

POWERING THE OEM/ODM RELATIONSHIP



**How and when to capitalize on supplier resources
for competitive embedded computing design.**

Smart Design & Market Leadership: Powering the OEM/ODM Relationship

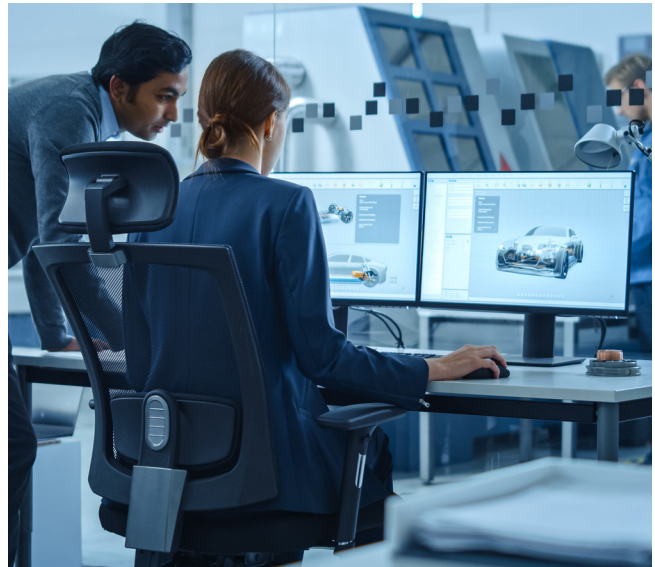
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Original Design Manufacturers (ODMs) of embedded computing systems play a key role in the product design chain, filling a gap for Original Equipment Manufacturers (OEMs) when specific computational performance or system features are required.

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What OEMs may not realize, is that their Original Design Manufacturer (ODM) partners are constantly striving to deliver ahead of market needs, competing by readying features and performance improvements before the OEMs realize the necessity to their systems. Whether developing a specialized component which may not be available off-the-shelf, or customizing an existing product for end-user performance – ODMs work hard to drive new efficiency, creativity, and competitive advantage in product development.

This white paper covers five key value-adds OEMs can consider when evaluating their ODM partner relationship for embedded computing design and leadership.



Create a Holistic View of Design Needs

Because success in any project depends on having clear objectives, OEMs must work carefully to establish a set of requirements that capture everything needed to ensure success of their product, including performance targets, environmental challenges, quality expectations, and time to market.

But defining these needs takes expertise and attention to detail that can strain OEM resources. The team must address questions, such as what is the lifecycle and longevity of the system? Who supports the system after deployment? What did the product development team learn from the previous generation or system design?



ODMs add a unique perspective to this process – a holistic approach that taps into a deeper level of experience across a range of customers, products, applications, and SLAs. Both collaborative and engineering-focused, this approach fuels a complete understanding of the OEM’s application from the beginning. The embedded system becomes more than just a list of parts, and the ODM can readily design system elements that close the gaps between a completely off-the-shelf commodity and a custom design. A tighter integration from the beginning helps meet end-user goals on day-one and throughout the entire life of the OEM’s product.

Collaborative Engineering, Early in the Design Process

Highly-engineered compute systems start with a strong understanding of the market-specific application and well-defined requirements. Based on their industry and market experience, ODMs can establish a system architecture that matches the OEMs’ performance and application needs. While off-the-shelf components are used to meet these needs as much as possible, ODMs add value and options by leveraging decades of cross-industry and supply chain relationships with partners such as NVIDIA® and others. OEMs benefit from the reduced cost and improved time-to-market of off-the-shelf components, while at the same time extending the product lifecycle typically reserved for custom designs.

When no off-the-shelf component exists to meet a unique customer need, ODMs ideally offer the design capabilities to solve the challenge. In-house electrical, mechanical, and software engineering expertise help OEMs meet otherwise impossible needs with custom design for enclosures, electronics, and applications.

Accessing Design Intelligence through System Modeling and Simulation

OEMs can leverage in-house capabilities of their ODM partner, adding critical advantages to the design process. For example, the ODM’s in-house modeling and simulation capabilities can predict

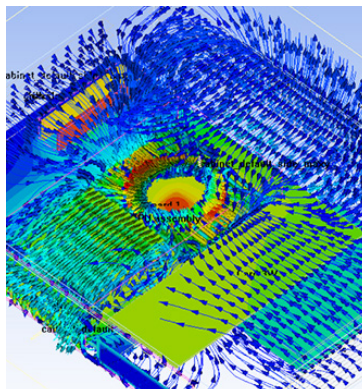
design challenges prior to building a prototype. Tools such as computational fluid dynamics simulation help predict system hot spots and finite element analysis gives insight into its tolerance for shock and vibration. Establishing this information early in the process supports engineers by eliminating problems before they occur – reducing development cycles, improving quality, and reducing cost.



