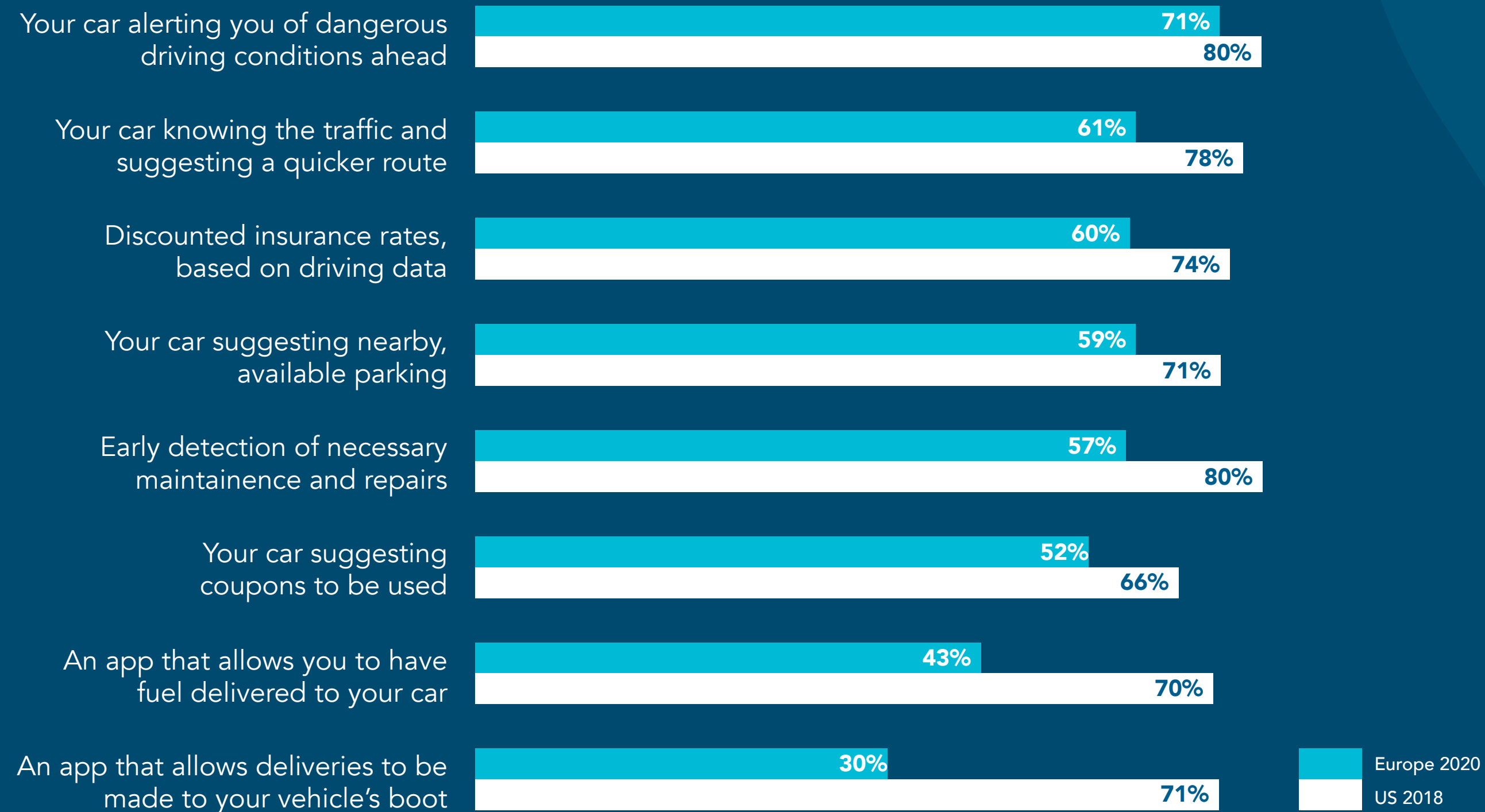
Source: SBD Automotive

Data Becoming the Industry's New Fuel...

All this transformation is being fueled by the growing quantity and availability of vehicle and mobility data to each of these stakeholders. Based on estimates, all the vehicles on the road today generate in excess 30,000 Petabytes per day (to put that in context, the entire written works of mankind, from the beginning of recorded history, account for 50 Petabytes). Only a fraction of this data ever makes it out of the car, but when it does, it can act as a powerful enabler of innovative new solutions and experiences. Below are a few ways that data is helping to drive mobility forward:

A survey was conducted with current connected car drivers in the USA (2018) and Europe (2020) to gauge their interest in services based on connected car data. See the list of services evaluated to the right. Of those who expressed interest in each service, approximately 80 percent were willing to share anonymous or personal connected car data to gain access to these capabilities.

Interest in Connected Car Services Europe vs. US



"High Definition 'live maps,' meaning a digital representation of the world that is fresh, accurate and rich in attribution are becoming increasingly important to enable various autonomous and mobility experiences. Our self-healing mapping technology enables us to analyze data from multiple sources, such as satellite imagery, probe and crowd-source vehicle sensor data in real-time, allowing our maps to always stay fresh and reliable."

