FutureHorizons
The Global Semiconductor Industry Analysts

FUTURE HORIZONS
Presents

Under the Auspices of
The City Of Dresden and
Silicon Saxony

Post Forum Summary

International Electronics 2010

19th Annual International Electronics Forum

"Where The International Electronics Community meet"

Thrive Or Survive ... Going For Gold In The Post Recession Economy

Hilton Hotel
Dresden, Germany

"Probably The Best
Global Industry Networking Event Ever"®

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Delegates feedback and Forum Photographs

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> "It was a great opportunity for exchanging information, learning and getting synchronised with Future Horizons positive team."
>
> LB Consulting

> "I would like to thank Future Horizons for another great IEF. An excellent job by the team, as usual. Everything ran smooth as clock work. A great job in keeping up the quality after such a horrific downturn"
>
> ATEEDA Ltd

> "Thank you to Future Horizons for organising such an interesting and valuable event, at a real nice place. I made a lot of very good contacts and had many good discussions"
>
> Memsfab

Forum Programme

Wednesday May 5, 2010

15:00-19:30 **Forum Registration**
16:00-17:30 **B2B Speed Networking**
18:30-19:30 **Welcome Cocktail Reception**
19:30-22:30 **Welcome Reception Dinner**

Thursday May 6, 2010

From 06:30 **Breakfast**
Main Breakfast Room
From 07:30 **Forum Registration (Continued)**
Foyer Area
08:30-17:15 **Forum Presentations**
Conference Centre
08:30-08:45 **Introduction & Welcome**
Malcolm Penn, Chairman & Chief Executive Officer, *Future Horizons*
08:45-09:00 **Welcome Addresses**
Dirk Hilbert, Deputy Mayor of Economic Affairs, City of Dresden

Session 1 "The Strategic Imperative"

09:00-09:30 **Providing Real Solutions- The Next Challenge For IC Suppliers**
Rich Beyer, CEO & Chairman, *Freescale Semiconductor*
09:30-10:00 **Around The Human Body: New Frontiers In MEMS**
Benedetto Vigna, Group VP & GM MEMS, Sensors & HP Analog
STMicroelectronics
10:00-10:45 **Coffee Break & Networking**

Session 2 "Driving The Changes"

10:45-11:30 **Nano-Electronics:Shaping Our Future**
Luc Van Den Hove, President & CEO
IMEC
11:30-12.00 **Delivering 10x Design Improvements**
Robert Hum, VP & GM, Deep Submicron Division
Mentor Graphics
12:00-12:30 **Enabling Business Growth Through Collaborative Innovation**
Jack Sun, VP R&D & CTO
TSMC
12:30-13:45 **Forum Lunch**

Session 3 "Market Forecasts"

13:45-14:45 **Chip Market Outlook-Making Sense Of Myths & Misconceptions**
Malcolm Penn, Chairman & CEO
Future Horizons
14:45-15:30 **Coffee Break & Networking**

Session 4 "Driving The Changes"

15:30-16:00 **The Wireless Road Map**
Gerhard Fettweis, MD Vodafone Chair Mobile Communications Systems
Technical University of Dresden
16:00-16:30 **Turning Light Emitting SC Components Into Illuminaire Solutions**
Thomas Wiemers, MD Swareflex Division
Swarovski & Co & Swareflex

Session 5 "The CEO Interview"

19:00-19:55 **Chip Industry Management & Technology Reflections**
Tsugio Makimoto, *President Techno Vision Former Corporate Advisor, Sony Corporation, Former Senior Executive MD, Hitachi Electronic Devices Group*
17:15 **Forum Adjourns**

20:00-23:00 **Fiesta Dinner - Festungsmauern**

Friday May 7

From 07:00 **Breakfast**
Main Breakfast Room

08:25-13:00 Forum Presentations

08:25-08:30 **Opening Remarks**
Malcolm Penn, Chairman & Chief Executive Officer, *Future Horizons*

Session 6 "Infrastructure Changes"

08:30-09:00 **A New Paradigm For Process Control In The SC & PV Industries**
David Joseph, Chief Strategy Officer
PDF Solutions