DC engineers preparing a rack enclosure for thermal performance testing

Once a product design has been realized, rigorous testing validates its performance against all necessary environmental and regulatory requirements. For example, in-house environmental chambers allow the ODM’s engineers to quickly assess platforms, verifying all components within acceptable operating ranges regardless of computational load and environmental conditions.

This level of design intelligence enables designers to balance system acoustics with thermal needs. As importantly, armed with an optimal, thermal design strategy prior to prototyping, OEMs reduce development costs, accelerate time-to-market, and can even consider alternative designs based on learnings from simulated performance data. Additionally, the ODMs’ in-house shock and vibration equipment can be used to assess everything from transport packaging to operational vibration of mobile platforms. The resulting data drives products proven to function under the environmental stresses encountered throughout their lifecycle.



Thermal modeling example



Protecting OEM Resources

Along with advanced environmental testing, ODMs can perform functional testing on systems to demonstrate system stability and performance. All system software, from the BIOS to the operating system and driver stack, is validated to establish a solid foundation for customer software. To ensure OEMs do not waste resources on maintaining drivers and operating system versions, the ODM can take responsibility of developing and managing the software image applied to each system over its lifecycle. Security patches, hot fixes, driver updates and planned software releases can all be incorporated into image updates on an OEM-specified schedule to improve security and simplify software deployment.

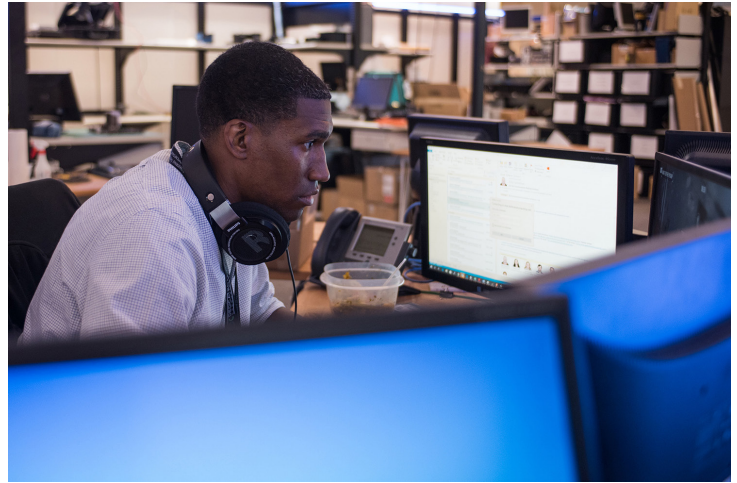
Today, there is a whole new dimension of liabilities for OEMs to consider – addressing them is not an entirely technical discussion and may involve numerous priorities from internal teams such as administration, engineering, quality assurance and service. ODMs often take on the role of facilitator, helping OEM teams communicate internally, for example helping them maneuver to a stronger security-first mindset or long-term approach to field services and maintenance.

Long-Term Advantage

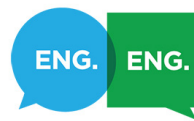
OEMs excel at designing products with an understanding of processing capabilities and general performance requirements, but often face specific application demands that require ‘something more.’ ODMs focus on solving the unknown or unpredictable challenges with ongoing R&D – creating in-house systems that solve a particular application challenge or fill a market need that is not currently addressed. They continually ask themselves ‘what are OEMs going to need, computationally, before they know they need it?’

Working to answer this question, ODMs are constantly pushing boundaries – carving out their industry role by expanding what they offer as a strategic partner and building new ways to help OEMs distinguish performance. Ideally, this creates opportunity for value-added

relationships with OEMs, helping them protect resources, enhance system performance, reduce time-to-market, and create market leadership.



DC design engineers provide rigorous testing for electrical, thermal, and acoustical performance throughout the product design process.



Connecting Engineer-to-Engineer

Dedicated Computing understands that the best partnerships are typically based on engineering experience, coupled with the depth of industry knowledge required by the ODM partner.

“As a design, development, and deployment partner, skilled in complex, engineered solutions, we’re problem-solvers by nature—collaborating with our customers, engineer to engineer. With more than 70% of our employees serving in a technical or engineering role, we bring a fresh perspective to our customer’s product design and development process.”

-- Jeff Krueger, Director of Systems Engineering,
Dedicated Computing

To begin the conversation with Dedicated Computing, visit www.dedicatedcomputing.com or call 877-333-4848 to request a meeting.

