

F R O S T & S U L L I V A N

FROST & SULLIVAN BEST PRACTICES AWARD

AUTOMOTIVE IN-VEHICLE MEDIA
SOFTWARE - GLOBAL

Enabling Technology Leadership
2019



cinemo
The Future of Infotainment

FROST & SULLIVAN

2019

BEST
PRACTICES
AWARD

Contents

Background and Company Performance	3
<i>Industry Challenges</i>	3
<i>Technology Leverage and Customer Impact</i>	4
<i>Conclusion</i>	7
Significance of Enabling Technology Leadership	8
Understanding Enabling Technology Leadership	8
<i>Key Benchmarking Criteria</i>	9
<i>Technology Leverage</i>	9
<i>Customer Impact</i>	9
Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices	10
The Intersection between 360-Degree Research and Best Practices Awards.....	11
<i>Research Methodology</i>	11
About Frost & Sullivan	11

Background and Company Performance

Industry Challenges

The new-age automotive environment is transitioning towards connected and self-driving vehicles; and the time that occupants will spend in these advanced vehicles will be more focused on entertainment rather than vehicle operations. This would require original equipment manufacturers (OEMs) to focus on providing an immersive in-car digital experience to the driver and passengers. However, the lead time for developing vehicles extends over several years and manufacturers are unable to keep pace with quickly proliferating digital technologies. OEMs and Tier I automotive suppliers face various challenges, but providing a feature-rich in-vehicle multimedia experience similar to advancements in the consumer electronics industry has become their top priority. Specialized third-party software vendors can help OEMs and Tier I suppliers shorten the gap between in-vehicle infotainment (IVI) software design cycles with consumer electronics industry developments and provide a similar digital experience, thereby increasing customer satisfaction.

So far, OEMs and Tier I suppliers have concentrated on hardware, such as offering larger displays and additional auxiliary displays per vehicle. However, these hardware-centric solutions have reached saturation and the potential to differentiate hardware has become limited. Going forward, OEMs and Tier I suppliers need to shift to developing innovative software solutions using the consumer electronics industry as their benchmark. While these software solutions have been in the market for decades, they are now becoming increasingly complex and advanced due to content availability, technology convergence, and in-car connectivity.

Another challenge faced by OEMs and Tier I suppliers is that premium-rich features typically found in high-end vehicles are making their way into mid-range and entry-level models. This will make it essential for software solution providers to support the entire range of vehicle models while maintaining software compatibility. This presents considerable challenges in terms of the cost and complexity of software solutions needed to enable these features throughout all of an OEM's vehicle segments. The flexibility to develop, customize, and update software solutions in addition to reducing development costs for their partners and providing faster time to market will be the key benchmarking parameters for software suppliers. Therefore, OEMs and Tier I suppliers will need to engage with specialized software suppliers and third-party vendors to provide media solutions that cater to the requirements of multiple passenger profiles.

Technology Leverage and Customer Impact

Founded in 2008, Cinemo has built an excellent reputation in the automotive infotainment industry with its robust catalog of multimedia playback and streaming, media management, connectivity, and cloud middleware technologies. This expertise is due to its focus on middleware solutions, which it develops according to the specific requirements of automakers. As a result, Cinemo solutions are the most recognized and highly rated in the IVI multimedia sector—providing a great segue for the adoption of its solutions by 27 major OEMs and 20 top Tier I suppliers.

Cinemo has achieved this by actively tackling issues faced by automakers, such as implementing an innovative feature-rich multimedia solution that is accessible to all in-car occupants. Frost & Sullivan has found Cinemo's software scalability to be one of its major strengths, which it has achieved through a modular architecture approach. This helps OEMs and Tier I suppliers reduce the lead-time to launch next-generation IVI systems.

Commitment to Innovation and Commitment to Creativity

Cinemo has successfully leveraged its experienced and dedicated engineering team to build a modular media playback and streaming middleware software architecture. This software is compatible with all major operating systems and hardware solutions, plus it supports numerous files, discs, and stream types. This modular operating system (OS)-agnostic approach allows it to function across vehicle head unit types and rear seat display units, and has helped it cover the entire range from low-footprint to premium IVI devices.