Charity Rumery,
Vice President, Americas
Automotive & Industrial,
HERE

Source: Otonomo

Data Becoming the Industry's New Fuel...



Protect

Data is the primary enabler for autonomous cars. Sensors need to be trained to detect and recognize objects, and the primary approach to achieving this is by collecting massive quantities of data to feed AI algorithms.



Map

In addition to training sensors, data from vehicles will rapidly become primary building blocks for future digital maps and, conversely, the map itself will be utilized as a safety cross-check against sensor and vehicle data. For example, location and speed data are already being used to help fine-tune maps and maps provide critical safety validations against these elements, but data from cameras, radar and Lidar will soon enable much higher-definition maps to emerge.



Mitigate

The days of waiting for parts to fail before replacing them are coming to an end, as big data allows automakers to predict the maintenance and repair needs of their vehicles, in turn enabling dealerships to be optimized and downtime to be minimized.



Personalize

The automotive experience is due for a "Netflix-ication," as usage data is used to help filter the mountain of choices given to consumers down to only those that are most likely to appeal.



Facilitate

The liberation of vehicle data also presents opportunities for players on the peripheries of mobility—insurers, car parking operators and gas stations can all start to offer tailored services to drivers and passengers to the extent they are permitted to access vehicle data.



Data Becoming the Industry's New Fuel...

With more connectivity, sharing of the same vehicles among consumers and increased access to vehicle and mobility app data also comes real concerns for consumers: about privacy, data protection, personal security and identity management. According to recent surveys conducted by SBD Automotive and Otonomo, sixty percent of respondents say it's very important to be told exactly what data is being collected, how it is being used and by whom when deciding whether to share their data.

New privacy protection laws such as the California Consumer Privacy Act in the United States and the General Data Protection Regulation in Europe are being put into place to help consumers protect their data. Protection is far more than checking the terms and conditions box, but transparently knowing the difference between consent and true protection. Connected vehicles and mobility services also mean increased attack surfaces. Bringing consumer's digital life settings from personal devices into the car can also expose unique challenges, as can protecting

consumer's data from a first to a second car owner. Today's vehicles and mobility experiences do not have a one button transfer of settings, nor do they "wipe data" securely when the owner moves from car to car. There are yet other unique challenges when vehicles are shared. Today, legacy data often remains part of a consumer's past mobility journey indefinitely. Consumers are also demanding that "sound" cybersecurity be a part of the design and selection criteria that forms the entire mobility platform.

"Our research underscores the importance of developing consumer-facing apps that inform consumers about how their data can be used, facilitate choices about data sharing and are easy for consumers to understand and use. These apps need to be able to share consent information across the ecosystem of companies working with connected car data."

Asaf Weisbrot,
CCO
Otonomo

"Attackers are increasingly looking to monetize data and target victims via various means. Beyond ensuring this new connected mobility world is secured from an Operational Technology platform perspective, attacks are increasingly becoming more automated and this union of connectivity, consumer awareness and data privacy means the security of mobility platforms needs to be considered from design to supply chain to experience."

Eloy Avila, CTO, Darktrace

A woman with dark curly hair and glasses is looking slightly to the right with a thoughtful expression. The image is partially obscured by a large, semi-transparent blue graphic that covers the lower and right portions of the frame. The text is centered on this blue area.

**CONSUMERS ARE
FEELING THE PAIN**

Describing the Pain: Consumer Experience Today

Consumers are spending more time than ever on the move, as commuting grinds to a halt during the week and people travel in search of experiences during their time off. Based on recent data published by the U.S. Census Bureau, American workers over 16 years old invested 225 hours—more than nine days—getting from where they live to where they work and back (whether that's in a car, by rail, in a bus or on a bike). Consumers are also spending precious resources completing monotonous tasks during each step of their mobility journey, including planning amongst disparate and non-connected points of their mobility experience, setting up and

personalizing in-vehicle features and a litany of tasks after the journey is complete (including maintenance, parking and reaching the last mile in less dense footprints).

Despite a shift in consumer priorities from aesthetics/performance to convenience and efficiency as people become more focused on digital

priorities, unfortunately these pain points persist. The proliferation of more screens, additional advanced safety features and connectivity to the cloud are only making things more of a challenge.



"Any time it feels like you are stuck and unable to be working on the things you need to work on for the day does feel like lost time."

Shaun, Daily Commuter
Watch Now



Describing the Pain: Many Universal Pain Points

External Issues Make People Feel Out of Control

Parking, traffic and navigating through construction, accidents, unfamiliar areas, unpredictable road blocks can all create stress and anxiety, impacting the quality of the time in the car.

"The situation on the streets is confusing, not only since there are congestions and construction sites, but there are so many different transportation means such as bikes and scooters, and the streets are not made for this." (Omar, driver, D)

The Car Breaks the Connection to the Rest of My Life

The smartphone and smart-home create the expectation of constant connection, but cars "break" this connectivity. Which means that when tech doesn't work as well as it should, the car is blamed for lost time.

"My car does not have Wi-Fi or a computer in it like a laptop."

