

## INDUSTRY OVERVIEW

Certain information and statistics set out in this section and elsewhere in this document relating to the industry in which we operate is derived from various official, market and other third party sources, including information obtained from HKTDC and information provided by iSuppli Corporation ("iSuppli"). Based on our review of (i) the background information, credentials and qualification of iSuppli; (ii) the bases and assumptions made by iSuppli; (iii) the research methodology adopted by iSuppli; and (iv) statistics prepared by other market participants and/or research companies and based on our understanding and knowledge regarding the consumer electronics and netbook industry, we believe that the sources of these information and statistics are appropriate sources for such information and statistics and have taken reasonable care in extracting and reproducing such information and statistics. We have no reason to believe that such information or statistics is false or misleading or that any fact has been omitted that would render such information or statistics false or misleading. The information and statistics have not been independently verified by us, the [●], the [●], the [●] or any of their respective affiliates or advisors or any other party involved in the [●] and [●] and no representation is given as to their accuracy. This information may not be consistent with information from other sources.

### SOURCE OF THE INDUSTRY INFORMATION

We commissioned iSuppli, an Independent Third Party, to conduct an analysis of, and produce a report, released in August 2009, on the consumer electronics and netbook industry for inclusion in this document at an aggregate fixed fee of US\$10,000. iSuppli is the global leader in technology value chain research and advisory services and deliver information about the entire electronics value chain. iSuppli is headquartered in the United States and has offices in Europe and Asia.

The methodology used by iSuppli for the preparation of the report involved conducting both primary and secondary research obtained from numerous sources such as interviews, surveys, and third party sources, utilizing its long-term industry expertise and mathematical modeling to determine the market forecasts and historical performance of consumer electronics and netbook industry.

Considering the long-term research experience in the consumer electronics industry, the experience and qualification of the industry expertise, the research methodology adopted and the reputation of iSuppli, our Directors believe that the sources of the information and statistics are appropriate sources for such information and statistics and have taken reasonable care in extracting and reproducing such information and statistics.

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### CONSUMER ELECTRONICS INDUSTRY

#### Overview of consumer electronics industry

##### *Types of consumer electronics*

The increasing adoption of digital technology has given rise in the consumer market to a multitude of electronic devices, a significant number of which are designed to provide audio or video entertainment and personal use. Examples of audio devices include, but are not limited to, CD and MP3 recorders and players, personal stereos, HiFi systems, and radios. Among video devices, examples can be found in flat-panel television sets, set-top boxes, portable media players, DVD players and recorders, camcorders, digital still cameras, and video games consoles (hand-held and plug-in consoles).

In addition, a variety of consumer electronic devices falls outside of the pure audio and video entertainment space. These include mobile phones, desktop and notebook computers; fitness and home healthcare products such as digital pedometers, heart rate monitors, and consumer grade digital blood pressure monitors.

##### *Digital consumer electronics with digital signal processing capabilities*

Digital signal processing is the processing of signals by digital means. A signal consists of, amongst other information, a stream of numbers that are processed by performing numerical calculations. In the case of digital consumer electronics, this processing usually refers to the transformation of digital signals from one form to another through the performance of numerical computations. An important and common example of the use of digital signal processing is in products that require audio and video compression and decompression.

Digital signal processing can be performed on a variety of computing and logic circuits, including application-specific integrated circuits ("ASIC"), application-specific standardized products ("ASSP"), dedicated digital signal processors (also referred to as a DSP), microcontroller units ("MCU"), application-specific microprocessors ("MPU") and programmable logic devices ("PLD").

