智慧城市与汽车产业
Smart Cities & the Auto Industry

10月25日，汽车行业的风云人物、欧洲汽车行业协会（ACEA）主席卡洛斯·戈恩（Carlos Ghosn）在中欧国际工商学院主办的第12届中国汽车产业高峰论坛上发表主旨演讲。下文是其演讲内容选编。

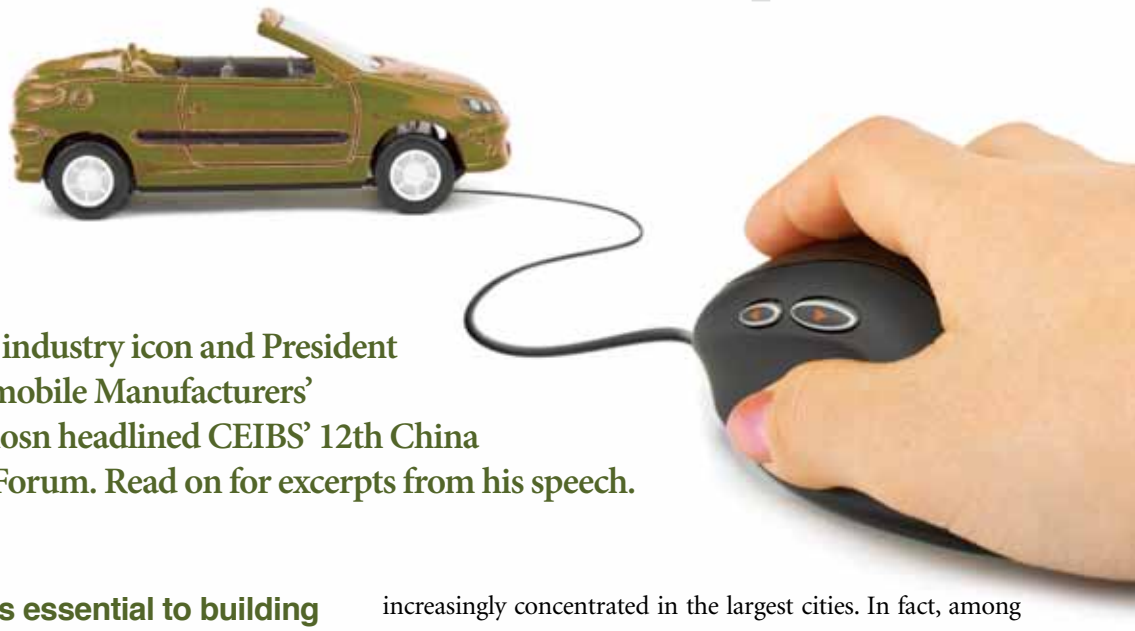
建设智慧城市的关键趋势和要素

当前，全球人口已超过 70 亿，约半数都居住在城市。

到 2050 年，全球人口将增长至约 90 亿，预计 98% 的新增人口来自发展中国家与新兴国家。城市人口预计会增长一倍，而农村人口的比例将保持不变，并进而减少。

在发达国家，人口日趋老龄化对医疗保健体系、社会福利项目和就业市场都提高了要求。

与此同时，新兴经济体正经历着人口快速增长和城市化的突飞猛进。



On October 25th auto industry icon and President of the European Automobile Manufacturers' Association Carlos Ghosn headlined CEIBS' 12th China Automotive Industry Forum. Read on for excerpts from his speech.

Key trends & elements essential to building a smart city

"The world today has more than 7 billion inhabitants. About half of those people live in cities.

By 2050, the world's population will grow to around 9 billion, with 98 percent of this growth expected to come from the developing and emerging countries. The urban population is expected to double, with rural population rates set to stagnate and then decline.

In the developed world, populations are aging, placing increased demands on healthcare systems, social welfare programmes and the job market.

At the same time, emerging economies are experiencing significant population growth and rapid urbanisation.

This is presenting significant challenges, particularly in China, which has an urbanisation rate of 42 percent and already has three cities that are among the top ten largest globally. China has about 170 cities with populations exceeding 1 million. And the proportion of the population that lives in cities of more than 1 million continues to rise.

In 2011, three out of five people who lived in urban areas resided in cities of fewer than 1 million inhabitants. By 2025, it's estimated only one out of two people in urban areas will live in cities of this size.