"When the phone rings it takes almost 1 minute before I can hear the call in the car."

Learning New Car Tech Is Like Learning a New Language

Car tech is not intuitive and even when phone tech doesn't work, the car bears the brunt of the blame. Smartphones are always a universal translation, although the phone is the center of people's worlds.

"I could not drive the car without my mobile."

"I don't like the control knob, it is not [intuitive] to use and not well placed."

Car Not as Smart as Home or Phone

Expectations for connectivity are influenced by apps and devices and not the car. The car is far behind in this regard.

"Since I use the cell phone constantly, the car is often unable to cope with this; new software..., overall it works too complicated and slowly with the cell phone."

"Coffee machine, controlled by app so I can start it when I am still in bed."

Source: HARMAN Consumer Insights, May 2020

Describing the Pain: Introducing Jacob's Physical and Digital Journeys

Meet Jacob. He's a fairly typical commuter, spending on average of two hours per day getting to work—mostly by car. As with most of us, Jacob lives in two worlds: **a physical one and a digital one.**

Physical world: Jacob often tells his friends how he spends hours every week physically getting to work in order to join virtual conference calls with colleagues in other offices. As he

sits in his car every morning, he sees the same people traveling alone each day and wonders how much shorter his commute would be if he and others shared a ride from time to time.

Digital world: As if creeping along highways at walking speed isn't frustrating enough, Jacob feels like he's in a constant battle on the digital front too. Something as simple as connecting his music streaming account to his car or using the virtual personal assistant to request a song can turn into a shouting match. While these frustrations aren't limited to his car (two of his 'smart' speakers at home still refuse to acknowledge each other's existence), he can't help feeling that his car is always a few steps behind the rest of his digital life. While his car was sold to him as being "connected," it doesn't feel like it really connects him to his digital world.

Jacob's journey is one most of us can relate to—one that can sometimes leave us exhausted, isolated, entrapped or even enraged. It is at this intersection of the physical and digital worlds that mobility solutions today struggle the most. Jacob is not alone.

"Getting to work gets more painful each day. Not only does it take me longer than ever before, but I'm more aware than ever of how much that lost time is worth. My car isn't helping me—it's just another thing that doesn't work the way I want it to."

Jacob



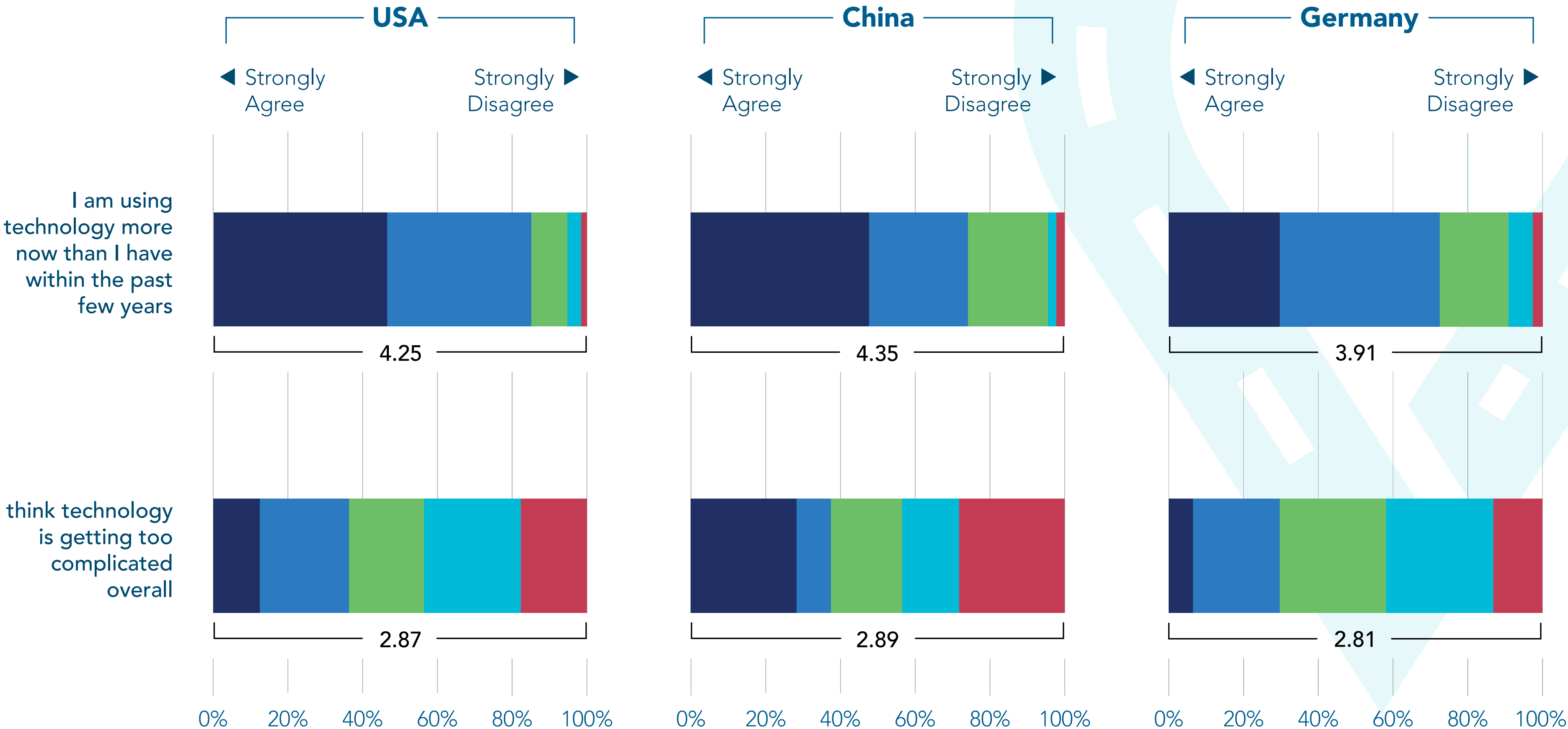
Quantifying the Pain: Voice of the Mobility Customer

