

Bird's eye view

IT'S SHOWTIME: As we head into Electronica, the biennial component exhibition, we've put together a series of articles that look at applications likely to drive the electronics industry and particularly in Europe. In the future B2B is likely to be machine-2-machine and auto-2-auto (see **pages 28, 29, 30, 32, 33, 34**).

DEVIL'S IN THE DETAIL: Moore's Law is under threat from nanoscale physics on one side and multibillion transistor complexity on the other, according to EDA expert Hugo De Man. The IMEC research institute, sees the creation of technology-aware designers as a way for industry to keep riding the escalator down to smaller geometries (see **page 24**). But if the design complexity doesn't get you the test complexity will, according to a test conference keynoter (see www.eetimes.eu/193500707).



GOOD VIBRATIONS: Designs based on microelectromechanical systems are pitching to serve as oscillators and displace the use of the piezoelectric properties of quartz crystal. R. Colin Johnson looks at the offerings from two U.S. startups in the area (see **page 40**). Theon Sensors is a Greek startup (see below) that is aiming to use MEMS technology for mass flow and air flow applications (see www.eetimes.eu/193400848).

PILLARS OF WISDOM: Greek academics and business leaders are attempting to foster the growth of electronics companies in the Athens area. EE Times Europe was given an exclusive tour of the newly-built Hellenic cluster facility and briefed on a new technology initiative (see **page 14**). Supporters of that initiative will, no doubt, wish to work with private equity management firm Global Finance, which is raising about \$360 million to back management teams seeking to expand in S.E. Europe (see www.eetimes.eu/184400070).

Greece frames future in technology cluster

By Richard Wallace

ATHENS — Determined to secure a competitive regional position in an increasingly global European electronics market, Greece has launched a national technology initiative focused on semiconductors, microelectronics and embedded systems. The Hellenic Technology Cluster Initiative, the first of its kind for Greece, was initiated and inspired by the collective vision and bottom-up efforts of a core group of private companies comprising Greece's leading semiconductor industry entrepreneurs, design houses, research institutes and university microelectronics labs, including the National Technical University of Athens and Patras University.

HTCI's goal, which has been endorsed and backed with government support, is to foster the growth of new and existing technology companies and support centers of excellence in world-class R&D and product development, and, ultimately, to help transform Greece into an attraction for foreign investors.

The initiative has entered its pilot phase. It has received €9.5 million (about \$12 million) for two years, with €3.75million (about \$4.9 million) from the Ministry of Development's funds, €2.75 million (about \$3.5 million) from the European Union's 3rd Community



HTCI

Support Framework (regional development funds) and €3 million (\$3.75 million) in private matching funds from companies taking part in the cluster.

While global companies like Atmel, Photonics and Broadcom have a major presence in Greece, local entrepreneurs have established a viable electronics "ecosystem" based on the fabless semiconductor/design house model. The HTCI hopes to fuel national growth and technology innovation through a more Silicon Valley-like approach that puts a

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On top of the news ONLINE

Gathered below are five of the top stories that have appeared online at www.eetimes.eu:

- 1) BenQ Mobile insolvency hits Infineon's bottom line (www.eetimes.eu/193402010)
- 2) IBM technology keeps future chips cool (www.eetimes.eu/193402388)
- 3) Dialog Semiconductor another victim of BenQ Mobile crash (www.eetimes.eu/193402393)
- 4) STMicroelectronics multiplies profit (www.eetimes.eu/193402015)
- 5) Printable electronics helps Formula One (www.eetimes.eu/193402914)

U.S. execs see bright future for Europe

By Colin Holland

CAMPBELL, California — And they have beer on the stands! What was once the incredulous reaction by executives from the United States to the hospitality for which Electronica is famous has now turned to a boast "... and we are going to have beer on OUR stand, and it won't be American". But it is not the beer, or even the sausages, that continues to attract a worldwide audience to a chilly Munich every two



"We see the European market as very healthy"
— Sanghi, Microchip



years. It is the opportunity to meet the electronics sector in all its guises. The semiconductor folk might not tend to venture out to the extremities where cabinets and racks are all the rage and no doubt the emech aficionado might avoid

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greater reliance on home-grown development and venture capital-backed entrepreneurship.

