



SEMICONDUCTOR EUROPE NEWSLETTER

NOVEMBER 2011

CONTENTS

- Message from the President
- The semiconductor market in 2010
Page 2
- Trade issues central in 2011
global talks on semiconductors
- Semiconductors as a strategic
key enabling technology
Page 3
- The EU's innovation plans –
a perspective from Europe's most
R&D intensive industry sector
continuation
- Internet of Things *continuation*
Page 4



Hermann Winkler MEP, DG RTD Director Herbert von Bose and ESIA Vice President Alfred Hoffmann discussing the links between the EU's Horizon 2020 and KETs initiatives at the joint ESIA/Saxony Liaison Office panel discussion, November 2011

- What chips & KETs can do for
Europe and what Europe can
do for its KETs & chips
- 3 (killer) questions for...
ACTF Chair Leonardo Sabato
Page 5
- New Members: ST-Ericsson & X-Fab
Page 6
- European semiconductor industry
achieves a 41% reduction in green
house gas emissions
Page 7
- ESIA Members
- About ESIA
Page 8

The EU's innovation plans – a perspective from Europe's most R&D intensive industry sector

ESIA's main innovation prerequisites range from bridging the gap between ideas and market by making EU R&D&I funding programmes more market-relevant; focusing the use of structural funds and simplifying procedures; to placing more emphasis on societal challenges¹. These are the type of measures ESIA has been advocating in its contributions to both the Key Enabling Technologies (KETs) to MarKETS initiative², as well as the run-up to the EU's Horizon 2020 inno-

vation framework programme for 2014-2020, currently earmarked with a total of €80bn. They are even indispensable if we want to see Europe's most R&D intensive industry³ continue to create and increase innovation in and for Europe. Yet, there is still much room for improvement. Indeed, in global comparison, Europe fares extremely well when it comes to providing funding for fundamental research, which is rewarded by a world-wide acknowledged excellent basic competence. However, this is not sufficient to stimulate a knock-on effect and help maintain or to gain market shares and jobs. Innovation is a question of efficiently working and interfacing entire value chains. ESIA believes that the historical European innovation gap can be overcome by increased co-operative efforts in the domain of more application-oriented ('development') R&D. Regions like China, Korea and the US have long recognised the benefits of a more 'application' and 'development' orientated R&D funding (58%; 44% and 48% respectively⁴).

continues on page 4 ►

Internet of Things

The term Internet of Things (IOT) was probably first used by a British technology pioneer in 1999. The idea behind the IOT is that if all objects in the world were to be equipped with miniscule identifying devices, then daily life on our planet would undergo a radical transformation, as humans and objects such as light bulbs, fridges, cars and buildings could be interconnected between each other via the internet. The IOT is seen as the next technological step forward, as revolutionary as the rise of personal computers, the internet or mobile connectivity. It can also be seen as the internet entering the real world and as a way to address many of

today's societal challenges. The basis already exists, considering that by 2013, there may well be over 1.2 billion internet connections in more than 800 million homes around the world¹, increasing to over 1 trillion by 2020.

Connecting objects, people and the internet has many possible applications in the home and outside, addressing Europe's grand challenges such as energy efficiency, as well as enhancing convenience and safety.

continues on page 4 ►

Message from the President

Despite the uncertain global economic scenario, semiconductors remain one of today's market drivers, providing the enabling technologies to support growth and progress today and in the future. Europe will continue to be very much part of this picture but, as a region, we need to reinforce our framework conditions to effectively address specific European challenges, namely competitiveness gaps and achieving a global level playing field for our industry. To attain these goals ESIA is the association which brings our industry sector expertise and concerns together and acts as a natural partner for decision-makers both in the EU and worldwide.

The issues ESIA deals with have grown considerably over the past years; our 2011 Work Programme now covering over 110 action items and objectives. This edition of *Semiconductor Europe* provides a snapshot of those issues which matter to the

industry. Together, we are able to raise and address the growing range of policy-related issues which impact our industry. More importantly, we are also pro-actively engaged in contributing to shape the economic and regulatory environment we operate in, both in Europe and worldwide. This level of engagement can only be maintained and expanded with the active support of all our Members. I am pleased to see important new Members joining ESIA and an increasing recognition that the more you put into the association the more you get out of it. We can all only benefit from this.

