MICROCHIP

2025 PRODUCT LEADER

Advancing the Product Portfolio to Match the Full Range of Customer Needs

RECOGNIZED FOR BEST PRACTICES IN THE GLOBAL AUTOMOTIVE TOUCHSCREEN CONTROLLERS INDUSTRY

FROST & SULLIVAN

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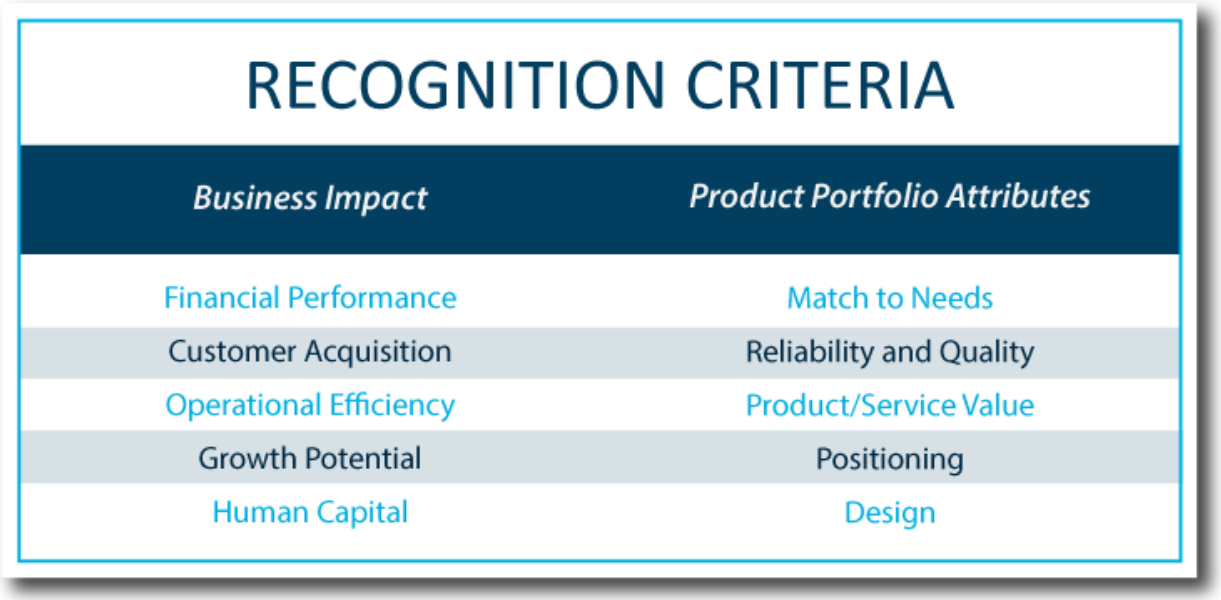
Best Practices Criteria for World-class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each recognition category before determining the final recognition recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Microchip excels in many of the criteria in the automotive touchscreen controllers space.



The Changing Landscape of Automotive Display HMI

Automotive human-machine interfaces (HMI) are undergoing rapid transformation driven by advanced display technologies, evolving user expectations, and the rise of software-defined vehicles. OEMs are pushing the innovation with pillar-to-pillar displays, curved OLED panels, and freeform screen shapes, delivering immersive, intuitive, and brand-distinctive cockpit experiences. Frost & Sullivan appreciates how this shift is not merely aesthetic; it clearly redefines how drivers interact with their vehicles.

Touchscreens now anchor infotainment and personalized in-car control, but growing concerns about driver distraction and regulatory pressures (e.g., Euro NCAP guidance) are reviving tactile inputs such as rotary knobs integrated into digital interfaces. Meanwhile, display manufacturers are gaining influence in HMI integration as demand for flexible, high-performance, and safety-compliant touch solutions rises. OEMs face mounting pressure to reduce complexity and accelerate time-to-market. In this context, Microchip's maXTouch® M1 family delivers a timely, transformative response to the changing needs of the automotive HMI ecosystem.

