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## **BMA5009 Marketing Management**

### **Group Case Analysis: AMD**

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## Introduction

In this case study, we examine AMD's strengths and weaknesses in relation to the microprocessor industry as at the year 2007. In doing so, we offer practical advice for AMD in its marketing strategy, in particular, to cope with Intel Corporation in the x86 microprocessor space.

## The microprocessor industry

The following subsections examine the opportunities and threats the microprocessor industry exerts on AMD. In addition, we also afford understanding of the five competitive forces the microprocessor industry subjects AMD to: the bargaining powers of *competitors, new entrants, substitute products, buyers, and suppliers*.

### *Opportunities*

#### **Data centre heating and cooling requirements**

The energy consumed by data centre servers, cooling equipment and related infrastructure more than doubled<sup>1</sup> in the US and worldwide between 2000 and 2005 (McGee, 2007). The jump in the number of servers, fuelled by the public's insatiable appetite for online content, accounted for 90% of the additional power consumption (McGee, 2007). Data centre managers now face a new challenge as heating and cooling requirements escalate—the need for energy-efficient computer processing.

#### **Emergence of multi-core processors**

In 1965, Intel co-founder Gordon Moore predicted “the number of transistors on a chip doubles about every two years”. Microprocessor firms like Intel have traditionally realised Moore's law by increasing processor clock speeds. However, increasing processor clock speeds comes with the attendant problems of increased heat and power consumption. Microprocessor companies like AMD, Intel and Sun Microsystems now favour multiple cores on a processor die to improve performance. Two or more processor cores packaged together can increase performance of a

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<sup>1</sup> Worldwide, the total bill was \$7.2 billion in 2005, compared with \$3.2 billion in 2000.

computer system without greatly increasing the total amount of power consumed and the total amount of heat emitted.

### **32- and 64-bit computing coexistence**

At the time when early 32-bit x86 architectures were devised, 4GB<sup>2</sup> of memory was so far beyond the typical quantities available in installations that it was considered to be all that was required for all processing demands. By the early 1990s the continual reductions in memory costs and application demands for even larger addressable space fuelled the development of 64-bit computing. 64-bit computing will provide 16EB<sup>3</sup> of addressable memory space, expected to be sufficient for many more computing years.

Intel in collaboration with Hewlett-Packard however, took a radical approach to addressing 32-bit limitations in the x86 space by introducing a brand new architecture: the Itanium. Software applications must be extensively rewritten to run on Itanium and this decision drew much criticism from the industry that preferred a more evolutionary transition (Lohr, 2003).

AMD responded with the Opteron processor, running the AMD64 instruction set that combined both 32- and 64-bit capabilities. Intel gradually found its role reversed, and found itself in the position of adopting the architecture that AMD has created by introducing the Intel EM64T. The industry is currently in a dilemma in whether to adopt AMD's 64-bit x86 implementation (AMD64) or Intel's implementation (EM64T) as the standard for 64-bit x86.

### **x86 processor space is the fastest growing space**

With the move away from mainframe processing, the x86 microprocessor space is currently the fastest growing processor space, eclipsing other processor families like the IBM POWER, and HP's PA-RISC, MIPS and Alpha processors. Even Sun Microsystems is rebuilding its image to be seen as less proprietary by making available x86-based systems in addition to their SPARC systems (Shankland, 2005).

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<sup>2</sup> 2<sup>32</sup> = 4,294,967,296 bytes (4GB).

<sup>3</sup> 2<sup>64</sup> = 18,446,744,073,709,551,616 bytes (16EB).

## **Microprocessor open-source movement**

Though not prevalent, we observe new developments in the microprocessor industry to increase participation in processor architecture development and application design. Such initiatives are designed to encourage innovation built on proven technology at a markedly lower cost and at a faster speed. The most recent such initiative is Sun Microsystems' OpenSPARC<sup>4</sup> project started in December 2005.

## **Threats**

### **The return of thin-client computing**

As trends in the computing industry emerge, they sometimes ebb away but revisit the industry again later when developments in the hardware or software arenas facilitate their return. Thin-client computing, previously popularised by Sun Microsystems is seeing a comeback with greater interactivity in web-based applications<sup>5</sup>. Thin-client computing shifts processing power away from the desktop to the server. Although this may be a threat to demand for high-end processors in the desktop market, it is also an opportunity for greater demand for high-end processors in the server market. We believe this phenomenon may be a fad and will fade away like it did previously.