In July, I left the KETs High-Level Group meeting with the EU Commissioners, Member State representatives and my industry colleagues with an impression that with this initiative Europe can really make a difference this time if it effectively implements what it has set out to do. The programme, the recommenda-



tions and, above all, the political support are all in place. Next comes the action. Let's continue to be a driving part of it. ■

Carlo Bozotti
President & CEO, STMicroelectronics
President ESIA

The semiconductor market in 2010

- Total worldwide market value 2010: \$ 298bn (€ 224bn).
- Total European market value 2010: \$ 38bn (€ 29bn)
- Percentage of worldwide market in 2010: Europe 13% / Americas 18% / Japan 16% / Asia Pacific 54%

The different semiconductor market mix in Europe, 2010

SOURCE WSTS



EUROPE

1%

GOVERNMENT

and military purchases

9%

CONSUMER

entertainment, radio, TV, VCR, personal or home appliance, camera, games, etc.

22%

AUTOMOTIVE

powertrain, safety management, body and convenience, engine controls, entertainment

30%

COMPUTER & OFFICE

mainframe, peripheral office equipment and personal computers

18%

INDUSTRIAL & INSTRUMENT

lab, test, control and measurement

20%

COMMUNICATIONS

wired and wireless, mobile, RF connectivity solution (Bluetooth, GPRS...), telecommunications, traditional telecom equipment, home networking equipment

WORLD

1%

18%

8%

41%

11%

21%

The different semiconductor market mix in the world, 2010

SOURCE WSTS



Trade issues central in 2011 global talks on semiconductors

As the global semiconductor industry grows so too does the scope of the issues affecting our members, many of which call for international cooperation. This was also reflected in the 2011 Government/Authorities Meeting on Semiconductors (GAMS). GAMS is a unique forum bringing together the EU, China, Chinese Taipei, Japan, Korea and the US once a year to discuss and decide on a wide range of pre-competitive semiconductor-related issues. Trade issues continued to be the main drivers, with issues such as the appropriate consideration for advanced semiconductor products such as Multi-component Integrated Circuits (MCO) and regulations affecting commercial encryption high in the agenda of this year's GAMS.

MCOs are among the most advanced semiconductor industry products, yet they are not currently treated as such in international trade. They do not enjoy