In contrast, cities of more than 1 million inhabitants, which accounted for about 40 percent of the world's urban population in 2011, are expected to account for 47 percent by 2025.

So it's clear the future urban population will be increasingly concentrated in the largest cities. In fact, among the million-plus cities, the megacities of at least 10 million inhabitants will experience the largest growth.

By 2025, when the number of megacities is expected to reach 37, Asia will have gained another nine, Latin America two, and Africa, Europe and Northern America one each. This indicates a clear trend of accelerated urban growth and concentration in Asia.

The challenge

One big challenge for developing countries is to reduce their dependency on external energy sources, to improve their energy mix in favour of renewables, and to face climate change threats. This is necessary to achieve a sustainable development of their economies, societies and the environment.

Total greenhouse gas emissions from transport have grown since the 1990s with the increase in transport demand. Thanks to the automobile industry's investments in innovative, new technologies, the impact of this increased demand has been dramatically mitigated.

All forecasts show demand for passenger and freight transport will continue to grow in line with economic growth. Curbing mobility is not an option.

All modes of transport – air, rail, road, sea and inland waterways – will need to increase their supply and efficiency to cope with this growing demand… and to meet ambitious environmental targets.

Average CO2 from new passenger cars has come down by close to 20 percent in 13 years. Fuel consumption from today's

这意味着巨大的挑战，尤其是在中国。中国的城市化率已达到 42%，并且已经有三个城市跻身全球前十大城市之列。中国约有 170 个人口超过百万的城市，这些城市的居住人口仍在持续增长。

2011 年，每五个城市居民中有三个居住在人口不超过百万的城市。到了 2025 年，预计每两个城市居民中有一个住在人口不超过百万的城市。

相比而言，2011 年，人口超百万的城市的人口总数约占世界城市人口总数的 40%，预计到 2025 年这一比例将升至 47%。

显然，未来城市人口将越来越集中到最大的城市。事实上，在人口超百万的城市中，人口超过千万的巨型城市的人口增长速度将是最快的。

到 2025 年，巨型城市预计将达到 37 个。在新增的巨型城市中，亚洲有 9 个，拉丁美洲 2 个，非洲、欧洲和北美洲各 1 个。这意味着城市加速发展与集中的趋势主要体现在亚洲。

挑战

发展中国家面临的一大挑战就是要减少对外部能源的依赖，改善能源结构，优先使用可再生能源，并应对气候变化带来的挑战。只有完成这些，发展中国家才能实现经济、社会与环境的可持续发展。

上世纪 90 年代以来，随着运输需求的增长，其产生的温室气体排放总量也在增长。得益于汽车产业对于创新技术的投资，这种不利影响已大为减少。

所有预测都显示，客运与货运需求的增长将与经济增长齐头并进。因此，遏制流动性是不可行的。

所有的运输方式——航空、铁路、公路、海运及内河运输——都需要增加供给、提高效率，以应对不断增长的需求 …… 并完成充满挑战的环保目标。

新型客车的平均二氧化碳排放量在 13 年内已经降低了近 20%。自 1965 年以来，重型车辆的燃油消耗量至少减少了 60%。

这两大改进主要归功于引擎技术的发展。要持续大幅减少二氧化碳排放量，我们就必须多方面协同努力，而不仅仅是关注车辆技术。

解决方案

最近，欧洲议会在一份报告中将“智慧城市”定义为能够动员本市范围内多元利益主体，用技术方案解决公共需求的城市。

当然，每个城市都是独一无二的。对于城市的拥堵和污染问题没有万能的解决方案，也没有一种方法能够确保这些方案不会影响一个城市的繁荣。

当然，整套的解决方案是存在的…… 有些已经进行了试验，有些则刚刚出现。所有这些解决方案都以“智慧城市”的概念包装自己。最合适的方案要依据具体城市的布局与规模、人口密度、文化与历史，以及可利用的金融资源而定。