### **Rapid technology advancements and new product introductions**

The semiconductor industry is characterised by rapid advancements in technology and new product introductions. AMD's products compete with products developed for similar or rival architectures, and with products based on the same or rival standards. It is not possible to predict which competing standards will become the prevailing standards in the market segments in which AMD competes in. AMD will lose the critical opportunity to dominate the 64-bit x86 space should Intel's EM64T overshadow AMD64.

### **Increasing outsourcing of operations**

Increasing outsourcing of manufacturing, assembly, and test operations by "fab-less semiconductor companies" (e.g., Broadcom Corporation, NVIDIA Corporation,

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<sup>4</sup> See <http://www.opensparc.net>.

<sup>5</sup> See <http://docs.google.com> for an example of how office productivity applications have moved online.

QUALCOMM Incorporated and VIA Technologies) allow competitors to significantly reduce capital expenditures and gain access to intellectual property (IP), design services and other goods and services offered by these foundries. AMD's innovations in multi-core processing, 64-bit computing and chipset designs may be inexpensively replicated by its competitors should these competitors engage the same foundries that AMD manufactures their products in.

### **Inability to enforce or protect IP rights**

Related to the increasing outsourcing of operations in the semiconductor industry is the difficulty in enforcing or protecting IP rights. Firms in the microprocessor/semiconductor industry often rely on the ability to license patents from each other in order to compete in today's markets. For instance, AMD has historically patterned its processor designs after Intel's designs. If one of these licensees becomes a foundry, competitors are able to avoid patent rights in manufacturing competing products.

### ***Existing competitors***

Intel, with 75% of the x86 market share<sup>6</sup> is the only significant competitor to AMD in the x86 space. Other competitors are relatively unknown and settle for whatever is left over from AMD and Intel's combined 95% share of the x86 market.

The microprocessor industry competes on product quality and power consumption, reliability, speed, form factor, cost, selling price, adherence to industry standards, software and hardware compatibility and stability, brand recognition, timely product introductions and availability (AMD, 2007). Technological advancements in the industry result in frequent product introductions, regular price reductions, short product life cycles and increased product capabilities that may result in significant computing performance gains. For AMD to compete effectively, it must be able to develop, introduce and sell new products or versions on a timely basis and at competitive prices while reducing manufacturing costs.

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<sup>6</sup> Dean McCarron, Mercury Research (x86 microprocessor market shares, Q2 2006).

## **Intel's manufacturing prowess**

Intel exhibits great manufacturing prowess with manufacturing facilities in Ireland, Arizona, Oregon and New Mexico. AMD in contrast has only a single facility in Dresden, Germany (AMD, 2007; Intel, 2007). In its latest display of manufacturing might, Intel is opening a new US\$3 billion factory in Arizona, Intel's first plant dedicated to manufacturing only microprocessors (Economic Times, 2007). The significantly larger number of facilities as compared to AMD permits Intel to achieve economies of scale by mass-producing microprocessors to quickly flood the market with new designs and versions.

## **Intel's marketing and financial prowess**

Intel has also been known to leverage on its market power and significant financial<sup>7</sup> resources to engage AMD in prolonged price-wars. Intel frequently engages in price-cuts (e.g., BusinessWeek, 2007) to diminish AMD's marketing efforts in new processor designs and versions.

## ***New entrants***

### **Prohibitively high barriers to entry for new entrants**

The microprocessor industry is an extremely capital-intensive semiconductor business. There are thus extremely high barriers to entry as entry requires significant R&D investments and advanced semiconductor fabrication facilities.

## ***Substitute products***

Both 32- and 64-bit x86 differ as to how their architecture lend themselves to substitution. We afford understanding of these two architectures separately as follows.

### **32-bit x86: High substitution of products**

Intel is the only viable competitor in the 32-bit x86 space and substitution of an AMD 32-bit processor with an Intel equivalent is trivial as AMD has historically developed and patterned processors after Intel's designs. The instruction code is the same for both AMD and Intel processors so the same software can run on both processors.

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<sup>7</sup> Intel had US\$48.368M in assets. AMD in contrast had US\$13.147M (Intel, 2007; AMD, 2007).

