

# FUTURE HORIZONS

Presents

## Post-Forum Summary “International Electronics 2007”

16th Annual International Electronics Forum

*"Where The International Electronics Community Meet"®*

Under The Auspices Of The Hellenic General Secretariat For Research & Technology, Ministry Of Development & ELKE.  
With The Support Of The Federation Of Hellenic Information Technology & Communications Enterprises

### *Semiconductor 7.0 ... Powering The New Industry Paradigms*

**Highlighted below are some comments fed back from our delegates:**

"A truly world-class event, well-organised and executed, with great speakers, attendees, excellent location and ambiance."

"This forum has picked up the gauntlet from where first Rosen, InStat and then Dataquest left off."

"An excellent event - delivered to high expectations. The best semiconductor event I've attended, with an excellent quality of attendees & speakers."

"The concept of presentations and networking is excellent. The balance is really good."

"Having a sense of the attendees was enormously valuable as it let me set up multiple 1:1 meetings."

"As a first-timer, I very much enjoyed participating in the meeting. Future Horizons ran a very well-oiled machine and the attendance was impressive. The forum was well organised and informative and the arrangement of the accommodation and the events was outstanding."

"A 'must do' for every serious industry executive's calendar ... I can do serious business here."

"I must say that it was superb, both professionally and socially."

"As always, a very informative and excellent networking opportunity. Thanks again."

"Thank you to the Future Horizons team for a fantastic event; once again you exceeded past achievements and expectations."

"The big difference between Future Horizons' Forum and similar events is I go to the others simply to steal ideas; I come to Future Horizons to share and discuss ideas."

## ***"Probably The Best Global Industry Networking Event Ever"®***

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Forum Photographs





**May 2-4, 2007 - Plaza Resort Hotel, Anavyssos, Athens, Greece**

## **IEF2007 – Post-Forum Summary**

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### **Forum Programme**

#### **Thursday 3<sup>rd</sup> May 2007**

08:30-08:45 **Introduction & Welcome - Plaza Resort “Gaia Ballroom”**

Malcolm Penn, Chairman & CEO, Future Horizons

08:45-09:00 **Welcome Address**

Ioannis Tsoukalas, General Secretary For Research & Technology  
Ministry Of Development, Government Of Greece

#### **Session 1 “Shifting Industry Paradigms”**

09:00-09:30 **Convergence & Divergence In Parallel For The Ubiquitous Era**

Satoru Ito, Chairman, Renesas Technology Corp

09:30-10:00 **Being Connected, Now & In 2015**

René Penning de Vries, Senior VP & CTO, NXP Semiconductors

10:00-10:30 **Future Trends In The Optoelectronics Industry**

Michael Lebby, President & CEO, OIDA

10:30-11:15 *Coffee Break - Networking/Informal Discussions*

#### **Session 2 “Driving The Changes”**

11:15-11:45 **Technology, Business & Finance Trends In Microelectronics**

Philippe Geyres, CEO, Oberthur Card Systems

11:45-12:15 **OLED Display Technology: Hype Or Reality**

Myrddin Jones, CEO, OLED-T

12:15-12:45 **Electronics Trend On Indesit Products**

Davide Aloj, Product Design Manager, Indesit Company

12:45-14:00 *Forum Lunch*

#### **Session 3 “Infrastructure Changes”**

14:00-14:30 **China's Consumer Electronics Market Review & Expectations**

Richard Chang, President & CEO, SMIC

14:30-15:00 **The India Semiconductor & Electronics Sub-System & Its Evolution**

Poornima Shenoy, President, India Semiconductor Association

15:00-15:45 *Coffee Break - Networking/Informal Discussions*

#### **Session 4 “Market Forecasts”**

15:45-16:30 **Worldwide Semiconductor Market Outlook**

Malcolm Penn, Chairman & CEO, Future Horizons

16:30-17:00 **Key Market Drivers, Applications & Design**

Chris Ryan, Industry Analyst, Future Horizons

17:00-17:15 **Forecast Q&A**

19:30-22:30 **Forum Fiesta** (*Coaches departs hotel front lobby at 19:00*)