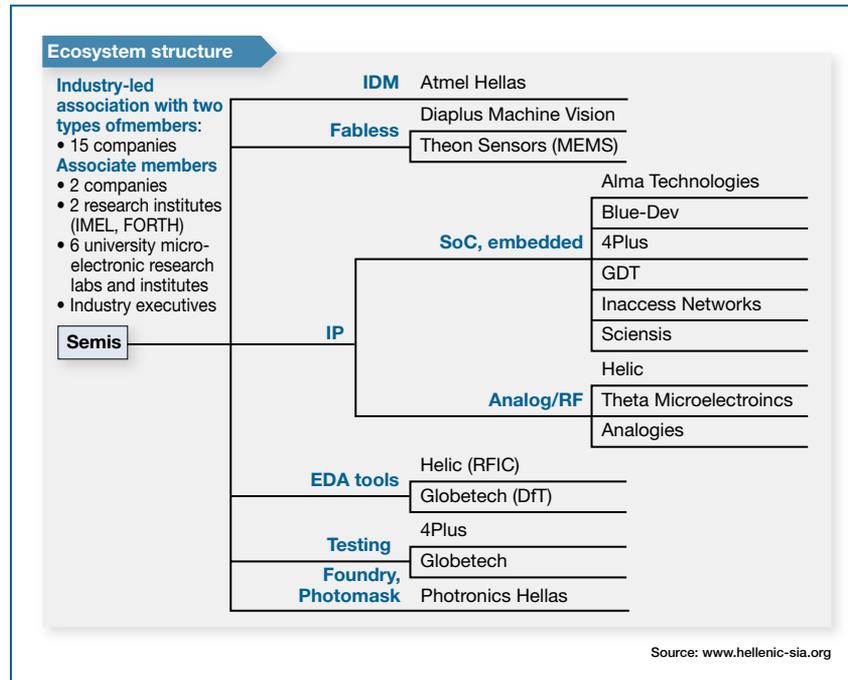
In April 2005, the minister of development, Dimitrios Sioufas, spurred by private concerns, started to push forward a framework to take advantage of what was termed “local competitive characteristics” and to establish a framework of targeted clusters focusing on “a few technology market areas in exports-oriented segments that can yield world-class marketable results.”

In a related development, Greece’s Hellenic Ministry of Development is overhauling the nation’s R&D policy to encourage more public-private partnerships (see related story, page 16).

The result is the Hellenic Technology Cluster Initiative. It is hosted by the Research Center Athena and is the first such effort backed by an industry-led group and supported by an industry association: the Hellenic Semiconductor Industry Association.

HSIA president and general manager of Athens-based Theta SA Theodore Varelas called HTCI “the right tool at the right time.”

“We anticipate that HTCI will play a catalytic role in the cooperation of the private sector along with the public sector in a targeted effort to expand the semiconductor ecosystem in the region. We anticipate the HTCI framework will



Greece’s semiconductor ecosystem

What Hellenic-SIA brings to the table



set an example for commitment and rapid deployment of actions to support the establishment of R&D center of large corporations in the region, support of small and medium-sized enterprises, along with creation of spin-offs out of local research institutes.”

The goal is to “create an example and show that it can be done” while replicating “the good practices and avoiding bad ones into the other identified sectors in the future,” said HTCI

unit director and cluster champion Vassilios Makios.

While Athens is the base for the cluster, the initiative is “national in scope,” said Makios, who is also vice president of Research Center “Athena” and a professor in the Department of Electrical and Computer Engineering at the University of Patras.

Jorge-A. Sanchez-P., HTCI director for strategic planning and business development, acknowledged “the key role that

Vassilios Makios — a highly influential engineer and educator, and mentor to several generations of Greek electrical engineers, innovators and entrepreneurs in Athens, Patras, Thessaloniki and throughout the global Greek diaspora — played in getting HTCI off the ground.”

“We had to bring a lot of new ideas to the government, and we suggested a lot of changes in the research, innovation and regulatory framework. It was a very bottom-up approach,” he noted.

“But when I met with Sioufas, and [Ioannis] Tsoukalas [the secretary general for research and technology] and (Spyridon) Efstathopoulos [the secretary for competitiveness], “they got it right away,” Makios added.