## **64-bit x86: Low substitution of products**

Intel is again the only viable competitor in the 64-bit x86 space. However, substitution is not trivial as software must be designed specifically for either the EM64T instruction code or the AMD64.

## ***Suppliers***

### **Mother Nature: A perpetual and inexpensive source of silicon**

A microprocessor is an integrated circuit built on a tiny piece of silicon that functions as a semiconductor<sup>8</sup>. Silicon is the eighth most common element in the universe by mass. On earth, silicon is the second<sup>9</sup> most abundant element in the crust, making up 25.7% of the crust by mass. There is no supplier-threat as Mother Nature appears to continue to be a reliable and inexpensive source of silicon in the foreseeable future.

### **In-house manufacturing processes**

Manufacturing capacity and modernisation are key differentiators in today's competitive market for microprocessors. In the race to pack more transistors in each microprocessor, transistors have gone as small as 45nm. Both AMD and Intel design and manufacture their own transistors and processor dies to speed new products and designs to the market. AMD and Intel are their own suppliers in this regard.

## ***Buyers***

### **Price-conscious and demand readily available products**

Buyers of microprocessors, both consumer and business end-markets are extremely conscious of published prices. Consumers in particular, are easily swayed by Intel's price-cuts as the 32-bit x86 space processors are easily substitutable. Both end-markets demand ready availability of products at price-cuts and new product or version introductions. Although it may be possible to estimate demand at new product or version introductions to meet customer demands, it is difficult when Intel launches a price-cut and AMD's single Dresden facility is unable to cope with any marketing reaction response.

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<sup>8</sup> A material whose electrical conductivity is between that of a conductor and that of an insulator.

<sup>9</sup> Oxygen is the most occurring element on earth.

## **AMD**

### ***Strengths***

#### **Computer graphics: ATI acquisition**

AMD acquired ATI in October 2006, hoisting it to become the world's third largest supplier of graphics cards and processors overnight (AMD, 2007). The ATI acquisition presents new opportunities for the company as both companies are in the business of computer data processing.

#### **Leadership in multi-core processors**

AMD pioneered the industry's move to multi-core processors. AMD was the first to deliver dual-core processors in its Opteron product line in 2005, making it the highest performance-per-watt of electricity leader. Intel later followed suit with its Core processor product line.

#### **Leadership in microprocessor power management**

AMD's PowerNow! is a speed-throttling and power-saving technology used by its processors to decrease the processor's clock speed when the computer is under low load or idle, reducing power consumption and heat generation. The ability to reduce power consumption and heat generation is important to extend battery power in computer notebooks and in today's context where government and environmentalists are focused on electricity consumption and its effects on the environment.

#### **Strong chipset designs**

The speed of a computer is only as fast as its slowest component. A computer processor may run at its fastest speed but it will be inhibited if connectivity to other components such as memory and other devices is slow. AMD's Direct Connect and participation in the industry's HyperTransport design allows for high speed access to all components in a computer using open standards.

#### **High-end performance and attractive pricing**

To spur demand and adoption of its microprocessors, AMD has traditionally priced its products at a lower price as compared to Intel. Intel being perceived as the industry

leader is able to command a premium for its products even though AMD's products are occasionally technologically more superior to Intel's. The lower-pricing makes AMD the highest performing processor per dollar.

### **64-bit x86 leadership**

Historically, AMD has developed and produced processors patterned after Intel's original designs. However, with 64-bit x86, roles were reversed and Intel is now in the position of adopting the architecture which AMD has created (AMD64) as an extension to Intel's own x86 processor line. Intel's response to AMD64 was the EM64T.

The superiority of AMD64 over Intel's original 64-bit implementation—the Opteron—was that it offered a seamless 32- to 64-bit transition for the industry. Switching to 64-bit Opteron required software applications to be rewritten. With AMD64, both 32- and 64-bit can co-exist, thus permitting the industry a gradual transition to 64-bit.

### **Products with option to upgrade**

An important AMD strength over Intel is that the company permitted end-user easy upgrades by simply replacing the microprocessor with a newer model; there is no need to overhaul the system board. This strength is complemented by its strong chipset designs where Direct Connect and HyperTransport will continue to be able to accommodate (newer) higher-speed processors as they become available.

