

# The future of movement

Opportunities and challenges in Asia Pacific  
2021-2022

here



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# Executive summary



The passenger and commercial vehicle industries are undergoing major transformation, as new technologies are innovating and disrupting the movement of people and goods on a global scale.

The future of movement is a top priority for global businesses and governments focused on three major mobility trends: autonomous driving, electrification and shared mobility. With ever-changing developments, it is critical for organisations to adapt through collaboration and communication.

The European Chamber of Commerce (EuroCham) represents the voice of the European business community in

Singapore, providing members with a forum for advocacy, networking and information sharing. EuroCham's Smart Mobility Committee works to foster alliances between European companies, government bodies and the Singapore transportation ecosystem.

Together with HERE Technologies, EuroCham launched The Future of Movement, a platform to cultivate understanding of the key trends, challenges and opportunities relating to the movement of people and goods. The objective of the program is to bring together industry experts, thought leaders and policy shapers in a forum to exchange ideas on movement-related topics.





**The Future of Movement** has four pillars:



**Autonomous driving**

The future of autonomous vehicles in the region



**Urban mobility**

How technology and innovation, together with transportation capacity, facilitate the movement of people



**Transportation**

The infrastructure and services required to facilitate the movement of goods in an on-demand economy



**Logistics**

The role of technology in addressing the challenges and opportunities in supply chain visibility and fleet management

A series of webinars was held in conjunction with EuroCham corporate member, HERE Technologies. HERE is a location data and technology platform that moves people, businesses and cities forward by harnessing the power of location.

As the program’s knowledge partner, HERE engaged a variety of stakeholders – including industry experts, thought

leaders, opinion leaders and logistics-tech innovators – who contributed their expertise on a range of topics relating to The Future of Movement.

This eBook is a summary of the webinars, held in 2021.



# Electric vehicles: challenges and opportunities for adoption



Electric vehicles (EVs) have the potential to transform the transportation sector and beyond. However, significant investments in infrastructure, vehicle tech and critical car components are required to enable a shift from the dependence on internal combustion engine (ICE) vehicles.

This chapter summarises the webinar about electric vehicles. It's aimed at:

- Government departments responsible for developing infrastructure for EVs
- Companies developing technology to improve EVs
- Automobile companies producing/selling EVs
- Citizens who wish to learn more about EVs



The webinar was hosted by EuroCham and included a panel of industry experts:



**Abhijit Sengupta**, Director and head of business, India, HERE Technologies  
Abhijit launched HERE Technologies map and location content in Southeast Asia and India. He is a thought leader in defining product and content strategy.



**Deep Gaur**, Product portfolio management for Southeast Asia, SEA, Director - Sales, HERE Technologies  
A member of the Global Business Innovation team, Deep Gaur is responsible for business development in SEA. He drives HERE Technology's portfolio roadmap and strategy, working closely with key customers and partners to leverage the full potential of location technologies for their businesses.



**Goh Chee Kiong**, CEO, Charge+  
A longstanding advocate in the cleantech and sustainability sectors, Chee Kiong is a regular contributor to conferences and the media. He currently sits on the board of the Energy Studies Institute (ESI).



**Mark Tan**, Head of National Electric Vehicle Centre, Singapore  
Established in March 2021, the National Electric Vehicle Centre is responsible for cultivating a vibrant EV industry and research ecosystem. The department is setting regulations and standards that help planning for an EV charging infrastructure.



**Mats Nilsson**, Director – APAC central, Volvo Buses  
Mats has worked in numerous functions at Volvo, including purchasing, sales, strategy and product planning, plus general management.



**Ricky Tay**, Managing director, Volkswagen Singapore  
Ricky is the first Singaporean to head Volkswagen Group Singapore since the company started directly managing its retail business in 2007.



**Scott Tan**, Principal director and public sector strategy lead, Accenture  
An experienced strategist and design thinking practitioner, Scott has worked in the US, UK, Hong Kong and Singapore. He helps drive digital transformation, and redesigns operating models and service experiences at an industry and state/national level.



# Challenges of EV adoption in Singapore

Consumers in Singapore are hesitant about EVs for a number of reasons, including:

- The supply and location of EV chargers
- Concerns about power supply
- Charging versus fuel cost
- The cost of EVs compared to regular vehicles

## Charging supply and location

Singapore is addressing the charger situation as the government has set the goal of 60,000 charging points by 2030. And companies like Charge+ are invested in the entire value chain, from supply of proprietary chargers to design validations to installation, operations and maintenance.