仅有更智能的移动还不算是智慧城市，还需要考虑制定一套与之配合的政策。

我们总结了智慧城市的六大特点：

- 首先，城市内部和城市之间都有高度协调的“智能管理”政策。这些政策的发展应建立在稳固的公私合作关系上，尤其是在流动性方面。地方和区域政府应明确方向，并综合采用不同政策，形成一个协调的计划，兼顾城市化、基础设施、市民与货物的流动性等方面。智能管理要求地方社区与当地企业之间建立紧密的工作联系。
- 其次，必须发展“智能经济”，更好地利用电子商业和电子商务，以促进生产力发展，加快优化货物与服务的输送。
- “智能移动”要求高科技、一体化的运输和物流系统。有了智能移动，人们就能够获得实时信息，提高交流的速度和效率，节省成本，并减少二氧化碳排放。
- “智能环境”是指使用智能能源系统。这些系统包括更多地运用可再生与高科技能源网、测量、污染控制与监测、绿色城市规划等，从而使得能源使用与再利用更有效率。
- 当然，一个智慧城市也需要“智慧市民”。只有当市民们学会了正确使用，信息与通讯技术才有用武之

heavy-duty vehicles is down at least 60 percent since 1965.

Both of these improvements are due primarily to improved engine technology. To continue making significant CO2 reductions, we must address our efforts in an integrated way, rather than focus on vehicle technology alone.

The solution

A recent report by the European Parliament defined a "smart city" as one that tries to address public usage with technology-based solutions, involving multiple stakeholders within the municipality.

Of course, each city is unique. There is no one-size-fits-all solution to dealing with the problems of congestion and pollution. Nor is there one way to ensure these solutions don't affect a city's prosperity.

Rather, a toolbox of solutions exists… some tried and tested, and others just emerging. All of these solutions are wrapped up in the term, "smart city". The most appropriate solutions for a particular city depend on its layout and size, density, culture and history – as well as the financial resources available.

Smarter mobility alone does not create a smart city. Rather, a range of policies need to be considered to work in concert with one another.

We identified six general characteristics for a smart city:

- First, there are "smart governance" policies that should be well-coordinated within and across cities. They should be developed based on strong public-private partnerships, especially when it comes to mobility. Local and regional governments need to be clear on their direction and integrate different policies into one coherent plan that covers urbanisation, infrastructure and mobility for citizens and goods. Smart governance requires a close working relationship between local communities and local businesses.
- Next, the "smart economy" must be developed to better utilise e-business and e-commerce to increase productivity and facilitate the advanced delivery of good and services.
- "Smart mobility" requires high-tech, integrated transport and logistics systems. With smart mobility, people can tap into real-time information to make their commutes faster and more efficient, save costs and reduce CO2 emissions.
- The "smart environment" refers to the use of smart energy systems. These include increased use of renewables, high-tech energy grids, metering, pollution control and

关于欧洲汽车工业协会
About the European Automobile Manufacturers' Association

- 欧洲汽车工业协会代表总部设在欧洲的 15 大汽车制造商。
- 这些汽车制造商奠定了产业基础，在欧洲直接或间接地提供了近 1300 万个工作岗位，为欧盟创造了 950 亿欧元的贸易顺差，并带来了高达 3890 亿欧元的税收收入。
- 在研究方面，汽车产业是欧洲最大的私人投资者，每年斥资 320 亿欧元用于研发 …… 占所有行业总投入的 25%。

- The ACEA represents 15 of the major automobile manufacturers based in Europe.
- These manufacturers underpin a sector that directly and indirectly accounts for nearly 13 million jobs in Europe, creates a 95 billion-euro trade surplus for the European Union, and brings in nearly 389 billion euros in tax revenue.
- The auto industry is Europe's largest private investor in research, spending 32 billion euros a year on R&D... 25 percent of the total spent by all industries.

地。建设智慧城市的一个重要组成部分是培训市民使用新技术。

- 最后是“智能居住”，指的是鼓励有技术支持的生活方式、行为和消费。

智能交通系统和服务是智能移动的支柱。这些系统和服务将信息通讯技术融汇到交通基础设施之中，以提高性能、安全性、流动性和环境可持续性。

随着客运和货运需求的持续增长，目前的运输系统能力会成为瓶颈。要达到智能移动，关键在于利用网络和新的交通管理工具来优化对交通基础设施的使用。

汽车产业的建议

必须采取多种方案来保障人们的出行。

当乘客流动量增长时，仅靠智能车辆并不能系统性地改善交通运输系统。

智能通讯技术需要在广阔范围内加以应用，包括车辆和周边的交通基础设施。

政府需要投资建设智能运输系统，从而实现自动车辆或增强驱动车辆的潜在效益。这些效益包括更高的安全性能、更强的道路承载力、更高效的停车空间、更高的燃料效率和更少的污染等。