According to Makios, “recent successful investments in Hellenic business sectors indicate that leading investors are interested in venturing into an emerging and highly rewarding market.

“We believe we have a high caliber of ‘human capital’ in Greece, especially in the semiconductor sector, with established commercial links and proven business endeavors” around the world.

The goal is to “develop regionally and compete globally,” Makios said, enumerating a series of coordinated objectives focused on “the need to locate and bring together the current Greek players; the need to formalize partnerships and strengthen collaborations and to build business partnerships and collaborations that will contribute

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Silicon Valley blossoms in Athens

Late last month, EE Times Europe was given an exclusive tour of the new Hellenic cluster facility and was briefed on the new technology initiative by its private and government supporters, including visits to HSIA member companies in and around Athens.

The HTCI facility is in the municipality of Maroussi, which was mainly an ancient agricultural area and more recently a residential one, whose Kifissias Avenue is increasingly known as “telecom alley,” reflecting a post-Olympics boom in wireless and networking companies such as Vodafone, Siemens, Cisco, EMC and Hewlett-Packard, that are making Maroussi home base for Athens and the region.

The Kifissias Avenue station on the Athens Metro is the gateway to the cluster (and the Athens Olympic Stadium built for the 2004 Olympic Games), and the area is a short distance from the new Athens International Airport and the new Helexpo exposition center.

Massive investments and improvements have been made in transporta-

tion — including a new ring road and a breathtaking high-speed roadway linking Athens and the airport — communications and municipal infrastructure for the Olympics. Among ancient ruins, it has laid the groundwork for a 21st-century phase of economic development in the region in and around Maroussi.

“There’s fiber everywhere, and we have the most advanced cable network in Athens and wireless hot spots throughout the area,” Nikos Vogiatzis, cluster operations and corporate services director for HTCI, said of the Maroussi location.

HTCI, focused on semiconductors, microelectronics and embedded systems, is setting up shop in a refurbished, three-level, 2,800-square-meter (about 30,000 square feet) facility

designed as both an incubator and a new permanent home for several of HTCI’s more established technology companies. Included are modern parking facilities, secure technology-business offices and R&D.

While construction and renovation in the new facility was still under way in the Maroussi facility, all of the available space has been spoken for and allocated to its new tenants. The first permanent tenants in the facility are: Atmel Hellas, Bytemobile, Helic, InAccess Networks, GDT, Alma Technologies, BLUEdev, Diaplous, and 4Plus.

“We already need more room,” said Vogiatzis, noting that plans for Phase 2 are already being discussed and include potential expansion and growth nearby on the grounds of Athens International Airport. Ultimately,

cluster proponents hope to deploy a large-scale cluster ecosystem and to develop a dedicated “Cluster Innovation Area” in the 2009 to 2013 period.

The Ministry of Development’s Operational Programme “Competitiveness” comes under the 3rd Community

Support Framework (3rd CSF) 2000-2006. It includes a package of actions and subsidies to improve the competitiveness of the Greek economy and to promote the country’s social and economic convergence with other EU member states.

Cluster funds support the management and administration of

the center, the infrastructure, hardware, software, training and seminars, external expertise, intellectual property due diligence, seminars and filing process in support of its clients.

— Richard Wallace



Nikos Vogiatzis: “We already need more room.”

R&D reform to spur competitiveness

Greece is a small country, but it has a track record and strong capabilities in research and technology development, especially in electronic engineering and across the microelectronics-intensive information, computing and telecommunications domains.

In 2001, there were 55,626 researchers (up from 30,500 in 1993) in such fields as telecommunications, microelectronics, multimedia, computer science, computer networks and software engineering, attracting the interest of many multinational companies and producing an increasing number of high-quality publications.

But Greece's R&D system, which is heavily university-driven, shows major imbalances and discontinuities among the academic, business and government sectors.

The 2005 Competitiveness Report of the European Semiconductor Industry Association includes a call for increased investment in Europe and to "unleash Europe's R&D capabilities," saying "Europe must spend 3 percent or more of European GDP for R&D." It also calls upon Europe to open its educational system "to work

for industry," and to "enable more and stronger multiple partnerships."

