

# PUND-IT RESEARCH

## Marketplace Update

**Power.org:  
Common Goals + Individual Strengths =  
Community Benefits**

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# Power.org: Common Goals + Individual Strengths = Community Benefits

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With its launch in December 2004, Power.org focused on a value proposition new to the embedded and IT hardware industries: to establish a community dedicated to developing, enabling, and promoting Power Architecture technology as the preferred open standard hardware development platform for the electronics industry. Since then, the Power.org ecosystem has grown from its original 14 founding companies to 45 active members involved in a wide range of Power-centered efforts and industries.

The community's growth and success to date begs a number of questions: How does Power.org follow historical precedents? What does the open development model offer that proprietary platforms do not? What is it about the community that Power.org members find appealing? How is Power.org empowering its members to leverage their individual strengths to achieve common goals? Considering the momentum the community enjoys, what lies ahead for Power.org?

## ***The Benefits of Community Collaboration***

Historically, collaborative and cooperative efforts enriched a wide variety of activities in U.S. communities ranging from rural quilting bees, canning parties, and barn raisings to constructing churches, schools, and other public buildings. Such focused, collective efforts are common across the globe in communities that understand the benefits of sharing skills and work.

Community collaborations result from the recognition of two basic truths. First that some projects lay beyond the abilities of individuals or smaller groups, and second, that the larger community benefits by helping to enable the success of those individuals and groups. These activities obviously benefit from the special skills of community members, but they also provide opportunities for exchanging information and insights, serving as a proving ground for future collaborative efforts.

## ***The Power of Collaborative Innovation***

The advent of communities built around technologies represents a growing understanding of and appreciation for the benefits that can spring from innovative collaborative efforts. Strategically, the ability of collaborative development in helping lower design costs and shorten time to market can also potentially increase revenues and share. Working together can also help vendors enhance less tangible strategic issues such as market leadership, recognition, and mindset. More practically, close collaboration helps vendors and developers manage processes ranging from specifications and standards adoption to technology compatibility and interoperability to creating workable intellectual property (IP) policies.

The creation of Power.org reflects some key microprocessor industry drivers including the need for integrated solutions and more efficient and effective development models. In addition, the growing momentum behind the Power Architecture platform indicates the notable value this technology offers to developers facing larger industry and market trends:

- **Increasing combinatorial complexity** – The dramatic rise in the performance of technologies of virtually every kind may qualify as conventional wisdom, but it is also eminently true. What tends to receive less attention is the corresponding increase in the complexity of those and associated products, from the smallest embedded processors to the largest supercomputer, and from the simplest embedded application to the most complex enterprise software suites. This issue spans virtually every industry, and is inspiring a wide range of collaborative efforts among vendors anxious to ensure product quality and customer satisfaction.
- **Growing diversity** – Even as individual electronics components are increasing in complexity, the solutions they inhabit are becoming far more diverse. Microprocessors enhance performance or features across ever-widening numbers of consumer, industrial and business products. Technology

solutions are enabling new processes and behaviors for users and organizations of every kind. The result? Unprecedented growth opportunities for vendors, as well as sweeping competitive challenges.

- **Expanding multiple, divergent markets** – The fact is that no single organization can effectively act on, let alone anticipate, myriad activities and trends spanning the global marketplace. Attempting to do so results in a loser's game of running hard to keep up with constantly accelerating targets. Is there any way to win this race? More and more, companies are working together to develop new collaborative technology products and solutions, sharing intelligence, skills, risks, and rewards.
- **Coping with change** – Change may be a constant, but how do vendors deal with constant change? The microprocessor sector offers some good examples, where vendors across the industry have shifted toward System-on-Chip (SoC) solutions that offer powerful and flexible platforms for integrated product development. Much of the industry is also embracing open, standards-based architectures, recognizing that they offer stable, developer-friendly solutions that support long term business strategies better than proprietary platforms. Like-minded vendors are also establishing and working within collaborative communities focused on common goals – pursuing the 21<sup>st</sup> century technology equivalent of barn raisings.

### ***Power Architecture Technology – Building Blocks for New Collaborations***

The ability of Power Architecture technology to help developers cope successfully with these and other challenges make it an ideal platform for innovative collaborative efforts. Alone among microprocessors architectures, Power embodies a unified instruction set architecture with a single brand that spans a wide variety of applications from consumer electronics to networking and communications to the world's most powerful supercomputers.