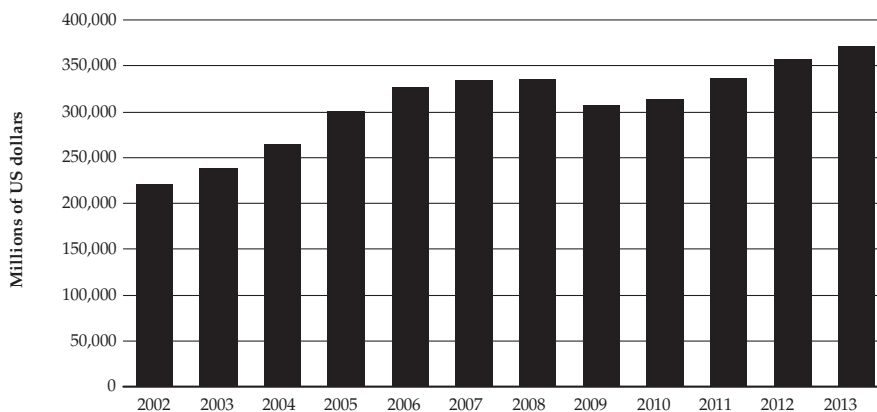
To enable digital signal processing, firmware is embedded into circuits. Firmware enables the device to perform its basic operations and to manage electronic component functions. Digital electronics with embedded firmware include audio players (MP3 and WMA), digital still cameras (JPEG), camcorders (MPEG-4), DVD players, set-top boxes, A/V receivers, HDTV (MPEG-2 and AC-3), smart phones, mobile Internet devices, mini notebooks, digital storage devices such as USB, memory sticks and portable hard disk drives, and specific-functions devices such as biometric monitors, motion detection devices, global positioning system devices, mobile televisions and games consoles.

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### Market size

The consumer electronics market is a market worth US\$335 billion in OEM revenues in 2008. Revenue is forecasted to reach approximately US\$308 billion in 2009 and is projected to grow further to approximately US\$371 billion by 2013 (Diagram i), representing a CAGR of 5% from 2009 to 2013. Despite the impact of the global economic downturn, the market is expected to recover, reaching US\$314 billion in 2010.

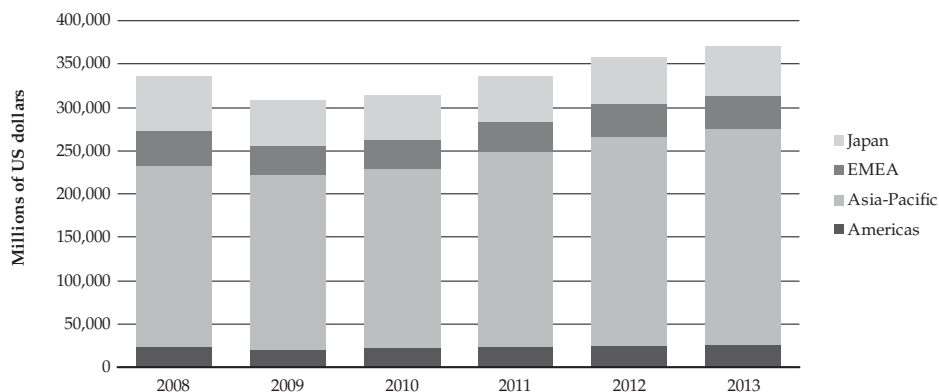
**(Diagram i) Consumer electronics equipment revenue, 2002-2013**



Source: *iSuppli*

As illustrated below (Diagram ii), the Asia-Pacific region is and will continue to be the region where the majority of consumer electronics are manufactured, especially when compared to the regions of Japan, EMEA and the Americas, respectively.