Yet Greece's research system and high-quality development skill are extraordinary, as confirmed by its proportional participation in the Framework Program of the EU. Greece provides 0.5 percent of the research potential of the EU, but its participation in the respective programs of the Framework Program ranges from 1 percent to 8 percent. But here too there is a preponderance of small contributions made to larger projects administered by units in other member states of the EU.

In other words, Greece has done an enviable job of designing, developing and supporting technology programs for other EU countries, but it's been a laggard when it comes to developing and deploying homegrown innovation and entrepreneurial-driven technology business within Greece itself.

However, all that is changing, and change is being driven at all levels of academic, commercial and legal struc-



Ioannis Tsoukalas strives for Silicon Valley-like climate.

tures within Greece. It's not clear how long it will take the nation to reach its own or the Hellenic Semiconductor Industry Association's objectives, but thanks to grass-roots industry organizations such as the HSIA, which seek to improve the climate for technology innovation, it's headed in the right direction, according to some industry observers.

Ioannis A. Tsoukalas, the secretary general for research and technology, a key policy-making arm of the Ministry of Development, has been a driving force in efforts to reform Greece's antiquated R&D system.

Much of this effort is focused on improving the climate for public-private cooperation.

Mindful of Greece's contribution to both the academic and industrial advances in electronics at home, in Europe and in the U.S. and Canada, Tsoukalas and HTCI's champion, Vassilios Makios, both nurture a lifelong vision of a more Silicon Valley-like entrepre-

neurial climate for their country, a new generation of Greek entrepreneurs.

"The main asset of Greece is human capital," Tsoukalas asserted, but quickly noted that "many of the forces of excellence in Greece have been hidden below the overall picture."

In an interview at the Ministry of Development (MOD) in Athens, Tsoukalas referred to what he termed antiquated notions about the role of academia and university research within the Greek university system. Greece's failure to modernize and reform this system has held back the commercialization of much Greek-developed innovation and research developments, he said.

"Greece has an ideal notion of an academic university that no longer exists," Tsoukalas said, noting that the MOD and the Greek government are just emerging from an intensive institution-wide examination of scientific and technology policy within Greece. The General Secretariat for Research and Technology is writing its final report and plans to publicly disclose "a new law for research and technology" at the end of November that will be the MOD's official recommendations to parliament and Greece's prime minister for broad-ranging reforms.

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ute to HTCI growth, especially in areas of: technology and know-how transfer; investment; human capital development; joint ventures in promotion and dissemination, and R&D partnerships."

Greece's newest clustering initiative is bucking a trend of technological stagnation and decline, owing, some say, to a lack of vision by Greece's political leaders and an entrenched policy that has supported the tourism and energy industries, to the exclusion of other promising, but neglected, sectors like IT.

Greece has not been outward-looking, and when it's tried these things (promoting technology innovation), they have been run by the public, government sector, not the private sector," Makis Magdalinos, investment manager at ELKE, the Hellenic center for Investment in Athens, noted, expressing skepticism that runs deep within many observers within Greece.

Magdalinos asserted that despite strong assets in "human capital," Greece

has not reached its business and technology potential in the EU, although he is optimistic that it will. "To succeed, they (HTCI) will have to reach critical mass quickly," Magdalinos warned.

Semiconductor industry leaders outside Greece share the local industry's optimism. One is George Scalise, president of the U.S. Semiconductor Industry Association.



Vassilios Makios: "Develop regionally, compete globally."

"Great universities with outstanding engineering programs are the common denominator of successful microelectronics industries. With its rich history of excellence in higher education, Greece has in place the foundation for a viable, competitive semiconductor industry.

"With talented engineers and a fabless business model utilizing the wafer fabrication capacity available in Asia, I expect the Hellenic semiconductor industry will make rapid progress," Scalise predicted, adding "in the microelectronics industry, a healthy supporting infrastructure is essential for success. The technology cluster initiative is an important first step toward creating that infrastructure."

