

# **FUTURE HORIZONS**

Presents

## **The European Fabless Semiconductor Report**



### **2009 Edition**

**Annual Analysis Of The European  
Fabless, Chipless & High-Level  
IC Design House Industry**

# **Future Horizons**

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**The European Fabless Semiconductor Report**

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**Chapter 1 – Introduction, Scope & Methodology**

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European chipless, fabless and IC contract design companies are presented as ‘one per page’ company profiles in Chapter 7. The full database is available separately, supplied in Excel form on computer disk, and contains street and website addresses as well as classifications by country and specialisation.

## **1.2 Methodology**

Intensive research for this report has been carried out over the past year, for the period 1998 to 2008 inclusive and the company also uses its own archived data going back to 1995. Research was based on an in-depth analysis of detailed data on current and future design capacity, the end-use application market, and design skills developed by companies. The data was obtained by three research methods:

Questionnaire to companies that make up the European IC design industry. The database of companies was built up by researching end-use system customers, wafer foundries, promotional activity and from design companies themselves

Furthermore, detailed information was collected from structured interviews; either carried out face-to-face or via telephone and also from company published accounts.

Additional information was used from Future Horizons' proprietary database, supported by Future Horizons' research staff

Finally, the data was organised as a comprehensive reference resource, giving detailed profiles of companies, on a ‘company-per-page’ basis, at the end of the report. This valuable database is also available in electronic Excel database format as an optional extra to original Report purchasers only.

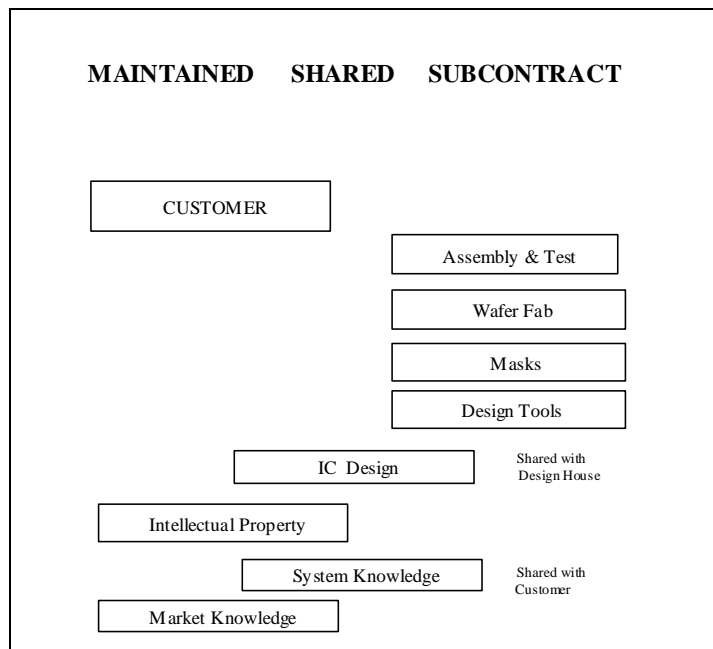
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# Chapter 2 - The Design House Phenomenon

Subcontracting a number of capital intensive and mature sciences will allow the companies to concentrate on meeting with their customer's application needs. System-on-Chip (SoC) integration will need greater system and software knowledge than commodity, application specific and digital logic ICs have needed in the past, and a number of partnerships will have to be created in order to make this happen.

Market and system knowledge will have to be gained in partnership with leading systems companies. It is an immense task, especially in man-hours, to design these large chips. Except in the very large companies, a team including external members will be necessary to take on the task of a SoC design.

**Figure 2.3 - IC Industry Restructuring**



Source: Future Horizons

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**Chapter 3 - Design Industry Drivers**

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such as voice dialling, global positioning and can transmit and receive data as well as voice.

The Third Generation (3G) mobile phone market is now with us and, subject to service offerings is giving access to video and full Internet capability and soon mobile TV. GSM phones have now moved to GPRS with extra features such as multimedia text capability, MP3 music and built-in quality cameras in phone sizes the same as or smaller than the GSM equivalent.