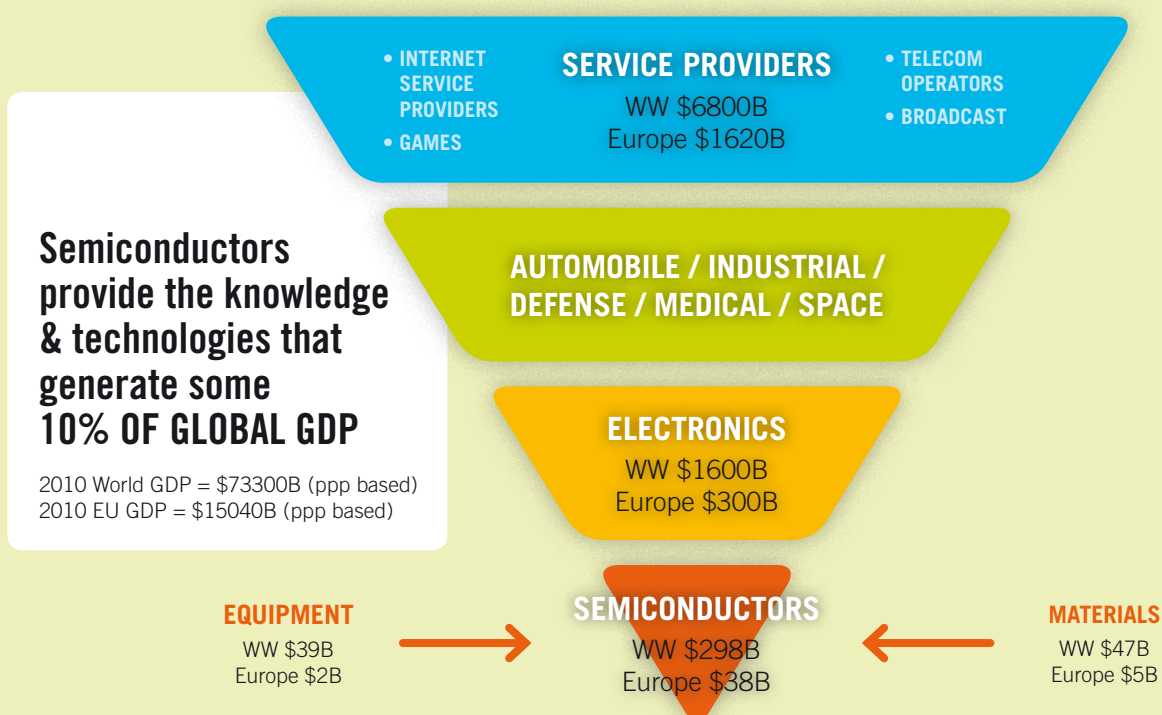


EU Commission (DG Trade & Taxud) and ESIA jointly representing European interests at the September 2011 GAMS in Washington

the favourable treatment granted to other semiconductors under the Information Technology (ITA) Agreement. ESIA, together with the other members of the World Semiconductor Council (WSC) supported the GAMS commitments to achieve a common understanding of what constitutes an MCO. Despite significant progress made during governmental ad hoc experts' meetings, the discussions suffered a setback as government delegations could not yet bridge the existing gaps in their views on such a complex issue. Dialogue continues among governments as the discussion focuses on a few remaining blocking points.

Encouraging global collaboration and open markets for commercial encryption technologies continues to be a primary focus for ESIA. ESIA is active in monitoring regulations and restrictive practices worldwide, working with key industry stakeholders and authorities to promote global open markets for commercial encryption. The GAMS also attaches great importance to this issue and has asked WSC to provide inputs on the semiconductor industry perspective on encryption and on the role of semiconductors in addressing global information technology challenges. ■

Semiconductors as a strategic key enabling technology - 2010



The EU's innovation plans – a perspective from Europe's most R&D intensive industry sector *continuation*

Here Europe — which spends less than 30% funding in this domain — has to catch up. Also in terms of the evolution of total R&D investment intensity Europe has to speed up in order to reach the 3% of GDP mark, which has already been passed by Japan and Korea.⁵

“So far so good...” says ESIA's R&D Group Chair Fred van Roosmalen “... our suggestions are largely shared by a large part of the responses to the Horizon 2020 Green Paper, and have generally been taken on board within the KETs and recognized within the Horizon 2020 run-up.”

Boosting Europe's innovation potential is the fundamental goal of the 11 recommendations of the KETs High-Level Group Final Report which cover interdependent steps ‘from the lab to the pilot line to the fab’. This concept is jointly shared by a number of Commissioners

and their respective DGs, as well as by major EU Member States.

Much work and many discussions will be needed for both initiatives, as the EU's decision-making machinery really sets into motion on both the KETs and Horizon 2020 initiatives under the Polish and Danish EU Presidencies.

Yet challenges remain. One of the central pieces of the KETs recommendations is the request for a specific KETs-box under the Horizon 2020 programme. This could effectively focus funding towards the specific needs of the defined KETs areas and would make a real difference. However, as ESIA's Co-Vice President Enrico Villa warns: *“This is one of the specific recommendations which runs the risk of becoming diluted as the Horizon 2020 discussions progress. Should Europe end up with a KETs box for everything,*



*Bringing semiconductors closer to Brussels
ESIA product exhibition November 2011*

then the status quo for R&D&I will remain in Europe.”

