



Automotive Industry Weekly Digest

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[Sales Highlights] NIO posts 124.5% y/y increase in vehicle sales during July

Chinese electric vehicle (EV) startup NIO has reported 124.5% year-on-year (y/y) growth in sales to 7,931 units during July. According to a company statement, the deliveries consisted of 1,702 units of the ES8 sport utility vehicle (SUV), 3,669 units of the ES6 SUV, and 2,560 units of the EC6, a coupé-style variant of the ES6. In the year to date, cumulative deliveries of the ES8, ES6 and EC6 stood at 21,896 units, up 111.9% y/y, while for the first half of the year, total deliveries stood at 49,857 units.



Outlook and implications

NIO's mid-size electric SUVs, the ES6 and EC6, have become its backbone models, while the ES8 still appeals to consumers looking for a large six-seater SUV. The EC6 and ES6 are positioned in the premium EV segment with hefty price tags, but through its battery leasing programme NIO has effectively lowered the overall costs for both models. To accommodate growing demand for its models, NIO is working towards expanding its production footprint in China, and has started construction of a smart EV industrial park in Hefei, Anhui province. Called the Neo Park, the facility covers an area of 11.2 million square metres and includes manufacturing and research and development (R&D) facilities with designed annual capacity for 1 million vehicles and 100 GWh of batteries. The R&D will focus on development of technologies related to complete vehicles, core parts, and autonomous vehicle operation. The company is also starting to look at moving into foreign markets. It has recently received European Whole Vehicle Type Approval (EWVTA) for its ES8 SUV and shipped the first batch of SUVs to Norway in July. IHS Markit expects NIO's global sales to be around 82,600 units in 2021 and 117,000 units next year.

[Sales Highlights] Toyota Group reports 44% growth in global output during June

IHS Markit perspective

Implications

Toyota Group's worldwide output, including subsidiaries Daihatsu and Hino, grew by 44% y/y in June to 969,759 units. Of the total, the Toyota brand reported 41.2% y/y growth in production volume last month to 831,533 units. Daihatsu and Hino's production surged by 61.6% y/y to 123,447 units and by 79.7% y/y to 14,779 units, respectively.



Outlook

Toyota Group's overseas production increased for the 10th consecutive month in June, while its domestic output grew for the fourth consecutive month. The steep increase in production last month can be attributed to a low base of comparison last year, when output in several markets was negatively affected because of the lockdowns imposed in response to the COVID-19 virus pandemic. According to our latest production forecasts, Toyota Group's light-vehicle output (including the Hino, Daihatsu, Toyota, and Lexus brands) is expected to reach around 10.63 million units in 2021.

Toyota Group continued to report significantly higher global vehicle output for yet another month during June. The increase can be mainly attributed to a lower base of comparison last year, when output in several markets was affected as a result of the lockdowns imposed in response to the coronavirus disease 2019 (COVID-19) pandemic. According to data released by the automaker on its website today (29 July), Toyota Group's worldwide output, including subsidiaries Daihatsu and Hino, grew by 44% year on year (y/y) in June to 969,759 units. Of the total, the Toyota brand reported 41.2% y/y growth in production volume last month to 831,533 units. Daihatsu and Hino's production surged by 61.6% y/y to 123,447 units and by 79.7% y/y to 14,779 units, respectively. Overall domestic production of the group grew by 64.5% y/y to 389,057 units last month. This includes 294,387 units by the Toyota brand, marking an 84.1% y/y increase. Daihatsu's domestic production grew by 18.9% y/y to 82,544 units, and Hino's output increased by 68.7% y/y to 12,126 units. The group's production outside the domestic market grew by 33% y/y to 580,702 units last month. This includes overseas production of 537,146 units of Toyota-brand models, up by 25.2% y/y, and Daihatsu's production of 40,903 units (compared with just 6,948 units in June 2020). Hino's overseas output increased by 156% y/y to 2,653 units.



During the first half of 2021, Toyota Group's global production was up by 35% y/y to more than 5.3 million units. Of this total, the Toyota brand's output was up by 36.3% y/y to more than 4.5 million units, Daihatsu's production was up by 28% y/y to 699,068 units, and Hino's production improved by 19.4% y/y to 80,096 units. By region, total production in Japan during the first six months of 2021 was up by 19.8% y/y to 2.12 million units, while production outside Japan was up by 47.3% y/y to nearly 3.17 million units.