However, the unique attributes of Power Architecture technology are not particularly well-understood outside the developer community. Power is probably best known as the driving force behind IBM's notable server products, including its market-leading System p UNIX solutions, the remarkably flexible and agile System i mid-market servers, and options for the company's Blade-Center solutions. The architecture also supports leading-edge IBM solutions including its BlueGene supercomputers which represent, on the latest Top500.org list, the world's two top performing supercomputing installations, and nine of the top 20.

Additionally, over the past two years, Power Architecture technology has become the de facto platform for computer gaming consoles, knocking Intel completely out of the market and inhabiting products including Microsoft's Xbox 360 product and Nintendo platforms. Power technology also underlies the Cell Broadband Engine (BE) processor at the heart of Sony's upcoming PlayStation 3. Co-developed by Sony, IBM, and Toshiba, Cell BE qualifies as a model for the kinds of innovation available to and achievable by willing, imaginative collaborators.

The sheer flexibility of Power Architecture technology offers unmatched levels of choice and opportunity for original device manufacturers (ODMs) and original equipment manufacturers (OEMs), particularly those in embedded systems markets and sectors who use solutions developed by Power.org members including Freescale Semiconductor, AMCC, and PA Semi.

Power Architecture technology is the leading microcontroller architecture for automotive power train applications. About half of 2007 car models will utilize Freescale microcontrollers built on Power Architecture technology for engine and transmission management processes, and five of the top automobile manufacturers use Freescale solutions. As braking, suspension, and safety systems become increasingly sophisticated, we expect demand for Power in the auto industry to expand significantly. Power also provides the brains and brawn for growing numbers of products in other markets and industries including wireless infrastructure, networking, infotainment, storage, printing, medical, industrial, and stationary and mobile consumer devices.

Networking and telecom equipment has been another stronghold for Power Architecture technology. Freescale's PowerQUICC line based on Power Architecture technology has maintained dominant market share in the communications processor market. Over time, we expect that the sheer volume of future embedded market opportunities for Power could eventually outweigh enterprise IT solutions.

The result? The Power Architecture will provide the revolutionary foundation for ever-expanding numbers of consumer electronics products, networking and communications infrastructure components, and business IT solutions. This translates into virtually unprecedented opportunities and support for ODMs, OEMs, and other developers who inhabit and influence a wide variety of commercial and industrial markets.

### ***Power to the Community***

So what is Power.org and what is so special about it? Simply put, Power.org is a formal community whose primary mission is to develop and promote the Power Architecture as the preferred open standard hardware development platform for the electronics and technology industries. Launched in December 2004, the 14 founding members of Power.org established the group as an open community that enabled collaborative innovations centered on Power Architecture solutions. No other microprocessor architecture can boast anything similar.

Power.org intends to benefit members by creating specs that help identify and address gaps in the development process, optimizing interoperability, and accelerating innovation. By following spec-compliant procedures, Power.org members should be able to more easily reap targeted, high value opportunities for their products. In addition, the community aims to increase the visibility and vibrancy of the Power Architecture ecosystem via new branding processes and initiatives.

### ***What Does Power.org Do?***

Mission statements aside, how does Power.org work and what does it provide for community members? The community offers four levels of membership; Founder/Board of Director (BOD), Sponsor, Participant, and Developer, with higher level members (Founders and Sponsors) having greater access to and responsibility for community governance. Power.org is currently governed by four founding members; Cadence Design, Freescale, IBM and Synopsis. The community also supports a Power Architecture Advisory Council and five Technical Subcommittees.

Generally speaking, Power.org provides access to the Power Architecture that is somewhat analogous to the collaborative Linux/Open Source model. To date, no other processor architecture offers OEMs and ODMs this granular level of technical and business autonomy. As a result, community members have a say in critical issues that affect their current and future livelihood. For example, the Power Architecture Advisory Council (PAAC) provides Power.org members who are general Power Architecture technology licensees a unique opportunity to participate in a collaborative forum focused on instruction set architecture change and evolution.