Europe needs to embrace the opportunities of both initiatives, the sooner the better. ■

1 ESIA's submission to the Green Paper: Towards a Common Strategic Framework for EU R&I Funding, 9.2.2011 COM (2011) 48.

2 High-Level Expert Group on KETs; Final Report June 2011

3 2010 EU Industrial R&D Investment Scoreboard European Commission, JRC/DG RTD & ESIA press release Feb. 1, 2011. ESIA website

4 KETs presentation to the EP's ITRE Committee, August 30, 2011.

5 EU Commission 2011: 'EU – Building an Innovation Union'.

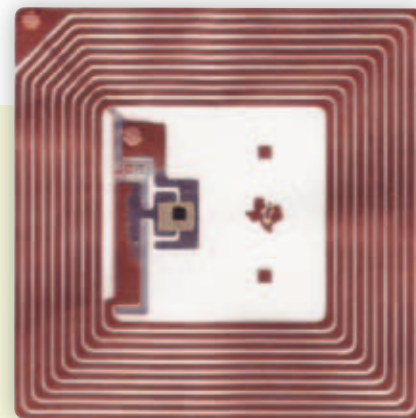
Internet of Things *continuation*

For example; your refrigerator detects that you are out of your favourite food and leaves a message on your smart phone reminding you to stop by the shop on the way home from work. Or your washing machine determines when to start its programme depending on time of day energy rates and by itself chooses the appropriate programme because from reading the tags integrated in your clothes it had determined that you had mistakenly put your best woollen sweater in together with your cotton shirts. Or smart sensors in cars and planes which detect wear and tear and wirelessly report the need for servicing or repairs.

The IOT is therefore a dynamic, global network that connects everyday objects and systems, adaptive to their environment and providing what is called ‘ambient intelligence’. Semiconductors are the key enabling technology providing the

core components for making the IOT a reality. Semiconductors can provide secure, low power communications, RFID chips and sensors and actuators allowing objects to be adaptive to their environment and be embedded in a communications infrastructure and many other key parts of this network spanning the globe. European semiconductor companies are among the world leaders in these core technologies required to bring about the IOT.

At the same time there are still many challenges ahead. One of these is that the IOT should provide a secure and trusted environment for its users – be it consumers, businesses or other stakeholders. ESIA fully shares that in the design, development and deployment of IOT applications privacy and security considerations should be an integral part of the approach and technology selection.



*RFID semiconductors are
a central piece in the IOT puzzle*

Chips provide the technology that both makes the IOT possible and help to enhance data security and privacy. We are therefore working together with decision makers to ensure a beneficial development of the IOT. For instance, ESIA is currently part of the group of experts appointed by the European Commission. As a member of the experts' group, ESIA will contribute to the on-going discussion about how the IOT can develop in Europe and beyond. ■

1 IBM see www.ibm.com/smarterplanet



What chips & KETs can do for Europe and what Europe can do for its KETs & chips

CEOs and Sherpas from STMicroelectronics, Fraunhofer, Soitec, Intel, Infineon with ESIA after the KETs High-Level Group meeting in June 2011

Nanoelectronics – or semiconductors – are one of the six key enabling technologies identified as strategically important for Europe and ‘indispensable for the delivery of smart, sustainable and inclusive European growth.’¹ What nanoelectronics, nanotechnology, photonics, advanced materials, industrial biotechnology and KETs-focused advanced manufacturing systems have in common is their capability to generate innovation and address societal challenges well beyond their respective sectors. In the case of semiconductors, this enabling function means that the global semiconductor industry enables around 10% of global and European GDP. EU institutions and Member States have realized this connection (as have other regions around the globe²) and tasked the High Level Expert Group (HLG) to draw up recommendations for the successful deployment of KETs in and for Europe. Europe has a specific advantage over other regions as it has advanced expertise and experience in all the identified KETs. On the other hand,

it faces grave disadvantages through unfavourable framework conditions which partly work actively against the ability to cross the valley-of-death between ideas or inventions and marketable products, processes and services - or innovation.