### ***Weaknesses***

#### **“Second-rate to Intel” perception**

AMD as a licensee and manufacturer for Intel's x86 family of microprocessor has generally been perceived as having second-class products when compared to Intel. This unflattering perception unfortunately continues to persist to the present day.

## No aggressively published processor roadmap

Intel typically develops the next two generations of microprocessors simultaneously. For instance in March, Intel announced<sup>10</sup> its upcoming Penryn and Nehalem microarchitectures that will take the company past 2009. In contrast<sup>11</sup>, AMD's announcements are generally conservative and speak only of general designs.

## Weaker market coverage, distribution and marketing muscles

Intel covers the full microprocessor market with a product for each segment: from embedded devices, to handheld PDA phones to high-end servers. It also enjoys a strong distribution network with its processors being used in virtually all personal computers. AMD in contrast only saw recent partnerships with Acer, Asus, Dell, HP IBM, Lenovo and Sun Microsystems. Intel, with significant financial resources, frequently engages in price-cuts to drain AMD's marketing efforts.

## SWOT critical success factors

### Implications of external opportunities and threats for AMD

Opportunities/Threats	Critical success factors
Data centre heating and cooling requirements	AMD should capitalise on its leadership in microprocessor power management to spread the importance of using processors with environmentally friendly-designs.
Emergence of multi-core processors	The market is already moving towards multi-core microprocessor designs, thus there is no need to further aggressively communicate the benefits of such a design. AMD must however establish and continue emphasis that it is the leader in multi-core designs.
32- and 64-bit computing coexistence	AMD needs to emphasise the 64-bit value for consumers. i.e., how it affects their everyday use of computing (e.g., the inability to save files larger than 4GB, and computers that can use only up to 4GB in RAM).
The return of thin-client computing	Likely to be a fad that will ebb away like it did previously. Although this may be a threat to the desktop market, it is definitely an opportunity for the server market. As such, its potential effects to AMD cancel each other out as AMD is in both businesses.
Rapid technology advancements and new product introductions  x86 processor space is the fastest growing space	The microprocessor open-source movement offers an invaluable opportunity for AMD. Since it is difficult to enforce or protect IP rights, AMD should open-source its microprocessor design. Open-sourcing the microprocessor design is a plus point in marketing as it creates the perception that AMD is "technologically more advanced" and is more customer-focused.
Inability to enforce or protect IP rights.	Open-sourcing may also change the microprocessor market from a "push-market"—where Intel has traditionally "spoon-fed" manufacturers with roadmaps—to one of a "pull" where customers

<sup>10</sup> See <http://www.intel.com/pressroom/archive/releases/20070328fact.htm>.

<sup>11</sup> See [http://reviews.cnet.com/4520-3086\\_7-6715793-1.html](http://reviews.cnet.com/4520-3086_7-6715793-1.html).

	<p>demand what they value in microprocessor designs.</p> <p>Strategically, open-sourcing the AMD64 design opens R&amp;D to the entire community and promotes the development of new designs based on AMD's 64-bit x86 implementation (as compared to Intel's closed EM64T development).</p> <p>The microprocessor out-sourcing movement may thus be viewed as fully embracing AMD's customer-focused differentiation: "a customer-centric approach to innovation".</p>
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### Implications of existing competitors for AMD

Competition	Critical success factors
Intel's manufacturing prowess	The world-wide trend of increasing outsourcing of operations may allow AMD the opportunity to drive down fixed costs by outsourcing the foundries. As manufacturing knowledge is diffused through open-sourcing the microprocessor design, new microprocessors may be manufactured quickly by foundries that have developed the economies of scale to manufacture them en-masse and inexpensively.
Intel's marketing and financial prowess	<p>AMD has superior chipset designs in its Direct Connect and HyperTransport architectures. This complements AMD's strength in providing consumers with microprocessor upgrade options. AMD may downplay Intel's marketing co-op dollars by emphasising lower total costs of ownership (TCO) for consumers.</p> <p>Price-bundling with ATI graphics cards in the short-term also reduces the effects of Intel's price-cut wars as it is now more difficult for consumers to perform a direct price comparison with Intel's offerings. In the long-term, AMD should explore product-bundling by integrating the ATI graphics core in AMD processors.</p>

### The marketing strategy

In communicating the marketing strategy we employ the use of an extended Boston matrix in figure 1 (Ward and Peppard, 2002). The Boston matrix is only really useful in the growth and mature stages in the four-stage cycle of emergence, growth, maturity and decline during which strategies may change (Ward and Peppard, 2002).

