



# FutureBridge

## MOBILITY

### Look-back Trends 2024

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# Mobility Look-back Trends 2024

## CASES : Navigating Mobility's Transformation

### C ONNECTED MOBILITY



Connected mobility advances with EU mandates on DMS, Level 3 ADAS, advanced infotainment and cockpit innovations

### A UTONOMOUS MOBILITY



Autonomous mobility accelerates through expansions, regulations, investments and sensor advancements

### S HARED MOBILITY



Shared mobility thrives with aerial, micro and shared solutions, while collaborations digitize bus transit

### E LECTRIFIED MOBILITY



Electric mobility expands as battery technologies improve, prices drop, alternatives emerge, and hybrids gain focus

### S USTAINABLE MOBILITY



Sustainable mobility progresses with EU's CO2 cut mandates, advances in materials, hydrogen and remanufacturing



**In 2024, the CASES trends were propelled by a confluence of regulatory mandates, technological advancements, strategic partnerships and investments.**

- ✓ FutureBridge analyzed pivotal developments in mobility, highlighting 2024's defining CASES trends.
- ✓ Using extensive databases, global tracking, expert validation and a benchmarking model based on innovation impact, market scalability, technological feasibility and sustainability alignments we have identified the most critical trends.
- ✓ With the mobility sector evolving rapidly, OEMs, suppliers, and technology companies must adapt to shifting consumer demands, sustainability goals, and market dynamics.
- ✓ These insights equip stakeholders with a strategic edge to tackle challenges and seize opportunities in this transformative landscape.



# Connected Mobility 2024

Regulations, SDVs and Telematics redefine the future of driving

## Key Trends

- **Rising Adoption of Driver Monitoring Systems (DMS):** EU mandates DMS in all commercial vehicles; Collaborations such as Roadzen-Bosch and Omnivision-Philips add health monitoring in passenger vehicles.
- **The Shift to Software-Defined Vehicles (SDVs):** Mercedes Benz gains Level 4 AV approval; Xpeng continues to invest in advanced s/w systems while Toyota and NTT partner to develop driver-assist technology.
- **Infotainment Advancements:** Audi and Mercedes-Benz launch advanced voice assistants for better user experience, whereas Apple updated CarPlay features.
- **Semiconductor Collaboration Fuels Digital Cockpit Evolution:** Qualcomm-Google, MediaTek-Nvidia and Huawei-Nissan advance cockpit technologies.

## FutureBridge Perspective

- **Collaborate for Scalable Innovation:** Build partnerships to co-develop DMS, SDVs, and semiconductor solutions, ensuring cost efficiency, faster innovation and compliance.
- **Invest in Differentiation:** Focus on modular software, advanced personalization and smart ecosystems to create unique user experiences.
- **Secure and Monetize Connectivity:** Standardize cybersecurity, monetize features via subscriptions and ensure regulatory compliance for future-ready solutions.

**\$3.3 Bn**

Invested by Toyota and NTT in a mobility platform that leverages large data sets to enhance driver assist technology

**~\$500 Mn**

Investment made by Xpeng in R&D, to release 30 new or revised car models in 3 years

**>800**

Voice commands recognized by the voice assistant in all new Audi Q6 e-tron





# Autonomous Mobility Trends 2024

Investments, Regulations and Advanced Sensors

## Key Trends

- **Robo-Taxi Renaissance:** Waymo to enter Tokyo, expand in Phoenix, LA-Los Angeles, and SF-San Francisco, while Baidu secures Hong Kong test rights. Tesla unveiled Cybercab and Robovan.
- **Regulations Paving the Way:** China's new rules enable autonomous taxis and buses in Beijing and Wuhan; Baidu and Tesla lead trials. NHTSA launches AV STEP, easing driverless exemptions despite safety concerns
- **Investment Dynamics:** GM exits Cruise to refocus on ADAS; Motional postponed robotaxi service plans after Aptiv withdrew investment.
- **Sensor Synergy:** Luminar acquired Gooch & Housego's optoelectronic division, expanding semiconductor operations, while NXP partnered bitsensing.

## FutureBridge Perspective

- **Accelerate Robo-Taxi Adoption:** Leverage regulatory advancements in China and Waymo's expansion model to scale autonomous taxi operations, ensuring profitability and user trust in urban markets.
- **Shape Regulatory Frameworks:** Collaborate with policymakers globally to influence AV-friendly regulations like NHTSA's AV STEP and align innovation with compliance for market leadership.
- **Invest in Sensor Ecosystems:** Form strategic partnerships (e.g., Luminar-Gooch & Housego) to advance sensor technologies, enhancing safety, scalability, and cost-efficiency in autonomous vehicles.