ESIA generally supports the 11 recommendations delivered to European Commissioners in June 2011. These are both *unique* and *vital* if Europe is going to succeed in its deployment efforts and improve the global competitive position of the EU for KETs:

Unique as they propose very concrete measures required to strengthen all three pillars holding up the bridge over the valley-of-death. This covers the areas of technological research, product development and competitive manufacturing. *Unique* also as these are being directly supported by all KETs, several Commissioners and their respective DGs, key Member States and MEPs and key European regions. This applies in particular to recommendations such as the introduction of a KETs

box within the Horizon 2020 R&D&I programme, emphasis on demonstration and pilot activities, simplifying the funding mechanism procedures, the inclusion of KETs in the EU’s structural funds, partly better protection of research results or state aid framework improvements e.g. through a matching clause.

The full implementation of the recommendations is *vital* as Europe will be unable to spearhead its own ambitions to tackle societal challenges without an effective industrial innovation policy. The KETs initiative is the concrete basis for such a policy and marks a clear investment into Europe’s future. Maintaining a status quo approach or failing to make the necessary changes would be more than simply a missed opportunity. KETs and nanoelectronics can do a lot for Europe – Europe needs to deliver for its KETs and its nanoelectronics. ■

1 COM (2009) 512; 2009 European Competitiveness Report 28.10.10; Council conclusions 28.5.09 HLG for KETs, Final Report 23.6.11

2 See e.g. Impact of Internal Policies on KETs, March 2011. Published by EU Commission, DG Enterprise & Industry.

3 (killer) questions for... ACTF Chair Leonardo Sabato (STMicroelectronics)

To fight counterfeiting, ESIA recommends the use of authorised distribution chains, but buying semiconductors on the open market when supplies are running low and prices are cheaper for the customer – what’s wrong with that?

It is dangerous to underestimate the phenomenon of chip counterfeiting – semiconductors are highly sophisticated devices and it only takes one malfunction to influence the performance of the end product. With counterfeit chips, you are, by definition, not receiving the good you think you have bought. Hence the risks of malfunctioning are infinitely larger. If this product is for instance a USB stick, then the biggest pain is replacing it. But if the chips are part of your car-braking system, medical device, your banking card or airport control computers, then we are entering entirely different dimensions of health, safety and security risks. Even tracing back which chip is malfunctioning can be like

looking for a needle in a haystack. The best way to avoid these risks is to make sure you know where the chips come from. Authorised distribution chains of semiconductor companies are by far your best bet to diminish the risk. Being tempted by a quick deal is not.

How can European customs’ agencies realistically identify counterfeit chips?

One central advice we give to customs’ officials is - never open the chip! Indeed, the only way to detect and verify counterfeit chips is through the sharing of intelligence and close cooperation between industry, customs and enforcement agencies. Having 27 customs agencies in Europe makes cooperation more complex, as the European ‘Application for Action’ (AfA) procedure proves. This is however the pre-condition to ensure cooperation and ESIA has developed nine steps on how to do this. Our experience shows that counterfeiters choose the path

of least resistance and those brands that are not prepared will face serious issues in defending their patents. In Europe this can be avoided by simply filing the AfA with the customs agencies; the members of the ESIA-ACTF are available to share the details of this process.

How can counterfeiting be stopped?

It can’t be the simple answer. When you have successful products you will always have people trying to counterfeit them. However, counterfeiting can be significantly contained and companies within ESIA’s ACTF are leading the way. We are seeing increasing numbers of border seizures, producers being raided and a growing awareness and interest among semiconductor companies, customers and authorities alike. It is these success stories which will eventually lead to a decrease in the counterfeit black market, which we currently estimate up to some €9bn worldwide. ■

New Members



ST-Ericsson is headquartered in Geneva, Switzerland with main centres in China, France, Japan, Korea and Sweden and locations in 20 further countries. ST-Ericsson is an industry leader in the design, development and creation of cutting edge mobile platforms and semiconductors across the broad spectrum of wireless technologies. The company is a key supplier to leading handset manufacturers, as well as to other key industry players, such as mobile operators and manufacturers of dongles, laptops and other connected devices.

ST-Ericsson is innovation focused, with the vast majority of its employees working

in research and development. The company is backed by the strongest Intellectual Property Rights (IPR) portfolio in the wireless industry through its parent companies – Ericsson and STMicroelectronics.