09:00-09:30 **Organic Electronics - From Lab To The Market**
Karl Leo, Professor
IAPP

09:30-10:00 **Commercialization Of Plastic Electronic Technology**
Achim Neu, Director of SCM & Procurement
Plastic Logic GmbH

10:00-10:30 **The Foundry Foundation: Enabling The Next Wave Of Innovation**
Mojy Chian, Snr VP Design Services & Enablement
GlobalFoundries

10:30-11:15 **Coffee Break**

Session 7 "Grande Finale Executive Panel"

11:15-12:30 **R&D Matters - Independent Process Or Start Of The Journey?**
Joseph Borel, Founder, *JB R&D Consulting*
Joël Hartmann, Group Vice-President, *STMicroelectronics*
Peter Kücher, Director, *Fraunhofer Center Nanoelectronic Technologies*
Hossein Yassaie, CEO, *Imagination Technologies*

12:30-12:40 **Closing Address**
Sami Issa, Executive Director, Abu Dhabi Ecosystem Development Unit
ATIC
Gitta Haupold, Vice President, *Silicon Saxony*

12:40-12:45 **Closing Remarks**
Malcolm Penn, Chairman & CEO
Future Horizons

12:45-14:00 **Grande Finale Lunch**

14:00-16:00 **Volkswagen Factory Tour**

14:00-17:00 **GlobalFoundries Factory Tour**

> **"Top Notch! Very well organised".**
> **Mentor Graphics**

Keynote Presentation Summaries

(in programme presentation order)

"Providing Real Solutions –The Next Challenge for IC Suppliers"

Rich Beyer
CEO & Chairman
Freescale Semiconductor

There has been an explosive growth in connected devices or connected intelligence, which has increased complexity and blurred traditional applications boundaries. The introduction of multi-core processors has also led to increased complexity especially for software developers. Both connectivity and multi-core processors require software development. Even legacy software must be re-written for multi-cores as it is often not easily transferable

Freescale's approach to the new challenges is to increase the proportion of software engineers vs. hardware engineers. Many of these engineers work closely with end customers to implement complete system solutions. The use of development platforms is very useful to gain new customers and retain existing ones. Today's' silicon provider is expected to provide systems expertise to support the customer as well as (silicon) hardware and drivers. Unfortunately, it is difficult for the semiconductor supplier to recoup the cost of this support in a highly competitive environment.

Despite the cost, support to the customer through 'silicon ecosystems' is an essential differentiating factor between semiconductor suppliers. Silicon ecosystems encompass platforms, development tools, applications and system software support amongst others.

During questions it was evident that assuring quality for software is not an easy task. Additional effort is needed to assure the zero defect target for more critical applications areas such as automotive. Hardware reliability methodologies are well tried and tested but there is still some improvement in proving software meets similar exacting standards for reliability.

"Around the Human Body: New Frontiers in MEMS"

Benedetto Vigna,
Group Vice President & General Manager for MEMS, Sensors & The High Performance Analog Division
STMicroelectronics

Benedetto Vigna introduced the subject of MEMS by noting that the MEMs application space is being extended from its traditional niche in automotive sensors (airbags, stability control and pressure) to more consumer oriented electronics products such as the Nintendo Wii, mobile phones, remote controllers and other items in the home.

He explained that the 'second wave' of MEMs used in consumer goods is the main driver of today's MEMs market. MEMs have reduced in size and power and have included multiple sensor integration and embedded intelligence to meet the needs of these new applications.

Another potential application for MEMs is the use in and around the human body. This is described as the third wave of innovation. The compact size and low cost of MEMs makes it ideal for sensing various processes in the body including motion, pressure and bio detection of molecules. It can also assist in drug delivery systems including MEMs pumps and valves as well as energy harvesting from the environment for battery-less systems.