One accomplishment of the forum's efforts is the new Power ISA V2.03, which merges the individual Power and PowerPC ISAs into a single, unified instruction set. In leveraging Power ISA V2.03, community members will enjoy improved semiconductor capabilities and more software compatibility, factors that should enhance efficiencies and lower costs in product development.

Another example of the benefits conceived and delivered by Power.org is the new Power Architecture Platform Requirements (PAPR), the organization's first collaboratively developed open platform specification. Reflecting the sharing for mutual benefits that typifies Power.org efforts, IBM has made available to the group's corporate members a royalty-free license for any of the company's patents that apply to PAPR-compliant solutions. Designed to ease the creation of new Linux-enabled Power-based devices and application, the PAPR aims to reduce companies' development costs and time to market for products ranging from high-end embedded systems through servers.

The platform also provides a notable model for follow-on requirement specifications, including an embedded PAPR and a home media server PAPR currently under consideration by Power.org.

In addition, the Power.org Technical Subcommittees today support exploring and enabling objectives in a number of key development areas:

1. **Bus Architectures** – Standardize the bus interconnect in Power Architecture based SoCs, enabling rapid reuse, lower development costs, and increased compatibility.
2. **HV Server Ref Platform** – Enable lower cost, industry standard form factors and more competitive Power Architecture servers.
3. **Packet Switch Interconnects** – Define chip- and subsystems-level architectural reference design standards and specs for a 10-GbE packet switch module/switching appliance aimed at next generation servers.
4. **Platform Architecture** – Define and publish base architectural standards to facilitate development of compliant components and products.
5. **SoC Design Hierarchy** – Adopt and/or create specifications and standards to enable the creation of a world class SoC ecosystem that positions the Power Architecture at the industry's forefront and eases designers' efforts.
6. **Storage Virtualization Partitioning** – Enable more data-intensive non-IBM applications to leverage the ability of Power-based LPAR storage systems and functions
7. **New Areas** – Power.org is also considering establishing subcommittees to investigate other technical areas including Media (Cell/Power) Platforms, Accelerator Frameworks, and Disruptive Applications.

How does all this benefit community members? In essence, Power.org offers open access to Power Architecture technologies and resources, and creates a supportive, collaborative environment where member companies can work together to understand and overcome semiconductor industry challenges, as well as system design challenges. The result? More effective product development. More competitive products. More business opportunities for community members. More chances for success.

### ***Power.org – Today and in the Future***

No other microprocessor architecture offers developers similar opportunities to literally control their destinies. As a result, Power.org members look to a future determined by their voices and vision. This affects not only the community's current efforts but also new areas of Power opportunity such as accelerator frameworks, network/switching, and media platforms. Perhaps most importantly, the structure of Power.org ensures that as the community expands, new members will spark new thinking, new concepts, new collaborations, and new opportunities. The constant refreshment of ideas that is the wellspring of innovation provides Power.org both inspiration and sustenance.

### ***Summary***

The measurable benefits of community collaboration have obvious historical precedence, but are also central to growing numbers of efforts in the semiconductor industry such as Power.org. Since its launch in December 2004, Power.org has grown from 15 companies promoting Power Architecture as the preferred open standard hardware development platform to a community of 45 active members involved in a wide range of Power-centered efforts and industries. The Power Architecture technology's leading-edge performance and unique flexibility make it an ideal platform for these open, collaborative efforts. The continuing success of Power.org reflects key industry trends, and represents an effective means for vendors and developers to meet both technical and business challenges.

Along with the goals and issues that drove Power.org in the beginning, recent initiatives including Power ISA V2.03, the Power Architecture Platform Reference, and the new unified Power brand and logo effort further highlight the key roles community members play in determining the success of

the Power Architecture and their own efforts. The result of this unique exercise in community autonomy? More effective development processes, more competitive products, and more business opportunities for Power.org members. Further, as the Power.org expands, members will inspire new thinking, new ideas, new areas of collaboration, and new opportunities for success.

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***About Pund-IT***

***Pund-IT emphasizes understanding technology and product evolution and interpreting the effects these changes will have on business customers and the greater IT marketplace. This report is the result of sponsored research developed by Pund-IT, Inc., which believes its findings are objective and represent the best analysis available at the time of publication.***