Outlook and implications

Toyota Group's overseas production increased for the 10th consecutive month in June, while its domestic output grew for the fourth consecutive month. The steep increase in production last month can be attributed to a low base of comparison, as Toyota Group's global output fell by 24.3% y/y in June 2020 as a result of the COVID-19 virus pandemic. Output in several markets was affected negatively in June 2020 because of the lockdowns imposed in response to the pandemic, leading to significant y/y increases last month.

Outside Japan, Toyota-brand (including Lexus) production in North America totalled 196,481 units last month, up by 28.8% y/y. In the United States, sales were robust for yet another month and were helped particularly by



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higher demand for light-truck models such as the Highlander and sedans including the Camry. Toyota's production in the US totalled 127,985 units last month, while in Canada and Mexico its production stood at 48,055 and 20,441 units, respectively. During the first half of 2021, output in North America was up by 61.6% y/y to 985,328 units. The automaker stated that despite operational adjustments due to supply shortages caused by a cold snap in February and March, sales remained solid, particularly those of light trucks including the Highlander. Additionally, plant operations were temporarily suspended during the same period of the previous year due to effects of COVID-19. In Latin America, Toyota-brand production was 29,485 units last month (up by 250.3% y/y) and was 148,691 units (up by 105% y/y) during the first half of 2021. In Europe, Toyota's production totalled 69,572 units, including 11,818 units in the United Kingdom, 15,933 units in Turkey, 22,805 units in France, 7,018 units in Russia, and 11,998 units in Czechia. In China, Toyota's output was flat during June to 144,440 units, in conjunction with the transfer of the Avalon production plant (transferred from SFTM to TFTM). There were also production adjustments implemented in June 2020 due to the effects of the COVID-19 virus outbreak. In the first half of 2021, sales of the Corolla Levin, Avalon, and other models were strong. Overall, the automaker's production in Asia, including China, was up by 16% y/y last month to 231,552 units.



According to IHS Markit's latest production forecasts, Toyota Group's light-vehicle output (including the Hino, Daihatsu, Toyota, and Lexus brands) is expected to reach around 10.63 million units in 2021, up by 15.5% y/y. At its Japanese plants, total light-vehicle production during 2021 is expected to be around 4.16 million units, up by 8.5% y/y.

It appears likely that the coming months will remain tough for the industry, as global market stagnation and increasing political and economic uncertainties around the world will present downside risks for global production. Global markets have been hit by a second wave of the pandemic, which is expected to negatively affect output in the third quarter of 2021 as well. The automotive industry has also been dealing with a semiconductor chip shortage, with automakers around the globe forced to suspend or reduce production as a result.



[OEM Highlights] MG reveals One SUV

MG Motor has revealed the MG One sport utility vehicle (SUV), reports the Hindustan Times Auto. According to the report, the SUV showcases the brand's new SIGMA architecture – an all-in one modular design platform – and new design language. The MG One SUV has been unveiled in two variants – Fashionable and Sporty – and comes with a three-dimensional grille. The model has LED headlamps with integrated LED daytime running lamps (DRLs), a sloping coupé-like roofline at the rear, a chrome border above the window line, silver roof rails, plastic cladding on the wheel arches, LED tail-lamps, a black rear spoiler with a cut-out, and alloy wheels. According to the automaker, the SIGMA architecture is designed to optimise interior space with up to 75% efficiency by compressing the mechanical space, and to balance exterior shape and interior space. The SIGMA architecture used in the One SUV will be able to support multiple powertrains and body styles. The launch of the vehicle is unlikely in India, but the automaker is planning for the launch of the petrol derivative of the ZS electric vehicle (EV) SUV in India in the fourth quarter, which is likely to be rebadged as the Astor.



Outlook and implications

In February, MG Motor India confirmed plans to launch an SUV based on the ZS EV in the country this year. According to IHS Markit light-vehicle data, sales of the new C-segment SUV, which will be positioned below the Hector SUV in MG's line-up, are expected to reach 3,728 units in India this year. MG's Indian line-up also includes the Gloster nameplate.