#### **Market segmentation and targets**

The microprocessor industry is characterised by frequent design and product introductions. The utility of a computer starts diminishing as soon as it is purchased; a new microprocessor emerges, only to move into the decline stage as soon as the next design or model becomes available. Software applications create the "pull" in the computer industry as consumers demand the processor power that goes into the computer systems they purchase. To be "Microsoft Vista-ready", Microsoft

recommends<sup>12</sup> a 1GHz processor with 1GB RAM. The company even provides an upgrade advisor<sup>13</sup> that allows website visitors to check if their computers are ready for Windows Vista. Figure 2 summarises the targeted market segments in the *mobile*, *desktop*, and *server* markets.

32- and 64-bit x86	
Mobile	
Low-power (Sempron)	Desktop-replacement (Turion)
64-bit x86	
Desktop	
Low-cost, entry-level (Sempron)	High-end (Athlon)
Server	
All processor configurations (1, 2, 4, 8) (Opteron)	

Figure 1: Market segmentation and targets shaded

Industry attractiveness	High	<b>Invest</b> (Turion, Opteron)	<b>Niche?</b>
		<b>Harvest</b> (Athlon)	<b>Select</b>
	Low	<b>Defend</b>	<b>Divest</b> (Sempron)
		Strong	Weak
		Competitive position	

Figure 2: Policy/portfolio matrices

## Mobile and desktop segments

The desktop-replacement notebook (Turion) and high-end desktop (Athlon) market segments see the highest turnovers as consumers replace them frequently to cope with the ever-increasing application demands (e.g., gamers will keep upgrading to the newer processors for smoother game-play). The Turion is favoured by campus-/road-

<sup>12</sup> <http://www.microsoft.com/windows/products/windowsvista/editions/systemrequirements.msp>.

<sup>13</sup> <http://www.microsoft.com/windows/products/windowsvista/buyorupgrade/upgradeadvisor.msp>.

warriors that seek to run the same applications on their desktops while on the move, or to forego their desktops for a mobile device. In addition, many computer manufacturers often run back-to-school notebook purchase programmes with most institutions encouraging the use of notebook computers on campus (Moltzen, 2006; Sheppard, 1998).

In both segments, AMD should focus on the high-end customers who generate the highest repeat purchases. AMD should shift focus away from the lightweight mobile and low-cost entry-level desktops. These are generally purchased by low-profit and extremely price-conscious customers who delay upgrades and replacement of their computer purchases until the older systems cease to function.

From the perspective of the extended Boston matrix, AMD should hoist the Turion from its current *select* quadrant to the top-left *invest* quadrant and to *divest* resources from the low-power Sempron to other processor lines. AMD should also better *harvest* the high-end Athlon cash-cow by better marketing of its existing technical merits using consumer-speak.

### **Server segment**

In the server landscape, the x86 market is generally serviced by single- and dual-processor systems. There is however, an increasing trend in moving to systems with higher processor core counts. AMD has to continue to service the single- and dual-processor cash-cows while pursuing the quad- and dual quad- stars.

In addition, the 64-bit x86 industry remains undecided to standardise on Intel's EM64T or AMD's AMD64. AMD will benefit from seeing greater marketing to help it secure the 64-bit x86 market. From the extended Boston matrix perspective, AMD should *invest* in the Opteron.