#### **Friday 4<sup>th</sup> May 2007**

08:30-08:40 **Opening Remarks** - Malcolm Penn, Chairman & CEO, Future Horizons

08:40-08:45 **Welcome Address** - **George Karanikolos**, Secretary General, SEPE

#### **Session 5 “The Strategic Imperative”**

08:45-09:15 **Smart Systems: The Role Of Innovation & Hybrid Technologies**

Salvatore Coffa, R&D Director SMG, STMicroelectronics

09:15-09:45 **Software - The X Factor**

Chris Turner, SC Business Development Manager, Cambridge Consultants

09:45-10:15 **Power Is Everything**

Robert Ober, Fellow, Office of the President, LSI Corporation

10:15-10:45 **SC Production Equipment - New Opportunities & Challenges**

Tetsuro (Terry) Higashi, Chairman & CEO, Tokyo Electron

**May 2-4, 2007 - Plaza Resort Hotel, Anavyssos, Athens, Greece**

## IEF2007 – Post-Forum Summary

10:45-11:30	<i>Coffee Break - Networking/Informal Discussions</i>
<b>Session 6</b>	<b><i>“Grande Finale Executive Panel”</i></b>
11:30-12:45	<b>New Business Models For The Seventh Semiconductor Decade</b> Walden C (Wally) Rhines, Chairman & CEO, Mentor Graphics Corporation Jacques Noels, Chairman & CEO, Nemoptic Rahul Sud, General Partner, Silicon Capital Alberto Sangiovanni-Vincentelli, Professor, University of California
12:45-13:00	<b>Closing Remarks</b> Vasilis Makios, HTCI / Theodore Varelas, HSIA (VP, Theta Microelectronics)
13:00	<b>Forum Wrap Up</b>
13:00-14:30	<i>Grand Finale Lunch</i>
14:30-18:30	<b>Sightseeing Tour Of Athens</b> (Sponsored By HTCI/HSIA)

### Keynote Presentation Summaries (in programme presentation order)



#### **“Convergence & Divergence In Parallel For The Ubiquitous Era” - Satoru Ito, President & CEO, Renesas Technology**

**Satoru Ito** reflected that the semiconductor industry is mature and is forecast to grow at an annual 9 percent. This is only one third that of 1976-1985 annually and half that of the 1984-1985 period, but happily it is still growing at more than the world GDP growth. During the history of the industry, Moore’s Law has allowed us to describe and predict falling feature sizes, die sizes and prices per function, but average prices per chip and chips per wafer have remained fairly constant. With diminishing improvements of performance at the gate level it is inevitable that IDMs will depend more on the wafer foundries. Renesas will not abandon advanced process R&D in the future as this is necessary to develop SoC chips and carry out pilot production, with the option of using foundries for mass production later. The growth engine of the future has changed from technology to functional integration. The experience of 90nm and 65nm SoC development has shown that SoC designs cost between US\$20-60 million, so as a percentage the design cost is rising fast. This means that the strategy must be to decrease design cost and design time, whilst increase sales per design leading to the importance of IP reuse. The future business model challenge is to promote a platform strategy that recognises the need for some convergence on common design IP and process elements, but is able to meet the divergent needs of various applications and different customer needs.



