FROST & SULLIVAN

2024

ENABLING TECHNOLOGY LEADER

IN THE GLOBAL PASSENGER VEHICLE ADAS INDUSTRY

FROST & SULLIVAN

BEST PRACTICES AWARD

2024

mobileye™

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Mobileye excels in many of the criteria in the passenger vehicle ADAS space.

AWARD CRITERIA

Technology Leverage	Customer Impact
Commitment to Innovation	Price/Performance Value
Commitment to Creativity	Customer Purchase Experience
Stage Gate Efficiency	Customer Ownership Experience
Commercialization Success	Customer Service Experience
Application Diversity	Brand Equity

Growth Opportunities for the ADAS Market

The development and adoption of Advanced Driver Assistance Systems (ADAS) is increasing due to emerging challenges within the automotive industry, such as strict safety regulations, technological advancements, and a higher societal demand for safer and more efficient transportation. In recent years, consumers have begun to expect their vehicles to include various levels of ADAS features for safety and comfort, such as highway assist or adaptative cruise control. Furthermore, integrating feature-rich ADAS into their product portfolio allows original equipment manufacturers (OEM) to secure a competitive edge and elevate the driving experience to unparalleled levels of comfort and convenience.

Frost & Sullivan estimates the global passenger vehicle ADAS market for Level (L) 2, L2+, and L3 will reach 42.6 million units shipped in 2030,[1] with a compound annual growth rate of about 128% from 2023 to 2030.[2] In this context, companies leveraging comprehensive ADAS capabilities will benefit from its significant expansion, leading the market into its next growth phase.

Mobileye is a developer of ADAS and autonomous driving solutions. Through a comprehensive value proposition, groundbreaking technologies (e.g., machine learning, data analytics, and cloud capabilities), and a strong emphasis on customer satisfaction, the company leverages its expertise to meet the unique

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[1] *Global Autonomous Driving Outlook, Frost & Sullivan, 2024*

[2] Ibid.

needs of an ever-changing industry, capitalizing on new growth opportunities and cementing its leadership in the passenger vehicle ADAS market.

Unmatched Scalability, Enhanced Capabilities

> *"Mobileye's commitment to innovation and creativity enables it to develop technologies that address the full spectrum of advanced mobility for passenger and commercial vehicles, including basic ADAS applications (e.g., automatic braking and blind spot monitoring) and cloud-enhanced L2, L2+ and L3 functionalities. The company stands as the leading vendor of eyes-on, hands-on ADAS, amassing $637 million in revenue for the fourth quarter of 2023."*
>
> *- Silvana Rulet*
> ***Best Practices Research Analyst***

Mobileye's commitment to innovation and creativity enables it to develop technologies that address the full spectrum of advanced mobility for passenger and commercial vehicles, including basic ADAS applications (e.g., automatic braking and blind spot monitoring) and cloud-enhanced L2, L2+, and L3 functionalities. The company stands as the leading vendor of eyes-on, hands-on ADAS, amassing $637 million in revenue for the fourth quarter of 2023.[3] Moreover, it is actively ushering in the next phases of automotive technology, including SuperVision™, an L2+ Navigate-on-Pilot system capable of taking over driving functions with eyes-on, hands-off capabilities, and progressing toward fully autonomous driving.

The company's automotive-grade advanced image processing and computer vision system-on-chip (SoC), EyeQ™, is among its most successful offerings and now in its sixth generation, with more than 170 million units delivered globally since 2007, and 37 million units in 2023 alone. Widely recognized for its high-performance computing capabilities and specialized hardware-accelerated processing units, the SoC seamlessly handles tasks such as image recognition, object detection, lane tracking, traffic sign recognition, pedestrian detection, and more. These capabilities enable intelligent and real-time decision-making in automotive systems to enhance safety and driving automation. Over the years, Mobileye has released several iterations of the EyeQ™, each offering improved performance, power efficiency, and advanced features.