Question: How much do you agree or disagree with each of the following statements?



The EPM Advisory Council conducted a short survey in March 2020 to understand the true scale of the challenge that consumers like Jacob face in their day-to-day journeys. The survey was conducted in the USA, China and Germany, and included 1,000 recent car buyers. The key findings were:

While people are relying on technology more than ever before (particularly in the USA), a significant proportion of respondents feel that technology is getting too complicated. This is likely a reflection that while many of the devices people rely on may work well individually, integrating these devices into a seamless digital experience is getting harder.



Source: SBD Automotive

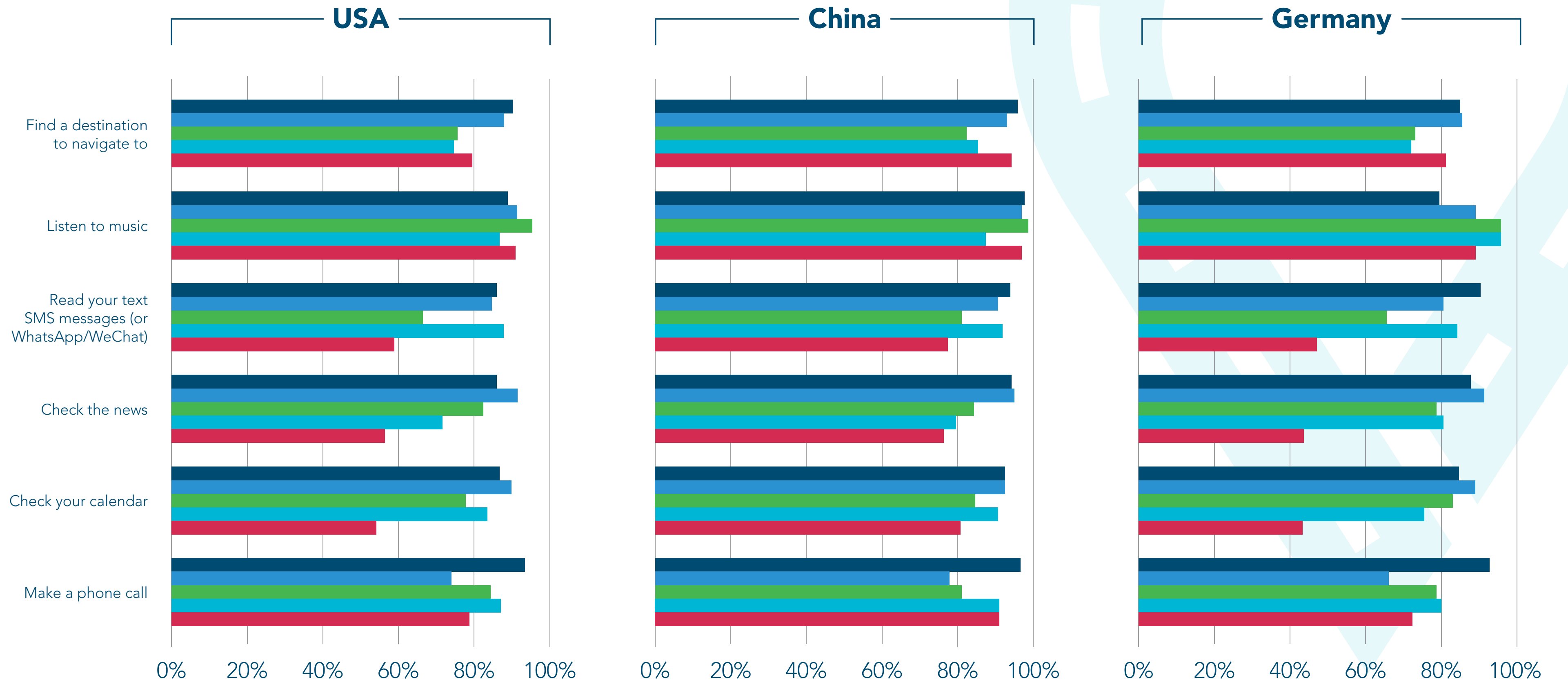
Cars Regularly Rank Behind CE Devices in Terms of Ease-of-Use



Question: On a scale of 0 to 10 where 0 is Near impossible and 10 is Extremely easy, how easy is it to do all of these things when using your device?