为了缓解气候变化，车辆必须持续使用清洁能源。政府和企业要积极推广并激励零排放车辆，鼓励消费者购买更清洁的新技术。

汽车产业投入了大量资金以减少传统内燃机的排放，同时还推出了具有可替代动力装置的新型高效车辆，在某些情况下可以达到零排放。这些技术已经被应用于私人和商业运输。

汽车制造商们在开发车辆时应考虑迎合尽可能多的消费者，并提出方法将新型车辆融入到新的价值链中。新型车辆也必须很好地适应居住人口越来越多的城市环境。

汽车产业正致力于建立或培育更加多元的企业模式和服务——比如汽车共享，这能够满足那些不愿买私家车的人。人口变动、环保意识增强、过去几年全球经济的低迷等因素，促进了汽车共享服务的兴起。信息与通讯技术使得这些服务更加实用，也便于协调。因此，过去几年汽车共享服务在欧洲取得了一定的成功。目前预计有 250–280 万个汽车共享成员，他们分布在 46 个全球网络中。自行车共享服务的增长速度甚至更快——2005 年，全球仅有 74 个自行车共享系统，如今已增至 636 个。

要把各个方面都结合起来建设智慧城市，就需要各界人士和各行各业通力合作 …… 用一种比以往更加综合的方式来进行发展：

- 智慧城市需要政府在信息与通讯基础设施方面进行投资；
- 要优化当前交通基础设施的使用，包括为零排放车辆部署更广泛的基础设施；
- 在起步阶段，要激励消费者使用更节能的和零排放的车辆，保证车辆得到更广泛的应用；
- 随着可再生能源的持续增多，能源的价格应该是可接受的；
- 必须提高交通系统的一体化；
- 政府和产业要提倡更环保的出行方式。

建设智慧城市最难的部分或许就是将这些难题放在一起解决了。通过投资与创新，汽车产业正致力于确保在全球智慧城市中，依托智能基础设施的智能汽车为未来民众提供高效、经济的移动方式。

monitoring, and green urban planning. It enables the more efficient use and re-use of resources.

- Of course, in a smart city it also helps to have "smart people." Information and communications technology is only useful when citizens understand how to use it properly. An important part of building a smart city is training citizens to use this new technology.
- Finally, "smart living" refers to encouraging technology-supported lifestyles, behaviour and consumption.

Intelligent transport systems and services are the backbone of smart mobility. These systems and services integrate information and communication technologies with transport infrastructure to improve performance, safety, mobility and environmental sustainability.

The ability of today's transportation systems to respond to the needs of people and goods is hampered by a continuous increase in demand. To achieve smart mobility, it is critical to leverage networks and new traffic management tools to optimise the use of transport infrastructures.

The auto industry's recommendations

Several solutions must be adopted to keep people on the move. Smart vehicles alone will not systematically improve transportation systems when there are also more people on the move. Smart communications technologies need to be deployed on a large scale, both in the vehicle and the surrounding transportation infrastructure.

Governments need to invest in intelligent transportation systems to achieve the potential benefits of autonomous or enhanced-drive vehicles. Those benefits include increased safety, higher road capacities, more efficient parking, improved fuel efficiency and reduced pollution.

To help mitigate climate change, vehicles must continue to get cleaner. Government and industry need to actively promote and incentivise zero-emission vehicles to encourage consumers to buy these new, cleaner technologies.

The auto industry has invested heavily to reduce emissions from its traditional internal combustion engines. It has also rolled out new, efficient vehicles with alternative powertrains that, in some cases, produce no emissions at all. It has applied these technologies to both personal and commercial transport.

Auto manufacturers must develop vehicles that appeal to as many customers as possible while offering ways to integrate them into new value chains. New vehicles must also be well-suited to the urban environments in which more and more people will live.

The industry is working to establish or foster more diverse business models and services – such as car-sharing, which meets the needs of people who prefer not to own a car. The rise of car-sharing services has been spurred by demographic changes, increased environmental consciousness, and the global downturn of the past several years. Information and communications technology makes these arrangements more practical to coordinate and use, which is why they have seen some success in Europe over the last few years. Today, there are an estimated 2.5 million to 2.8 million car-sharing members in 46 networks worldwide. Bike-sharing is growing even more rapidly – in 2005 there were only 74 bike-sharing systems in the world; today there are 636.