Furthermore, in 2022, the company introduced EyeQ Kit™, a software development kit designed to empower OEMs to leverage EyeQ's capabilities for their applications. With a focus on scalability, low power consumption, and industry-leading computer vision technologies, EyeQ Kit™ allows automakers to develop advanced ADAS features, driver-monitoring applications, automated parking systems, and more while benefiting from standardized application programming interfaces and development platforms for cost-effective and efficient development cycles.

Mobileye's technology development processes allow it to stay ahead of the competition by launching new solutions quickly to address customer needs. For example, in January 2024, the company launched its Driving Experience Platform (DXP™), which addresses multiple customer pain points, reducing trade-offs in developing autonomous driving systems. It functions as an end-to-end solution for developing autonomous driving systems and optimizing the systems' decision-making. DXP™ provides automakers and developers with the necessary infrastructure, tools, and resources to create, test, and deploy

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[3] https://ir.mobileye.com/news-releases/news-release-details/mobileye-releases-fourth-quarter-and-full-year-2023-results-and

autonomous driving systems.[4] The platform includes software components, development environments, simulation tools, and reference designs.

Moreover, DXP™ defines the structure and rules for decision-making within autonomous vehicles. It separates decision-making into universal elements ("when" and "what") and unique elements ("how"), allowing for customization while maintaining compatibility with standardized components. For instance, when approaching a stop sign (the "what"), the vehicle must stop, but how it stops varies, such as braking later and stronger or earlier and milder. DXP™ organizes these unique behaviors into packages based on scenario-specific requirements, enabling automakers to customize driving experiences without starting from scratch. Automakers can select appropriate packages during online driving based on parameters like location and weather conditions.

The comprehensive nature of DXP™ enables automakers to develop autonomous driving systems from start to finish, optimizing decision-making processes to enhance safety, efficiency, and user experience.

Mobileye developed a proprietary Road Experience Management (REM™) technology that enhances autonomous mobility through up-to-date, crowd-sourced mapping. The company's base ADAS, which consists of a monocular camera and a SoC, has been installed in approximately 170 million vehicles globally. Of these millions of vehicles, around 3 million collect road segment data with centimeter-level accuracy and send it to the company's cloud, where sophisticated algorithms align the gathered ground truth data to produce Roadbook, Mobileye's exclusive mapping product that no other provider matches in scale, efficiency, or automatic refresh rate. To date, REM™ has successfully mapped about 90% of roads in the United States and Europe. It is also present in other regions, such as South America, Australia, and Asia, including 37 cities in China as of the first quarter of 2024, with a planned nationwide expansion. Nevertheless, the company protects personal information and complies with international privacy laws, such as Europe's General Data Protection Regulation.

This combination of traditional computer vision perception with map data ushered Mobileye's map-based sensing state model, which utilizes REM™, machine learning, and artificial intelligence (AI) algorithms as input to train neural networks with visual and historical data. Furthermore, autoregressive architecture allows neural networks to improve perception, reduce uncertainties, and improve decision-making.

Frost & Sullivan applauds Mobileye's relentless pursuit of innovation, keen market insights, and robust research and development initiatives, which solidify its position as a leader in the passenger vehicle ADAS industry and shape the future of autonomous driving.

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[4] https://www.mobileye.com/opinion/mobileye-dxp-as-a-novel-approach/

A Foot in the Present and an Eye on the Future

> *"Mobileye builds its technological portfolio by collaborating closely with various stakeholders and partners to evolve alongside market needs and trends. In March 2024, the company announced that it would strengthen its collaboration with the Volkswagen Group (Volkswagen) to accelerate the development of automated and autonomous driving technologies. The partnership aims to introduce advanced assistance systems for highway and urban driving, including automated overtaking, automatic stopping at traffic signals, and support in intersections and roundabouts."*
>
> *- Kamalesh Mohanarangam*
> *Research Manager*