Note: Results show % of respondents who gave a score of 6-10.

Cars rank lower than average when it comes to usability when compared with other digital devices. Staying connected and productive in the car seems to be a particular challenge across all three regions surveyed, with many respondents struggling to read SMS messages, keep up with news or check their calendars.



Source: SBD Automotive

Digital Experiences Are Climbing up the Importance Ladder

Question: We'd like you to rank in order of importance the key things you may look for in the next car you buy. It is important that my next car is a car that is...

Note: Results show % of respondents who placed criteria within their top-5.

Traditionally, car buying was heavily influenced by a vehicle's physical factors such as aesthetics and performance. Our survey shows that many of these traditional factors are being overtaken by new considerations, such as how well the vehicle integrates with a person's digital lifestyle.



Source: SBD Automotive

Diagnosing the Pain: Digging Deeper into the Root Causes

While it may seem obvious that the mobility consumer experience needs to be paramount, there are five complex and underlying factors why automakers and mobility participants too often get this wrong:



#1 **Cultural: Hardware-driven (vs. consumer) culture.**

Today, automakers who are transforming into mobility providers tend to be too far removed and separated from the end-users of their products and/or rely completely on dealers for day-to-day interaction with consumers and their needs. The automotive industry is to a large degree focused on a “build-and-forget” hardware-based paradigm, rather than the “always-improving” mentality that has emerged in the software and services sectors. Even the identity management systems are still architected around a 26-digit Vehicle Identification Number (VIN) rather than a vehicle owner’s name, vehicle occupants and/or increasingly multiple or shared users of a vehicle. This restricts the level of engagement to enable consumer-driven enhancements.



#2 **Technical: Rigid platforms.**

It can still take 4 to 5 years for an entirely new car or mobility platform to be designed and launched and it is rarely easy or flexible enough to integrate consumer’s technologies, home networks and the rest of a consumer’s daily life that they would like to take with them on their journey. Many of these platforms are still not upgradeable, and as cars get older, they are not always better. Even with over-the-air software updates, mobility providers have been more cautious to embrace change, and do not have organizations and/or processes in place to manage vehicle software generations ten years or more after the vehicle launch. Most providers also do not expose the software code or have re-use strategies in place around key technology enablers. Additionally, a different supplier is generally used for each generation of software in the vehicle.



#3 **Organizational: Silos everywhere.**

Consumers increasingly rely on multiple forms of transportation to get from A to B and multiple devices and apps to manage their lives, so it can be difficult for any single company to see the “big picture” from a consumer’s perspective. Consumers must therefore piece together a patchwork of solutions which are interoperable, do not allow ticketing integration or cannot optimize the holistic mobility experience. While consumers are increasingly diversifying their modes of transportation, devices across private vehicles, shared services and apps, most companies in the automotive or mobility space continue to work in a heavily siloed environment, with teams narrowly focused on just one element of the user experience and no one in charge of the entire mobility experience.



Diagnosing the Pain: Digging Deeper into the Root Causes

#4

Communication: Industry jargon, not consumer-centric language.

There is quite a bit of misaligned language, which doesn't resonate with owners and users of mobility. Automakers and mobility providers rely too heavily on industry jargon or communicate in ways consumers do not understand. Words and phrases such as "personalization," "user profile," "eco mode" and "phone projection" can overwhelm consumers. In an effort to gain a competitive advantage, automakers are also sub-branding autonomous safety features. According to the [American Automobile Association \(AAA\) 2019 survey](#) of 34 car brands sold in the US with advanced driver assistance systems (ADAS), AAA found 40 different brand names to describe emergency braking, 20 names for adaptive cruise control and 19 terms for lane-keeping assistance.

#5

Commercial: Antiquated partnership/business models.

All these are exacerbated by legacy business models, slow to evolve and keep pace, and have not been a traditional focus area for automakers or mobility providers. There is too often a mentality that company A or company B must "own the customer" rather than a model which rewards shared responsibilities, affords joint visibility into the pains of the process and where both sides seen as equals.



A man with dark hair is shown in profile, looking out of a window. The image is partially obscured by a large blue overlay that contains white text. The text is centered and reads: "SHIFTING FROM 'RPM' TO 'EPM' REQUIRES COLLABORATIVE INNOVATION".

**SHIFTING FROM "RPM"
TO "EPM" REQUIRES
COLLABORATIVE INNOVATION**

A New Mobility Experience Built on Consumer Experience Pillars

The automotive and mobility industry demonstrated by CASE has been focused on delivering technology, but now must shift towards delivering hyper-individualized mobility experiences that help deliver upon consumer experience pillars for both owners and users of mobility. What does this mean in practice?