Cinemo's application programming interface (API) is ingeniously built so that its base code remains the same irrespective of the OS and hardware it is paired with, making it convenient for OEMs and Tier I suppliers to add and remove features just by recompiling the project code, without any lengthy or expensive software development processes. For instance, in 2019 the company announced the launch of its Projection Plus technology that enables rear-seat entertainment systems to access Apple CarPlay and Android Auto projection technologies. This builds on its portfolio of multimedia middleware solutions and services while also demonstrating that Cinemo is in an excellent position for an autonomous future with its unified media solutions. Frost & Sullivan believes Cinemo is clearly looking to expand its portfolio's reach and provide a unified platform for a truly captivating in-vehicle user experience.

"Innovation is the key to stay forefront. Cinemo has been extensively driving innovation in IVI for the past ten years and continues to enrich the way multimedia will be consumed in the future. We are excited about our partnership."

- Timo Dudel, Manager Purchasing Connectivity and Software at Volkswagen

Cinemo also provides high-quality media performance for OEMs and Tier I suppliers for any type of configuration and on any platform from the user's device of choice. As such, Cinemo has incorporated support for a wide range of connected devices, streaming format and cloud content that leave its competitors struggling to catch up. This unified connectivity provides a compelling and feature-rich media user experience that car buyers increasingly demand.

Frost & Sullivan is convinced that with Cinemo's modular, highly flexible, and secure products, the company is ideally positioned for further growth in the automotive infotainment market.

Stage Gate Efficiency

Cinemo aggressively introduced new and upgraded offerings, such as the rollout of its suite of distributed technologies. This includes its newly launched Distributed Cloud™, which gives car users instantaneous access to online music, storage and TV content. Its cloud solution complements its multimedia playback services in providing a holistic digital experience in the vehicle, which sets a new standard for in-vehicle music and video streaming. It utilizes its expertise in embedded media solutions to diversify its portfolio and develop complementary software to create new use cases. For instance, its advanced API solutions enable database syncing into Gracenote databases, allowing seamless integration with voice recognition and speech engines. This is the first solution to bring thirteen of the world's most popular online streaming services into the car, connecting people and multimedia content from European, Asian, and US online music, storage and TV services.

Frost & Sullivan feels that Cinemo's innovative concept of integrating its Distributed Playback™ solution with Distributed Cloud™ technology stands as a testament to understanding OEM requirements to enrich the performance of in-vehicle infotainment solutions.

"With its scalable and high modular architecture, Cinemo contributes to speed up the development process and deliver best-in-class multimedia."

- Dr. Thomas Hollman, Head of Cockpit Electronics Development at Volkswagen.

Commercialization Success and Customer Ownership Experience

Cinemo believes in accelerating the development of its customers' IVI systems through partnerships and close cooperation throughout the life cycle of its solutions. With the introduction of new solutions and updates for existing ones, Cinemo has been expanding its market presence with some notable new deals. For instance, at CES 2018, Renesas

showcased the development of Renesas Connected Cockpit Platform by incorporating Cinemo's unified middleware solutions.

Cinemo also consistently enhances its products so that they support the evolving high-quality requirements of the automotive industry, and it provides these enhancements through industry collaborations and partnerships. In 2018 alone, these collaborations included partnerships with global semiconductor player STMicroelectronics (ST), embedded and connected technology solutions provider Elektrobit (EB), and leading navigation systems and software solution provider Aisin AW. It also collaborated with Panasonic to develop multiple IVI projects for both OEMs and aftermarket solutions providers. By working with these companies to incorporate its adaptive middleware solutions into their technology, Cinemo has enabled 'harmonized media playback' and content sharing that provides customers with a superior, personalized and truly immersive in-vehicle digital experience.