[OEM Highlights] GAC, Huawei partner to develop a smart SUV with Level 4 autonomous driving

GAC and Huawei intend to build eight models and multiple series of cutting-edge EVs that will provide a new driving experience at ever-lower prices



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Source: Getty image/ gorodenkoff

According to a press release published on PR Newswire on 1 August, GAC Group officially announced an exciting joint project with tech giant Huawei. The companies will collaborate to develop a "smart SUV," with the goal of reaching the market in mass production by the end of 2023.

The SUV will be the two companies' first joint product. A medium-to-large-size, all-electric SUV, the car's vision is one of futuristic, powerful, and efficient technology that will provide buyers with exciting new energy capabilities and Level 4 autonomous driving.

Outlook and implications

GAC Group embraces and encourages extensive technological innovation in its vehicles, and Huawei is a global leader in many fields. This strategic cooperation will allow them to build a new generation of intelligent vehicles and digital platforms. This SUV and multiple other future models will utilize GAC's GEP.30 chassis platform and Huawei's CCA (Computing and Communication Architecture), as well as carrying Huawei's full stack of intelligent vehicle solutions.

GAC and Huawei intend to produce eight models and multiple series of cutting-edge electric vehicles, providing a new driving experience at ever lower costs, using new technologies, new processes, and new materials, as well as intelligent manufacturing and vastly improved production capacity.



[Technology Highlights] Jio and MG Motor tie up for IoT solutions

MG Motor India has reportedly partnered with Indian telecommunications company Reliance Jio to equip its upcoming gasoline (petrol) derivative of the MG ZV electric vehicle (EV) with Internet of Things (IoT) solutions, reports the Economic Times. As per the terms of the partnership, the telco company's 4G network will provide high-speed in-car connectivity to customers of the automaker's upcoming sport utility vehicle (SUV), which is likely to be rebadged as the Astor, in cities, towns, and rural areas. Reliance Jio's embedded SIM (eSIM) and IoT solutions will help customers access infotainment features and real-time vehicle telematics.



Outlook and implications

In February, MG Motor India confirmed plans to launch an SUV based on the ZS EV this year. According to IHS Markit light-vehicle data, sales of the new C-segment SUV, which will be positioned below the Hector SUV in MG's line-up, are expected to reach 3,728 units in India this year. MG's Indian line-up also includes the Gloster nameplate. In April 2019, TomTom said that it would supply routing software, live traffic services, and TomTom IQ Maps for MG India's new connected car.

[Technology Highlights] VW forms JV with TraceTronic for automated software integration

Volkswagen (VW) Group and TraceTronic Group have formed a 50:50 joint venture (JV), named neocx, for the automated testing and integration of automotive software and networked services. The JV will create a continuous integration/continuous testing (CI/CT) factory through which VW aims to accelerate the development of digital functions such as over-the-air updates. Rocco Deutschmann, CEO of TraceTronic Group, said, "We are pleased that Volkswagen has chosen to partner with TraceTronic in the large-scale implementation of a CI/CT factory for Volkswagen and its suppliers. Deploying our TraceTronic software tools and expertise, we can help our customers worldwide with the continuous integration and testing of automotive software using state-of-the-art methods."





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Outlook and implications

This will support VW's ACCELERATE strategy under which it aims to transform into a software-driven mobility provider. The automaker has announced the integration of software into vehicles and digital customer experience as its core competencies. From the second quarter of 2022, it plans to offer digital services to drivers of its ID electric vehicles. It has also formed a new division called Car.Software in an attempt to increase its in-house software development from the current 10% to 60% by 2025.