Accomplishment: Whether it is commuting or while en route, this is largely wasted time for the driver and/or vehicle occupants. Consumers are seeking mobility solutions which enhance their personal productivity and efficiency, optimize their day and support drivers' ability to safely multitask. Mobility examples include integration with workforce solutions, prioritizing tasks/routes to get things done, integrating with personal calendars and providing notification and tools to achieve secondary tasks. Almost all new consumer-driven innovations provide "time back" to the end user, and mobility is no different.

Well-being: Consumers want to have peace of mind during their end-to-end mobility experience. Providers must develop experiences that enhance drivers' and riders' physical safety and digital security as well as the personalized in-vehicle atmosphere which reduces stress and monitors their physical well-being. Automakers have increased safety and security solutions to decrease fatalities and alert authorities upon a vehicle crash. Emerging mobility examples such as ADAS—including lane correction, driver and occupant monitoring, biometrics, emotion recognition and more, can help ensure the mobility experience can be trusted, is safer and automatically adjusts the mobility settings and platform to the needs of the user.

Social Connection: Mobility was once seen for decades as a social release, and avenue for social connection. The modern experience of driving alone has led to the car and getting from A to B as one of isolation. Consumers are seeking to enable safe experiences that build personal connections inside and outside the vehicle. Market innovations include user-enabled location-sharing of routes and time of arrival, keeping in touch and sharing mobility experiences via social media platforms and among shared vehicles appropriate levels of sharing and anonymization with strangers.



A New Mobility Experience Built on Consumer Experience Pillars

Enjoyment: Consumers want a fun and enriching mobility experience. Drivers and passengers want to consume video and audio entertainment and enable personalized moments of discovery when it is safe to do so. The mobility experience should be immersive and integrate both brought-in and remotely delivered content, as well as context and awareness of what is happening around the vehicle during their journey. Market innovation includes cloud-based integration of video content to “continue” consumption during a journey, personal sound-zones to operate devices and consume media without disturbing others (especially in a shared vehicle), as well as smart location-based notifications to desired preferences and points of interest.

Environmental Consciousness: Consumers are increasingly aware of the environmental impact of their mobility footprint on global climate change. A growing segment of consumers are embracing electric vehicles as statements, and becoming increasingly vocal advocates for new mobility choices that include non-ownership models overall. The impact of alternative forms of mobility such as ridesharing is causing vigorous debate on whether the overall environment has improved or gotten worse. New eco-focused technologies for the mobility ecosystem include charging by specific daypart to reduce impact on the grid, allowing owners to charge using renewable energy sources. This creates deeper awareness for mobility users and allows them to share their impact, as well as other navigation-related enhancements for both Internal Combustion Engines (ICE) and Electric Vehicles to reduce their overall carbon footprint by selecting optimal routes and charging locations.

It will be up to industry ecosystem partners to determine:



1. How they best enable and enhance these experiences.



2. If there is an opportunity to offer other experiences, enablers or complementary services that are not already “owned” and can be created or evolved.



3. How true innovation can be achieved today, beyond moving out-of-car digital experiences into one of the large ecosystems.



Collaborative Innovation for Real Change

No single company can possibly deliver on each experience pillar above. Instead, the broader mobility ecosystem will need to change the way it innovates and collaborates in order to succeed.



Consumers First! Take a 360° Customer View

Real change can only occur if automotive manufacturers and mobility providers start first and foremost with the experience needs of the end consumer—both owners and users of mobility solutions. This includes increased design-thinking principles according to the flow of the experience (and constitutes a “good” vs. “better” vs. “best”), as well as clarifying the role of the automotive or mobility screen against how a consumer will organize their digital life into the future vs. the other way around.

If consumers need to be at the heart of the future mobility experience, data needs to be the bloodstream sustaining the entire mobility ecosystem of partners. The last few years has seen a growth in the number of data marketplaces and APIs emerging to help connect data providers with data users. Moving forward, companies will need to find ways of sharing data for the good of the customer and with their consent, as well as help upstream and downstream partners understand usage and behaviors so everyone gains a truly holistic perspective on the mobility experience and there is both a real and perceptual value exchange.



Seamless Integration Across Multiple Mobility Components

Expectations outside the industry are setting consumer expectations for what the ideal mobility experience should be: IDs built around their digital life, opt-in data flow across broader industries and services, simplified account management based on choice and liquid integration with a single click. Automakers and mobility providers must also ensure a seamless onboarding and offboarding of a consumer, from permanent owners to one-time users. The user experience and human-machine interface must also be robust to ensure seamlessness before, during and after the journey, including a contextual experience that is reflective of brand promises and not just a copy of an app.

“Providing our retail customer with an end-to-end digital experience that does not stop when they leave the car is central to our value proposition as a trusted mobility provider. Additionally, serving our commercial and fleet customers digital needs is paramount; they own their vehicles to run their business or generate revenue—an increased level of digital in-vehicle and off-vehicle products and services is key,”

May Russell,
Ford Smart Mobility –
Technology Executive,
Ford Motor Company

Collaborative Innovation for Real Change



Open Innovation Sandboxes

Testing new mobility experiences is extremely difficult—it requires a real-world environment where experiments can be conducted in a way that ensures safety, while minimizing reputational, Intellectual Property (IP) and legal risk to companies involved. Too often automakers in the broader mobility value chain either resort to closed-door clinics that provide an unrealistic perspective on consumer attitudes towards new mobility experiences or are forced to launch large-scale and expensive pilot programs with no prior data in those markets that could help them optimize the experiment. Some companies have had to partner with exclusive municipalities under limited conditions or even announced intentions to build entire new smart cities as testbeds for observing real-world mobility experiences and collecting consumer insights.