"The technologies that Cinemo provide us are enabling excellent users experience to our customer with our IVI products, and we recognize the Cinemo's capability is very high. "

- Ryuichi Yokota, Project General Manager & Group Manager of Multimedia System Planning, ITS & Connected Management Div., Connect Company of Toyota Motor Corporation

Cinemo's solutions also address the changing needs of consumers. For instance, in 2018, Cinemo partnered with VOXX Automotive and integrated its middleware solutions into the Evolution Series (EVO) Rear-Seat Infotainment system. This offers a unified playback and distribution approach to media content displayed on EVO's multi-screen rear-seat units in select 2018 and 2019 vehicles from Ford, GM, and Mazda. Also in 2018, Volkswagen (VW) integrated Cinemo's Distributed Playback™ and Distributed Media Management™ services into the VW Touareg digital cockpit. Integrating Cinemo's solution into the infotainment solutions will allow future Volkswagen vehicle drivers to have an engaging in-vehicle user experience in terms of media playback, streaming, and generally multimedia consumption.

By delivering an impressive array of media playback capabilities, Cinemo has garnered a worldwide customer base that includes major OEMs such as BMW, Daimler, GM, Toyota, Peugeot Citroen, Suzuki, Groupe PSA, and Volkswagen. This also includes Tier I suppliers such as Panasonic, Faurecia-Parrot, Continental, and Mitsubishi Electric. This underscores the acceptance of Cinemo's solutions and shows that its modular approach is well received by the industry.

Brand Equity

Cinemo has intelligently evolved into a one-stop media solution partner, which enables it to build trust and loyalty among its customers. A unique selling point behind Cinemo's service is the widespread uniformity of its OS-agnostic and cross-platform support. This can be delivered across all brands and cater to an entire model range, from entry-level devices to high-end infotainment devices, at a fair price.

The company's steady success also hinges on building recognition through participation in industry events such as CES. This gives insight to IVI ecosystem stakeholders regarding the company's major innovations. Notably, for the second consecutive year at CES (2019), Cinemo's key customer Robert Bosch Car Multimedia showcased its next-generation Android automotive-based infotainment systems that utilize Cinemo's state-of-the-art solutions. Also at CES 2019, its newly introduced Projection Plus™ technology (which employs its media and connectivity framework) was recognized by the Consumer Technology Association with the CES 2019 Innovation Award under the In-Vehicle Audio-Video category. Such events strengthen its recognition and market position, while its quality offerings fortify its standing as a successful innovator in the automotive infotainment multimedia solutions.

Cinemo has successfully identified and addressed key challenges in the automotive infotainment industry by providing a truly unified media solution. Cinemo is favorably positioned to differentiate itself from competitors and it will continue to build a strong customer base with OEMs and Tier I suppliers.

Conclusion

Frost & Sullivan is quite impressed by Cinemo's modular approach and ability to design feature-rich infotainment systems. The company offers unified middleware solutions and compatibility with all major operating systems ensuring unrivaled flexibility to integrate in all system scales, including entry-, mid- and high-end infotainment and rear-seat entertainment systems. Also, incorporating its customizable API allows OEMs and Tier I suppliers to add new features and use cases without lengthy and expensive software development processes. The company further leverages its engineering prowess and proprietary technology to respond to market demands and diversify its solutions with complementary software collaboration tools.

For addressing the evolving needs of the automotive industry, Cinemo is recognized with the 2019 Frost & Sullivan Enabling Technology Leadership Award.

Significance of Enabling Technology Leadership

Ultimately, growth in any organization depends on customers purchasing from a company and then making the decision to return time and again. In a sense, then, everything is truly about the customer. Making customers happy is the cornerstone of any successful, long-term growth strategy. To achieve these goals through enabling technology leadership, an organization must be best in class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.



Understanding Enabling Technology Leadership

Product quality (driven by innovative technology) is the foundation of delivering customer value. When complemented by an equally rigorous focus on the customer, companies can begin to differentiate themselves from the competition. From awareness, to consideration, to purchase, to follow-up support, organizations that demonstrate best practices deliver a unique and enjoyable experience that gives customers confidence in the company, its products, and its integrity.

Key Benchmarking Criteria

For the Enabling Technology Leadership Award, Frost & Sullivan analysts independently evaluated Technology Leverage and Customer Impact according to the criteria identified below.

Technology Leverage

Criterion 1: Commitment to Innovation

Requirement: Conscious, ongoing adoption of emerging technologies that enable new product development and enhance product performance.