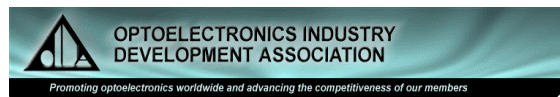
#### **“Being Connected, Now And In 2015” - René Penning de Vries, Senior VP & CTO, NXP Semiconductors**

After outlining the evolution of mobile phone connectivity options and illustrating performance in terms of their acceptability for downloading a movie, **René Penning de Vries** showed the need for some type of 4G technology. The question is however, which 4G technology, and how to support existing and new technologies such as EDGE and CDMA EVDO, UMTS, HSDPA, WiMAX, LTE, UMB, IEEE802.16m and IEEE802.11g. If the present trend of adding more and more subsystems to the radio modem chip and more and more antennae continues it will be unworkable and unsustainable. René referred to this as the “porcupine problem” and these extra antennae are not only to be used to offer all the frequencies, but to add antenna for a MIMO system. What is suggested by NXP is a three-channel approach consisting of a “low-end” consisting of Bluetooth, Wibree, FM, NFC, ZigBee and UWB, a reconfigurable cellular RF channel catering for present mobile phone 2G-3G communications and finally a high-bandwidth channel for Wi-Fi, WiMAX and 3G evolution. These channels would each interface to a multi-standard software-defined radio (SDR) platform operating the radio modem functions and behind this will be an applications processor. As the move to 4G will be an evolution, SDR will suit the step-by-step approach and these chips could be with

May 2-4, 2007 - Plaza Resort Hotel, Anavyssos, Athens, Greece

## IEF2007 – Post-Forum Summary

us over the next couple of years. Why the need for such complexity when WiMax could meet most of these requirements and have a higher spectrum efficiency? The answer seems to be legacy and the vast investment in cellular networks, their licences and the present deployed equipment. We therefore need to design system chips with the ultimate flexibility to support standards and feature evolution in the future.



### “Future Trends In The Optoelectronics Industry” - Michael Lebby, President & CEO, OIDA

The next decade is bright and **Michael Lebby** full of “optimism” for optoelectronics, with sales revenues of opto and opto-enabled parts growing at 11 percent per annum and reaching US\$1,000 billion by 2016. Present high-growth markets include LCD TVs, Cameras, PDP TVs and fibre optics. Although the displays market matures, consumer and entertainment electronics take over as the key market drivers in the future. In some consumer applications optoelectronics is 20 percent of the BOM. Optoelectronics components are dominated with displays at over US\$70 billion, but growing markets are detectors and light sources, including camera imagers and flash guns, solar cells, lasers for DVDs and CD players and the new areas of OLEDs for portable information devices and mobile TV and LED lighting for the home and automobile. Although a “cottage industry” in some areas (such as in lasers) Michael believes the optoelectronics industry is approaching sufficient maturity to have its own foundry.



### “Technology, Business & Finance trends In Microelectronics” - Philippe Geyres, CEO, Oberthur Card Systems

In recent history we have seen the semiconductor industry change, whether it be the ownership of some companies by private equity or the announcement of some IDMs that they will abandon process R&D after the present round. Although **Philippe Geyres** is now involved with a smartcard OEM and therefore a semiconductor customer, his days at STMicroelectronics allow him to still have a view on how and where our industry is going. Silicon processing is getting more and more difficult at every geometry-reduction step. Historically, at every process shrink we see gains in improved density, higher speed and lower power consumption, but at first glance future geometry reductions are only promising density improvements. Chips are now more complex and many SoCs require RF capability, embedded memory, embedded reconfigureability and sensors on board. Design is therefore again becoming linked more closely to process. Even though CMOS is the dominant process there are too many variants required to achieve optimum integration. Taking ARM out of the equation, the IP industry is still in its infancy and there is still work needed to find an easier way to put the IP blocks together. As we move forward we see the semiconductor company accepting more and more responsibility for software, in terms of supplying on-chip communication protocols and drivers at the time of offering reference designs. So where is our business going? Using foundries will reduce the IDM's (or fab-lite IDMs as they may become) ability to differentiate its product offering by using a better process. One of the biggest industry problems – the lack of good IP – may be being resolved with the foundries moving into this space. So with the exception of Intel and Samsung, how long will it take for the foundries to take over the industry?