**(Diagram ii) Historical and future market size (US\$ million) by major countries/regions, 2008-2013**



Source: *iSuppli*

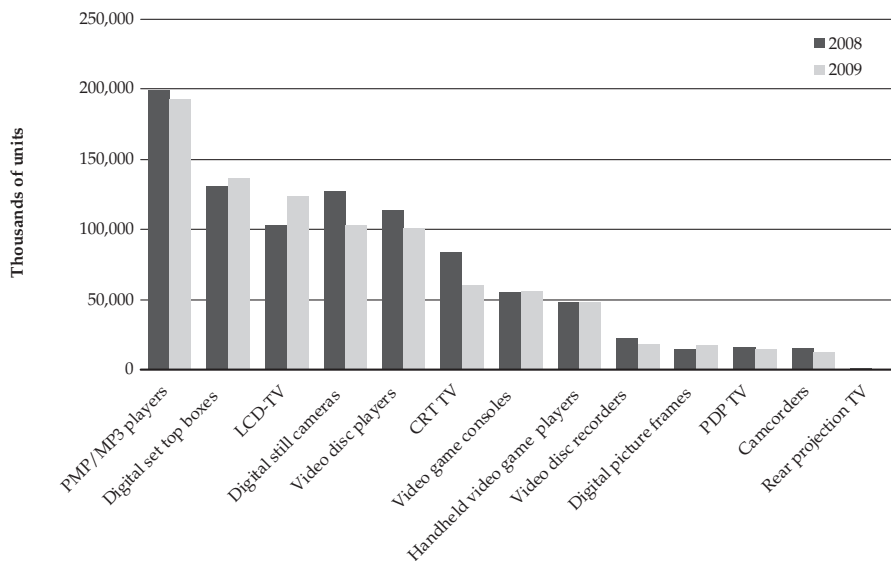
## INDUSTRY OVERVIEW

The global economic downturn has had varying effects on different segments of the consumer electronics market. The implementation of different pricing strategies and product mix by various segments have been aimed to help improving volume and to address the reduced consumer spending budgets, resulting in expected growth in volume for some segments, such as, digital set-top boxes, LCD televisions, video game consoles, handheld video game players and digital photo frames. In particular, through its flexibility in adjusting product mix, the portable media player ("PMP") and MP3 segment will continue to enjoy the largest volume when compared to other segments.

The PMP/MP3 segment is a high volume segment because the devices are personal devices, and unlike a television, its use will not typically be shared with many other people. Furthermore, consumers may purchase more than one device for a number of different uses, such as, a larger device for viewing video content, a second device for use in the car and a third device for use whilst exercising.

With the variety of different devices available on the market, ranging from the high-end with wireless connectivity and touch screen capability to the simple small storage device with no display, the OEMs are able to provide devices that enter the market at different price points in order to suit a wider range of consumer budgets. Consequently, this flexibility in product mix has allowed the segment to adapt and adjust throughout the different cycles of the economy.

**(Diagram iii) Key segment volume changes in 2009**



Source: iSuppli

Following a drop in revenue in 2009 as a consequence of the global economic downturn, consumer electronics revenues are expected to rise in 2010. LCD televisions, the largest segment by revenue (without taking into account of consumer white goods/appliances), will continue to be the largest segment through 2013. As consumers around the world make the transition to high-definition flat-panel LCD televisions, alternative television segments such as CRT, rear projection, and plasma will continue to

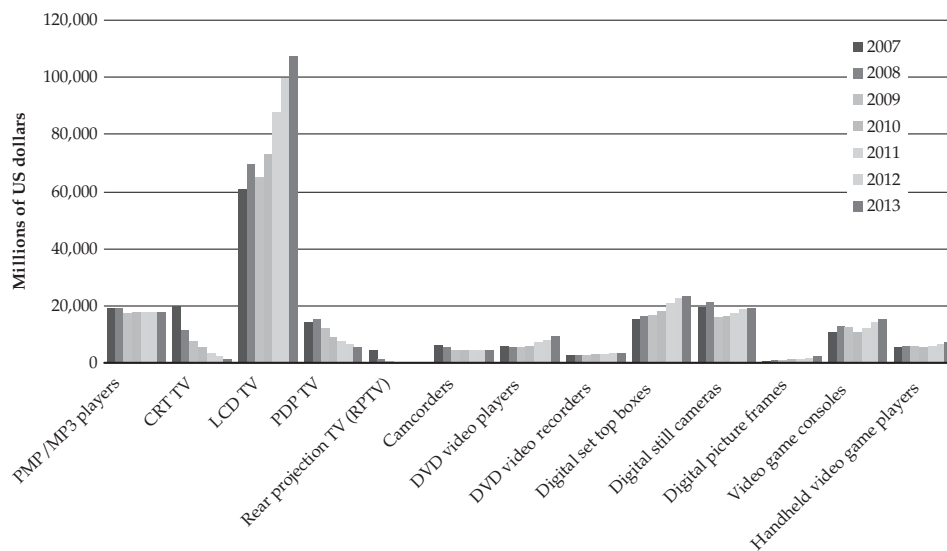
## INDUSTRY OVERVIEW

decline. Set-top boxes ("STB") will also see an increase in revenue as a transition to high-definition televisions by consumers will subsequently raise the demand for premium features such as HD support and DVR.

Video game console and portable game device manufacturers will also continue to increase their revenues throughout the forecast period, especially when these manufacturers launch their next generation platforms.

While revenue from sales of PMP and MP3 players have also been impacted by the global economic downturn, the impact was slightly delayed compared to other devices. This is likely because consumers were able to "shift down the mix" to the lower-priced devices and continue to purchase these devices as popular holiday gifts. This segment is expected to continue recovering starting in 2010, however growth will be challenging with the influx of iPhone-type mobile phones that are gaining popularity.