## Power supply

EV charging does not follow the petrol station format. It's not a five minute,

plug in and charge process. Fast chargers are limited in number, so the charging process is slow, taking place overnight in residential premises. As Singapore is such a high-density city, it is difficult to install chargers in public parking lots and housing blocks. While landlords are showing interest in EV charging stations, they are reluctant to spend the money required to install them.

In Singapore, as with other countries, charging is offered as a service. Companies like Charge+ make the initial investment and operate the chargers for a few years in order to cover the costs, which means zero cost for the landlord. This model has already seen an increased pickup of EV chargers across Singapore.





### **Charging vs fuel costs**

The average distance per day by Singaporean drivers is 50km. Most electric cars travel at an average 17,000 km per year. Using an EV could save up to S\$15,000/year on the charging versus the fuel costs.

### **The cost of EVs**

Currently only expensive cars like Tesla are available in Singapore. However the government's Green Plan 2030 is supporting early adoption by lowering taxes and giving rebates of up to S\$25,000.

EVs are becoming more affordable, the user experience is improving and electric vehicles are better for the environment than gasoline, diesel or hybrid vehicles. A recent study revealed that if the electricity to power EVs is created using clean fossil fuels, like CNG, introducing electric vehicles could reduce harmful emissions by up to 50%.

Buying sentiments are changing too, as almost 50% of potential car buyers are considering EVs. But a huge mindset shift is required for sustained growth and for EVs to take off in Singapore.



# Adoption by commercial fleets



For successful adoption of EVs as commercial fleets, like public buses, the government has to support with long-term approaches to policies, regulations and subsidies.

The Land Transport Authority (LTA), Singapore's only city bus operator, has already committed to phasing out diesel buses and see all buses being electrified in the future. Adoption is already moving in the right direction and Singapore is in a position to set an example to the rest of Southeast Asia.

HERE helps alleviate concerns and anxieties about commercial fleet adoption for all stakeholders – from manufacturers and regulators to drivers and passengers. HERE location platform serves as a marketplace that enables collaboration among stakeholders; it connects those looking for information with those who have answers and solutions.



# Location and charging

The biggest obstacle in EV adoption is matching the demand for electric charging with the supply of EV charging facilities.

HERE provides a scalable location platform that matches the demand from EV drivers for charging with the charging infrastructure. Efficient and secure, the location platform provides access to HERE's own location data and services, and allows third parties to host and distribute their location assets on the HERE Marketplace. All static and dynamic data is aggregated and delivered by HERE's location services to end consumers and businesses.

The platform has two key functions:



A global database of EV charging stations that provides both static information like pricing and connection types, and the dynamic availability of charging stations. The database enables charging infrastructure providers to distribute their latest network details to drivers via a real-time, secure and global EV charging service.



Drawing on decades of mapping and routing expertise, HERE's EV Routing service provides critical information about EV vehicle range. It factors in real-world conditions such as traffic speed, traffic lights and even complex elements like the elevation of the road surface, all of which have a large impact on the range.

Providing drivers with knowledge and assurance about the location of charging stations helps reduce anxieties about running out of charge and alleviates hesitancy over adopting EVs.



# Power supply issues



If 100% of condominiums in Singapore were to adopt EV charging stations, it would equate to approximately 100 EVs per condo. This would create a power supply shortage.

However, as the average time between charges is five days, this issue would be resolved if condos created a sharing economy, whereby each EV charger is used by multiple residents. Shared charging carries its own issues – particularly in public spaces as drivers compete for the charger – but thinking

innovatively and considering different business models will empower a sustainable system.

The LTA is looking at how to manage power supplies and is exploring provisions for what to do with EV batteries at the end of their life. Together with the Environment Agency, they have introduced a producer responsibility framework that compels all battery producers to recycle batteries. Along with recycling, batteries could be reconditioned or used as energy storage.