A common theme amongst the applications around the human body is connectivity as much of the data gathered must be available for further processing either locally or in more distant servers on the Internet. Applications highlighted by Mr. Vigna included disposable lab-on-chip, nano-pumps for diabetes management, remote heart monitoring, wireless body sensor networks, contact lenses for glaucoma detection and in the far future smart micro-robotics.

continued

Keynote Presentation Summaries

Questions on Mr Vigna's presentation were concerned with the reliability of MEMs vs. silicon, which he said is comparable. Another question drew out the differences between Europe and the US. Governments mainly drive decisions in Europe on medical applications, but in the US there is a more open market for consumer based medical monitoring devices.

"Nano-Electronics Shaping Our Future"

Luc Van Den Hove,
President & CEO
IMEC

Luc pointed out the progression in the semiconductor market dominated by PCs or computers to an extended market including communications and consumer equipments (3C). More recently, the 3C market is being defined by more connectivity through wireless technologies.

Because of this, IMEC has been developing cognitive and Software Defined Radio (SDR) as an enabler. As well as SDR, high frequency radios have been developed to meet the needs of high data rate and low power radios for environmentally powered (no batteries) equipments.

The presentation gives a view of the future with a number of concept devices including flexible phones that can be embedded in clothing or worn round the wrist together with advanced e-Readers and 3D gaming machines.

Another important R&D area is the development of medical electronic devices to meet the needs of an ageing population and this is particularly important for Europe and more established industrialised countries such as Japan. Ideas explored include body networking with garments supporting various types of sensors such as portable electro cardiograms. Some of these ideas require the combination of conventional silicon with organic or plastic electronics.

The integration or growing of biological material including neurons is being researched at IMEC. The combination of nano-electronics and neurons can lead to a better understanding of the brain and its development. IMEC believes that the next wave of innovation (and a driver for semiconductors and plastic electronics) is medical applications.

This wave has already started with the introduction of some consumer devices such as blood pressure monitors and blood sugar measurement devices in pharmacies during the last ten years. Low cost lab-on-a-chip devices for rapid analysis of blood samples without a fully equipped laboratory will also be an important aid in healthcare at the point of need

Apart from medical electronics, new applications include the use of novel materials for LED illumination and smart metering for power saving.

The presentation then moved on to discuss some of the latest developments in semiconductor technology to increase both integration and performance. Although optical shrinking is important the use of new materials (e.g. strained Si, High-k) and lithography with e-beam or EUV has made further shrinks possible. 3D stacking developments (silicon cubes) is another way forward for increased integration. Advanced transistor development including FINFETs and high mobility (high performance) developments were also discussed. The co-integration of SiGe MEMs on CMOS were highlighted as a path for improved integration of MEMS and silicon.

Keynote Presentation Summaries

Dr. Van den hove stressed the importance of collaboration to meet the challenges of future R&D echoing the plea by TSMC's Dr Jack Sun. It is evident that there is no shortage of new ideas for the future development of nano electronics with a vast range of research and development options being pursued.

One question on the presentation included the current viability of EUV lithography. The reply was that the throughput of wafers is increasing with good progress in the last six months. The current throughput is approximately 50 wafers/hour and this needs to be increased to over 60 wafers/hour to be cost effective and preferably higher.

Another question was about the timescale for bio-applications and the reply suggested that innovations would appear in the next 1 to 2 years. It was also pointed out that the rate for medical innovation could be a problem as the rate of innovation is much slower than the electronics industry. This is, in part, due to the strict regulation of medical applications and drugs. However, the comment was made that this could be overcome to some extent by taking the consumer rather than the 'professional' path to market.

Mentor Graphics®

"Delivering 10X Design Improvements"

Robert Hum
Vice President & General Manager
Deep Submicron Division
Mentor Graphics

Robert Hum made the point about the vast number of transistors that are available in advanced silicon by comparing this to the number of stars that are in the visible galaxies as seen from the earth, which number about 100 billion. Although this is not available now he predicts that this will be a reality by 2020. Design using this number of transistors will be a very complex process and lead to increasingly sophisticated and complex products.

The physical limitations of Moore's law are examined. There is a finite limit to shrinking silicon and an exponential curve cannot go on forever. Moore's Law will meet issues of electron and atomic sizes as reductions in geometry continue. However, there are other ways of reducing costs possibly by using carbon nano-tubes and bio-switches as well as going into the third dimension.