3G mobile phones are only a little larger than present GPRS phones due to an improved screen size, but one generation more complex in technology. This progress has been brought about by more circuit integration.

Intelligent IC design and finer semiconductor geometries have not only reduced the phone's physical size, but have also reduced the IC's power consumption for the same function, allowing both battery size and weight reductions as well as longer battery life between charges.

In today's electronic products, particularly those that are portable, the chip and the system it enables, is increasingly inseparable. For some OEM companies, the products are a system with little more than a box surrounding a single chip or chip-set, and because no other components are required, the OEM struggles to realise added value.

While consistent semiconductor industry growth ultimately depends on a healthy electronic systems market, the electronics systems market cannot survive without the innovation and cost effectiveness that the chip industry provides.

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**Chapter 4 - IP Becomes A Market**

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From the licensor's point of view they have to:

- ❑ Develop the IP
- ❑ Evaluate the IP in multiple configurations and often different wafer processes
- ❑ Determine and prove the level of quality of the IP
- ❑ Document the IP adequately but not to give away the family silver
- ❑ Promote the IP
- ❑ Price the IP
- ❑ Negotiate an agreement
- ❑ Support the customer

Making a technical evaluation of IP prior to purchase is difficult, due to the necessity of a due diligence procedure to ensure the legal ownership and quality aspects are adhered to. This is made somewhat easier by the recent introduction of services, in the individual company cases such as with ARC, whereby an engineer can simulate and prove that the IP performs over the Internet.

The absolute proof is in the evaluation and subsequent verification of the operation of the IP in the licensee's own circuit configuration taking place. To do this there is a difficulty of maintaining security but allowing a technical 'due diligence' before IP is purchased.

If the IP is silicon-process critical, the evaluation cannot be carried out overnight and must take considerable manpower from both parties. This evaluation must also allow the exercise of multiple IP together with the evaluation of system architectures and hardware/software co-design.

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**Chapter 5 - Design House Methodology**

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These non-manufacturing companies are not burdened with the high financial overheads of a wafer fab. Originating in the USA in the 1980s, this style of company can innovate effectively and have a fast design cycle, backed up by good market and system knowledge, all of which are core competencies.

Wafer foundries and sub-contract IC assembly companies carry out the IC manufacturing process for the fabless semiconductor companies. Cambridge Silicon Radio, Dialog Semiconductor, Melexis, Oxford Semiconductor and Wolfson Microelectronics are examples of Fabless semiconductor companies.

### **5.3 Chipless IP Vendors**

The chipless IP vendor is more of a European phenomenon. With even less capital and administrative costs than the fabless semiconductor company, its sole role is to market Intellectual Property (IP).

IP exists as pre-designed re-useable electronic circuit functions in the form of design building blocks. These building blocks are commonly called 'cells'. Some cells that primarily carry out microprocessor or DSP functions are also called 'cores'.

IP is the common thread throughout the high-level IC design house industry. Companies live or die by the IP they create and its exploitation and protection are the keys to long-term survival. Examples of chipless IP vendors are ARC International, ARM, Dolphin Integration, and Imagination Technologies.

Our research has observed that all design houses are unique. Even though design-houses were pigeonholed into one of the four sectors above, in practice, most also have a partial fit with one or more of the others.

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# Chapter 6 - Company Skills & Profiles