An alternative (and perhaps more scalable) approach is to start building a network of open innovation sandboxes across different cities, whereby conditions can support new ideas and consumers can be easily recruited to test them. This would both help ensure a broader diversity in local consumer preferences and stakeholder feedback, as well as entice both entrenched mobility players and start-ups with the opportunity to test innovations faster and at greater scale.



Strength in Numbers Via Thoughtful Partnerships

Successful mobility experiences include seamless integration of components to ensure a holistic mobility journey can be delivered. Too often when individual corporations try to “own” the end-to-

end journey, the outcomes for mobility users inevitably suffers. Partnerships need to embrace trust, transparency, low barriers to entry for emerging solutions and developers, mutual visibility of outcomes and address shared monetization goals.



Embrace the Challenges of Autonomy

Creating value at the speed of need and laying the foundation for 2030+ autonomous systems will have the potential to massively disrupt the mobility experience as we know it today. Autonomy offers new benefits for travelers and business professionals, and increases access for the elderly or persons with specialized mobility needs. But this step-change also

means that commercial and local relationships must change. Almost as important as the technology itself, a collaborative ecosystem will be needed to accommodate new autonomous requirements for consumer education (both riders and drivers within mixed environments), smart cities with vehicle-to-vehicle and vehicle-to-infrastructure communication needs, governments, insurers and other interests. An ecosystem in which consumers are protected and innovative solutions can be brought to market will be required.

“Earlier this year, Hyundai became the first mainstream automaker to launch a Smartphone Digital Key. Digital Key adds convenience for our owners who are used to using their phones for everything. Customers want to manage their lives with a smartphone. More importantly, wide adoption of Digital Key allows us to be ready for future shifts in mobility, such as car sharing and alternative ownership models.”

Manish Mehrotra,
Director, Digital
Business Planning and
Connected Operations,
Hyundai Motor America

Collaborative Innovation for Real Change



Business Model Disruption

The business model will need to change drastically to support the new focus on mobility experience. Vehicle manufacturers will need to embrace commercial opportunities that move beyond a one-time sale into one that includes lifetime value, subscriptions and in-vehicle commerce opportunities via third parties and new software-based enhancements. Enabling new mobility experiences must also allow for shared revenue opportunities via a diverse set of providers with visibility and value-based monetization for each party's contribution to the full experience.



Shift from IQ to EQ Leadership

The automotive industry has traditionally favored IQ leadership ("know how") but will increasingly need to seek out leaders who also have strong EQ skills ("know you"). And, while cognitive intelligence (IQ) delivers fluid and quantitative reasoning, experiential intelligence (EQ) rewards leaders who can identify emotions, relate to the experiences of others and build social communities. The mobility leaders of tomorrow will need to be able to empathize with their customers to a much greater degree than ever before. Surveys and focus groups will no longer be enough. Being avid users of their own mobility products and services will be key, as will experiencing the challenges that consumers face in their daily lives. Next-generation mobility leaders will need to be part data scientist, part psychologist, part evangelist and part economist.



Embrace Transparent and Quantifiable Metrics

Automakers sell one of the most expensive products in the world yet are largely flying blind with little-to-no insights on how their products are actually being used, enjoyed, cursed, valued or any on-going accepted metric of satisfaction. Similarly, beyond a simple "app or driver rating," mobility users have little to no outlet to express their perspectives on each step of the experience, and underlying providers across the value chain (e.g. payment processors, user experience designers, developers, transit agencies, maintenance and repair fleets, etc.), have little visibility into how their contribution to the mobility experience is received or valued. The industry needs a consumer experience metric that ultimately drives better decision-making and positive outcomes for end

customers. A metric will emerge that is simple for both consumer and providers to understand. It should be transparent and cover the holistic mobility experience to gain credibility. This will enable it to be actionable enough to improve the overall customer experience.

Almost all of these changes can occur in parallel to technological advancements the industry will experience in the next decade. As customer experience expectations begin to steadily rise over time the mobility ecosystem will need to accommodate this change by putting these best practices into action.



