2023 WILL DRIVE AUTONOMOUS VEHICLES
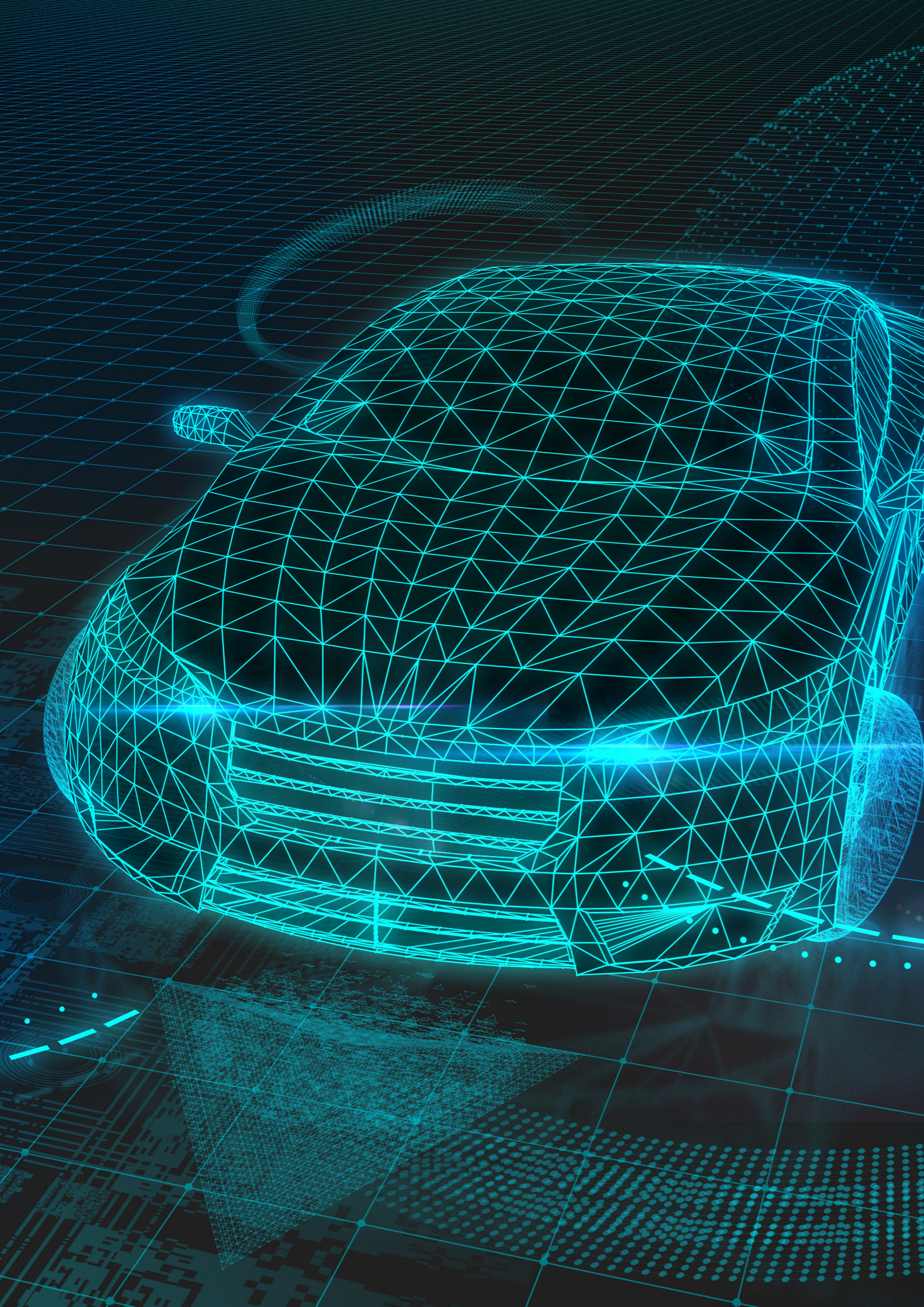
BUSINESS DEMANDS WILL BE THE ACCELERATOR FOR AUTONOMOUS VEHICLE ADOPTION

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Autonomous vehicle discussion is dominated by their possible impact on car ownership and driving, both statements of the western lifestyle. But, as with many technological developments, it is business adaptation and demand that will be the accelerator for autonomous vehicle adoption.