Built for the Road Ahead: Listening, Adapting, and Delivering

Microchip developed the ATMXT3072M1 and ATMXT2496M1 touchscreen controllers in direct response to evolving automotive demands. OEMs now require support for diverse display formats—from circular clusters to ultrawide infotainment panels—while ensuring robust performance under challenging conditions. The M1 family addresses these requirements, with reconfigurable sensor channels that adapt to varying aspect ratios and form factors, including curved and shaped OLED displays.

Microchip works quite closely with OEMs and display manufacturers through joint design reviews, tuning sessions, and regional support hubs. This customer-centric approach ensures product roadmaps align with real-world integration challenges and emerging use cases. The M1 controllers introduce capabilities that were previously unavailable in the market, including a high signal-to-noise ratio for thick-glove operation, seamless knob-on-display functionality, and ISO 26262 functional safety compliance. These innovations empower OEMs to deliver safer, more intuitive, and highly differentiated HMI experiences.

Engineering for Elegance: Touch Innovation Meets Form Factor Freedom

The maXTouch® M1 family introduces several design breakthroughs to support large, curved, and shaped OLED displays. With up to 112 configurable sensor lines on the ATMXT3072M1 and 100 on the ATMXT2496M1, the controllers offer unmatched flexibility for non-rectangular and ultrawide formats. The Smart Mutual acquisition method enhances signal fidelity, enabling reliable touch detection even on high-capacitance OLED stacks.

> *"While specifics remain confidential, the company's pipeline focuses on richer user experiences, enhanced safety, and greater design freedom."*
>
> ***- Jack Palmer***
> ***Principal Consultant – Mobility Advisory Practice***

Microchip designed the M1 family to balance adaptability, performance, and reliability. The controllers combine mutual and self-capacitance sensing, advanced noise suppression, and dynamic burst frequency control to ensure robust operation across temperature and environmental extremes. A standout feature is hybrid touch-plus-rotary input, which allows capacitive knobs to be mounted directly on the display. This innovation improves safety by enabling tactile control (without visual distraction) and nicely aligns with regulatory trends favoring physical inputs for critical functions.

Precision Under Pressure: Performance That the User Can Trust

Automotive environments demand uncompromising reliability, and Microchip engineers designed the M1 controllers to meet these expectations. Both ATMXT3072M1 and ATMXT2496M1 are AEC-Q100 qualified and CISPR 25 Class 5 compliant, ensuring electromagnetic compatibility and durability under harsh conditions. They integrate embedded flash with Error Correction Code (ECC), separate timing circuits for processor and safety checks, and robust diagnostics for touch panel and knob failure detection.

Performance-wise, the M1 family delivers industry-leading responsiveness, with initial touch latency under 25 milliseconds and multi-touch report rates up to 120 Hz. Enhanced algorithms—palm recovery, lens bending compensation, and display noise equalization—ensure accurate touch tracking even in moisture, condensation, or high-noise environments. These capabilities make the M1 family a benchmark for quality and reliability in automotive HMI.

More Than a Chip: A Smarter Path to HMI Integration

The M1 family's core value lies in simplifying integration while expanding functionality. OEMs and Tier 1s gain a single controller that supports complex display shapes, capacitive knobs, and advanced touch features within a safety-compliant framework. Compared with competitors, Microchip offers superior

flexibility, reduced system cost, and faster time-to-market through its Total System Solutions (TSS) approach.

TSS extends beyond the touchscreen controller to include complementary microcontrollers, power-management integrated circuits (ICs), and development tools. This holistic offering enables customers to build complete HMI systems with fewer integration hurdles and greater design coherence. By combining technical excellence with ecosystem support, Microchip delivers a compelling solution across the automotive supply chain.

Accelerating HMI Success in a Collaborative Way

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Microchip designs its ecosystem to accelerate and de-risk HMI integration. The maXTouch Studio platform provides tuning tools, simulation environments, and design guidance tailored to automotive use cases. The KoD™ Knob Designer tool, developed with Panasonic, helps OEMs optimize knob placement, size, and detent configuration for seamless interaction.

Strategic partnerships with display manufacturers directly shape the M1 family's capabilities. As touch sensors increasingly integrate into display modules, Microchip collaborates with panel makers to ensure compatibility, performance, and manufacturability. This model not only enhances adoption but also keeps Microchip's solutions aligned with the latest display innovations and integration practices.