# Role of the government



The government plays a critical role as a catalyst for EV adoption. The LTA has identified three areas of focus:

1. Regulation: establishing the standard for EV charging.
2. Operations: rolling out the plan for 60,000 charging points by 2030
3. Industry promotion: growing the EV ecosystem through transition workshops and a new maintenance framework

The LTA's charging plan prioritizes coverage over volume: 40,000 of the new charging stations will be in HDB blocks and 20,000 in private premises. The aim is for all parking lots to have an EV charging point by 2025. LTA will incentivise charging operators and charging owners to deploy chargers by offering grants. As technology like smart charging and routing evolve, and data usage is optimised, there are manifold possibilities.



# Maximising logistics productivity through real-time supply chain visibility



The recent massive disruption has revealed just how vulnerable complex supply chains are and demonstrates the importance of having better visibility at every stage of the journey. Chapter 2 of *The Future of Movement* summarises the webinar about supply chain visibility. Host EuroCham was joined by a panel of industry experts, including:



**Abhijit Sengupta**, Director and head of business, India, HERE Technologies  
Abhijit launched HERE Technologies map and location content in Southeast Asia and India. He is a thought leader in defining product and content strategy.



**Eric Tiels**, Lead solution engineer digital supply chain, SAP SEA  
Industry expert and advisor, Eric has spent 25 years in supply chain management. He leads customer solutions for SAP Southeast Asia.





**Sudhan Sundaram**, Managing director, Accenture Singapore

A supply chain and logistics expert with more than 25 years professional experience, Sudhan helps clients design and implement customer-centric supply chains that drive revenue growth and end-to-end business value.



**Sulaizah Saptoe**, Senior product lead for transportation and logistics, HERE Technologies

Sulaizah launched HERE's first pedestrian navigation content globally. She leads product marketing for the company with a mandate to drive and grow business in Automotive, T&L, TMT.



**Wesley Hind**, Head of commercial Asia, ECCO

Wesley is responsible for optimizing ECCO's distribution network, and ensuring healthy supply and demand management. Prior to Singapore, Wesley has lived in Japan and Thailand and has had short stints in Canada and Slovakia.



**Wong Meng Huat**, Director operations and projects, DHL

With more than 20 years experience of the logistics industry, Meng Huat's expertise is in transformation of the supply chain with technology.



# Supply chain visibility today and the impact of 5G



Supply chain visibility requires a clear understanding of the location of goods or services at every stage of the journey. Customers today demand more predictability and visibility of the whole supply chain.

Services like Grab, Amazon and Uber, which show real-time visibility of drivers, have influenced expectations: customers are demanding similar levels of visibility and mapping for their deliveries. DHL launched the first app in the market to provide GPS mapping for urgent shipments, giving customers end-to-end visibility over their shipment. The mapping and tracking of the driver's location enables DHL to have better proactive management.

Warehousing has also been impacted by the pandemic. But as a result there is improved visibility of warehouse operations – so many warehouses had to shut during COVID that DHL is now communicating to customers when a warehouse is operating at full/partial or zero capacity.

It is predicted that 5G will transform visibility of supply chains, providing enhanced visibility and real-time data at every step of the journey. For example, 5G will enable sharing of images of vehicles or goods being transported, as well as real-time reports of the condition of the products, or temperature of the delivery, among other factors.




# Location and supply chain



Location services are a valuable tool for enhanced supply chain visibility, providing critical data for both shipper and receiver.

HERE Technologies has a number of products that facilitate better supply chain visibility, including routing algorithms, middle/last-mile solutions and traffic information.

 At the planning stage, location intelligence helps businesses forecast their performance and efficiency with dynamic route optimization. Location intelligence provides real-time multimodal shipment visibility, identifying possible disruptions, plus steps to avoid them.



At freight handovers, location intelligence enables optimization of operational efficiency and better time performance. Post-trip reports and predictive data analytics inform inventory management and enable future improvements.



Asset tracking helps with inventory tracking and management. Sensors attached to a company's asset provide real-time visibility – showing the location of the asset, where it might be delayed, where there might be problems and when it arrives. Companies can get a clear view of the movement of their assets and up-to-date data on the product's status.



# Supply chain resilience

In an end-to-end supply chain, there is a huge focus on resilience and the ability to adapt. This requires planning for multiple scenarios.

Although still in its early stages of development, AI and machine learning have the potential to extend scenario planning, whereby they make decisions that are usually made by humans.