Greece at a glance

Population: 11.2 million
 EU membership: January 1, 1981
 GDP 2005: \$236.8 billion
 GDP growth rate (Q2 2006): 4.1 %
 Total FDI 2005: \$2.75 billion
 Total FDI inflow as a percent of GDP: 0.7%



1. Number of undergraduates per year

a. EE: 5 years of studies (Dipl.-Ing.): 1280 (2006 figure)
 b. EE: 3,5 years of studies (B.Sc): 5405 (2006 figure)
 c. IT informatics/telecoms: 4 years of studies (B.Sc): 1640 (2006 figure)
 Other related (Math, Physics, etc.) (BSc): 2205 (2006 figure)
TOTAL 10530

of the a. above chartered EEs 1105 (2006 figure)
 of the above around 85% finish their studies

2. Number of MSc and PhD EE Graduates per year.

45,6% of a. above pursue a post-graduate degree
 - of those, 44,74% a MSc and 56,26% a PhD
 - of those 54,2% abroad and 45,2 in Greece.
 - of those abroad 51,5% in the UK, 27,8% in the US, 8,4% in Germany, etc

3. Total number of EEs employed in Greece

Chartered EEs (Professional accreditation by the Technical Chamber) are about 18,000
 10% increase per year for the last 5 years.
 Estimated total number of EEs employed in Greece is around 80,000.

4. Percentage of EEs compared to other degrees

Among all engineers, the EEs are about 17,8%

Source: Hellenic Center for Investment, IntelliNews, Ministry of Education, the Technical Chamber of Greece

R&D change

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Though he did not outline the pending policy changes the ministry will seek, Tsoukalas noted that Greece's new R&D legal framework will be modeled on the U.S. National Science Foundation (NSF), an independent federal agency created by Congress in 1950 to "promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense."

Greece has also looked to Finland and Holland for technology policy guidance. Both of those small countries have developed effective programs to promote public-private cooperation to drive innovation and a knowledge-based economy. Greece's new initiatives will mix the best elements of all three systems.

"The public consultation has ended," Tsoukalas said, adding that the text of a new framework for R&D policy making and funding "will be presented to Parliament at the end of November."

Throughout government and industry, there was skepticism about the prospect of changing the status quo in Greece. But these doubts aren't putting a dent in the HTCI's or the MOD's determination or confidence. "I think it will work," Tsoukalas said, noting it will take time to make changes. But "it will have an impact and, in three years, we will have quantifiable and qualified results."

Tsoukalas and Spyridon Efstathopoulos, the secretary for competitiveness, were two of HTCI's earliest and strongest proponents. The Ministry of Development, through its General Secretariat for Research & Technology and its Operational Programme "Competitiveness," endorsed the microelectronics area as the pilot ("test case") of Phase 1 of the new cluster initiative.

"It has been planned carefully," Tsoukalas said of the cluster initiative and HSIA member participation.

"We have been failing till now," Tsoukalas said, adding that HTCI "has inherent parameters of being in the forefront, and I expect that it will succeed," adding "it will be a milestone for the Greek entrepreneur."

Online:
Greece updates R&D legal framework for technology innovation, research.

www.eetimes.eu/19350196

Research clusters make progress in South of France

By Colin Holland

NICE, France — It has been a good year for the electronics companies and support services that crowd the coast around the French Riviera. Not only has the area made some major gains in attracting new companies, but in a little over a year since its establishment the Microelectronics Integrated Center of PACA (Provence-Alpes-Côte d'Azur) — CIM PACA — has made great strides in providing value-added research to the many local and international companies.

The so-called cluster approach established three microelectronics-centric platforms under the CIM PACA umbrella: a design platform of new-generation SoCs based in Sophia Antipolis, a characterization platform of micro- and nano-structures in Rousset, and a micropackaging and security platform based at the Provence Microelectronics Center in Gardanne (see box below).

The Cote d'Azur has in the past year also seen its first Indian investment, which is among one of the first in France. The company, Wipro, with more than 50 000 employees worldwide, is now in Sophia Antipolis as Wipro Newlogic and has created 60 new jobs in the course of the year.