Driving Tomorrow: Innovation That Moves with the Market

Touch will play an even greater role in next-generation vehicles as pillar-to-pillar displays, eMobility, and software-defined architectures become mainstream. Anticipating this evolution, Microchip is actively investing in R&D to support new innovations such as flexible, rollable, and multi-modal HMI interfaces. While specifics remain confidential, the company's pipeline focuses on richer user experiences, enhanced safety, and greater design freedom.

Microchip's fosters an agile, collaborative culture that unites cross-functional expertise with dedicated automotive teams and a global support infrastructure. Backed by a strong foundation in functional safety, the company partners with OEMs and display makers to anticipate trends, co-develop solutions, and scale quickly. These strengths position Microchip at the forefront of automotive HMI innovation in a fast-moving market.

Conclusion

Microchip's maXTouch® M1 touchscreen controllers address the changing automotive HMI landscape with flexible support for advanced display formats and tactile inputs. Developed in close collaboration with OEMs and display makers, they integrate seamlessly with next-generation systems while driving user-centric innovation. The controllers offer standout performance, proven reliability, and full safety compliance, while Microchip's TSS approach simplifies development and accelerates time-to-market. Frost & Sullivan concludes that strategic partnerships and a forward-looking innovation culture further strengthen Microchip's industry position. With its strong overall performance, Microchip earns the 2025 Frost & Sullivan Global Product Leadership Recognition.

What You Need to Know about the Product Leadership Recognition

Frost & Sullivan's Product Leadership Recognition identifies the company that offers a product or solution with attributes that deliver the best quality, reliability, and performance in the industry.

Best Practices Recognition Analysis

For the Product Leadership Recognition, Frost & Sullivan analysts independently evaluated the criteria listed below.

Business Impact

Financial Performance: Strong overall business performance is achieved in terms of revenue, revenue growth, operating margin, and other key financial metrics

Customer Acquisition: Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

Operational Efficiency: Company staff performs assigned tasks productively, quickly, and to a high-quality standard

Growth Potential: Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

Human Capital: Leveraging innovative technology characterizes the company culture, which enhances employee morale and retention

Product Portfolio Attributes

Match to Needs: Customer needs directly influence and inspire the product portfolio's design and positioning

Reliability and Quality: Products consistently meet or exceed customer expectations for performance and length of service

Product/Service Value: Products or services offer the best value for the price compared to similar market offerings

Positioning: Product serves a unique, unmet need that competitors cannot easily replicate

Design: Product features an innovative design that enhances both visual appeal and ease of use

Best Practices Recognition Analytics Methodology

Inspire the World to Support True Leaders

This long-term process spans 12 months, beginning with the prioritization of the sector. It involves a rigorous approach that includes comprehensive scanning and analytics to identify key best practice trends. A dedicated team of analysts, advisors, coaches, and experts collaborates closely, ensuring thorough review and input. The goal is to maximize the company's long-term value by leveraging unique perspectives to support each Best Practice Recognition and identify meaningful transformation and impact.

		VALUE IMPACT	
STEP		WHAT	WHY
1	**Opportunity Universe**	Identify Sectors with the Greatest Impact on the Global Economy	Value to Economic Development
2	**Transformational Model**	Analyze Strategic Imperatives That Drive Transformation	Understand and Create a Winning Strategy
3	**Ecosystem**	Map Critical Value Chains	Comprehensive Community that Shapes the Sector
4	**Growth Generator**	Data Foundation That Provides Decision Support System	Spark Opportunities and Accelerate Decision-making
5	**Growth Opportunities**	Identify Opportunities Generated by Companies	Drive the Transformation of the Industry
6	**Frost Radar**	Benchmark Companies on Future Growth Potential	Identify Most Powerful Companies to Action
7	**Best Practices**	Identify Companies Achieving Best Practices in All Critical Perspectives	Inspire the World
8	**Companies to Action**	Tell Your Story to the World (BICEP*)	Ecosystem Community Supporting Future Success

*Board of Directors, Investors, Customers, Employees, Partners

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at http://www.frost.com.

The Growth Pipeline Generator™

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:

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