

INTELLIGENCE HITS THE ROAD

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INTELLIGENT TECHNOLOGIES

are now inextricably embedded into our everyday lives. But their reach is far broader than that, and set to deepen further still. The astonishing advances in the automotive industry—from virtual showrooms to autonomous driving and smart traffic infrastructures—are now reshaping mobility for the 21st century.

Accenture research shows that 78 percent of automotive industry executives agree that technology is enabling them to weave products and services seamlessly into the fabric of how people live today.¹

What is at the heart of all this? Breakthrough developments in the power and application of artificial intelligence (AI). Vehicles are shifting gear from being disconnected, personal transport products to becoming hyper-connected and intelligent nodes in a complex mobility ecosystem.

In this year's Accenture Technology Vision—Intelligent Enterprise Unleashed—we've identified five technology trends that will reshape how we live, work and play over the next few years. While all of the trends resonate with the automotive industry, three in particular represent key opportunities which, if seized today, will bring about tremendous gains in the future.

Here are the three trends driving the future of automotive.



EXTENDED REALITY

Virtual and augmented reality technologies are removing the distance between people, information and experiences, transforming the way we live and work.

Prospective automobile buyers are already used to being able to go online and configure a car model to their specification. Extended reality will develop that ability dramatically, shifting interactions from static imagery to an immersive experience. For example, customers will be able to experience the infotainment system first-hand, try out interior options and even create a video of themselves at the wheel inside their new vehicle.

Take Lynk & Co³, for example. It's offering entirely new ways for consumers to configure and customize a vehicle, all through interactive and immersive digital channels that offer configuration options and new ways to purchase outright or "subscribe" for use of the vehicle.

But the possibilities of extended reality reach far beyond the sales experience. Accenture's acquisition of Mackevision³ (a market-leading provider of CGI solutions to the auto industry, and one of the award-winning visual effects houses behind *Game of Thrones'* visual world) points to a future where extended reality becomes an integral element throughout the auto value chain. Already providing companies like Porsche, Mercedes-Benz, BMW and Audi with virtual showrooms and immersive driving experiences, the capabilities Mackevision is pioneering will help enable the construction of digital twins that can be used from design, production and maintenance to validation of vehicle integrity in the aftermarket.

80% of automotive executives believe it will be important or very important to leverage extended reality solutions to close the gap of physical distance when engaging with employees and customers.²

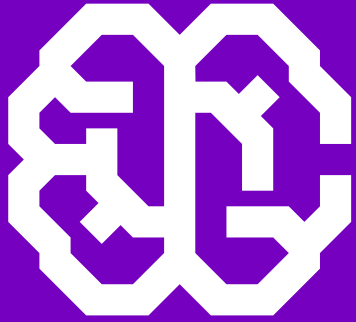
One key feature, virtual twins enriched by real-world data creating a constant feedback loop, will enable manufacturers to continuously improve their products, looping back critical information on vehicle performance to be used in fine-tuning subsequent designs.

A digital twin can also be used to train mechanics so they can repair parts and processes in the real world more effectively. And when it comes to autonomous driving, a vehicle's digital twin will enable each driverless vehicle to complete millions of

kilometers' training and testing in different driving situations (e.g., urban traffic) before licensing for safe transfer to the customer. In fact, this looks likely to become a regulatory standard for driverless vehicles to be allowed on the road.

Extended reality will also be used to enhance passengers' and drivers' experiences on the move. As autonomous vehicles increase in sophistication, the windshield will itself become a rich, interactive interface for multiple forms of content—from entertainment to personalized marketing.





CITIZEN AI

As artificial intelligence grows in its capabilities— and impacts people’s lives—businesses must move to “raise” their AIs to act as responsible, productive members of society.

For automotive companies, the principal focus for AI to date has been inside the vehicle. To a great extent that means using AI technologies to provide a differentiated driving experience. For example, Mercedes launched at the Consumer Electronics Show in Las Vegas its “Mercedes-Benz User Experience,”⁴ a new operating system using artificial intelligence technologies for a range of infotainment and connectivity features. And in another recent development, Accenture and Faurecia, a leading global automotive supplier, announced a partnership to integrate Amazon Alexa technology within vehicles. This will use audio beamforming technology to separately identify drivers and passengers so that voice commands can be routed to the desired Alexa service.⁵

Innovations like these are pushing the boundaries of what’s possible today. But they’re just the start of an AI automotive revolution that will be more about what happens outside the car than within its cockpit.