## Dealing with the competition

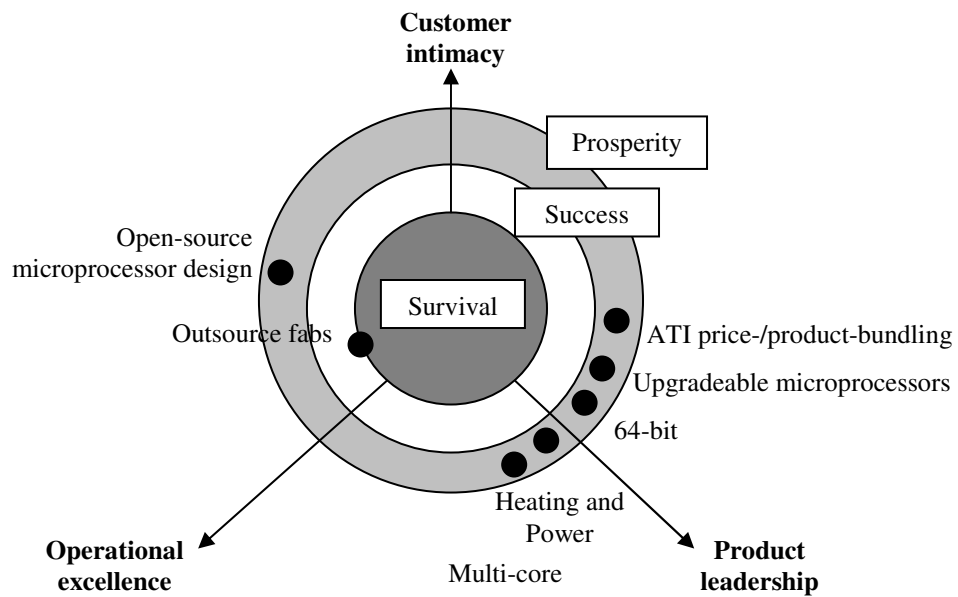


Figure 3: Dimensions of competence (Treacy and Wiersma, 1995)

In dealing with the competition, we employ the dimensions of competence (Treacy and Wiersma, 1995) to express alignment between internal capabilities, our marketing strategies and their requisites for success or future prosperity for AMD.

Marketing strategies	Internal capabilities and requisites
Open-source microprocessor design	Commoditising the x86 microprocessor market permits other manufacturers to base extension designs on the AMD64 architecture, possibly changing the microprocessor business from a “push” to a “pull” business. This is in alignment with AMD’s consultative approach to customer innovation.
Outsource fabs	Allows AMD to quickly work around Intel’s manufacturing prowess to bring products faster and closer to markets. In addition, when microprocessor design is commoditised, Intel’s manufacturing prowess no longer poses a threat as AMD will now have access to foundries all around the world.
ATI price-/product-bundling	In the short-term, AMD may initiate price-bundling with ATI graphics cards with a marketing tagline like “it works better with AMD” for ATI products.  In the long-term, AMD should explore product-bundling by integrating the ATI graphics core into AMD microprocessors.
Upgradeable microprocessors	AMD should market its lack of a product roadmap as a feature as its newer microprocessors will always be pluggable onto older system boards. Customers do not need to hold-out for the next design or to abandon older systems just to upgrade. This is marketable as a lower TCO for customers.
64-bit	Consumers generally do not understand the need for 64-bit x86 as they were never presented in layman terms. AMD should market 64-bit in layman terms (e.g., cannot have >4GB files or computers with >4GB RAM), and to quickly make 64-bit synonymous with AMD.

	The industry has not settled on Intel's EM64T or AMD's AMD64 standard. The standard that eventually gets adopted as the 64-bit x86 standard essentially takes control of the whole market.
Heating and power	AMD currently has the lowest power consumption per watt. The firm should market the green features and environmentally-friendly aspects of its processors.
Multi-core	AMD has leadership in multi-core processor design as it usually rolls out more powerful multi-core designs or ups the ante in processor core counts before Intel does.