Similarly, businesses need to consider continued connectivity. It is important to

have alternative supplier options should the first choice not be able to fulfil an order. SAP is a network-for-network company collaborating with a range of partners to provide the most relevant data needed for visibility. SAP can also provide data showing carbon impact, which helps companies work towards their sustainability objectives.

HERE uses location technology to make any supply chain resilient, irrespective of the underlying business solution. Location intelligence enables smoother inbound logistics operations and reduces waiting time, while post-trip analysis provides insights to inform and improve supply-chain resilience.



# Optimizing last-mile delivery logistics and the role of location

As ecommerce continues to boom, the speedy and accurate fulfilment and distribution of goods are a critical part of the ecommerce experience.

Last-mile delivery is one of the toughest challenges for logistics. Businesses of all sizes are exploring the newest technologies and experimenting with supply chain models to increase parcel volume, expedite deliveries that will ultimately meet customers' expectations.

This chapter summarises the webinar held about last-mile delivery. Host EuroCham was joined by a panel of industry experts including:



**Gopi Rengasamy**, Strategy Consultant, KPMG

Part of KPMG's Global Strategy Group, Gopi works with private, public and not-for-profit organizations, helping clients achieve their goals and objectives from 'innovation to results'.



**Jason Jameson**, Senior vice-president and general manager, HERE Technologies

Jason and his team are at the forefront of bringing the power of location to customers, partners and developers, across industries and markets, to solve business problems.



**Lim Zheng Gang**, Head of logistics, Foodpanda

Zheng Gang handles everything delivery and rider related at Foodpanda, including fleet management, operational performance, rider engagement and rider acquisition. He also acts as government liaison to identify and bridge gaps in the burgeoning delivery industry.





**Neo Su Yin**, Head of customer experience, domestic post and parcel, Singapore Post  
Since 2021, Su Yin has been responsible for improving the service quality and customer experience in the post and parcel delivery services at Singapore Post.



**Oh Bee Lock**, CEO, Singapore Logistics Association  
Industry veteran Bee Lock has a wealth of experience that spans long-term innovation and R&D, to navigating digital technological shifts, to formulating and driving strategic initiatives to leverage digitalization and the “Internet of Logistics”.



**Sulaizah Saptoe**, Senior product lead for transport and logistics, HERE Technologies  
Sulaizah launched HERE’s first pedestrian navigation content globally. She leads product marketing for the company with a mandate to drive and grow business in Automotive, T&L, TMT.



# COVID-19 and the logistics industry

Ecommerce and last-mile delivery have dramatically changed in the last two years. As contactless delivery became the norm, businesses were forced to adapt the delivery process. Singpost, for example, changed the technology used for deliveries to ensure both staff and recipients avoid physically handling items.

Similarly, Foodpanda had to enhance its service and offer more food options, while delivering at speed and maintaining government social distancing regulations. During the first year of COVID-19, the numbers of first-time customers ordering groceries on Foodpanda more than doubled – a trend that has continued well into 2021.

The pandemic is having a huge impact on the infrastructure required to deliver on the new ways of living and working, as goods and services are required to move

faster than ever. Location intelligence is already helping organizations adapt to each step on the logistics journey, and the development of location data, automation and machine learning are increasingly important.

Businesses at all stages of the supply chain have digitized rapidly. From shipping to last-mile delivery, the introduction of new technologies, reduction of middlemen and speed of transformation means that we now know more about last-mile delivery than ever before. The expectation of customer service has also changed; there is a bigger responsibility to meet customer expectations from the retailer to the final delivery person. Technology is the answer for any service provider wanting to survive - and thrive - in the new world of ecommerce.



# The challenges of contactless delivery



Contactless delivery is more than just technology: it is about keeping riders, as well as customers, safe. The biggest challenge is maintaining a balance between customer demand and ever-changing regulations, while maintaining rider safety. In practice, riders have to stay nimble, resourceful and diligent to keep up with the rapidly shifting protocols. Foodpanda is working with partners to offer discounts on petrol, healthcare and upskilling courses for

riders, working with the government with contact tracing, while riders are given priority vaccinations as frontline workers.

Internally, Foodpanda has a machine learning model that helps to forecast the demand curve, so riders can pick shifts based on this curve. In the long term, the company is looking into more technology solutions that enable riders to deliver more orders in an hour.