The semiconductor industry shows a very high growth in the number of transistors and end equipment compared with other industries. Steel averages around 5 percent compound annual growth rate compared with transistors at 49 percent. This rapid transistor growth causes a number of issues with efficient design methodologies.

Robert stated that it takes approximately 8 years for a design methodology to become widely adopted and that design methodologies must be in development by 2012 to deal with the challenges of 2020 because of historical (design methodology) adoption rates.

A factor of 10x design improvement is needed together with 1000x improvement for design verification for a 100 billion transistor design. The proposal to tackle the design complexity was divided into four main areas - system level design creation at a higher level of abstraction, functional verification and test, dealing with the issues raised by embedded software and finally mixed signal design and verification.

The system level design can be tackled by moving to transaction based modelling from RTL and using 'agents' as a means to decouple the IP cores from the connectivity fabric and protocol conversion. Agents can also provide managed services such as power and security management.

Keynote Presentation Summaries

Functional verification and test has particular challenges as a 10x growth in transistors needs 1000x increase in test vectors. The solution to this is to 'do things faster' but this is insufficient alone. Improved speed will need to be combined with removal of 'redundant' test vectors as well as a move to a 'transactional' test bench to meet the target. Test will need high performance automatic test pattern generation, embedded compression, logic Built-In Self Test (BIST), memory BIST with repair, analogue BIST and boundary scan.

A new set of toolsets is needed to meet the challenges of analogue design in complex circuitry. At the moment most tools are based on spice but more accurate modelling is needed for the reconciliation of physical effects in the design as well as the ability to use a new EDA toolset in multi-site design projects. This is a complex set of requirements and will need considerable development.

The cost of SoC design was increasingly being attributed to software development and design costs will exceed U$100 million in three years. The use of embedded software will increase productivity in software development and verification. Although there are many challenges ahead, Robert stated that design tools are available now for design of up to 40 billion transistors.

Questions on the presentation included the issue that an increased level of abstraction will mean less efficiency and that some flexibility will be lost. Also discussed was the probability that software and physical reliability could become an issue at higher complexity. Robert Hum acknowledged both of these points, although he felt that these issues could and would be resolved to meet future design requirements.

"Enabling Business Growth Through Effective And Collaborative Innovation"

Jack Sun
CTO & Vice President of R&D
TSMC

This presentation emphasises the need for co-operation as a spur to innovation. The financial crisis last year was a concern but was only a temporary setback for the semiconductor and most of the electronics industry. Silicon is certainly seen as the important backbone of technology development and the emphasis today is not only for cost reductions but also for reducing power in electronic systems.

TSMC believes that the fabless companies will continue to outperform the general semiconductor industry with an average growth rate of over 7 percent compared with the semiconductor average of approximately 4 percent growth expected for the semiconductor industry in general over the period 2011 to 2014. Growth will continue by the increasing pervasiveness of electronics in all applications areas and into smart and connected consumer and white goods devices. The convergence of computing consumer and communications is going to be a driver but it is also a challenge for the OEMs as they compete for market share outside their traditional areas.

TSMC is continuing to expand its offering by including packaging services as well as silicon foundry services. This will allow fabless semiconductor companies to achieve 'More than Moore' gains in integration by using TSMC as a foundry partner

Developments being pursued by TSMC to tackle the challenges of low power and low cost include aggressive development of new smaller geometry nodes.

Keynote Presentation Summaries

This is complemented by the development of lower voltage capable processes with high performance. These processes also need high capacity to meet market requirements and TSMC is proud of its 12 inch Gigafabs that, it believes, will cater for forecasted demand.

The presentation included a slide with 28 nanometre node development highlights and another presenting future 20 nanometre CMOS technology. However, these smaller geometry processes will come with more restrictive design rules. These more restrictive rules will be essential to maximise the economic potential of these new processes.

Dr Sun spent some time discussing EUV and Multi-Ebeam lithography. Advanced lithography is an essential pre-requisite for small geometry silicon fabrication. Another interesting point from the presentation was that TSMC sees a firm requirement for 450cm wafers and expects this to happen by 2015. However Dr. Sun was keen to emphasise that this needed industry wide co-operation and development as the cost is huge. Despite this plea, it may be difficult to persuade stakeholders that the return on investment will be worthwhile. Much negotiation and co-operation will be needed to ensure 450mm wafers become a viable economic reality.