The pressures that organizations are dealing with today will add fuel to autonomous vehicle (AV) demand; these include the skills shortage, inflation, changing consumer expectations, and the climate emergency. CXOs in a myriad of vertical markets should therefore look at how the autonomous vehicle could transform their business.

What is slowing AVs down?

According to some critics, autonomous vehicles have stalled. That perception is perhaps heightened by attention-grabbing headlines about accidents involving Elon Musk's Tesla cars using the autonomous function. These stories make lurid headlines but overlook the number of accidents and deaths that happen on the world's roads each and every day where the human driver is at fault. Beyond the headlines, though, autonomous vehicles and their backers have come across some obstacles.

Existing infrastructure is not fit for autonomous vehicles. A study of road quality in the USA found that just 41% met the standard for a good safe ride due to potholes and a lack of maintenance. Poor infrastructure is hard on human drivers but even harder for autonomous vehicles, which are attempting to navigate, record, and repeat journeys. Autonomous vehicles require high-end digital mapping, but poor-quality infrastructure prevents that map from being accurate and, therefore, safe for an AV.
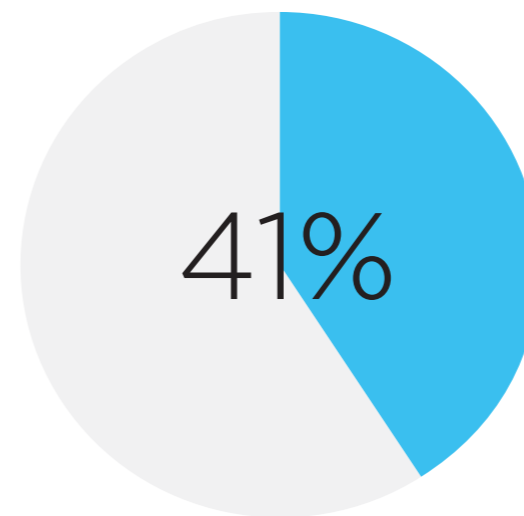
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If autonomous vehicles are to become a part of the travel landscape, infrastructure will have to be redesigned. At present most transport infrastructure is designed for the human driver.

For civic bodies, a great challenge is heading towards them; the need to design infrastructure not only for AVs but also the rising number of active travelers using bicycles, scooters, and walking. This systemic change in travel behavior away from cars has a further challenge for civic organizations, active travel and electric-powered AVs produce less revenue than fossil fuel-powered vehicles. Some studies report that fuel taxation could halve in the coming years, leaving a funding gap for investment into new infrastructure. To make the situation worse, the American Society of Civil Engineers recently said 43% of the nation's public roads were in poor condition.

The climate emergency has increased transportation restrictions; according to business advisory firm McKinsey, 150 cities have regulations for low-emission zones. Although autonomous vehicles will become part of the emissions solution - an autonomous vehicle can be more effectively utilized than a privately owned and driven vehicle - the spate of regulatory change will have put a brake on investment. AV makers and operators are waiting to see the impact. In addition, the post Covid-19 supply chain issues have significantly impacted vehicle manufacturers.