# The importance of location to last-mile delivery



Ecommerce is putting pressure on suppliers to reconfigure their fleets to meet shifting demands. Noting that the last-mile delivery is predominantly the costliest stage of the supply chain, HERE Technologies created a full-service application with straightforward pricing that helps fleet managers meet these demands and better manage their fleet operations.

The two priorities for this service are optimizing operational efficiency and minimizing cost to the customer. Having the ability to schedule pre-planned specific fleet attributions involves looking at legal restrictions, physical restrictions, loading docks, trucks and parking

distance markers. Disruptions to any of these aspects impacts the ability to locate goods and, as a result, will cause delays.

HERE's solution is an end-to-end product that tracks across multiple modes of transport and integrates with leading logistics systems, to provide accurate data on the location of goods. Fleet and logistics managers always want to understand driver performance and identify more effective routing options: post-trip analysis provides this information, enabling drivers to adhere to regulations, follow a predetermined route and reduce unforeseen delays.



# The evolution of the last-mile ecosystem

Increased pressure on last-mile delivery is placing even more strain on logistics at every stage of the journey, while customers are constantly looking for alternative solutions.

HERE aims to address these challenges by providing end-to-end visibility from the first mile to the last. Parcels are already tracked at each handover stage and the future adoption of IoT will help with more accurate tracking. HERE is adapting around the core technologies of fleet management, while innovating around all the extra layers of data being collected to better serve the evolving last-mile needs.

There is a huge opportunity for cost optimization and efficiency in last-mile delivery. HERE has built a packaged software-as-a-service, offering the ability for companies to pay for what they use, to solve issues such as job planning and dynamic replanning, then tracking the last-mile delivery.

The product is designed to help minimize the costs of delivery failures and optimize productivity of the workforce. Because it sits in the cloud, it provides access to advanced technologies that previously were hidden in complex IT implementations.

## Initiatives

The two key considerations for logistics providers are customer experience and the use of data to understand the expectations of customers. It is also important to look at how automation can help drive efficiencies: tried-and-tested video analytics are extremely useful.

Singpost is moving towards a mobile-centric customer experience and is looking at how they can digitize deliveries and postings: for example, digitizing the addressing and stamp process, or through sending customers notifications of when to expect mail. With help from the government, Singpost has introduced the first batch of 100 electric vehicles and it is looking to be 100% electric within five years.

Autonomous technology to deliver food in Singapore has massive potential, but will take years to develop. However, drones are already being tested, as they cover longer distances in a shorter delivery time and have the potential to reduce the mismatch between demand and supply.

Foodpanda has collaborated on the development of a drone that can deliver up to 3km. Although a fleet of drones is still a work in progress, this is a portal



to developing more use cases. It is also exploring the use of autonomous vehicles that will supplement riders and help reduce congestion.

Another ongoing partnership is with NUS' mobility department, which has created autonomous robots that function as riders, picking up orders from merchants and delivering them to students and staff across the campus. The first robot in the market has already passed the LTA safety assessment for supervised use and there are plans for operational testing in condos.

### **Changes in the last-mile ecosystem**

It is impossible to create a one-size-fits-all logistics solution for ASEAN, but it is especially challenging to develop a unified last-mile solution, as the end consumer is different in each country.

Nonetheless, ASEAN can learn from the technological advances made in the USA, Europe and, more recently, in China. Digital platforms are key and they can provide more connectivity, be it physical connectivity, documentation connectivity or regulatory connectivity.

On a positive note, governments in ASEAN are interested in digitizing to get ahead of the game. It is important for solutions

to integrate and interoperate across platforms, so vendors and suppliers can and leverage the 'platform of platforms', while allowing the creativity to generate new solutions.

COVID-19 was an external shock that forced organisations of different scales to embrace technology. Ongoing supply chain disruptions are forcing companies to channel their investments into three areas:

1. Automation solutions in warehouses or distribution centres to increase competitiveness and reduce operating costs
2. Internet of Things (IoT) will provide end-to-end supply chain visibility, creating more efficient and agile supply chains
3. Sustainability driven by operational efficiency and lower fuel consumption.

Last-mile delivery continues to be important, but there has never been a better time to digitize and harness the power of location technology. Automation, IoT and sustainability will help companies at every stage of the logistics journey, not just the last mile.