One of the questions that Malcolm Penn put to Dr. Sun at the end of his presentation was whether the relationship between Intel and AMD represented a valid comparison between TSMC and Global Foundries. There is no doubt that participation in the foundry semiconductor manufacture requires very large injections of capital to remain competitive and GlobalFoundries will need to work hard to gain market share.

TECHNISCHE UNIVERSITÄT DRESDEN

"The Wireless Roadmap"

Gerhard Fettweis
MD Vodafone Chair Mobile Communications
Technical University Of Dresden

Dr Fettweis gave an interesting insight into wireless futures made possible by current and future silicon integration. He pointed out that the radio and radio modem part of a modern cellular device has become very much smaller because of advances in design and integration. This will allow almost universal wireless connectivity either using the cellular system, which he prefers, or other wireless technologies such as WiFi or possibly new developments in ultra wideband radio systems.

It is clear from the presentation that the radio part of many smartphones is becoming an increasingly smaller part of the functionality of these devices. One example to illustrate this point is the steady increase in mobile storage memory in the average phone, which is rising quickly to 32GB and beyond. This storage is used for media and more complex or data-intensive applications.

One of the important points in the presentation was the need for increasing efficiency of the wireless spectrum. Each increase in efficiency needs a corresponding increase in processing power and a reduction of power consumption. Dr Fettweis is confident that advances in silicon and design would meet the target specification in the future and referred to a compact LTE design that had been completed by his university team.

Continued

Keynote Presentation Summaries

The use of more advanced modulation techniques for radio allows an increase in the efficiency of spectrum usage and this is important where spectrum is finite and the licensing cost is high. One of the slides showed the difference between the theoretical maximum efficiency and the current LTE cellular protocol. This shows that 4G standards and beyond are needed to approach maximum efficiency.

The conclusion is that the wireless roadmap is tracking Moore's law in silicon. This means that silicon will be a vital enabler for innovative wireless products in the future, thus meeting the needs of ubiquitous connectivity at low cost.

SWAROVSKI

SWAREFLEX®
lights the way to safety

"Crystal Ware - Turning Light Emitting Semiconductor Components Into Illuminaire Solutions"

Thomas Wiemers
Managing Director Swareflex Division
Swarovski & Co/Swareflex

Dr Wiemers was enthusiastic about bringing the merits of crystal ware and LEDs together to produce a pleasing pure and long lasting light source. The production of light from various sources including incandescent and fluorescent lamps are outlined together with the advantages and disadvantages of each.

The presentation gave a tutorial on the perception of light by the human eye and also the importance of the primary and secondary optics in the luminaire architecture. The optics and LED are important in determining the perceived quality of (white) light emitted. A comparison is made between polycarbonate and crystal glass in LED optics.

The conclusion reached was that the properties of crystal glass are superior in this application over the alternatives and that the stability of the light source is better over time. Crystal glass can also improve a number of parameters including resistance against abrasive wear, performance at high temperatures and resistance against other environmental factors.

One of the questions after the presentation questioned the cost of a crystal glass solution. At the moment, Dr Wiemers estimated that the cost of the combined crystal glass and LED was approximately 5 times the cost of an equivalent halogen lamp. However, he stressed that cost reductions in the future were both possible and practical for the LED and crystal optics and that it is also likely that prospective customers may be prepared to pay a premium for longevity and a high quality light source. Making a crystal glass LED lamp a reality will need the close co-operation of semiconductor and crystal ware manufacturers.

PDF SOLUTIONS®

"A New Paradigm for Process Control in the Semiconductor and PV Industries"

David Joseph
Chief Strategy Officer
PDF Solutions

A topic that is becoming increasingly important for advanced processes is process control. Good Process Control (PC) is critical in determining yields and, of course, cost for semiconductors. The photovoltaic (PV) industry is younger than semiconductors and the emphasis is on improving cost AND PV efficiency.