**(Diagram iv) Consumer electronics OEM factory revenue by key segments, 2007-2013**



Source: iSuppli

### Overall trends

#### *Technologies driven*

As technologies progress and become more standardized, overall cost of production declines. Numerous technologies that were previously only available in high-end electronic devices are now available to a wider variety of devices. For example, WiFi connectivity, an optional feature for notebook computers a few years ago, are now available in portable media players. Global positioning system ("GPS") technology, originally designed for military use and subsequently for serious outdoors enthusiasts, is available for use today in automobiles, mobile phones, add-ons for digital cameras and in personal/portable navigation devices.

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Taking advantage of the relatively greater ease of manufacturing devices, the manufacturers of digital consumer electronics are currently producing devices of greater sophistication and advanced functionality. In turn, these sophisticated and advanced devices attract consumers and increase their willingness to purchase the latest devices. In turn, consumers are demanding more for their money, expecting greater functionality and being more prone to compare features among competitive devices. Often, customers will pay a reasonable premium for devices with a greater number of functions.

### *"Smart" devices*

Not only are the consumer electronic devices becoming more enriched with features, they are becoming "smarter" by leveraging the processing power of DSP, ASIC or MCU semiconductor devices. These technologies, which are being adopted at greater amounts each year, allow for more sophisticated programming and complex algorithms that, in turn, enable smarter features and functionality. At present, there are smart phones capable of receiving emails from the Internet and provide navigation via GPS, and personal audio players that voice out song titles.

### *Convergence of personal/notebook computers, audio/video devices and mobile phones*

As network, communication infrastructures and multimedia contents are becoming more conveniently available, consumers have increased their reliance on electronic devices to act as their primary gateway to voice calls, Internet browsing, audio and video applications, and imaging display.

Driven by silicon manufacturing and architectural advances, the processing performance of mobile phones, audio and video players are nearing that of PCs and notebook computers. These devices are able to run identical or highly similar fundamental operating systems ("OS") and graphical user interface ("GUI") as PCs. On the other hand, driven by expanding market, PC chip manufacturers are producing scaled-down PC chips that power netbook computers.

Consumers who have previously used notebooks for accessing emails and the Internet have changed to use netbooks and mobile devices such as mobile phones, PDAs, and portable media players to access information, such as emails to audio and video content via wireless services for hand-held devices and wireless networks (e.g. 3G/3.5G, and WiFi).

The availability of network infrastructure and technology advancements and consumer mobility needs, are driving the convergence of consumer electronics devices with "on-the-go" capabilities, and PC-like functionality. This gives rise to a new class of consumer electronics devices known as mobile Internet devices ("MID").

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### Specific product trends and markets

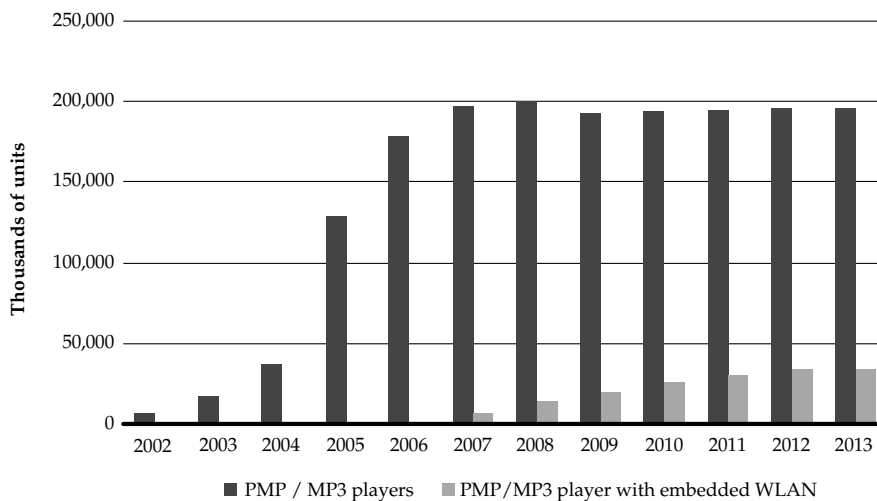
#### *Portable media player (transforming into MID)*

Worldwide unit shipments for MP3 players and portable media players ("PMP") together is forecasted to reach 196 million units in 2013, up from 178 million units in 2006. The PMP market is extending into MID market as wireless technology is added to provide connectivity to the Internet.