### “OLED Display Technology: Hype or Reality?” - Myrddin Jones, CEO, OLED-T

Organic Light Emitting Diode (OLED) technology is now beginning to establish itself as a low power replacement for the all-pervading TFT LCDs. As well as having lower power, OLEDs are 10 times faster than LCDs thus removing blurring on movement, are lighter in weight and thinner, have the potential of

May 2-4, 2007 - Plaza Resort Hotel, Anavyssos, Athens, Greece

## IEF2007 – Post-Forum Summary

being applied using inkjet technology and also have a better viewing angle. OLEDs have a better colour range including an excellent black. OLEDs have not replaced LCDs because LCD performance is good enough for many applications and prices are low because of high yields gained from 30 years of experience. **Myrddin Jones** agrees that OLED is a younger technology, but the industry has now sorted out the hype from reality and with improved lifetime materials, larger area and scale processing equipment and offshore production it is gaining market share. Present OLED markets are mobile phones, media players and digital cameras and there is a predicted market of US\$2.5 billion per annum by 2010.



### “Electronics Trend On Indesit Products” - Davide Aloj, Product Design Manager, Indesit Company

**Davide Aloj** explained the evolution of electro-mechanical white goods control to that of microelectronics and software, with the highest growths and changes during 1999 to 2003. Originally, electronics for say, washing machines, dishwashers, cookers and refrigerators were developed vertically with each market having its own product electronics, user interface and testing and service logic. Now the trend is to use one horizontal platform across all market applications. This has speeded up the writing of microprocessor code by 50 percent and time-to-market by 30 percent. This has also allowed Indesit to use one main MCU board and one power-supply board across all products. Machines are now developed so that development engineers can gather data and improve performance and the engineer's PC can even control machines. Systems of the future are also being developed to be controlled remotely by the customer, via radio.



### “China's Consumer Electronics Market Review & Expectations” - Dr Richard Chang, President & CEO, SMIC

In 2006 The Ministry of Information Industry of the People's Republic of China reported that the nation's electronics industry reached an annual growth rate of 22 percent, with sales revenue reaching US\$614 billion. **Richard Chang** looked specifically at consumer electronics - household, mobile and digital segments - China produced US\$557 million in revenue in 2006, confirming the significant worldwide role China plays in the electronics industry. China anticipates future activity in the latest developments in consumer electronics for emerging products such as MP4 players, 3G Mobile Phones, and LCD TVs. With mobile phones, he sees the demand moving from the city to the smaller towns and the move from MP3 phones to camera 3G phones in 2007/8. Separately, the digital camera market will grow and specifications will improve as Single Lens Reflex (SLR) cameras are promoted. Two of the biggest growth markets are in the MP3 music MP4/PMP video sectors and their associated memory card upgrade requirements. One of the largest growth areas in China is digital TV. This involves the supply of the TV set and the broadband connection via a TV set-top box either via cable or in the future broadband IP TV. As China's leading IC Foundry, SMIC plays a key role in the IC and electronics supply in China by supplying processes, design support and intellectual property for the consumer market.



### “The India Semiconductor & Electronics Sub-System & Its Evolution” - Poornima Shenoy, President, India Semiconductor Association

Recently we have witnessed a rapid growth in the Indian semiconductor industry, which was once overshadowed by the IT and embedded software booms. **Poornima Shenoy** said that this dynamic industry has arisen out of the generic IT umbrella, to carve a distinct niche for itself in the world of technological innovation. The Indian semiconductor and embedded design industry has revenues to the tune of US\$2.82

May 2-4, 2007 - Plaza Resort Hotel, Anavyssos, Athens, Greece

## IEF2007 – Post-Forum Summary

billion (2005) and employs nearly 75,000 people. This is expected to increase to revenues of US\$36.3 billion in 2015 with employment projections of over 780,000 in 2015. Thus India's forecast is to move from supplying 1.2 percent of global semiconductor revenue to 6.5 percent over the period. Captive companies have scaled up from merely being low-cost skilled resource centres to those carrying out end-to-end activities. Another promising statistic is that design starts in India are set to rise from 320 in 2005 to 1075 in 2015, an annual growth of 13 percent. The driving forces behind this growth is the rapidly growing domestic market, a strong education infrastructure, comparatively lower cost design talent, short product lead times, reduced entry barriers, rising government support, and improving infrastructure. Poornima listed ten local companies and thirty-one overseas semiconductor companies who are investing in India and making this happen.