The increasing sophistication of process control means higher costs especially when new materials are used, which have their own control requirements. The average cost is between 15 and 20 percent of the total. However, PC costs in advanced fabs can increase towards 30 percent of total costs. Despite this relatively high spend, wafers can still be lost due to excursion wafers and inline scrap. There is still a lot of room for economic improvements with better process control as it would reduce scrap and increase yield and reliability.

Improvements can be made by looking at the yield signature of the baseline wafers as this is where most gains can be made. The signature can help, but tighter controls can help even more but they do cost more to implement.

The answer proposed by PDF solutions is to build an increasingly accurate model-based PC system. A PC model can help by using lots of sensors to measure many parameters in real time and relating the change of characteristics in the silicon electrical parameters to calibrate, prove and improve the model.

The number of Fault Detection and Correction (FDC) statistics in a modern fabrication facility is enormous and classical control using 5 sigma limits is not useful. To work properly, the model needs to be aware of a number of critical statistics through physical and virtual of software machines that can replicate the real-world (physical and electrical) conditions.

The advantage of having an accurate software model is the ability to virtually measure all wafers rather than a sample. This methodology can provide information that can be used for problems in variability and takes up no floor-space and has zero downtime. The downside of the virtual machine approach is that it is not easy to build in the first place but initial hard work can reap rewards in improved yield and less downtime of processing machines. It is difficult to see other alternatives to this type of approach.

"Organic Electronics - From The Lab To The Market"

Karl Leo
Head of IAPP
Institut für Angewandte Photophysik And Fraunhofer-IPMS

Organic electronics deals with electronic components and systems that are realised using organic materials. The material choice for organic electronics is very large and it is possible to build organic or plastic electronics at low cost provided the right combination of materials and process are selected.

Applications for organic electronics include production of organically based LEDs, photovoltaics as well as transistor and memory circuitry. OLED lighting has the potential for greater efficiencies than current fluorescent tubes that are commonly used for low energy bulbs.

Organic products have progressed from small OLED displays through lighting to solar cells and eventually to plastic or organic based electronic circuitry. Organic based circuitry is set to take an increasing share of the market for the advantages it offers and could run in many 10s of billions of US$ within the next 8 years. Some projections have it rivalling the semiconductor industry in terms of value by 2025 but this may an over optimistic projection. The most important categories in the next few years will be Logic/Memory, OLED-displays and photovoltaics. The current real market for OLEDs is less than forecast during recent years but a new technology is notoriously difficult to forecast.

Currently Fraunhofer is working on improving OLED efficiency in combination with low voltage operation. At the moment, OLED technology just meets minimum specifications. High efficiency is crucial for wider adoption with brightness at least 1000 and ideally up to 5000 Cd/m2. White light LEDs need a mixture of red green and blue to make up white light. The blue OLED has a problem in long lifetime but improvements are continuing in lifetimes and efficiencies.

The PV market window for organic material is likely to be in the 2015 to 2030 time period. This gives a window of opportunity to develop material that has high efficiency and at least a ten-year lifetime at low cost. The long-term efficiency needs to be better than 10 percent (light) conversion and this may be possible by 2015. Current efficiencies seen in modules are between 6 to 8 percent. Various materials and architectures are discussed in the quest for improved efficiency. Small molecule organics and tandem PV cells are some of the possibilities being explored.

As well as pure optical or display devices, there are some applications for organic or plastic electronic circuitry that are suitable for replacing silicon-based circuitry. Plastic Logic has brought the Que e-Reader to market using organic electrophoretic displays together with organic transistor used for driving the display.

Although organic electronics has considerable potential it is not easy to realise because of the wide choice of materials available. In addition many production processes are still in the development phase as there is no recognised standard, unlike more standardised bulk silicon CMOS processes. Often, current organic production must use a variety of equipment from printable electronics to re-purposed silicon processing equipment.

PLASTIC LOGIC

"Commercialisation Of Plastic Electronic Technology"

Achim Neu
Director of SCM & Procurement
Plastic Logic GmbH

The presentation explored the history of Plastic Logic and the development of its Que plastic electronics based e-Reader.