# Are we ready for autonomous vehicles?

The fourth webinar of The Future of Movement series focused on the growth of autonomous vehicles in APAC. It was aimed at:

- Companies looking to play a role in the development of autonomous vehicles
- AI developers focusing on self-driving cars.
- Experts wanting to learn more about the scope of this industry

EuroCham was joined by the following panellists:



**Andrei C Iordache**, Global manager of connected and automated driving at HERE Technologies

Andrei Iordache is responsible for helping companies enhance their driving experiences with HERE's location-based service. In addition to his business education, he has a self-driving car program nanodegree from Udacity.



**Dr Luigi Di Lillo**, Lead of products and partnerships at Swiss Re

Dr Di Lillo is responsible for developing insurance products connected to vehicle safety, automation and electrification. He recently co-authored a peer-reviewed paper on AVs published by the National Academy of Sciences of the USA.



**Professor Nick Reed**, Founder of Reed Mobility

Prof Reed has worked at the forefront of transportation research for 15+ years. He is instrumental in connected and automated vehicle projects in the UK, leading the GATEway project in Greenwich and creating London's Smart Mobility Living Lab.



**Satya Ramamurthy**, Partner and head of infrastructure, government and healthcare, KPMG

An expert on urbanisation and transport projects, Satya is a key member of KPMG's Global Future Transport Technology network. He advises clients on the development of electric and autonomous vehicle strategies.



# How autonomous vehicles will develop in APAC



KPMG developed the Autonomous Vehicle Readiness Index (AVRI) to help transport policy makers assess a country's readiness for autonomous vehicles. Those in the private sector have also found it a useful introduction to AV development. The Index has four pillars:

1. Policy and legislation: Presence of an AV-focused agency, AV regulations, efficiency of the legal system, data sharing
2. Infrastructure: EV charging infrastructure, 4G and broadband coverage

3. Technology and innovation: Patent production, innovation capability
4. Consumer willingness to adopt AV

Singapore scores well across all four AVRI pillars and is ranked as no 1 on the Index. Ramamurthy did note that the city-state is, however, lacking in technology and innovation.

In 2009 Google first announced it was working on self-driving cars. After the initial hype, interest rapidly declined. However, according to Prof Reed, 2020 was a turning point. Waymo, the company





that emerged from Google's self-driving car project, is now offering commercial services with driverless vehicles to passengers in Phoenix, Arizona. Trials are also taking place in Singapore, where commercial, automated vehicles are running in the Science Park.

Challenges prevail. One of the major fears people have about AVs is their safety. Drawing on the example of rising accidents involving SUVs over

the last 10 years, it was explained that these larger passenger vehicles are less maneuverable, which means they cause more severe collisions and accidents.

When mobility becomes more accessible, increased congestion might have more of a negative impact than the positives of increased mobility. This means a change of mindset is required to overcome this perception.



# Impact and readiness for AVs



AVs will first be deployed in fields where there is the largest commercial incentive. As the transportation of goods is less risky than transporting people, logistics is the most promising field for early deployment. Next, it is likely AVs will be used in less busy environments and on highways.

Although the idea of autonomous vehicles as a retail option is still far-fetched, there are pilot projects taking place around the world. The growth of AVs will be determined by the operating

domain for which they have been built, but there are examples of AVs being used around the world, such as the robotaxi ride-sharing service launched in Boston, USA.

The size of commercial fleets also has a role to play in the adoption of automated vehicles. Usually companies want to buy the safest vehicles for their employees. Once large fleets start to purchase AVs, there will be an acceleration of their adoption and AVs will slowly be adopted by consumers.



# State of development



There is still uncertainty about whether autonomous vehicles are safer than those driven by people behind the wheel. Insurance companies will continue to push back until it's proven that an AV is significantly safer. However, regulators are inclined towards robot-driven vehicles because they consider them to be safer and better for society.

The current metrics of risk used to identify and define safety aren't reliable and need addressing. There are some statistics, including millions of miles driven by AVs, but it is more important to assess the quality of the miles driven,

to highlight the true impact on the risk. Automated vehicles are expected to decrease the risk of physical harm but if the total number of casualties was reduced. However, if the total number of casualties reduces, but the number of pedestrians killed increases (compared to conventional driving), it would be considered an unethical outcome.