### **“Smart Systems: The Role Of Innovation & Hybrid Technologies” - Salvatore Coffa, R & D Director, Industrial & Multi-Segment Sector, STMicroelectronics**

**Salvatore Coffa** believes that many new applications will need smart systems to enable them to diagnose a situation and to decide and allow a product to interact with its environment. Such systems need to be miniaturised, networked and energy autonomous. Smart systems also need to be able to sense and diagnose a situation and be able to predict a trend and to act on it. A typical example of such a system is temperature control in a building. This is now possible by using low bit-rate wireless techniques, temperature and air quality sensors. To enable more forward looking systems, sensors will have to be integrated onto silicon and include electro-optics, molecular recognition, and therefore engineers will need biochemistry and surface chemistry expertise. To be able to meet the needs of future markets, thin-film components will have to be integrated onto plastic substrates or plastic semiconductors used. To get a high throughput in production, these plastic circuits will need to be created via direct printing of circuits onto plastic roll. This will then reach new medical and wearable electronics volume markets. These and future personal communications markets will need lower weight power generation and storage. Thin-film micro batteries will be an added feature to give the independence of elements of smart systems. Such an energy generator is the micro-fuel cell built using inkjet printing techniques onto silicon substrates. These are still in R&D, but could be in production for use by mobile phones and PDAs by 2009.



### **“Software – The X Factor” - Chris Turner, Semiconductor Business Development Manager, Cambridge Consultants**

It is no longer enough to deliver an IC platform and trust that customers or third parties will develop programmes for it. Nowadays, the software is part of the SoC deliverables and this means a change of thinking for the semiconductor company. Using a number of case studies, such as the growth of the companies Virata, CSR and Ember **Chris Turner** highlighted the issues, difficulties and solutions in product development and how software has accelerated time to profit. The semiconductor world is changing. There are fewer ICs being designed and investment in design has to be paid back either over enormous volumes or multiple applications. Multiple applications brings with it more complexity, multi-processors, DSP and reconfigurability, so software becomes the critical success factor. As the semiconductor industry is guided by emerging requirements and applications it is therefore now driven by software. This means that management must learn how to manage software. Some of the challenge of IC product software is that it is difficult to value and although it is valued highly by all at the start of the market cycle, it has zero value in the eyes of the customer, in more mature markets. The chip rather than the system company is now defining the application and software is now the main competitive differentiator defining the end-customer's experience. Getting the chip working is only a quarter of the battle, getting customers



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## IEF2007 – Post-Forum Summary

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and design wins is what matters and this is often decided on by the availability of software at the time of product launch.



**“Power Is Everything” - Robert Ober, Fellow, Office of the President, LSI Corporation**

According to **Robert Ober**, reducing power consumption is becoming a moral imperative and also an issue of convenience for more and more mobile devices. Much of the product range involves networking and storage systems and as many of the semiconductor and board-level products are used in parallel, power consumption is also very important. ‘Green’ pressures, operational costs and scalability upwards are all impacted on by power consumption. In mobile and consumer systems, power consumption impacts on battery life, product cost, size and weight. In infrastructure networking and enterprise storage power impacts on facility restrictions, cooling and reliability so that big server farms are placed next to rivers to aid in cooling. An example given concerning the vastness of computation on the Internet is that of eBay, which handles about 16 billion queries a day and Google are rumoured to have about 1 million networked servers. In server farms, 50 cents is spent on power for every US dollar spent on capital equipment. It is therefore important that the industry look at power consumption at the system, board and semiconductor product level. Power reduction is being made at the silicon level by redesigning design libraries and processes and at the architectural level by better clock, data movement management, plus improved software and at the board level by improved backplanes and input/output power. The winners for the next decade will be companies that address the complete problem from silicon to systems to software, and are able to ‘think outside of the box’.