Flexible displays based on plastic electronics are at the heart of the e-Reader and this has led to its characteristics of toughness and lightweight. Plastic Logic decided to launch a complete product to market rather than sell display components and drivers or Intellectual Property.

Plastic Logic believes the Que e-reader has winning characteristics because of its unique thin and light form factor, large display and its inherent robustness. This is coupled with touch control and a powerful yet easy-to-use interface. An extended battery life is also an advantage, but the main drain on the battery is due to the connectivity in use at the time, which may include WiFi, 3G or Bluetooth.

More products including colour displays will be available in the future probably in late 2011 or early 2012.

GLOBALFOUNDRIES

"The Foundry Foundation: Enabling The Next Wave of Innovation"

Mojy Chian
Senior Vice President, Design Enablement
GlobalFoundries

The GlobalFoundries approach to the development of new processes and services is to pursue development as the economics makes sense. As is implies by its name, GlobalFoundries has wafer fabrication and other facilities throughout the world and is working on development of advanced 22 nanometre and below.

GlobalFoundries feels that the increase in complexity in designs, the need for lower power and increased performance are challenges, but opportunities exist for collaborative manufacturing by working more closely with its customers to improve the end product and increase profits.

Mojy noted that although process cost and fab start-up costs have increased, it is not all bad news. Despite slowing design starts, advanced technology continues to drive innovation and lower costs through smaller die. This in turn leads to more revenue for foundries and semiconductor fabless companies.

One of the differentiators that GlobalFoundries highlighted, was its close collaboration with the customer in developing the design and process in tandem to get the optimum product for the process. This means close working between GlobalFoundries engineers and customer engineers. The advantage that the GlobalFoundries engineers offer is that they have direct experience of chip design and product engineering and can be of direct help to the customer during development.

GlobalFoundries is migrating towards the type of practices that are found in IDMs where all disciplines work together. It believes this approach gives it a competitive advantage against other leading players in the Foundry business.

We would like to formally acknowledge and express our sincere thanks to the following organisations for their invaluable support.

"Dresden was a good choice. The mix of industry and academic worked well, both were able to shine"

Business To Business Speed Networking Hosted By Global Foundries

The second Future Horizons Business To Business Speed Networking opened this year's forum. This fast paced networking session really set the scene for the rest of the forum, helping delegates to establish relationships from the outset, as well as putting delegates in high spirits.

"All good pertinent presentations. BRAVO!"

Key Market Research Reports

Brochure downloads are available from our website. Reports can be purchased online, by fax, or email and are supplied in A4-ring binder and CD-ROM format. Respect copyright laws, multi-user/site licenses are required for additional users and/or posting on company Intranets.

FutureHorizons
The Global Semiconductor Industry Analysts

IEF2010 Post Forum Summary

Global Semiconductor Update Report

http://www.futurehorizons.com/page/18/global-semi

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/page/15/annual-semi

The Report analyses the market by product, application market, and region, all in a convenient easy-to-read format. The 2010 edition covers the historical data for 2004-2009, together with a five year forecast for 2010-2014 inclusive. This report is published in direct response to the market need and complements the "Global Semiconductor Update Report" - which provides the latest information on developments in the Worldwide Semiconductor Industry, changes in the Markets and Production Capacity, and the impact of the global economic situation.

Semiconductor Application Markets Report

(Previously called the Key Market Drivers Report)

http://www.futurehorizons.com/page/16/semi-app-market

Fully revised and completely updated, this Edition of the Future Horizons' “Semiconductor Application Markets Report” analyses in detail the global key semiconductor applications market drivers. The SAM covers the historical data for the previous five years, together with a five year forecast to 2014 . In total, the 29 key market segments analysed accounted for approximately 90 percent of the total semiconductor market. The report analyses in detail the technology and market factors driving the various key applications, their future development prospects, regional trends and market players, together with estimates for the anticipated semiconductor revenue, unit volume and ASP trends. The report can be purchased in full or as separate application reports

European Fabless Semiconductor Report

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

http://www.futurehorizons.com/page/17/euro-fabless

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.