**Table 6.1 (cont) - All European IC Design, Chipless & Fabless Companies**

<b>Company</b>	<b>Country</b>	<b>Company Type</b>
Aurelia Microelettronica Srl	Italy	Mixed Function
Avnet Asic Israel (AAI) Ltd	Israel	Fabless
Barco Silex	Belgium	System on Chip
BitSim AB	Sweden	Digital
BlueSky Positioning Ltd	France	Fabless
Boardbug Limited	England	Fabless
Bright Imaging Ltd	Israel	Chipless
BroadLight	Israel	Fabless
C4i	France	Mixed Signal
Cambridge Consultants Limited	England	System on Chip
Cambridge Semiconductor	England	Fabless
Cambridge Silicon Radio plc	England	Fabless
Cambridge Technology Consultants Ltd	England	Mixed Function
Camitri Technologies	England	Chipless
Cascoda Ltd	England	Mixed Signal
Catena Microelectronics BV	Netherlands	Mixed Signal
Celeno Communications	Israel	Fabless
CellGuide Ltd.	Israel	Fabless
Cellot Ltd	Israel	Chipless
Cellular3G	Israel	Fabless
CeRoma Ltd	Israel	Fabless
CESVIT Microelettronica Srl	Italy	Fabless
ChipIdea Microelectronics SA	Portugal	Mixed Signal
ChipIng Microelectronics GmbH	Germany	Fabless
ChipSensors Ltd	Ireland	Fabless
ChipX Ltd	Israel	Fabless
Circuits Multi-Projets (CMP)	France	Services
Cissoid	Belgium	Fabless
ClearSpeed Technology Ltd	England	Chipless
Cologne Chip Designs GmbH	Germany	Fabless
Commsonic Ltd	England	Chipless
Communication & Control Electronics Ltd	England	Fabless
Comodo Group Ltd	England	Fabless
Comsis	France	Chipless
Comsys Communications & Signal Processing Ltd.	Israel	Chipless
ConnectOne Ltd	Israel	Fabless

Cont/

## The European Fabless Semiconductor Report

# Chapter 6 - Company Skills & Profiles

**Table 6.2 (cont)- IC Design Companies - Chipless**

Company	Country	Specialisation 1	Specialisation 2
Sancom Technologies Ltd	Ireland	Baseband	
Silicon Hive BV	Netherlands	Video & Audio	Baseband
Silistix Ltd	England	ASIC/FPGA	Software
Simply RISC LLP	Italy	CPU	
Spiral Gateway Ltd	Scotland	ASIC/FPGA	
Systolix Ltd	England	DSP	Baseband
tCORE Ltd	England	Automotive	Support
Telecom Italia Lab	Italy	Telecoms	Networks
Tiempo	France	CPU	Bus Systems
Toric Ltd	England	Bus Systems	Analogue Interface
TurboConcept	France	Video & Audio	Software
Videantis GmbH	Germany	Video & Audio	DSP
Wavebreaker AB	Sweden	Analogue RF	Baseband

Source: Future Horizons

### Fabless Companies

There are 152 European fabless companies:

**Table 6.3 - European IC Design Companies - Fabless**

Company	Country	Specialisation 1	Specialisation 2
3D Labs Ltd	England	Graphics	Video & Audio
Abilis Systems	Switzerland	Video & Audio	Software
AB-Semicon Ltd	England	Networks	CPU
Adaptalog Limited	England	Analogue Interface	Mixed Signal
Advanced Silicon SA	Switzerland	Video & Audio	Automotive
Advasense Technologies Ltd	Israel	Sensor Interface	Video & Audio
Adventiq Ltd	England	Networks	
Air Semiconductor	England	Analogue RF	Baseband
AIseek Ltd	Israel	CPU	Graphics
Alpha Microelectronics GmbH	Germany	Analogue Interface	Sensor Interface
Altair Semiconductor	Israel	Baseband	
Amimom	Israel	Baseband	Video & Audio

Cont/...

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**Chapter 6 - Company Skills & Profiles**


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**Table 6.14 (Cont) - IC Design Companies – France**