## Channels

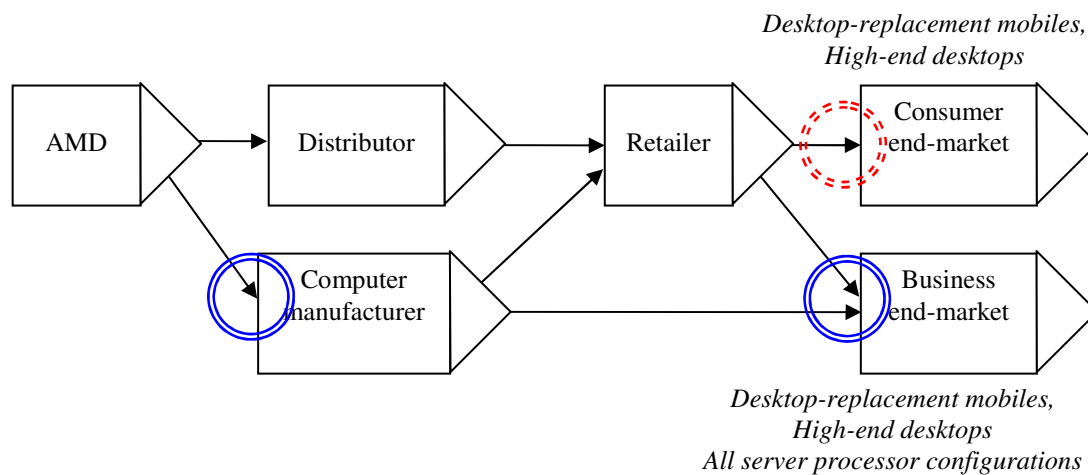


Figure 4: Value-chains of microprocessor flows to the market

The value-system of the microprocessor market culminates at the consumer and business end-markets. For both consumer and business end-markets, our promotion mix to *inform*, *remind*, *build* relationships with and to *persuade* customers will be based on a “pull” strategy. The dual-ringed circles in figure 4 indicate the points of “pull”: at *direct retail*, and at the *computer manufacturer*. For the business end-market, in addition to pulling from the market, we also employ the “pull” strategy at the computer manufacturer value chain.

## Direct retail consumer end-markets

### Targets

#### Desktop-replacement mobiles

The campus-/road-warriors that seek to run the same applications they are used to or are running on their desktops

#### High-end desktops

Hobbyists, computer gamers and processor-intensive application users (i.e., characterised by high-turnovers and frequent replacements).

## **Pricing**

Short-term price-bundling of microprocessors and ATI graphics cards allows AMD to charge a premium, and to minimise the effects of Intel's price-cuts as the customer can no longer make effective price comparisons—the microprocessor now comes bundled with a graphics card.

Continue to employ differentiated pricing as the newer processor models always command a premium.

## **Marketing communications**

### **Inform**

- Employ opinion leaders (or word-of-mouth) in consumer computer publications to provide reviews and benchmarks of AMD processor performance [against Intel processors].
- Sponsor events and retail businesses that are processor-/graphics-intensive such as computer gaming tournaments and LAN gaming retail outlets. These outlets permit AMD to tout the “AMD experience” with powerful processors and superior ATI graphics.
- Highlight the fun consequences of not going AMD, such as in LAN gaming: “It lasts longer”, or “Player died in gaming as the power ran out”. AMD's leadership in microprocessor power management permits desktop replacement notebooks to run longer than its competitors.
- Highlight the consequences of not going 64-bit x86 AMD in layman terms and in a fun manner to make it relevant to the consumer. For instance, one cannot have >4GB files or >4GB RAM in PCs (RAM/memory is important for the gamer).
- Ingredient-branding with a symbol that complements AMD's leadership in processor power management (e.g., the US energy-star logo).
- AMD's multi-core leadership with plug-and-play upgradeability provides road-warriors and processing power-demanding consumers to look forward to easy and inexpensive microprocessor upgrades.

### **Build**

- Future-proof: AMD processors can be easily upgraded by simply replacing the microprocessor with a newer model. This reduces the total cost of ownership for the consumer in the long-run as only the microprocessor requires replacement.
- Future-proof: The integration of both 32- and 64-bit on AMD microprocessors permits consumers to make the transition to the computing future as new 64-bit applications become available.

### **Remind**

- Regular processor updates to remind consumers that AMD is constantly innovating. The regular processor updates will be facilitated by open-sourcing the microprocessor design as design-collaboration with the community may help speed up processor development.
- Perpetual participation in back-to-school notebook purchase programmes to continuously remind the younger consumer generation that there is an alternative to Intel processors. Engaging the younger consumer generation also increases the chance they will continue to use AMD microprocessors as they move into adulthood.

### **Persuade**

- Emphasise AMD's future-proof capabilities and lower TCO through easy processor upgrades. Users of desktop-replacement mobiles and high-end desktops can always upgrade to higher-performing processors with a replacement of just the processor (unlike Intel where an overhaul of the system is required).
- Emphasise AMD's leadership in the 64-bit x86 space in layman terms. AMD processors offer the ability to run both 32- and 64-bit applications on the same processor at native speeds. Unlike Intel where 32-bit applications run slower and will require a complete rewrite to go 64-bit, AMD offers

the industry to gradually move up to 64-bit.

- Highlight to the customer that ATI graphics cards are optimised and work better with AMD microprocessors. Campus-/road-warriors or high-end users running graphics-intensive presentations will enjoy an improved visual experience.