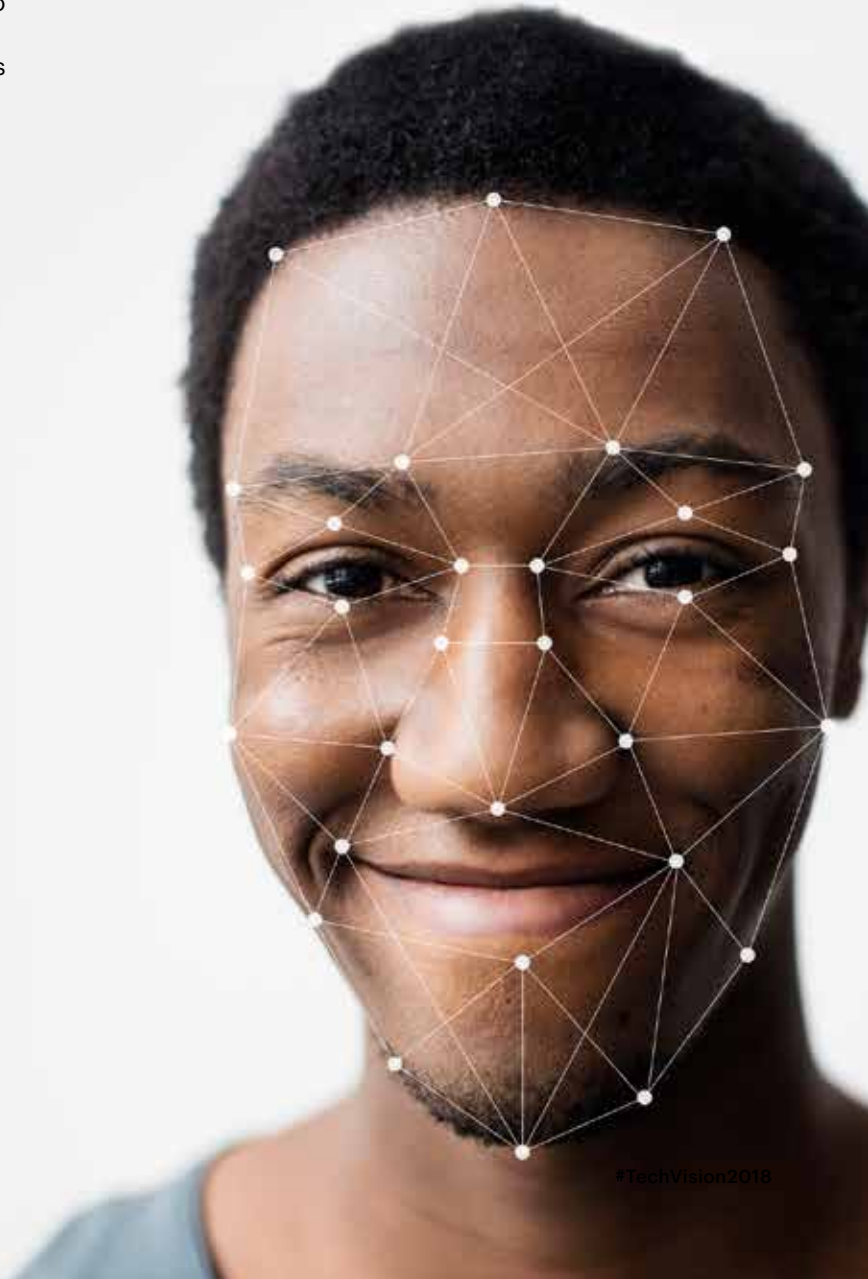
We’re already seeing AI being used to drive unprecedented operational efficiencies in the automotive supply chain with, for example, AI transforming the performance of everything from the production line to call centers. Industry executives recognize its power and are committed to investing in its future.

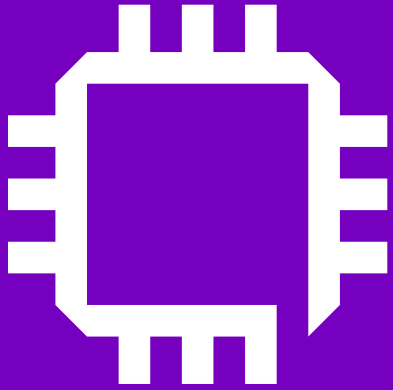
Nearly 80% of them agree that within two years, AI will become an ever-present co-worker and trusted advisor to humans throughout their organizations.⁶

From now on, expect to see AI being used in other ways as well, including enabling automotive customers to participate in a connected ecosystem of multiple players. Pointing to the shape of things to come, Byton,⁷ the China-headquartered company supported by Apple, is currently pushing the limits by turning the car into a next-generation smart device, using AI technologies to position it as a platform from which drivers and passengers can interact in new ways—with the vehicle and a universe of external providers.

And this is just the beginning. In the future, there will be so many AI use cases that the challenge for companies will be to zero in on the applications that can go beyond efficiency to create whole new revenue streams and business models. This requires something that is still missing in most cases today: a data strategy, high maturity in data analytics (a prerequisite for AI implementation and training), and a company-wide AI strategy.