From 2002 to 2008, shipments of PMP/MP3 players increased significantly from 6.8 million units to 199.7 million units, representing a CAGR of approximately 75.6%. However, due to market maturity, the shipment volume of PMP/MP3 players is expected to remain relatively stable over the next few years.

A decline in the price of wireless chipsets in recent years has led to increasingly more PMP/MP3 players being embedded with wireless technology and allowing consumers to access the Internet. The number of PMP/MP3 players embedded with WLAN is forecasted to increase from 14.4 million units in 2008 to 33.5 million units in 2013, accounting for 7.2% and 17.1%, respectively, of the total number of PMP/MP3 players.

**(Diagram v) Shipment of PMP/MP3 devices (standard and with network connectivity)**



Source: iSuppli

#### *Market share*

The market for PMPs and MP3 players is fragmented. While Apple Inc. ("Apple") is the market leader, many player brands are available in the United States. In the PRC more than hundreds of products are available from over 150 brands. The number of companies that are actually responsible for manufacturing the players in the PRC and elsewhere accounts for an even greater number, estimated at up to 200.

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Apple, the market leader, shipped 55 million units in 2008 for a market share of 27.8%. Philips was the second largest supplier, with approximately 3.5% of the market. Creative and Sony was third and fourth largest, respectively.

**(Table i) Worldwide PMP/MP3 market share, 2008**

|           | <b>Shipments</b><br><i>(thousands of units)</i> | <b>Market share</b> |
|-----------|---|---------------------|
| Apple     | 55,434  | 27.8%               |
| Philips   | 6,890   | 3.5%                |
| Creative  | 5,614   | 2.8%                |
| Sony      | 5,320   | 2.7%                |
| SanDisk   | 4,762   | 2.4%                |
| Samsung   | 4,357   | 2.2%                |
| Others    | 117,306   | 58.7%               |
| <br>Total | <br>199,683                                     | <br>100%            |

Source: *iSuppli*

*Key market drivers for growth of MP3/PMP*

(I) Internet and broadband connectivity

When compared to other consumer electronics devices, PMP/MP3 players take a greater advantage of broadband Internet access because a majority of the music and video content played on PMP/MP3 players is downloaded from the Internet or copied from existing CDs to PCs and notebook computers, and then "side loaded" onto the players via a USB cable. However, given the increasing number of WiFi access zone and hot spots, users will increasingly rely on their WiFi players to download content directly from the Internet.

(II) Widespread audio and video content availability

Audio

The worldwide broadband digital music market grew to US\$1.7 billion in revenue in 2007, with a split between downloads and subscriptions of 77% and 23% respectively. Growth in both segments will continue to be strong through 2012, although the music downloads will expand more rapidly than subscriptions.

The broadband download music market skewed heavily toward single-track downloads, which is a characteristic expected to continue.



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While Apple's success has been based primarily on the single-track download music model, some of its competitors have favored a subscription-based business model. Typically, subscription-based business models allow access to a library of up to 2 million tracks for a fixed monthly fee of approximately between US\$7 and US\$10. Many major digital music distribution services favor the subscription model, although some offer both options. Major subscription services providers include Real Networks, Napster, and AOL Music. As the trend of music downloading continues, it will spur both the growth of online digital music and stimulate the PMP/MP3 market.

### Video

The market for video content downloads is currently in the early stages of growth. However, this segment is expected to grow much more rapidly over the next few years. The worldwide broadband digital paid video market will grow from US\$621 million in 2007 to US\$6.7 billion in 2012.

The broadband digital video market includes a combination of television shows, music videos, and videos downloaded to PCs, notebooks, PMP/MP3 players, and other devices.

The amount of free video content is also increasing rapidly. The sources include new forms of advertising, news services, and "home grown" content, such as YouTube.

### (III) Incorporation of new features into PMP/MP3

The widespread of audio and video content download is driven by the decline of the price of NAND flash and other chipsets or components featuring new functionality, allowing manufacturers to increase storage capacity (critical for video content) or implement new features such as WiFi connectivity, Bluetooth connectivity, and larger displays featuring new technologies such as touch-screens.