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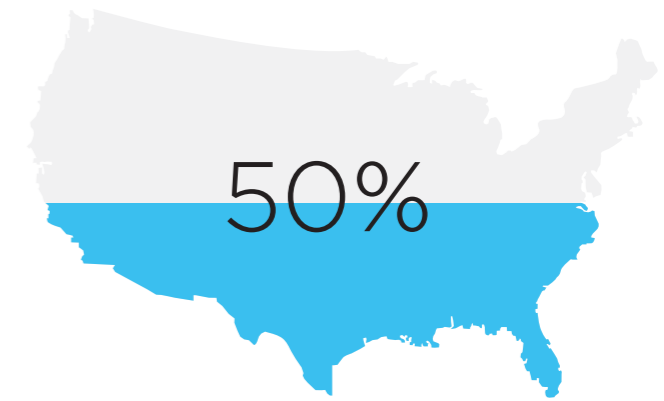
Despite these challenges, CXOs and organizations need to analyze and prepare for AV adoption. Just as Application Service Providers (ASP) didn't revolutionize the enterprise computing world, they did give a glimpse of the cloud computing world we inhabit today. In the spiritual home of cloud computing, San Francisco, self-driving taxis are in service, and by 2030 McKinsey believes that 500 billion miles will be traveled on US roads by AVs. By 2040 the same analysis believes that 50% of all miles traveled in the USA will be by autonomous vehicles. Investors continue to fuel the sector; over $400 billion was invested in the last decade into autonomous, electric, and connected vehicle businesses.

Asia is already pulling away as a leader, perhaps due to its growing new cities where alternative approaches to infrastructure can be more easily adopted than in historic cities and nations. Baidu, the Chinese cloud computing giant, has been testing an autonomous vehicle taxi service in Beijing.

In December 2022, TuSimple completed an 80-mile truck journey across Arizona with no driver on board.

Still not convinced?

The rise of electric vehicles, in particular since the pandemic, acts as an indicator of the scale and pace of change that is happening to vehicles in our society and organizations. Sales of electric vehicles (EV) have increased by 40% a year in the USA since 2016, and McKinsey believes that by 2035 the largest automotive markets will be fully electric - again, legislation, especially in Europe, will dictate this for new vehicle sales. EVs are not just restricted to congested roads, passenger carrying flying EVs are being tested in Germany, and the UK and drone boats have been instrumental in sea-based attacks against the Russian forces invading Ukraine.

The pace of electrification of vehicles is a potential indicator of how AVs will transform sectors and transportation - though admittedly more complicated than changing power sources.

Elements of autonomous technology are already on our roads, and the technologies are iteratively improving. In 2022 next-generation 4D imaging radar began to be shipped by the automotive sector. "4D imaging radars bring a significant performance boost compared to the previous generation of radars," says Dr. Xiaoxi He, IDTechEx Research Director. This iteration is leading to improved automatic emergency braking in vehicles such as the BMW iX.

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Research organization IDTechEx believes that autonomous haulage has taken a major step forward. In its analysis of heavy-duty autonomous vehicles, the successful trial by TuSimple, a US start-up backed by Volkswagen and others, will increase the adoption of autonomous vehicles in logistics. In December 2022, TuSimple completed an 80-mile truck journey across Arizona with no driver on board. With the haulage industry already struggling to recruit and retain drivers before the "great resignation," there is significant demand for more autonomous technology in the sector. The USA, Europe, and Asia are all reporting major shortfalls in heavy goods vehicle staff, which could exacerbate existing supply chain challenges.

"LiDAR (a remote sensing technology) has finally reached a price point where OEMs are prepared to start integrating it, and there has been a flurry of model adoption announcements this year. 2023 could then be the year of the LiDAR," Dr. Xiaoxi He says. The analyst believes these trends will lead to existing autonomous taxi services expanding, autonomous commercial vehicle trials will increase throughout 2023, and more cars will become available with high-performance radar and LiDAR.

Iterations, regulations, and commercial pressures will lead to 2023 being an instrumental year in the development and adoption of autonomous vehicles. Throughout the year and beyond, consumer attitudes to transportation are changing, while macroeconomic issues will make automation an inevitability. CXOs can play a key role in ensuring their organization is on the right - autonomous - journey.
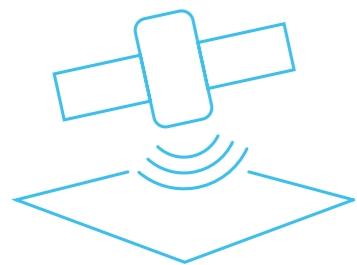
4D imaging radars bring a significant performance boost compared to the previous generation of radars