## Business end-markets through computer manufacturers

### Targets

In targeting the business markets, it is important to be cognizant that the business markets frequently make purchases from retailers for smaller quantities, and direct from the computer manufacturer when they are able to achieve savings through bulk orders.

For purchases through direct retail, the promotional mix is as described in the previous table. Purchases through computer manufacturers require a different promotional mix and are described as follows.

### Pricing

Employ product-form differentiated pricing by charging a premium for server-based Opteron processors. The business markets are generally more willing and are more capable to pay a premium than consumers.

It may also be possible to command a premium in pricing through eventual product-bundling: the integration of the ATI graphics core into AMD multi-core processors (Turion and Athlon series) so that there is no longer a need for separate processor and graphics card purchases.

### Marketing communications

#### Inform

- Business consumers need to be educated with regards to their role in the industry heating/power concerns. Seminars on the eco-friendly aspects of AMD may be conducted, or the education may be jointly conducted with firms like Sun Microsystems who have recently also began to emphasise the eco-friendly aspects of their servers. It may also be possible to influence computer manufacturers to adopt colours that emphasise the eco-friendly aspects of AMD processors (e.g., white for cool, or green for a general eco-friendly emphasis).
- Heating and power concerns should be translated to monetary terms; for instance in monetary savings through lower consumption of power and air-conditioning facilities: "It only makes cents to go green".
- Highlight the consequences of not going 64-bit x86 AMD: End consumers may ditch their systems and switch to other manufacturers that use AMD if they are not able to make a gradual transition from 32- to 64-bit computing. Highlighting Intel's 64-bit solution requiring a complete re-write of applications may facilitate this communication.
- Ingredient-branding with a symbol that complements AMD's leadership in processor power management (e.g., the US energy-star logo).
- Highlight AMD's multi-core processor design leadership and the design being well-suited for today's applications that utilise much server-side processing. Server-side processing typically requires programs to run in parallel; multi-core processing is suited to such parallel execution as each core can run programs independently of the other cores.

#### Build

- Future-proof: AMD processors can be easily upgraded by simply replacing the microprocessor with a newer model. This reduces the total cost of ownership for the customer in the long-run as only the microprocessor requires replacement.

- Future-proof: The integration of both 32- and 64-bit on AMD microprocessors permit customers to make the transition to the computing future as new 64-bit applications become available.
- Collaborative microprocessor designs through the open-source community. Business end-markets and computer manufactures feel they now have greater ownership of the 64-bit x86 microprocessors produced by AMD when they have access to architecture details online.

#### **Remind**

- Regular processor updates to remind consumers that AMD is constantly innovating. The regular processor updates will be facilitated by open-sourcing the microprocessor design as design-collaboration with the community may help speed up processor development.

#### **Persuade**

- Emphasise AMD's future-proof capabilities and lower TCO through easy processor upgrades. Users of desktop-replacement mobiles, high-end desktops and servers can always upgrade to higher-performing processors with a replacement of just the processor (unlike Intel where an overhaul of the system is required).
- Emphasise AMD's leadership in the 64-bit x86 space in layman terms. AMD processors offer the ability to run both 32- and 64-bit applications on the same processor at native speeds. Unlike Intel where 32-bit applications run slower and will require a complete rewrite to go 64-bit. AMD offers the industry to gradually move up to 64-bit.
- Convince computer manufacturers that consumers will demand AMD. HP, IBM, Lenovo and Sun Microsystems have already started introducing AMD in their product offerings. Other manufacturers should go AMD too to avoid missing the bandwagon.
- Highlight to both computer manufacturers and the business end-market that ATI graphics cards are optimised and work better with AMD microprocessors. High-end users running graphics-intensive presentations (e.g., in CAD/CAM designing) will enjoy an improved visual experience.

## **Concluding remarks**

In this case study, we offer AMD a possible marketing strategy to break Intel's grip on the x86 industry. The x86 industry is currently in a flux as it makes the transition from 32- to 64-bit computing. AMD, with its leadership in multi-core computing, 32- and 64-bit integration, ATI graphics and other various strengths can do well in exploiting this opportunity to gain a new foothold in the industry—in Intel's words: one that will enable it to leap ahead<sup>14</sup> of the competition.

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<sup>14</sup> "Intel. Leap ahead.™" is a trademark of Intel Corporation.

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