**“Semiconductor Production Equipment – New Opportunities & Challenges” - Tetsuro (Terry) Higashi, Chairman & CEO, TEL**

The semiconductor market has achieved a growth of 10 times in the past 21 years, a growth of 12.2 percent, similar to the semiconductor electronic equipment market growth and twice that of the electronic system market. Despite its growth, the overall electronics market is only 3 percent of world GDP with semiconductors less than 1 percent and semiconductors equipment 0.1 percent. However they have a bigger impact on the world than seen in their size. Recent semiconductor market growth was driven by the PC, then the mobile phone, and now by broadband communications, with ADSL, Wi-Fi and WiMAX as examples. Their opportunities for growth in the future are on three axes - new applications, growing semiconductor content and geographical economic expansion. Most important is the shift of three quarters of semiconductor production to Asia. To keep ahead, **Tetsuro (Terry) Higashi** believes both IDMs with fabs and foundries need to keep ahead of the competition, but with gains from straight geometry scaling becoming harder, R&D and innovation is required and the semiconductor equipment supplier is increasingly supplying this. The problem arises in who pays for this innovation, which is too expensive for the equipment supplier alone. The answer is collaboration with device manufacturers, universities and governments thus reducing the period between R&D and the forthcoming revenue.

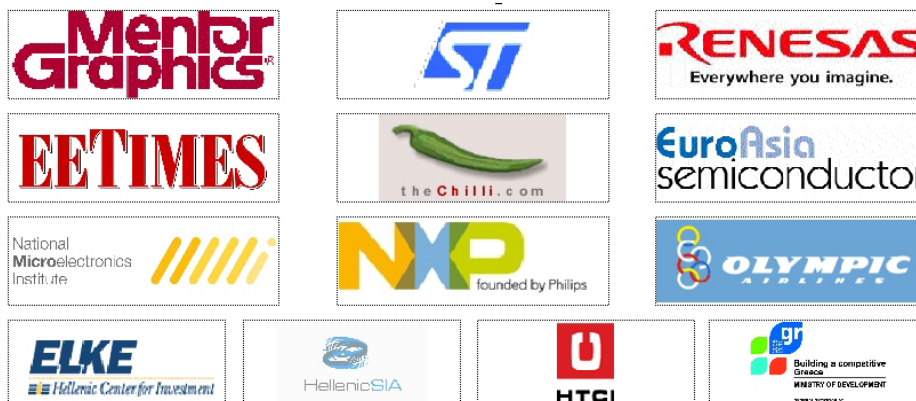
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The 2008 Forum will take place on May 7-9, 2008 at the Madinat Jumeirah, Dubai, UAE ... watch for further details.

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#### Semiconductor Monthly Update Report

[http://www.futurehorizons.com/new\\_web/westmkt/mureport/mureport.htm](http://www.futurehorizons.com/new_web/westmkt/mureport/mureport.htm)

A CEO favourite, this report is all a busy executive needs to keep in touch with industry trends. E-mailed monthly, the report provides a useful industry momentum indicator by compiling 12-monthly rolling charts for Units, Average Selling Prices (ASP) and Revenues broken down by total SC, IC, Optoelectronics and Discretes. Also included is a review of the world economy, broken out by region, plus a monthly feature on a key semiconductor market driver. The link between the economy and the semiconductor industry is not perfect but by measuring and understanding the impact of wafer fab capacity on lead-times and prices, and by monitoring the level of system OEM, distribution and semiconductor company inventory, more sense can be made of this fundamentally unstable industry. The report focus is on in-depth analysis and the underlying industry trends.