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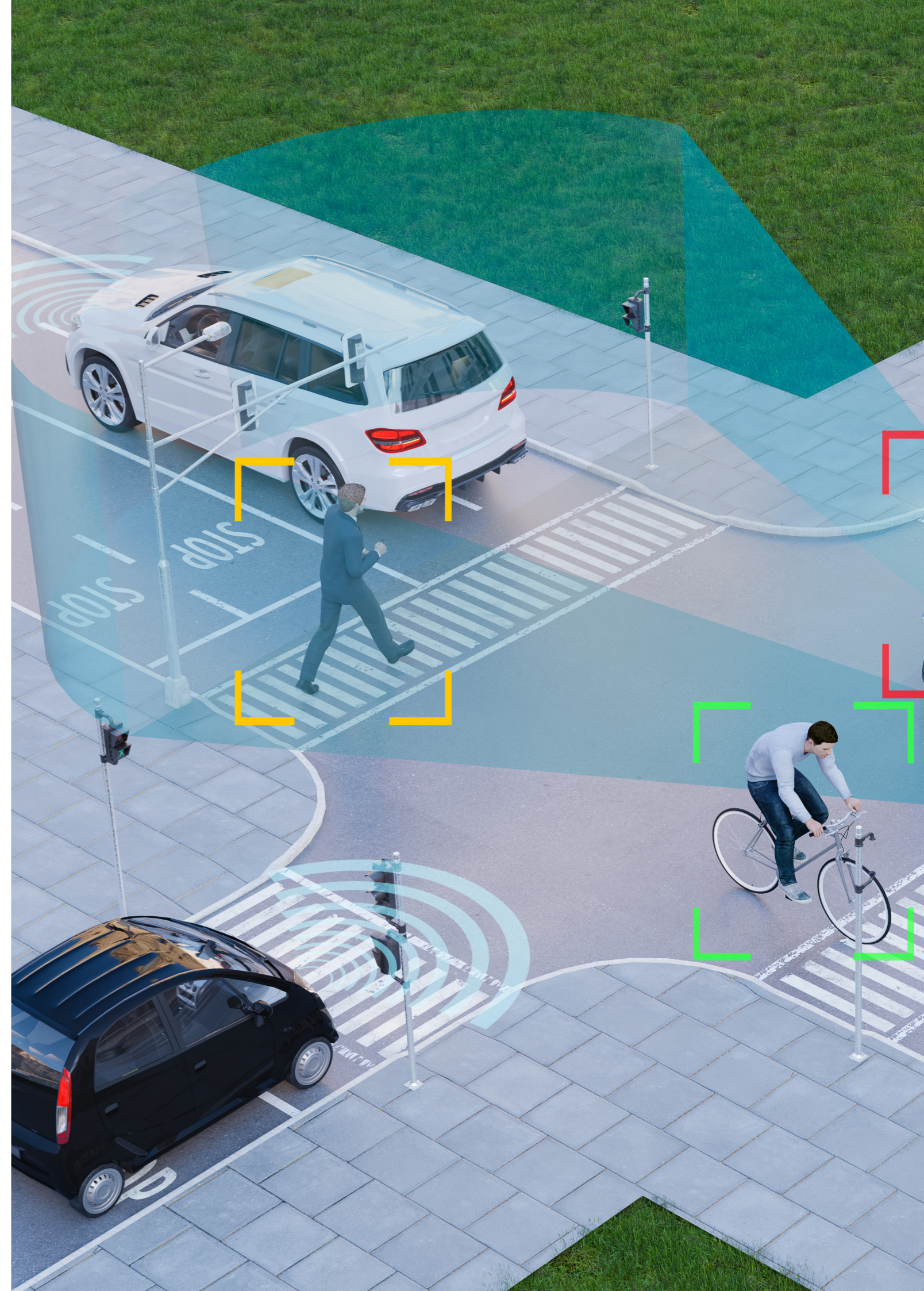
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