[GSP] India/Pakistan Sales and Production Commentary -2021.07

India/Pakistan sales

June 2021: +102.3%; 297,055 units vs. 146,788 units

YTD 2021: +85.3%; 1,847,912 units vs. 997,234 units

- The Indian subcontinent's light vehicle sales grew 85% from January to June 2021. Sales in the Indian automotive market in June jumped by 105% versus June 2020. In Pakistan, light vehicle sales jumped by 55%. The year-to-date (YTD) growth spike in India and Pakistan was due to the small base in April–June 2020 because of strict lockdowns. Demand surged as people are avoiding public transportation because of COVID-19-related fears. The accumulation of savings due to the cut in expenses has boosted consumers' ability to pay the down payment on a vehicle. Lower interest rates are also alluring customers to purchase a new car. However, price hikes on account of annual inflation and increasing commodity prices are deterrents to growth. The second wave of the COVID-19 pandemic is almost over, and everything is coming to a new normal in India.
- In the first half of 2021, sales growth was strong owing to the low base in 2020. However, growth was subdued relative to earlier projections as the second wave of the COVID-19 pandemic destroyed the economy. There have been numerous deaths, and the virus was highly infectious this time. The situation is now under control, and total cases are down, although there has been damage to the economy. On the macro side, the Indian economic growth forecast is expected to be strong in 2021 at around 7.7%. Lower interest rates and the tendency to avoid public transportation and instead to use private cars may be the key drivers that will help the industry grow. In 2021, the market is expected to grow at 26% on a year-on-year (y/y) basis.



- In Pakistan, automotive sales were strong in June 2021. However, sales dropped relative to last month owing to the expectation of a tax reduction on small cars in the coming months. Thus consumers preferred to postpone their purchases for another month. Otherwise the entry of new players and growing demand is helping the industry to make a strong comeback. The aggressive near-term macroeconomic outlook, lower interest rates, and recovery in businesses and the economy will remain major drivers of growth. There is a possibility of high short-term growth. However, in the medium term, a deterioration of macroeconomics is likely. In the long term, momentum is positive for the car industry, and the government is focused on pushing the automotive industry. Changes in private-sector policies will also help drive sales in the country.

India/Pakistan production

June 2021: 144%; 341,753 units vs. 139,874 units

YTD 2021: 85%; 2.14 million units vs. 1.15 million units



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- The Indian subcontinent's light vehicle production in June 2021 likely recorded 341,753 units, growth of 144% in production over June 2020 amid the slow post-lockdown recovery in the previous year. Its year-to-date (YTD) production rose 85%, with over 2.14 million units built, mainly owing to the low base of comparison of last year.



- The Indian auto market continued to grow on the back of an improving preference for personal mobility and improved consumer confidence in the rural and semiurban markets. Additionally, continued government policy support, low dealer inventory rates, and an extended waiting period of up to nine months for the best-selling models, such as the Hyundai Creta, the Kia Seltos, and the Tata Altroz, supported the demand. However, India had faced a catastrophic second wave of COVID-19 infections, with soaring daily new cases of over 0.4 million. The tally surpassed 30 million total COVID-19 cases, with over 97% discharged after recovery. India reported total deaths of 0.41 million. In June, local state governments, such as Delhi, Haryana, Maharashtra, Uttar Pradesh, and Karnataka, eased statewide lockdowns. Major OEMs, including Honda, Hyundai, Maruti Suzuki, MG, and Toyota, restarted production post lockdown with a gradual ramp-up.



[Supplier Trends and Highlights] IAR systems collaborates with NSITEXE to accelerate functional safety development for RISC-V

Establish Partnership to Provide Safety-Certified Solutions for Nsitexe's Risc-V-Based Ip Cores



Source: Getty image / FangXiaNuo

AR Systems, the future-proof supplier of software tools and services for embedded development, announced a partnership with NSITEXE, a group company of DENSO Corporation that develops and sells high-performance semiconductor IP, according to a press release on PR Newswire dated 2 August. The collaboration aims to bring high-performance development tool solutions with guaranteed functional safety and extensive support services to RISC-V-based innovative applications.

"Our collaboration with NSITEXE brings our joint strong technology and services further into the RISC-V community with extended possibilities for functional safety development," said Stefan Skarin, CEO, IAR Systems. "IAR Systems' functional safety offering provides the widest standards coverage in the industry, and together with NSITEXE, we are now enabling companies to speed up the path of using RISC-V in applications where ensured safety is critical for success."

Outlook and implications

NSITEXE was founded in 2017 as a wholly-owned subsidiary of DENSO, one of the world's largest tier-1 automotive parts manufacturers, with significant development in key areas of advanced automotive technologies. The NS31A, which was recently announced, is a general-purpose CPU with a single-issue core and a 4-stage in-order pipeline that operates on a 32-bit RISC-V ISA (RV32IMAF). It supports the ISO 26262 ASIL D functional safety mechanism required for automotive applications, as well as the AUTOSAR Platform's privileged mode.