Customer Satisfaction Impact

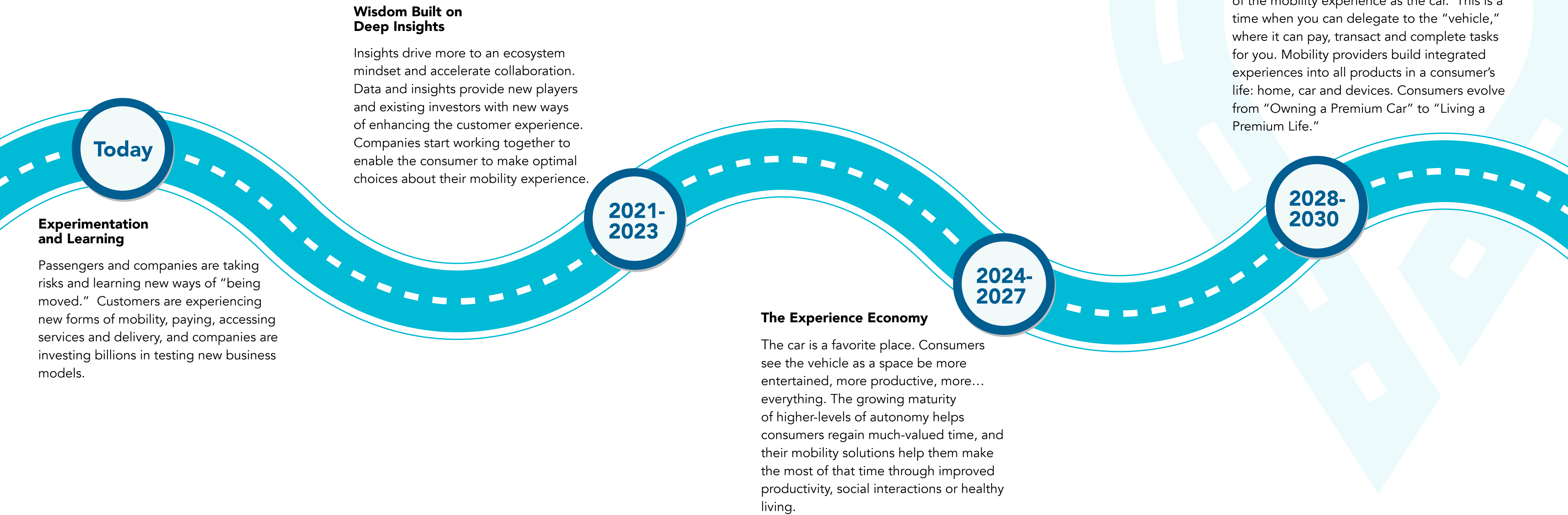
+15% **-20%**

Maximizing satisfaction with customer journeys can lift revenue by up to 15% while lowering the cost of serving customers by as much as 20%.

Source: McKinsey and Associates

A Clear Roadmap for the Next Decade of Mobility Success

Achieving all of the above may be the toughest transformation yet for an ecosystem that is by now well-accustomed to disruption. It won't happen at once—in fact it needs to happen in a sequence that helps stakeholders realign in a sustainable manner. Below is a roadmap for how we see this transition occurring:





EXPERIENCES PER MILE ADVISORY COUNCIL DRIVING CHANGE

Role of the EPM Advisory Council

Mobility is more than getting from one place to another. It's about shifting from one state of being to the next. The Experiences Per Mile vision gives people ownership of their experience in the car and transforms the value they place on the car and overall mobility experience.

HARMAN and SBD Automotive, together with industry partners and stakeholders, is transforming the industry and media dialogue through the recently formed Experiences Per Mile Advisory Council. The purpose of the council is to align automakers, Tier-one suppliers, third-party providers and other industry leaders, and to encourage collaboration regarding the changing value chains in the automotive industry that are being driven by the connected movement.

Active discussions center on the subject of intelligent technology, evolving consumer trends and how they're both reshaping the experience inside the vehicle as well as what this means for automakers and consumers alike. There's an urgent demand for consumer-centric, in-vehicle and mobility experiences and the most forward-thinking industry members must get involved now to drive a significant change. The council is shaping the future of EPM with a mission to promote collaboration, establish processes and elevate the automotive ecosystem as a whole.

David Slump, President of HARMAN Connected Services, made the following remarks about the EPM Advisory Council in the Experiences Per Mile Podcast: "The purpose of the Experiences Per Mile Advisory Council

is to uncover best practices and foster cross-industry collaboration, but it really starts with understanding and ensuring we all start with the consumer pain points, and really understanding the consumer insights. Then we can solve for those consumer pain points during the in-vehicle experience. And that's really the greatest benefit of the Advisory Council: The consumer will have a much better experience while moving from one location to another." To listen to the Podcast with David Slump, click here:



The purpose of the EPM Advisory Council is to help create a common purpose for the future of mobility. In the coming months, the EPM Advisory Council will develop an industry toolkit for key mobility stakeholders to communicate "experience" so that it is understood and common for the end consumer (such as a consumer-centric mobility dictionary). This includes shared metrics, which are transparent, accepted and actionable, that consumers and providers both understand.



"Joining the EPM Advisory Council has been an enlightening experience for myself and my colleagues to date. Bringing together various industries from mobility, autonomy to entertainment has shown we are all working towards the same goal. As we work towards defining the vital KPIs for the EPM we will determine best practices and processes to allow us to create a greater user experience. Defining the metric which is easily understood by the consumer will help to make EPM successful."

Paul Newton,
Head of Vehicle Electronics
and Connectivity
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For more information and to follow the EPM movement, see www.experiencespermile.org

This Report is Brought to You by the Experiences Per Mile Advisory Council

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