In summary, the increased demand for audio and video content as well as other new features on PMP/MP3 players have made these products more appealing to consumers. With PMP/MP3 players becoming a lifestyle product, some consumers own more than one player for use with different purposes, for instance, a consumer may have a larger player as the primary player and a smaller player used for fitness activities.

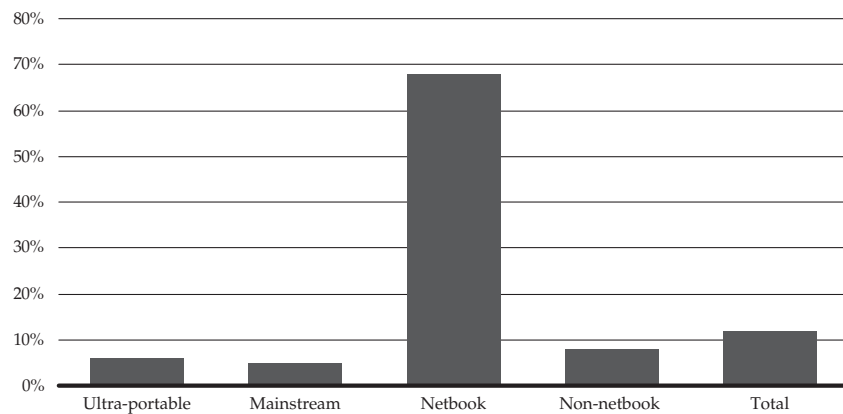
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### Netbooks

Netbooks are notebook computers that runs a fully functional operating system, which includes local storage capability, a keyboard and with wireless networking connectivity. Netbooks typically weigh less than three pounds, has a screen size of 7 to 10.2 inches, and are priced at less than US\$600. The netbooks are primarily focused on Internet-centric capabilities and mobility.

For consumers who require only a basic computing experience, the netbook satisfies the need for a cheaper mobile computer and thus will be a key growth driver for the 2009 PC market.

(Diagram vi) Shipment growth by notebook segment, 2009



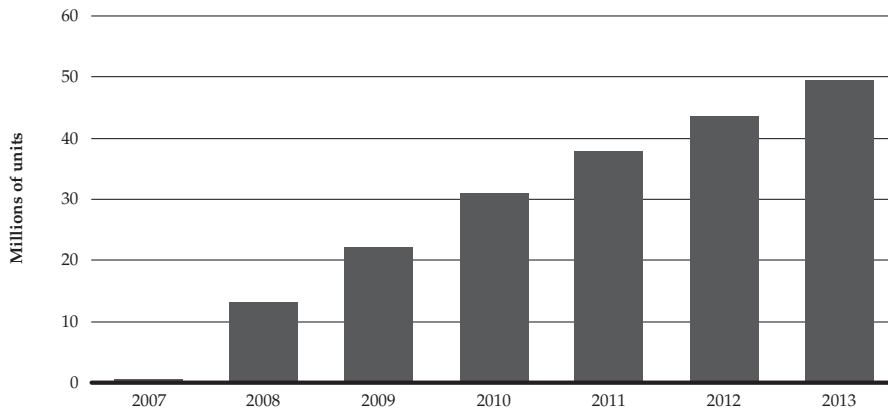
Source: iSuppli

### Worldwide netbook forecast

Netbook shipments are expected to reach more than 22 million units worldwide in 2009, compared to overall notebook shipments of 156 million units.

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**(Diagram vii) Netbook shipment forecast, 2007-2013**



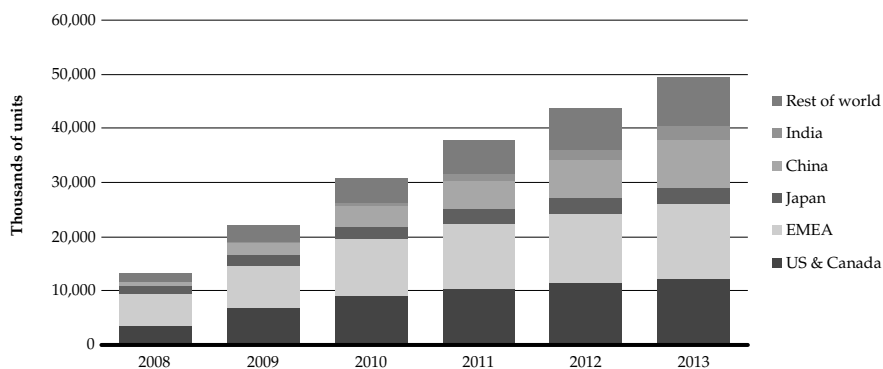
Source: *iSuppli*

### Worldwide regional netbook forecast

Despite its original focus on emerging markets, the netbook platform has gained significant growth in the United States and EMEA, where the PC markets are mature. These two regional markets are forecasted to account for over 50% of worldwide netbook shipments throughout the 2008 to 2013 forecast period.