[Supplier Trends and Highlights] Startup Quanergy Systems, Agia Solutions collaborate to deliver lidar systems in South America

Both companies are Milestone partners and Quanergy's lidar solutions are Milestone approved



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Source: Getty image/ Just_Super

OPA-based solid state lidar sensors and smart 3D solutions provider, Quanergy Systems, has announced a partnership with Agia Solutions, a technology system integrator serving Peru, Argentina, Chile, and Uruguay.

According to a press release issued by Quanergy on 29 July, the company stated that Agia will now offer Quanergy's high-performance lidar platform, along with its proprietary perception software, QORTEX™, to improve safety and security, increase productivity, and optimize efficiency for their customers. The companies are Milestone partners and Quanergy's lidar solutions are Milestone approved, enabling easy integration across Agia's technology portfolio.

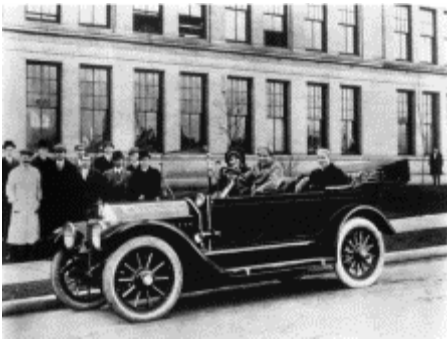
Outlook and implications

Commenting on the development, Federico Argerich, general manager of Agia Solutions, said: "LiDAR is a powerful IoT solution that is rapidly expanding into new markets, providing immense value for a wide variety of applications across many different industries. We are thrilled to partner with Quanergy to add LiDAR to our existing technology portfolio and bring this advanced technology to our customers for the first time."



[VIP ASSET] The rise of the “AutoTech” era

Dr Dan Yergin is vice-chairman of IHS Markit and author of *The New Map: Energy, Climate, and the Clash of Nations*. Below is a summary of an article that he has written for the *Wall Street Journal Saturday Review* on the future of the passenger car and personal mobility. The term he has coined for the changing technological landscape, which is currently creating the biggest disruption in the industry’s history, is “AutoTech”. This is the melding of the three cornerstone technologies that are combining to create a never-before-seen paradigm shift in the automotive space: electrification, autonomous vehicles, and digital mobility platforms. Please click on the PDF at the bottom of the page for the full article.



Chevrolet Classic 6

Picture courtesy of General Motors

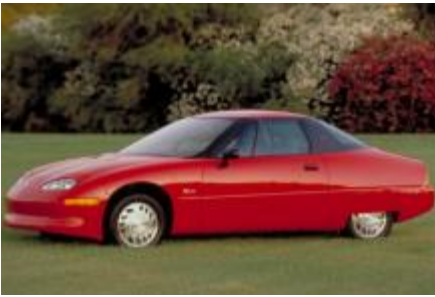
- When General Motors’ (GM) very first car, the Chevrolet Classic 6, appeared on Detroit’s streets in 1912, it ran on gasoline (petrol). Some 122 years later, in 2034, the very last GM car that runs on gasoline is scheduled to roll off the assembly line. Starting in 2035, GM intends to make only electric cars, extending from its least expensive model, the USD4,000 Hongguang Mini in China, to the “hand-crafted” Cadillac Celestiq, at USD200,000-plus. The other major car companies, from Ford and Toyota to Volkswagen (VW) and Volvo, are heading in the same direction. Governments are also driving the shift. California has banned the sale of gasoline cars in the state after 2035, and the United Kingdom is pushing for a ban by 2030. China will allow only electric cars or hybrids to be sold starting in 2035, and US President Joe Biden’s administration’s original new infrastructure bill included USD174 billion to support electric cars – 50% more than for bridges and roads.
- The new world of “AutoTech” – the merging of electric, autonomous vehicles with ride hailing to create a radically different car economy over the next couple of decades – is upon us. Tied together by the connectivity of digital networks, this new business could upend the global automotive industry and, along with it, the entire culture that, for more than a century, has been built around getting behind the steering wheel. Electric vehicles (EVs) were around at the start of the automobile, although Henry Ford’s Model T saw gasoline-powered cars take over the market, and that was pretty much it for decades. However, in the late 1990s GM rolled out an EV – the EV1 – mainly in response to California’s requirements for lower-emission vehicles. The car, colloquially known as the “egg-on-wheels” because of its distinctive shape, failed to catch on. However, in 2003, a young EV enthusiast named J.B. Straubel connected over lunch with Elon Musk. Straubel had what he later told me was “this harebrained idea that we could use what were then only laptop cells and power a car”. It was a meal that changed automotive history.