Mobileye's solutions go beyond its extensive expertise and best-in-class capabilities, with customer value as a strategic imperative. The company strongly emphasizes product personalization, offering off-the-shelf, fully co-developed, and hybrid solutions. For instance, its SuperVision™ surround camera system provides 'hands-off' navigation capabilities and driver-assist features, including autonomous lane changing, adaptive cruise control, traffic jam assistance, and collision avoidance, among others; it is Mobileye's most advanced driver-assist yet. SuperVision™ enables vehicles to follow the driver's navigation routes while optimizing the drive by autonomously changing lanes where needed and overtaking slower vehicles on multi-lane roads. Assisted by AI technology, the system consistently monitors the environment through 11 cameras. Additionally, it supports radar fusion perception. Mobileye allows for acquiring this solution as a standalone product or in combination with DXP™, enabling a customized user experience that integrates the brand's look and feel. This focus on personalization has had tremendous success, with SuperVision™ being incorporated into 200,000 vehicles globally already.

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Furthermore, Mobileye joined forces with EXEED (Chery Auto's luxury brand) and WBTL ADAS to introduce China's first Cloud-Enhanced Driver-Assist™ system on the EXEED VX model in February 2024.[6] This pioneering solution enables continuous updates for adaptive driving in various conditions, particularly in challenging scenarios like low visibility or complex traffic. Leveraging Mobileye's REM™ technology, the

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[5] https://www.mobileye.com/news/automated-driving-volkswagen-group-intensifies-collaboration-with-mobileye/

[6] https://www.mobileye.com/news/exeed-chery-autos-luxury-brand-chooses-mobileye-and-wbtl-to-launch-first-cloud-enhanced-driver-assist-in-china/

system includes lane-keeping on roads without markings and intelligent speed adaptation, promising significant safety enhancements.

Overall, Mobileye's transparent, seamless approach and close relationships position it as a partner of choice for passenger vehicle ADAS market.

Conclusion

Technology integration is a critical success factor for the passenger vehicle Advanced Driver Assistance Systems (ADAS) industry. Yet, with many options available, market stakeholders need to leverage the most appropriate and best technology-based solutions to optimize their market impact. With its Driving Experience Platform™, Mobileye enables automakers to develop autonomous driving systems from start to finish, optimizing decision-making processes to enhance safety, efficiency, and user experience. Additionally, its high-performing EyeQ™ solution has advanced computing capabilities and specialized hardware-accelerated processing units that increase automation. The company stands out from competitors based on its commitment to innovation, creativity, and ability to launch new solutions with far-reaching impact and application. Mobileye's proprietary Road Experience Management™ technology enhances autonomous mobility through up-to-date, crowd-sourced mapping while adhering to international privacy regulations. The company pairs its technology focus with customer-centric values, thus earning a solid reputation in the passenger vehicle ADAS market, sustained by significant partnerships with leader providers in the space.

For its strong overall performance, Mobileye is recognized with Frost & Sullivan's 2024 Global Enabling Technology Leadership Award in the passenger vehicle ADAS industry.

What You Need to Know about the Enabling Technology Leadership Recognition

Frost & Sullivan's Enabling Technology Leadership Award recognizes the company that applies its technology in new ways to improve existing products and services and elevate the customer experience.

Best Practices Award Analysis

For the Enabling Technology Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Technology Leverage

Commitment to Innovation: Continuous emerging technology adoption and creation enables new product development and enhances product performance

Commitment to Creativity: Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

Stage Gate Efficiency: Technology adoption enhances the stage gate process for launching new products and solutions

Commercialization Success: Company displays a proven track record of taking new technologies to market with a high success rate

Application Diversity: Company develops and/or integrates technology that serves multiple applications and multiple environments

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

About Frost & Sullivan

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The Growth Pipeline Engine™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

Learn more.

Key Impacts:

- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*

The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- Mega Trend (MT)
- Business Model (BM)
- Technology (TE)
- Industries (IN)
- Customer (CU)
- Geographies (GE)