A better understanding of those metrics, to truly comprehend what safety means, will be required before seeing more autonomous vehicles on the roads.



# Location and AVs



Harnessing the power of location will create a cleaner and safer future of autonomous, connected, electrified and digitized driving.

AVs rely on sensors to guide the vehicle, but these sensors have limitations. For example, they can't see around corners and struggle to operate efficiently in bad weather conditions, such as snow and fog. Richer data and more detailed attributes, like the location services provided by HERE, help automated driving systems become more aware of a vehicle's environment, while providing the industry with detailed location data. Better location data will mean AVs are likely to be safer and cleaner than regular vehicles.

Private vehicles, such as small factory vehicles will soon almost all be electric vehicles (EVs). However, this is not a sustainable option for larger and heavy goods, as the power supplies

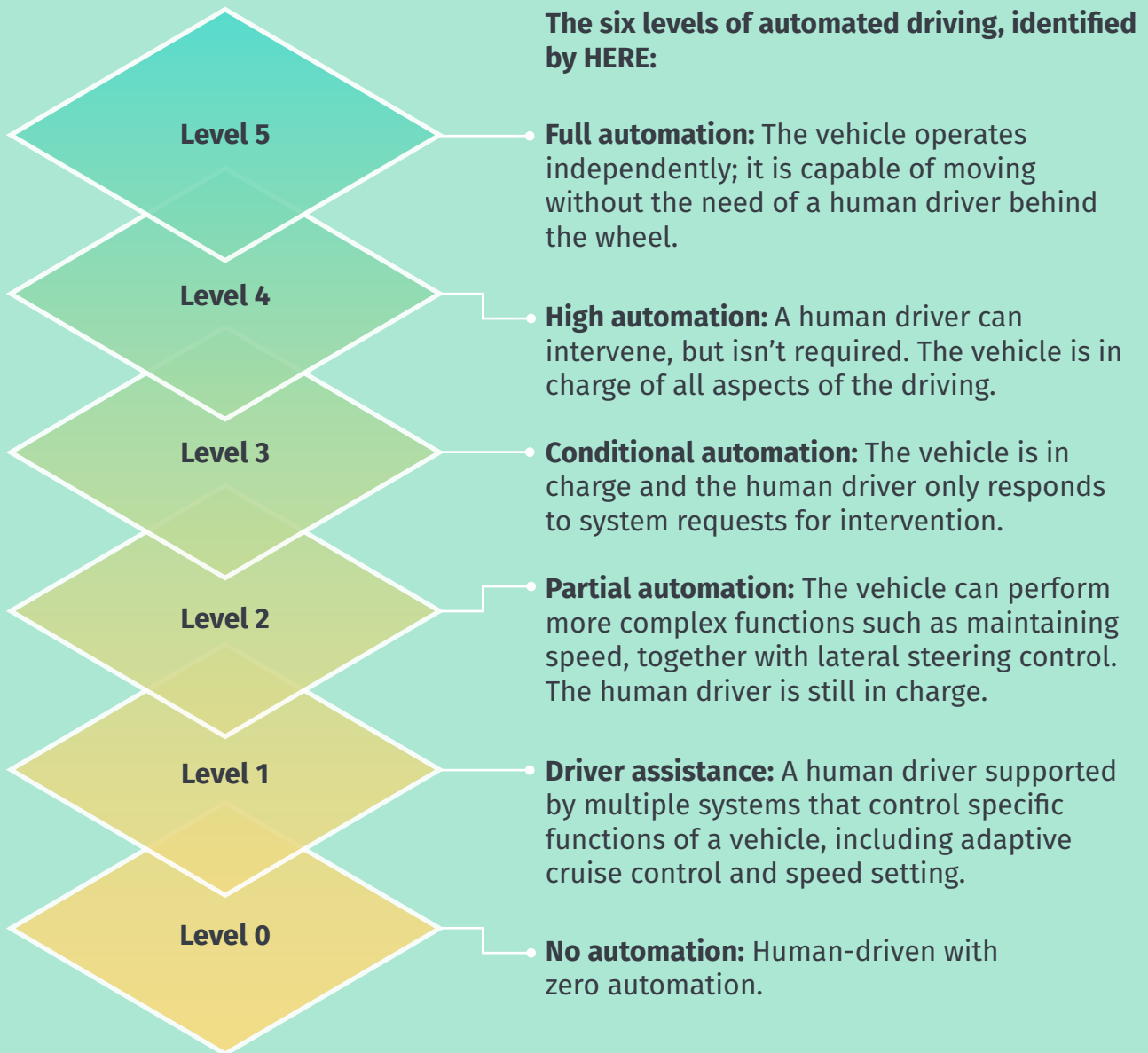
required will have a major impact on the environment. Alternative power sources or ways of carbon offsetting will need to be found.