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*General Motors EV-1**Picture courtesy of General Motors*

- Electric cars only take us partway down the road to AutoTech, however. Software and smartphones have made possible the second part of the triad – ride hailing. The idea has multiple origins. A Canadian software engineer named Garrett Camp could not hail a taxi on a San Francisco street in 2008, but he did have his new Apple iPhone, thus providing the inspiration for Uber. The seed for Lyft was planted when Logan Green, a California university student, saw jitney buses picking up passengers in Zimbabwe. Didi, the world's largest ride-hailing firm, grew from the frustration of Cheng Wei, a software engineer in China, after he missed several flights because he could not get a taxi.

[VIP ASSET] Highly scalable projection solutions to garner traction in mass-market vehicles

Suppliers expect costs to decrease as they are focusing on development of scalable solutions to meet needs of different automakers for different car segment

*Source: Getty Images*

IHS Markit expects to see projection solutions in most of the vehicles in some shape or form in the long term. However, this is possible only when suppliers offer scalable solutions for each car segment. After speaking to a few key suppliers in the area (including Texas Instruments and Osram Continental) regarding this issue, IHS Markit expects majority of the vehicles to feature projection solutions in the long term, starting with static ones, then gradually offering dynamic ones.

Scalable solutions to meet needs of all customers



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Today, many tier-1 suppliers are already working on highly scalable projection solutions for the automotive industry to make such solutions mainstream even on affordable vehicles. Scalability helps suppliers offer the right solution for the right segment as per the requirements of the market. The only requirement is that vehicles should have the necessary infrastructure to support such projection solutions.

Currently, such projection solutions are primarily seen on premium and luxury cars, although, we have started witnessing static logo projection on a few mass-market models as well. Today, despite technologies evolving much faster, it still takes a while for them to show up in affordable vehicles. In fact, it takes a long time to trickle down the line from premium cars into ‘bread-and-butter’ models due to various reasons such as cost and availability.

Similarly, in the case of automotive projection solutions, consumers are starting to now accept these. Suppliers including Texas Instruments (TI) and Osram Continental are already working on technologies and manufacturing processes to bring down the cost to make it available for affordable cars as well. TI’s Tobias Nass, general manager, Automotive Product Line, told IHS Markit in an interview that “the company is currently working on scalability to address demand for various projection solutions for mass market as well as premium vehicles. TI’s focus began with offering projection lighting for premium vehicles, with gradually expanding portfolio for lower segment cars as well. The company believes that there is demand for all types of projection solutions, ranging from low to high resolution, for every budget.”

Based on the demand for static projection solutions from all car segments, it is a proven fact that consumers are ready to accept it, and that it makes the vehicle stand out in the crowd. Some of the use cases of projection solutions are mentioned below:

Use cases of projection solutions		
Exterior decorative lighting	Interior decorative lighting	Exterior functional lighting
Logo projection	Logo projection	Back-up guide light
Dynamic welcome light	Roofliner lighting	Brake light
Welcome light	Footwell lighting	Door opening warning light
Various other use cases	Various other use cases	Trunk opening indication light and Various other use cases

Source: IHS Markit

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Use case: Autonomous vehicles

The aim of projection lighting is communication, enhanced safety, and visibility. The static, semi-dynamic, and dynamic light control functions projected down onto the pavement provide a new, important layer of communication and visibility. Dynamic lighting control becomes especially important as vehicle intelligence becomes more sophisticated. For instance, in case of autonomous vehicles, visual communication from vehicles will be crucial to show autonomous functions to other vehicles, pedestrians, and other road users. For example, a car can project its path backwards and its eventual parking position as it autonomously parks, communicating its intentions to both passing cyclists and approaching vehicles for safer interaction. Another example an



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autonomous vehicles may project a crosswalk or select a preset message that displays the words “safe to cross” on the road to directly communicate to pedestrians attempting to cross the road.

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