>500

Baidu's driverless robotaxis operated in Wuhan, while Waymo operated ~250 in LA, SF, Phoenix, and Austin

20 ¢/mile

Cost to operate the Cybercab (debut in 2026), no steering wheel or pedals, will cost less than \$30,000

>300 m

Range coverage of bitsensing's 4D imaging radar, claims 50% improvement in detection compared to conventional radar

# Shared Mobility Trends 2024

A Year of Transformation and Resilience in Mobility

## Key Trends

- **Aerial Mobility Takes Off:** Joby Aviation and Archer plan electric air taxi and have announced the launches for 2025, raised \$1.45 billion in-total, while Volocopter faces financial struggles.
- **Micromobility Consolidates:** Tier has merged with Dott, Lime has advanced sustainability, and Joco has achieved profitability with docked e-bikes.
- **Mobility-as-a-Service (MaaS) Expansion and Growth:** Uber grew trips by 25% to 2.7 billion in Q3 2024, diversifying with Uber Boat and Shuttle. India's ONDC has partnered with Namma Yatri, advancing MaaS by integrating auto-rickshaw hailing citywide.
- **Digital Bus Revolution:** In Europe and the US, partnerships RideBTA-Modeshift, Horisen-Vodafone, and Volvo-Optibus-Stoneridge have transformed bus transit with advanced ticketing and efficiency solutions.

## FutureBridge Perspective

- **Expand Multimodal Ecosystems:** Adopt MaaS strategies using Uber and ONDC models, integrating micromobility, ride-hailing and public transport to optimize urban mobility.
- **Invest in Aerial Mobility:** Support eVTOL initiatives like Joby and Archer to pioneer air mobility infrastructure, ensuring alignment with city networks and consumer expectations.
- **Sustain Micromobility Profitability:** Focus on sustainable and docked micromobility solutions, following Lime and Joco's profitability-driven approaches, to strengthen market share and efficiency.

>\$1 Bn

Joby Aviation secured \$500 Mn from Toyota followed by \$222 Mn before launching a \$300 Mn public offering

↑ 25%

Uber grew trips to 2.7 Bn in Q3 2024, compared to 2.4 Bn in Q3 2023

€150 Mn

Allocated by French govt. towards carpooling subsidies, offering drivers €3 per passenger, a €100 bonus resulting in 94% driver retention rate.



# Electric Mobility Trends 2024

From Battery Breakthroughs to Automaker Shifts

## Key Trends

- **Record Low Battery Prices:** Lithium-ion prices plummeted, driven by China's demand, cost-effective LFP batteries and production efficiencies.
- **Emergence of Lithium-ion Alternatives:** Solid-state, lithium-sulfur, and sodium-ion batteries redefine EV performance with advantages like improved safety, high energy density and cost-effectiveness.
- **Automakers Shift Focus:** Slowing EV growth prompted Ford, GM, Volkswagen, Volvo Cars, Mercedes Benz, Toyota, and Hyundai Motors to prioritize hybrids, counter Chinese competition, and optimize profitability.
- **Gigafactory Dynamics:** Northvolt paused projects, while CATL and LG Chem expanded into the U.S., leveraging Inflation Reduction Act incentives.

## FutureBridge Perspective

- **Advance Battery Innovation:** Invest in solid-state and sodium-ion batteries to enhance energy density, safety and cost-efficiency, mitigating reliance on traditional lithium-ion solutions.
- **Balance EV and Hybrid Focus:** Shift towards hybrid vehicles to counter competition and ensuring profitability while maintaining leadership in electrification.
- **Capitalize on U.S. Gigafactories:** Leverage IRA incentives to expand production with CATL and LG Chem, ensuring resilient supply chains and cost advantages.

↓ **\$115/kWh**

Lithium-ion battery prices fell 20% in 2024, reaching their lowest level in nearly a decade

**>\$1 Bn**

Lyten plans to invest in the world's first lithium-sulfur battery gigafactory in Nevada

**158 GWh**

Equivalent to powering 2 million EVs, gigafactory projects were delayed or canceled across Europe

# Sustainable Mobility

A 2024 Look-Back at New Targets and Innovations

## Key Trends

- **CO<sub>2</sub> Emission Reduction Targets:** In 2024, the EU mandated a 90% CO<sub>2</sub> emission cut from new trucks by 2040, and interim targets of 43% by 2030 setting a robust climate framework for heavy-duty vehicles.
- **Bio-materials Revolution:** Nokian Tyres' Green Step Ligna replaces fossil carbon with renewable lignin. Continental's CONTI NXT belt and natural fibers like flax and jute drive lightweight composites for vehicles.
- **Hydrogen Fuel Breakthroughs:** Hyzon Motors' hydrogen storage cuts weight by 43% and costs by 52%. Toyota's cartridges expand hydrogen use.
- **Remanufacturing Success:** Scania integrates remanufactured components into its main assembly line, bringing material use and emissions to ~50%.

## FutureBridge Perspective

- **Implement CO<sub>2</sub> Reduction Technologies:** Adopt lightweight materials and hydrogen fuel innovations to align with EU's stringent truck emission targets, ensuring compliance and sustainability leadership.
- **Integrate Bio-Materials in Vehicles:** Embed bio-materials in core components, collaborating with Nokian and Continental, to reduce environmental impact and drive cost-efficient sustainability.
- **Expand Hydrogen Adoption:** Adopt Hyzon and Toyota's hydrogen innovations to accelerate low-carbon transport, ensuring diverse energy strategies across vehicle segments.

**Upto 65%**

Materials are renewable, recycled, and mass-balance-certified materials in Continental's UltraContact NXT tire

**↓ 75%**

Reduction in manufacturing component count using Hyzon's hydrogen storage system

**↓ 45%**

Reduction in carbon emissions achieved with Scania's remanufacturing initiative, compared to making entirely new components






**2024  
Set The Stage;  
Stay Tuned As We  
Unveil What's  
Driving Mobility  
In 2025!**





# Thank you

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