<b>Company</b>	<b>Website</b>	<b>Company Type</b>
Logic Design Solutions	<a href="http://www.logic-design-solutions.com">www.logic-design-solutions.com</a>	Digital
M2000 SARL	<a href="http://www.m2000.fr">www.m2000.fr</a>	Chipless
MENTA	<a href="http://www.menta.fr">www.menta.fr</a>	Chipless
MND Semiconductors	<a href="http://www.mnd-semi.com">www.mnd-semi.com</a>	Mixed Function
Multi Video Designs	<a href="http://www.mvd-fpga.com">www.mvd-fpga.com</a>	Digital
Neotion SA	<a href="http://www.neotion.com">www.neotion.com</a>	Fabless
PLD Applications	<a href="http://www.plda.com">www.plda.com</a>	Chipless
Reflex Consulting SA	<a href="http://www.reflexconsulting.com">www.reflexconsulting.com</a>	System on Chip
Sequans Communications	<a href="http://www.sequans.com">www.sequans.com</a>	Fabless
Stepmind	<a href="http://www.stepmind.com">www.stepmind.com</a>	Fabless
System Plus SA	<a href="http://www.systemplus.fr">www.systemplus.fr</a>	Services
TAK Imaging SA	<a href="http://www.takasic.com">www.takasic.com</a>	Fabless
Tiempo	<a href="http://www.tiempo-ic.com">www.tiempo-ic.com</a>	Chipless
TIMA Laboratory	<a href="http://tima.imag.fr">http://tima.imag.fr</a>	Services
TurboConcept	<a href="http://www.turboconcept.com">www.turboconcept.com</a>	Chipless
Twinlinx	<a href="http://www.twinlinx.com">www.twinlinx.com</a>	Fabless

Source: Future Horizons

## The European Fabless Semiconductor Report

# Chapter 6 - Company Skills & Profiles

### Greece

Greece has 12 companies:

**Table 6.16 - IC Design Companies - Greece**

Company	Website	Company Type
Alma Technologies SA	www.alma-tech.com	Chipless
Analogies S.A	www.analogies.gr	Mixed Signal
Diaplous SA	www.diaplous.com	Fabless
Global Digital Technologies (GDT) SA	www.gdt.gr	Chipless
Globetech Solutions	www.globetechsolutions.com	Chipless
HELIC	www.helic.com	Chipless
inAccess Networks	www.inaccessnetworks.com	Chipless
Noesis Technologies	www.noesis-tech.com	Chipless
Sciensis Advanced Technology System Ltd	www.sciensis.com	System on Chip
Theta Microelectronics	www.thetamicroelectronics.com	Mixed Signal
Think Silicon Ltd	www.think-silicon.com	System on Chip
VLSI Design Laboratory	www.vlsi.ee.upatras.gr	Digital

Source: Future Horizons

### Ireland

Ireland has 10 companies:

**Table 6.17 - IC Design Companies - Ireland**

Company	Website	Company Type
ChipSensors Ltd	www.chipsensors.com	Fabless
decaWave Ltd	www.decawave.com	Fabless
Duolog Technologies Ltd	www.duolog.com	System on Chip
EagleIC	www.eagleic.com	Mixed Signal
IC Mask Design Ltd	www.icmaskdesign.com	Mixed Function
Powervation Ltd	www.powervation.ie	Fabless
S3 Group (Silicon & Software Systems)	www.s3group.com	System on Chip
Sancom Technologies Ltd	www.san11.com	Chipless
Silansys Technologies Ltd	www.silansys.com	System on Chip
The Tyndall Institute	www.tyndall.ie	Mixed Signal

Source: Future Horizons

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**Chapter 7 – Company Profiles**

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**4i2i Communications Ltd**

**Address:** 4i2i House, 136 Victoria Street  
Dyce  
Aberdeenshire AB21 7BE  
Scotland

**Phone:** +44 (0) 1224 793570 • **Fax:** +44 (0) 1224 724445

**Web Site:** [www.4i2i.com](http://www.4i2i.com)

**Year Founded:** 1995

**Number Of Engineering Employees:** 18

**Company Classification:** Chipless

**Intellectual Property & Design Skills:** Video & Audio  
Software

**Company Profile/Strategy:**

4i2i is one of the pioneers in video coding technology and was formed in 1995 by Martyn Riley and his wife Laura, at the Aberdeen base. The company sells IP to customers designing codecs on ASICs and FPGAs.

The IP cores and support software are for video compression MPEG video codecs and ADSL with cores including DCT, H.261, H263, H264 and error correction. Being a specialised company the codecs keep pace with video standard changes.