#### Annual Semiconductor Report

[http://www.futurehorizons.com/new\\_web/westmkt/esreport/esreport.htm](http://www.futurehorizons.com/new_web/westmkt/esreport/esreport.htm)

This two-volume report provides market analyses and forecasts of the worldwide and European semiconductor market (Volume 1), as well as a detailed analysis of the 27 key semiconductor end-user applications and industry market drivers, collectively accounting for three quarters of the total IC market (Volume 2). This value-added bundle is a must-have for anyone interested in the global semiconductor market and European detail.

#### Semiconductor Application Markets Report

(Previously called the Key Market Drivers Report)

[http://www.futurehorizons.com/new\\_web/westmkt/kmreport/kmreport.htm](http://www.futurehorizons.com/new_web/westmkt/kmreport/kmreport.htm)

**May 2-4, 2007 - Plaza Resort Hotel, Anavyssos, Athens, Greece**

## IEF2007 – Post-Forum Summary

Volume 2 of the Annual Semiconductor report is available separately as the Semiconductor Application Markets Report. Individual chapters describe how each application works, the technology used, the unit sales history and forecast, the semiconductor content and the associated semiconductor market size. This vital research resource volume is a proven industry favourite. Individual applications are also available as separate reports; please call for details.

### European Fabless Semiconductor Report

(Previously called the European Chipless & Fabless IC Design House Report)

[http://www.futurehorizons.com/new\\_web/westmkt/dhreport/dhreport.htm](http://www.futurehorizons.com/new_web/westmkt/dhreport/dhreport.htm)

This 300-page report covers the European and Israeli, chipless, fabless and independent IC design house community, and is essential for those planning the resources of subcontracting new product design, both in the semiconductor industry and the final system end product. It will also prove invaluable for authorities and government departments, planning and directing economic growth, as well as companies seeking investments, potential partners or acquisitions. As an added user benefit, the 280 strong chipless and fabless IC design house company database is available in Excel format as an optional CD extra (not available separately), with both pre-organised sorts (by country, design skill and application) and in raw data format allowing customised searches and analyses. This best-selling report has a proven track record as an invaluable research resource.

### Key Diary Dates (Sign Up Now – Online @ [www.futurehorizons.com](http://www.futurehorizons.com))

Jul 24, 2007	<b>IFS2007-MT, Mid-Term Semiconductor Industry Briefing, London</b> Mid-year analysis & forecast of the European & WW semiconductor market
Sep 03, 2007	<b>Silicon Chip Industry Training Seminar, London</b> Presented in layman's term, this seminar provides a complete overview of the integrated circuit industry, its background, technology, manufacture & markets
Oct 10-12, 2007	<b>International System &amp; SoC Forum 2007, Prague, Czech Republic</b> IEF2007 - 5 <sup>th</sup> Annual International System & SoC Forum. An international forum to discuss business issues within the international design & IP market, meet new contacts, share experiences, explore ideas and refine strategic thinking
Nov 26, 2007	<b>Silicon Chip Industry Training Seminar, London</b> Presented in layman's term, this seminar provides a complete overview of the integrated circuit industry, its background, technology, manufacture & markets
Jan 29, 2008	<b>IFS2008, Semiconductor Industry Briefing, London</b> Annual analysis & forecast of the European & WW semiconductor market
Mar 17, 2008	<b>Silicon Chip Industry Training Seminar, London</b> Presented in layman's terms, this seminar provides a complete overview of the integrated circuit industry, its background, technology, manufacture & markets
May 7-9, 2008	<b>International Electronics 2008 Forum, Dubai, UAE</b> IEF2008 - 17 <sup>th</sup> Annual International Electronics Industry Forum. An international forum to update market forecasts, develop new business opportunities, meet new contacts, share experiences, explore ideas, and refine strategic thinking
Jun 09, 2008	<b>Silicon Chip Industry Training Seminar, London</b> Presented in layman's terms, this seminar provides a complete overview of the integrated circuit industry, its background, technology, manufacture & markets

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