Collaboration is in the DNA of ST-Ericsson. The company has long standing relationships with global mobile phone manufacturers, spanning over 15 years. More than five billion phones have been built using ST-Ericsson's products and technologies, and more than a billion phones have been built on the company's complete platform solutions.

ST-Ericsson is unique in its ability to deliver state-of-the-art platforms, integrating mobile multimedia and connectivity for GSM, EDGE, WCDMA, HSPA, HSPA+, as well as TD-SCDMA and LTE. The company's multimedia and applica-

tion processors support all major operating systems (OS) to power next generation devices. ST-Ericsson's industry leading connectivity and broadcast solutions for Bluetooth, FM, GPS, WLAN, Near Field Communications and USB provide a richer mobile experience. The company covers all market segments, from entry level handsets to smartphones.

ST-Ericsson has developed close relationships with several European industry associations. Our recent membership at ESIA demonstrates our involvement in keeping a large base of R&D in Europe and contributing to the 2020 ICT target. ■

Denis Rousset
Public Affairs & Funding Director
ST-Ericsson
www.stericsson.com



X-FAB steps beyond logic and memory scaling to deliver "More than Moore" value for customers. Instead of following Moore's Law, X-FAB integrates technology features that interact with the analog world, and provides a comprehensive design ecosystem. It includes services and tools for developing diversified power/HV, MEMS, opto and analog products, a 24-hour technical hotline service, a portfolio of technically mature, extensive libraries and IP, a broad spectrum of primitive devices, and flexible prototyping options – all backed by X-FAB's 15 years of solid analog/mixed-signal foundry expertise.

At its four manufacturing sites in Germany, the US and Malaysia, X-FAB manufactures wafers for automotive, industrial, consumer, medical, and other applications on modular CMOS and

BiCMOS processes in geometries ranging from 1.0 to 0.18 μm , and special BCD, SOI and MEMS long-lifetime processes. Its marketing network and client base span Europe, the Americas and Asia, offering manufacturing capacity of approximately 750,000 200mm-equivalent wafers per year. Always creating long-term customer relationships based on stability, reliability and confidence in X-FAB's expertise, X-FAB adds value to the wafer manufacturing process by offering customers outstanding technical support. X-FAB customers benefit from high-performance technologies, excellent technical design and prototyping services; and fast, easy and flexible foundry access worldwide.

Privately held and headquartered in Erfurt, Germany, X-FAB currently employs approximately 2,400 people worldwide and 1,000 in Europe. At its locations in Erfurt and Dresden X-FAB draws from decades of experience in one of the most innovative microelectronics



regions worldwide with highly qualified specialists.

An ESIA membership is the most effective way of leveraging synergies and bundling forces to improve the competitiveness of the European semiconductor industry. As part of ESIA, X-FAB can strengthen its dialog with other companies within the branch and influence industrial policy in Brussels. ■

Hans-Jürgen Straub
Chief Executive Officer
X-FAB Silicon Foundries
www.xfab.com

EECA-ESIA Members

Company Members



National Associations



Research Institutes



EECA ESIA

European Semiconductor Industry Association

The Mission of the European Semiconductor Industry Association (EECA-ESIA) is to *represent, promote and defend the vital interests of the European-based semiconductor industry and to ensure its competitiveness in the global market.* The semiconductor industry provides the key enabling technologies at the forefront of the development of the Information Society. The sector supports over 110,000 direct jobs and up to 500,000 induced jobs in Europe, operating in a worldwide market valued at \$298bn (Europe \$38bn) in 2010. With membership covering companies, national sector associations and research institutes, ESIA is the voice of the semiconductor industry in Europe. ■



EECA EPCIA

European Passive Components Industry Association

The second autonomous industry association under the EECA umbrella is the European Passive Components Association (EPCIA) which works to represent and promote the common interests of the Passive Components Manufacturers active in Europe to *ensure an open and transparent market for Passive Components in Europe as part of the global market place.* ■

EECA ESIA

European Semiconductor Industry Association

11/13 Rue de la Duchesse
1150 Brussels, Belgium

Tel: +32 2 290 36 60
Fax: +32 2 290 36 65

secretariat.gen@eeca.be
www.eeca.eu/esia