Another big issue is the charging infrastructure and how people who don't have off-street charging facilities manage.

There are good reasons why AVs will need to be EVs. The electrical architecture in an EV allows more processors and is less costly, thereby increasing the electrical architectures to high-voltage recording. As 4K technology is smaller, there will be a greater capability to put more computers and more sensors in the same vehicle. The combination of more processing power and additional new features that can be updated over time will give rise to new capabilities in automated driving. These will help owners increase the customer lifecycle value.



# Levels of automated driving



# Key implications of location



The future movement of goods and people is dependent on location technology. From empowering automated driving, to transport management, to optimizing supply chains and enabling a better ecommerce experience, there are numerous examples of how location technology benefits mobility.

HERE's location platform is designed to meet the demands of urban mobility, shipping and logistics. Building on

its portfolio of map data and location services, HERE provides dynamic, real-time information that is specific to smart transportation, fleet logistics and shipment operations. The platform provides enterprise-grade coverage and the highest-quality features for better planning and execution. HERE's platform puts the customer at the core of everything: historic data is shared in an open, neutral and collaborative way that will help customers meet their KPIs.





### **Mobility of the future and areas of investment**

As the automotive industry moves into the digital space, and the function of the car changes, real-time access to data and location technologies will create new mobility solutions. In the future, mobility services will be defined by innovation, connectivity, security and location technologies. The public and private sectors can collaborate to create seamless transportation systems across cities, through developing mobility systems and autonomous driving.



### **Move towards map-based solutions with real-time location data**

According to [The State of Movement](#) study by Frost & Sullivan and commissioned by HERE, more than 50% of logistics companies are utilizing map-based solutions for their fleet management and shipment monitoring across all shipment types, for better route planning, real-time routing and vehicle tracking. This trend will extend to other logistics service delivery assets in the future.



### **Fleet management solutions**

With end-consumers demanding real-time delivery, logistics companies are focusing on solutions that enable better route planning, real-time routing and vehicle tracking. More accuracy in capacity planning, trend visibility and forecasting can be achieved with real-time tracking and data reporting.



### **Shift to cloud-based solutions to overcome integration challenges**

According to [The State of Movement](#) study, more than 50% of logistics companies are intending to adopt cloud-based solutions for fleet and logistics asset tracking, and shipment monitoring, in the next two years.



### **Boost customer satisfaction by prioritizing real-time solutions**

Customers increasingly require full transparency of their shipments during all stages of transit. As a result, logistics companies are prioritizing shipment monitoring solutions that enable real-time location and condition monitoring. Tracking and reporting on a real-time basis provides end-to-end visibility and enables better capacity planning.



### **Start leveraging IoT to enhance visibility and operational efficiencies**

IoT is gaining momentum, as companies are adopting IoT across fleet and logistics asset tracking and shipment monitoring. It is predicted to be a priority over the next two years. Logistics companies need to evaluate the suitability of IoT to gain end-to-end visibility over their fleets, assets and shipments.





## About EuroCham

EuroCham Singapore is an independent non-profit organisation governed by members, representing the common interest of the European business community in promoting bilateral trade, services and investments between Europe and Singapore and the region.

EuroCham Singapore represents the voice of the European business community in Singapore. We provide our members with a forum for advocacy, networking and information sharing within the European and Singaporean business communities and governmental circles.

## About HERE Technologies

HERE, a location data and technology platform, moves people, businesses and cities forward by harnessing the power of location. By leveraging its open platform, HERE empowers customers to achieve better outcomes – from helping a city manage its infrastructure or a business optimize its assets to guiding drivers to their destination safely. To learn more about HERE, including its new generation of cloud-based location platform services, visit [360.here.com](https://360.here.com) and [here.com](https://here.com).