Being able to harness and manage data to train AI will only become more critical as the momentum behind autonomous driving grows. There are few, if any, more compelling examples of why responsible AI matters than in the driverless vehicle. Until the public can really trust the technology (and the algorithms behind the decisions), uptake will meet resistance. In this context, it's not simply a matter of perfecting the technology (an enormous technical challenge in its own right), but also a matter of explaining it in a relatable way, making it transparent and/or ensuring there are checks and balances to govern its safe operations.





INTERNET OF THINKING

Businesses are making big bets on intelligent environments via collaborative robotics (cobots), AI and immersive experiences. To bring these intelligent environments to life, leaders must extend their infrastructures into the dynamic, real-world environments they want to reach.

Intelligence inside the car is the principal focus of most OEMs today. But what happens outside is set to become even more important. To deliver their many promised benefits—from protecting the environment and improving safety and convenience to new revenue streams—driverless vehicles will rely on being part of and connected to an intelligent, “living” infrastructure. It’s a trend that start-up NIO⁸ aims to capitalize upon, with the development of smart vehicles that will provide their drivers with a connected, living space—as much an extension of the home or office as a traditional vehicle.

As urban infrastructures become smarter and better connected—with 5G coming online and further proliferation of intelligent sensors—intelligence will become a pervasive “fog,” rather than isolated clouds. Edge computing in and around the vehicle will create new flows of data and information to enrich AI algorithms.

This will give drivers continuously enhanced experiences, from traffic jam-free journeys (drivers in London, for example, spend the equivalent of three days each year stuck in traffic⁹), to smart vehicle charging and even the opportunity to allow others (for a fee) to seamlessly share use of their vehicles.

As vehicles become smarter and more connected, their potential vulnerability to cyberattack will proliferate. But crucially, those same technologies will have enormous benefits in cyber security. With virus scanners installed, vehicles will also become part of a mass defensive network—each product feeding back data to a centralized operating and control center where threats can be continuously monitored and countered.

Building an intelligent environment like this, however, cannot be accomplished by any single company, agency or government. Cooperation between all players in building a connected and collaborative ecosystem will be vital. And the industry recognizes the necessity of working with others to achieve mutually beneficial outcomes. Already, four out of 10 automotive businesses report working with double or more partners today than they were two years ago.¹⁰

There are plenty of inspirational examples of collaboration out in the market. For instance, German OEMs BMW, Daimler and Audi have come together to place a US\$3 billion bet on HERE,¹¹ the digital mapping business that aims to create new levels of connected mobility beyond the maps and data it already owns. Or taking another example, BMW Group recently launched CarData,¹² a new connected platform that will give its drivers access to innovative third-party services. In China, Didi Chuxing¹³ is a platform enabling taxis, private cars and designated drivers to be hired via smartphone, serving more than 450 million users in over 400 Chinese cities.

As well as personal vehicles, ecosystem plays are perhaps even more advanced in the commercial vehicle space. Swedish manufacturer Scania has launched ScaniaOne,¹⁴ which provides a single digital environment to a host of connected third-party services for fleet owners and drivers. MAN,¹⁵ meanwhile, has created an open cloud-based operating system for the transport industry that aims to boost efficiency and transparency in the end-to-end ecosystem by connecting vast amounts of data, including information on trailers and drivers, as well as navigation, traffic and weather systems.

As these connected ecosystems coalesce and extend, however, a key concern for all participants will be assuring the veracity of the data that underpins them. And that's particularly important in, for example, Europe, where the introduction of the General Data Protection Regulation (GDPR) raises critical issues around data use, control and ownership and in China, where "critical" data must be stored on servers within the country.

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References

- 1 Accenture Technology Vision 2018 Research
- 2 Ibid
- 3 <https://www.lynkco.com/>
- 4 <https://www.daimler.com/innovation/case/connectivity/mbux.html>
- 5 <https://newsroom.accenture.com/news/faurecia-and-accenture-join-forces-to-reinvent-onboard-experience-for-connected-and-autonomous-vehicles.html>
- 6 Ibid
- 7 <https://www.byton.com/about.html>
- 8 <https://www.nio.io>
- 9 <http://inrix.com/scorecard/>
- 10 Ibid
- 11 <https://www.forbes.com/sites/dougnewcomb/2016/06/27/inside-audi-bmw-and-daimlers-3-billion-bet-on-heres-mapping-business/#4e60a6076343>
- 12 <https://www.press.bmwgroup.com/global/article/detail/T0271366EN/bmw-group-launches-bmw-cardata-new-and-innovative-services-for-customers-safely-and-transparently?language=en>
- 13 <http://www.didichuxing.com/en/innovation/smart-transportation>
- 14 <https://www.scania.com/group/en/scania-introduces-scania-one-the-digital-platform-to-connected-services/>
- 15 https://www.truck.man.eu/de/en/man-world/man-in-germany/press-and-media/RIO_-open-cloud-based_-operating-system_-for-the-entire-transportation-industry-265152.html

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