Piecing all of the parts together to make a smart city requires many people and institutions to work together… a more integrated approach than has been used in the past:

- Smart cities require government investments in information and communications infrastructure;
- The use of the current transport infrastructure should be optimised, including the wider deployment of infrastructure for zero-emission vehicles;
- Customers will initially need to be incentivised to buy more energy-efficient and zero-emission vehicles to ensure their wider adoption;
- Energy sources need to remain affordable as the trend to more renewable sources continues;
- Integration between transportation systems must be improved;
- And governments and industry need to promote more environmentally friendly driving behaviour.

Knitting the pieces of this puzzle together is perhaps the hardest part of creating the smart city. Through its investment and innovation, the automobile industry is working to ensure that in smart cities across the world, smart cars driven on smart infrastructures will offer efficient, affordable mobility for people well into the future."

对话卡洛斯·戈恩
In Conversation with Carlos Ghosn

以下是戈恩先生在第 12 届中国汽车产业高峰论坛上发表演说后问答环节的内容选编。

Excerpts from the Q&A that followed his keynote speech during the 12th China Automotive Industry Forum.

目前中国市场总体增长放缓，但与此同时，汽车制造商们仍在继续增加产能。这对中国汽车产业意味着什么？汽车产业是否将面临危机，还是能够化险为夷？

戈恩：我们之所以增加产能，是因为我们认为中国市场的放缓不会是长期的，经济基本面显示汽车产业将有大发展。当前，中国每 1000 个居民拥有 100 辆汽车，而这个数据在欧洲和美国分别为 500 辆和 700 辆。因此，中国绝不会停留在每千人拥有 100 辆汽车的水平上。

此外，中国政府还会继续投资基础设施。这也是中国的发展速度远远超过印度和巴西的最主要原因，后者的基础设施问题很严重。中国政府一直注重投资基础设施建设，坦率地说我认为这一举措不会停止。因此，我们将保持产能增长。

中国汽车产业会不会出现整合的趋势？

戈恩：是的。过去中国有 300 家汽车制造商，现在只有 100 家，因此这个行业是趋于整合的。另一方面，一些中国制造商正走向全球。我们看到很多中国汽车制造商在海外进行并购。例如，目前沃尔沃就是由中国制造商持有的，这是全球化正在发生的极佳证明。我们不仅看到国外汽车制造商来到中国，中国制造商也正在参与全球竞争。

您在中国遇到的主要障碍有哪些？尼桑、雷诺与东风合资经营有哪些优势？

戈恩：主要障碍就是要保持投资增长速度能够跟上市场需求。所有国外汽车制造商都面临这样的问题，他们要尽可能地加快投资以增加产能，并引进新技术。

优势就在于我们的伙伴东风对中国市场及其潜力有深刻的理解。因此，很庆幸能有这样优秀的伙伴帮助我们深入了解市场，加快发展。

新的创意与更智能的技术不断涌现，汽车制造商们如何对此加以利用？

戈恩：在中国和其他国家，技术战争正在进行。其实有两个战场：荧幕上《星际大战》里那些永远都不可能流入市场的技术和应用于大众市场的技术。我们要划清两者的界限。如果我们要保护环境，要建设智慧城市，就必须关注那些特殊技术，把它们引入大众市场。

因此，我认为中国在全国范围内设置电动汽车快速充电系统的决定是正确的。这一做法，加上激励汽车制造商开发新能源汽车的举措，中国将拥有适合大众市场的电动汽车，提升竞争力。这对于中国建设智慧城市是绝好消息。

电动车辆似乎是未来发展的趋势。从技术角度来看，竞赛已经结束了吗？

戈恩：不，我们已经见证了很多技术竞争。尺寸更小的内燃机、清洁柴油、天然气燃烧、混合动力、充电式混合动力、电动汽车 …… 所有这些技术的竞争未来仍会继续。其中有些会发展起来，这取决于法律法规。为什么欧洲 60% 的汽车使用柴油，而美国或日本只有不到 1% 的柴油车。主要差别在于各地法律不同。政府鼓励某种特殊技术，就会转变市场。鉴于汽车制造商已经全球化，我们不能把所有赌注都押在某一项技术上。我们必须开发多种技术，并在法律框架内根据当地市场特性启动这些技术。