Two British companies have also arrived. Cambridge Silicon Radio

has opened an R&D center in Sophia Antipolis and hopes to create up to 60 jobs while Icera also aims to raise its

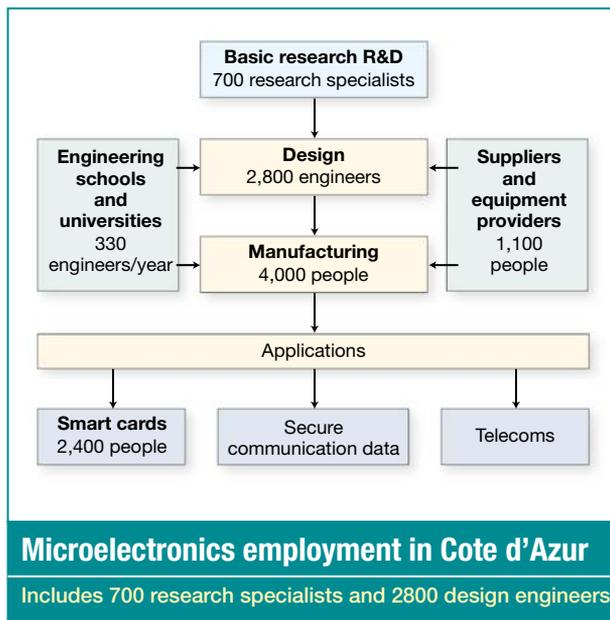
This park epitomizes the true multinational nature of the area with, at the last count, more than 68 nationalities represented among the 1,300 businesses.

In 1986, the arrival of VLSI marked the beginning of design activities within, with major firms like Cadence Design Systems, Synopsys, Mentor Graphics and Infineon Technologies setting the pace and triggering the growth of small to medium companies. Two years later, the acquisition of VLSI by Philips added to the momentum, with a new set of successful startups such as Stepmind, NewLogic Technologies and Centillum. At the end of the 90s, the arrival of STMicroelectronics, Sonics and TTP Com brought a new wave of development.

Microelectronics in the Cote d'Azur employs 5,169 people and 3,728 of them are involved in high-value R&D, with private companies in the region spending €235 million (about \$294 million) on R&D in 2004.

Many smaller businesses focus mainly on wireless solutions and design. ASK is a developer and manufacturer of microprocessor-based contactless smart cards for automated fare collection in public transit systems and highway toll booths. Stepmind is a fabless supplier that has developed among its applications an Edge baseband processor used by GSM

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head count to 60 by the end of 2006. Motorola has located its TTP COM R&D center, which specializes in wireless technology, in Sophia Antipolis.

All this started in the 1960s when IBM and then Texas Instruments made their first tentative steps to establish facilities under the Mediterranean sun. If anyone had predicted that there would someday be more than 90 microelectronics companies located on the Côte d'Azur the response would have been deep skepticism. About half these firms are in the Sophia Antipolis Science Park.

In a move away from its origins, the Ecole Nationale Sup des Mines has opened a satellite campus in Gardanne, just north of Marseille, far from its roots in St. Etienne in central France. While the main facility has moved on from supporting the mining industry to covering subjects ranging from material science and structures to health science and engineering, the Ecole's Provence Microelectronics Center was established in 2003 specifically for electronics research and education.

Three research departments cover manufacturing sciences and logistics, packaging and flexible substrates, and secured architectures and systems.

A joint team established in 2004 with CEA-LETI to look at secured embedded systems and microelectronics (Seame) was the first CEA team to be set up outside Grenoble. The center is now providing the base for the MicroPacks research and development platform, part of the CIM PACA project. One particular area in which it is making advances is on printed polymer electronics;

earlier this year it reported its success with carrying out inkjet-printed organic FET on plastic foil.

The Provence Microelectronics Center has occupied temporary quarters for the last three years but will shortly take over a specially built 60,000-square-meter campus. To be called the Georges Charpak Campus, the research facilities will include a 1,000-square-meter clean room and 15 research labs.

At present the center houses 283 graduate students, including 25 working on their doctorates, most working with industrial partners and 36 researchers/teachers. The new multicultural campus will eventually house 250 researchers and engineers, 130 permanent support staff and 660 students.

As well as the CEA-LETI link, the center is working with STMicroelectronics, Atmel, Gemalto and the Organic Electronic Association. It is also doing collaborative work with the universities of Montpellier, Grenoble and Marseille.