The PRC is forecasted to emerge as the next single largest market for the netbook platform, accounting for 17.5% of worldwide netbook unit shipments in 2013. In China, the netbook market is forecasted to grow by 260%. Netbooks are also poised to grow rapidly elsewhere, at 137% in North America, 88% in Latin America, and 81% in EMEA.

**(Diagram viii) Regional netbook shipments forecast**



Source: *iSuppli*

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### Key market drivers

#### (I) Cheaper platforms

At lower price points, netbooks are more affordable to consumers and will accommodate the considerable demand for cheaper mobile computing platforms.

Furthermore, with the global economic downturn and the lowered consumer propensity to spend, the netbook can serve the needs of consumers with less disposable income or consumers that are after lower prices.

#### (II) New market segmentation

In a reversal of the historical trend, the PC industry is currently undergoing a change in platform shipment mix in which mobile computers now ship more than desktop computers.

With the processor and graphics performance of the notebook computer now comparable to that of the desktop PC, the difference between the two computing platforms have become smaller.

In the same way, a change in shipment mix from desktop to notebook computers illustrates the increasing demand for mobile computing platforms and the declining demand for desktop computing platforms.

Netbooks remain targeted almost exclusively at the consumer PC market as their performance and technical specifications are insufficient to meet the requirements of the market. Possessing a very small form factor that aids mobility, netbooks can be obtained at a significantly lower price than the higher priced and business-focused ultra-portable notebooks that are currently on the market.

The matured PC markets are the key end markets for netbooks for a number of reasons, including a price point that is sufficiently low to allow the purchase of netbooks as a second or third PC, or as a first PC for children, teenagers and senior citizens.

### *Fitness monitors*

#### Market size

Fitness monitors have a large selling price range. Polar Electro Oy and Suunto Oy, producers of sports instruments and heart-rate monitoring equipment, had sales of 161 million Euros in 2004 and 72 million Euros in 2005, respectively.

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### Key market drivers

According to American Heart Association, physical inactivity is a major risk factor for cardiovascular disease, and most Americans are not physically active enough to gain any health benefits. The guideline for healthy adults aged between 18 to 65 for physical activity is at least 30 minutes of moderate intensity activity for five days of the week.

Pedometers can be used to count the steps taken, and as a tool to motivate physical activities, while heart rate monitors can be used to measure the intensity of physical activities. Technology that captures and measures the physical activity has recently been the focal point for health plans who seek tangible data on the effectiveness of wellness solutions.

### Pedometers

In 2008, Apple and Nike, Inc. released an iPod sports kit, a device which measures and records the distance and pace of a walk or run. The sports kit consists of a small accelerometer attached to or embedded in a shoe, which communicates with the receiver plugged into an Apple iPod Nano, or directly with an Apple iPod Touch or iPhone. The sports kit records the workout data and can be synchronized and stored on a designated website for analysis of the runs and share motivation with runners from across the world. There are other brands, such as Omron and Timex, that also offer pedometers products.

### Heart rate monitors

Some monitors transmits heart rate data from a chest strap to a wrist watch-like monitor using wireless technology. There are some strapless products in the market aimed at improving user comfort.

There is a growing number of "fitness phones" and MP3 players incorporating fitness monitoring features and websites that offer data tracking and advanced analysis for users to create personalized training plans, track their performance and share their achievements with others.

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### THE EFFECT OF OUTSOURCING AND MARKET CONSOLIDATION IN THE VALUE CHAIN

#### Challenges faced by consumer electronics makers

With the consumer electronics market rapidly evolving, the makers of consumer electronic devices are under heavy competition to be the first to market and introduce devices that are unique and differentiated (see Table i for a ranking of leading OEMs). Successful devices in the consumer market are quickly matched and challenged by similar competitive devices, forcing makers to enhance their devices and support emerging technologies at a fast and continual basis.