无人驾驶技术的梦想何时实现？

戈恩：首先，我们要区分自动驾驶汽车和无人驾驶汽车。自动驾驶汽车内有驾驶员，而无人驾驶汽车内不需要驾驶员。自动驾驶汽车会给予你权力：如果你想开车，你就开；如果你想做其他事，你也可以去做，并且很安全。这就是自动驾驶汽车，我们相信这种技术。

自动驾驶汽车很快就会面世，到 2016、2017 年，至多 2020 年，我们就会拥有非常先进的自动驾驶技术。不是所有汽车制造商都能生产自动驾驶汽车，但很多制造商已经在为此努力了。

Q: When we look at China, the overall growth has slowed down a bit but, at the same time, car manufacturers continue to add capacity. What does that mean for the automotive industry in China? Is the crisis coming to the industry or will it be sorted out?

Ghosn: We are adding capacity because we don't believe that the slowdown in China is going to be long-term, because the fundamentals are still pointing to a big development of the automotive industry. In China there are 100 cars per 1,000 residents. In Europe there are 500, and 700 in the United States. There is no way in the world China will stay at 100 cars per 1,000 residents.

On top of this, it looks like the Chinese government is willing to continue to invest in infrastructure. This is the only main big factor that explains why China is growing at a much higher rate than India or Brazil, where infrastructure is really a problem. In China, the government has always anticipated the investment in infrastructure, and frankly I don't think this is going to stop. For this reason, we are going to keep building capacity.

Q: Is China's automotive industry moving towards more consolidation?

Ghosn: Yes, in China there used to be 300 car manufacturers and now there are 100, so we are moving towards consolidation. On the other hand, some of the Chinese makers now are becoming global. We're seeing Chinese car manufacturers taking stakes outside China. For example, the fact that Volvo is now owned by a Chinese maker is a great sign of the globalisation taking place. We don't see only foreign carmakers coming to China but also Chinese makers trying to compete globally.

Q: What are the main barriers you have encountered in China? And what are the advantages of the joint ventures of Nissan and Renault with Dongfeng?

Ghosn: The main barrier is keeping up the investment fast enough in order to support the contribution of the market. That is common to all foreign carmakers, which are going as fast as possible to build more capacity and to introduce new technology.

The advantage is that our partner, Dongfeng, has a good and deep knowledge of the Chinese market and the Chinese potential. So, we are lucky to have a good partner who helps us to move fast with a deep understanding of the Chinese market.

Q: What are car manufacturers doing in view of all the new ideas and smarter technology that is coming up?

Ghosn: The battle of technology is already on, inside and outside China. There are actually two battles: the show – the Star Wars technology that never goes to the market – and the technologies that go to the mass market. We need to make a distinction between these two. When we talk about the environment, and if we really want to move towards smart cities, we need to focus on those particular technologies that are going to be mass marketed.

That's why I think China is making the right decisions by implanting a fast-charging system for cars all over the country. By doing so and by incentivising car manufacturers to build what we call the new energy car, China is going to have mass-marketed electric cars which are going to be competitive. That's great news for smart cities in China.

Q: It seems the future is moving towards electric vehicles… In terms of technology, is the game over?

Ghosn: No, you already have a lot of technology competing. There are downsized combustion engines, clean diesel, natural gas combustion, hybrids, plug-in hybrids, electric cars… and all these technologies will keep competing in the future. And some of them will prosper, depending on the legislation. That's why in Europe 60% of the cars are diesel while in the US or Japan less than 1% of the cars are diesel. The main difference between them is the local legislation. When you incentivise a specific technology you shift the market. And since car manufacturers are global, we cannot bet everything on a single technology. We need to develop diverse technologies and we need to be able to launch them based on the legislative framework and the local specificity of the market.

Q: What about the dream of driverless technology?

Ghosn: First, we should distinguish between autonomous cars and driverless cars. In the autonomous car, the driver is in the car. In the driverless car there is no driver in the car. The autonomous car gives you power: if you want to drive, you drive, and if you want to do something else you can do it and still be safe. That's the autonomous car and we really believe in this technology.

Autonomous cars are coming very fast and we are going to see very advanced autonomous technology in 2016, 2017, up to 2020. Not all car manufacturers are going to have autonomous cars but a lot of carmakers are already fighting to have them.