Criterion 2: Commitment to Creativity

Requirement: Technology leveraged to push the limits of form and function in the pursuit of white space innovation.

Criterion 3: Stage Gate Efficiency

Requirement: Adoption of technology to enhance the stage gate process for launching new products and solutions.

Criterion 4: Commercialization Success

Requirement: A proven track record of taking new technologies to market with a high rate of success.

Criterion 5: Application Diversity

Requirement: The development and/or integration of technologies that serve multiple applications and can be embraced in multiple environments.

Customer Impact

Criterion 1: Price/Performance Value

Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

Criterion 2: Customer Purchase Experience

Requirement: Customers feel they are buying the optimal solution that addresses both their unique needs and their unique constraints.

Criterion 3: Customer Ownership Experience

Requirement: Customers are proud to own the company's product or service and have a positive experience throughout the life of the product or service.

Criterion 4: Customer Service Experience

Requirement: Customer service is accessible, fast, stress-free, and of high quality.

Criterion 5: Brand Equity

Requirement: Customers have a positive view of the brand and exhibit high brand loyalty.

Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate award candidates and assess their fit with select best practices criteria. The reputation and integrity of the awards are based on close adherence to this process.

STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1 Monitor, target, and screen	Identify award recipient candidates from around the world	<ul style="list-style-type: none"> • Conduct in-depth industry research • Identify emerging industries • Scan multiple regions 	Pipeline of candidates that potentially meet all best practices criteria
2 Perform 360-degree research	Perform comprehensive, 360-degree research on all candidates in the pipeline	<ul style="list-style-type: none"> • Interview thought leaders and industry practitioners • Assess candidates' fit with best practices criteria • Rank all candidates 	Matrix positioning of all candidates' performance relative to one another
3 Invite thought leadership in best practices	Perform in-depth examination of all candidates	<ul style="list-style-type: none"> • Confirm best practices criteria • Examine eligibility of all candidates • Identify any information gaps 	Detailed profiles of all ranked candidates
4 Initiate research director review	Conduct an unbiased evaluation of all candidate profiles	<ul style="list-style-type: none"> • Brainstorm ranking options • Invite multiple perspectives on candidates' performance • Update candidate profiles 	Final prioritization of all eligible candidates and companion best practices positioning paper
5 Assemble panel of industry experts	Present findings to an expert panel of industry thought leaders	<ul style="list-style-type: none"> • Share findings • Strengthen cases for candidate eligibility • Prioritize candidates 	Refined list of prioritized award candidates
6 Conduct global industry review	Build consensus on award candidates' eligibility	<ul style="list-style-type: none"> • Hold global team meeting to review all candidates • Pressure-test fit with criteria • Confirm inclusion of all eligible candidates 	Final list of eligible award candidates, representing success stories worldwide
7 Perform quality check	Develop official award consideration materials	<ul style="list-style-type: none"> • Perform final performance benchmarking activities • Write nominations • Perform quality review 	High-quality, accurate, and creative presentation of nominees' successes
8 Reconnect with panel of industry experts	Finalize the selection of the best practices award recipient	<ul style="list-style-type: none"> • Review analysis with panel • Build consensus • Select recipient 	Decision on which company performs best against all best practices criteria
9 Communicate recognition	Inform award recipient of recognition	<ul style="list-style-type: none"> • Present award to the CEO • Inspire the organization for continued success • Celebrate the recipient's performance 	Announcement of award and plan for how recipient can use the award to enhance the brand
10 Take strategic action	Upon licensing, company is able to share award news with stakeholders and customers	<ul style="list-style-type: none"> • Coordinate media outreach • Design a marketing plan • Assess award's role in strategic planning 	Widespread awareness of recipient's award status among investors, media personnel, and employees

The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of the research process. It offers a 360-degree view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, resulting in errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS



About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, helps clients accelerate growth and achieve best-in-class positions in growth, innovation, and leadership. The company's Growth Partnership Service provides the CEO and the CEO's growth team with disciplined research and best practices models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages nearly 60 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on 6 continents. To join Frost & Sullivan's Growth Partnership, visit <http://www.frost.com>.