Concerned About The Industry Outlook for 2010 and Beyond?

Then Attend:

2010 Industry Forecast Seminar - Mid Term Update

Tuesday July 20, 2010

Hilton London Kensington Hotel, London,UK

Seminar Programme Includes:

- **2010 Market Update ...**

  The Key Factors Analysed
- **2011 Industry Outlook ...**

  Blue Skys Or Continuing Stormy?
- **Industry Application Drivers ...**

  IC Content & Forecast
- **Supply & Demand ...**

  Wafer Fab Capacity Trends
- **Market Outlook ...**

  5-Year Regional & Product Forecasts

Strategically timed half way through the year, the Industry Forecast Seminar-Mid-Term Update summarises and presents the extensive research capability of Future Horizons industry analysts. Now in its eleventh year, the annual forecast seminars are a vital link in our charter to provide industry with high quality, cost effective, market research. Whether a seasoned veteran or industry newcomer, this seminar is invaluable to executives from the semiconductor, electronics and related industries.

10.00	*Coffee & Registration*
10.30	Welcome & Introduction
10.45	Global Economic Review
11.15	Semiconductor Industry Outlook
12.00	Industry Capacity
12.30	*Seminar Lunch*
1.45	Key Application Markets
2.45	*Coffee Break*
3.00	European Chipless & Fabless IC Design
3.30	European Semiconductor Market
3.45	Forecast Summary & Closing Remarks
4.00	*Seminar Conclusion*

IEF2011 Forum

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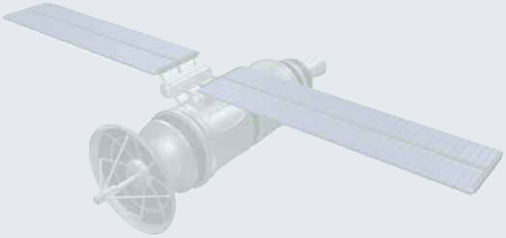

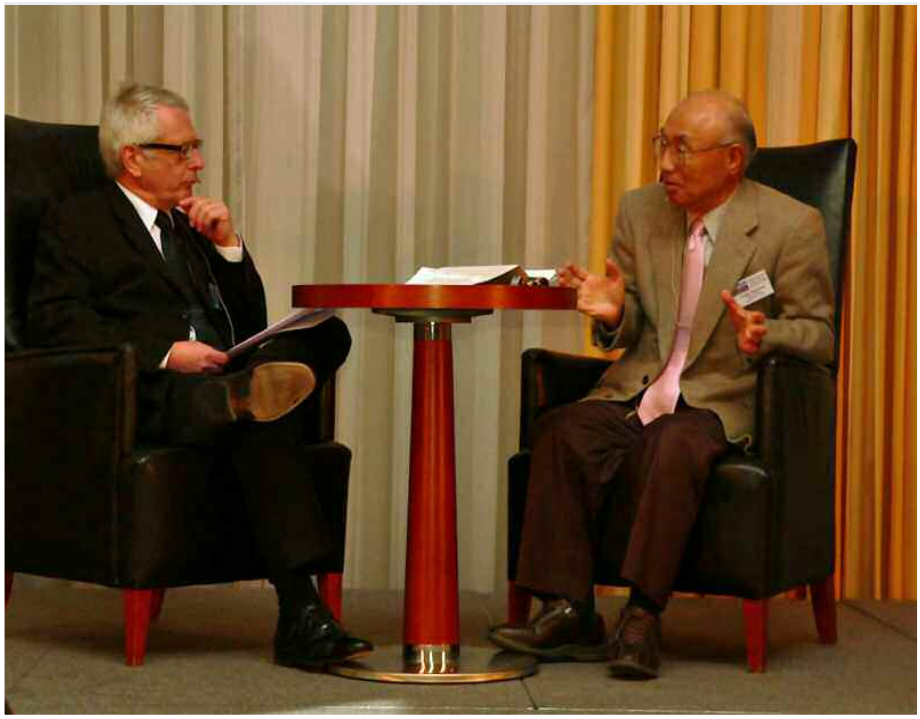

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