The rise of "smarter" digital consumer electronic devices, with more complex features requires the application of extensive research and development, bringing more challenges to the makers. Manufacturers need to maintain a balance between keeping abreast of new technology, shortening development cycle in order to deliver time-to-market products to the marketplace, and allocating effort and energy in working with IC manufacturers.

For makers pursuing growth opportunities, a realignment of their product development strategy is imperative for introducing innovative products at faster time-to-market and with significant cost savings.

#### Challenges faced by consumer electronics manufacturers

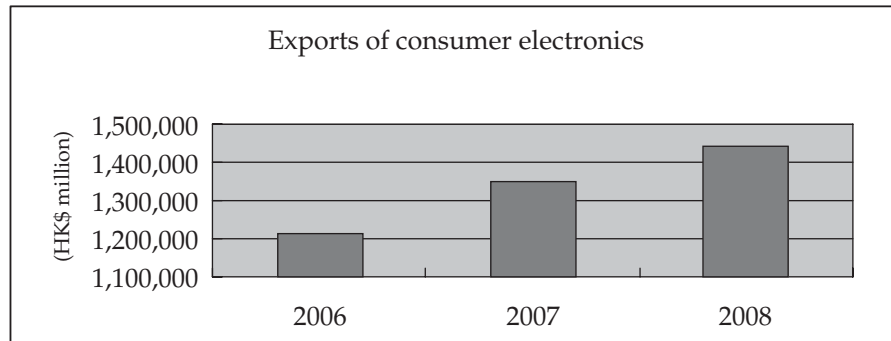
The PRC is the world manufacturing hub with factories located mainly in Guangdong province, the PRC where many OEM and EMS are located, serving their customers, such as, ODM, OBM and brand name companies. In 2007, the electronic information industry of Guangdong Province, the PRC, recorded a production value of RMB1,396.7 billion, representing a year-on-year growth rate of 16.8%. The companies are facing challenges from rising wages, appreciation of RMB and the PRC's new Labor Contract Law. The global economic downturn has been a catalyst for these manufacturers to rise in the value-chain, and to look for new business opportunities. In their effort to moving away from low technology and labor intensive business, they face difficulties in upgrading their technology base and developing higher value products.

Pearl River Delta is the centre of the electronic information industry of Guangdong Province, the PRC. Export of electronic information industry was US\$194.1 billion in 2007, representing 21.8% year-on-year growth rate, and accounts for 40.1% of national export of electronic information industry.

There were approximately 58,000 factories operated by Hong Kong companies in the Pearl River Delta. In 2007, there were more than 10,000 Hong Kong-owned electronic factories in the Pearl River Delta. Hong Kong manufacturers of finished electronic items produce mostly on OEM or ODM for reputable brand names for the overseas market. Hong Kong is the world's second largest exporter of calculators, radios, telephone sets, sound recording apparatus, computer parts/accessories and video recording/reproducing apparatuses (including DVD/VCD recorders/players) in 2009, with a total export of electronics products of HK\$1,439.2 billion in 2008, which represents a year-on-year growth rate of 6.7%.

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**(Diagram ix) Hong Kong exports of consumer electronics, 2006-2008**



Source: HKTDC

### The rising demand for design companies

Design companies, with extensive knowledge in both IC technology and consumer electronics industry, act as the bridge between makers and IC manufacturers. They participate in the design process at the early stage and they add value to the functional design and implementation of the products.

Outsourcing has reached the highest level of the manufacturing supply chain which extends to research and development. By outsourcing research and development offshore, companies can freeze a portion of their research and development budgets while growing their product offerings. Currently, some Fortune 500 companies in consumer electronics are purchasing complete designs of some digital devices from Asian developers, adapting them to their own specifications, and then marketing under their own brand names. Asian contract manufacturers and independent design houses have become forces behind many devices, ranging from mobile phones, laptops and high-definition televisions to MP3 music players and digital cameras.

**(Table ii) Leading digital consumer electronics manufacturers in the world**

#### Leading digital consumer electronic manufacturers in the world\*\*

- LG
- Panasonic
- Philips
- Samsung
- Sharp
- Sony
- Toshiba

\*\* Includes home appliances

Source: iSuppli

The challenges faced by manufacturers to move up the value chain have opened expansive business opportunities to design houses. Those manufacturers who desperately require the need to source design services, research and development and technology support will consider the design companies as great competition to their quest towards business transformation.