Systems level solutions, which are combinations of software and IP core designs, are targeted at digital CCTV, multichannel broadcast SD and HD TV, security and monitoring applications. 4i2i have signed over a hundred IP deals.

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**Chapter 7 – Company Profiles**

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**Ace Verification**

**Address:** 49/14 Hanasi Street  
54021 Givat Shmuel  
Israel

**Phone:** +972 (0) 5 48101102 • **Fax:**

**Web Site:** [www.aceverification.com](http://www.aceverification.com)

**Year Founded:** 2004

**Number Of Engineering Employees:** 8

**Company Classification:** Mixed Function

**Intellectual Property & Design Skills:** Verification  
Support

**Company Profile/Strategy:**

Verification is a large bottleneck in SoC design. Ace Verification verifies customer designs and licenses verification IP to third parties.

The company also trains customer's engineers in using the IP and also works closely with these engineers during the verification task.

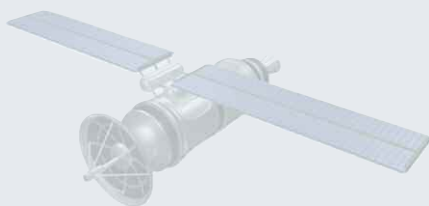
The company can produce a report, including an assessment of verification health, probability of meeting schedule, and provide a list of tailored recommendations for how to proceed with the design.



**22nd Year Of Service  
Founded 1989**

**5th Decade  
Of Semiconductor  
Experience**

**Our Experience  
Starts With The First  
Commercial IC**



Established in April 1989, Future Horizons provides market research and business support services for use in opportunity analysis, business planning and new market development. Its industry information seminars and forums are widely considered to be the best of their kind. Emphasis is placed on the world-wide semiconductor and electronics industry and associated markets. Emphasis is placed on the worldwide microelectronics and electronics industry, and European market environment.

Malcolm Penn is the founder and CEO of Future Horizons, with over 45 years experience in the electronics and semiconductor industry. He has worked extensively throughout Europe as well as in the United States, the former USSR, Japan and Korea, and was an early pioneer of pan-European research and product development collaboration in the 1970s during his tenure with ITT Europe. His industrial experience has involved him with all aspects of the management, manufacturing, marketing and use of electronic components, particularly semiconductor devices.

Future Horizons offers a high-quality, cost-effective, flexible alternative to expensive subscription-style, market research. Our experience commenced with the industry in 1962, from the first commercial IC to SOC integration. For all of your semiconductor business development needs ...

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**US Affiliate:**

**Pathfinder Research**

13901 North 73rd Street, Suite 205  
Scottsdale, Arizona 85260, USA  
Tel: + 1 480 348 1133  
Fax: + 1 480 348 9745  
hfeeny@pathfinder-research.com

**Israel Affiliate:**

**Amir Ben Artzi Content & Media**

40 Derech Hayam St.  
Havatzelet Hasharon, 42937 Israel  
Tel: + 972 73 7367966  
Fax: + 972 9 8665799  
amir@amircm.com

**Russian Affiliate:**

**ELINT**

6th Floor, 40 Bldg  
1, 3y Proezd Maryinoy Roshchi  
127018 Moscow, Russia  
Tel: +7 459 228 0766  
Fax: + 7 495 787 3869  
elintsp@mail.ru

**Indian Affiliate:**

**Pradeep Chakraborty PC  
Mediaworks**

Tel: +91 99451 27632  
pradeepchakra@gmail.com

**European Affiliate:**

**GMC Suisse**

Ch. de la Dauphine 20  
CH-1291 Commugny  
Switzerland  
Tel: + 41 22 349 0939  
wladek@grabinski.ch

**Far East Affiliate:**

**Semicon Research Ltd**

Kagami Ishi Bldg., 1-11-7, Bunkyo-Ku  
Yushima, Tokyo 113, Japan  
Tel: + 81 3 5684 3941  
Fax: + 81 3 5684 3943  
o\_ohtake@semiconresearch.com