

## Innos hosts world's first production facility for rollable displays

Innos in Southampton is to provide the world's first volume production facility for rollable displays.

The deal with Polymer Vision for organic, semiconductor-based rollable displays, means manufacturing will start this year after ten years of research.

Polymer Vision has spent the past three years processing displays in its own pilot facility in Eindhoven and will transfer the process technology and finalise qualifications to Southampton, where Innos has already started installing equipment in its newly built, 800m<sup>2</sup> - Class 100 cleanroom.

"This step confirms Polymer Vision's pioneering position in the new industry of rollable and flexible displays and marks the next step towards putting the products in the consumer's hands," says Guido Aelbers, chief operating officer of Polymer Vision. "Innos' experience

of semiconductor processing and manufacturing equipment is vital to our success in meeting market demand and we are very happy to be working together with Innos."

"Rollable display technology is the future for mobile devices and Innos is delighted to be sharing its expertise and working with Polymer Vision to bring this next generation of technology to the mass market," said Alec Reader, Business Development Director at Innos. The rollable display enables mobile devices to incorporate a display that is larger than the device itself. ■

[www.innos.com](http://www.innos.com)

*"Rollable display technology is the future for mobile devices"*

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## Call for more spin offs in robotics

The Bristol Robotics Laboratory has to look at doing more to spin out companies to commercialise its research, according to one of its leading academics.

"We need to do more on the exploitation," said Prof Alan Winfield one of the

founders of the lab. He points to the Whiskerbot, which uses whiskers of shape memory allow to steer without light, and could be used to locate people trapped in collapsed buildings.

Winfield has been on the commercial side of the industry, having set up APD

Communications, a safety critical radio systems developer, before moving to UWE in 1992. However, there has to be a focus on research for the lab. "I've been there and done that and want to concentrate on the research," he said ■

[www.brl.ac.uk](http://www.brl.ac.uk)

*See main feature page 6*

## Zuken launches Cadstar Express

Zuken has launched an Express version of its Cadstar 9.0 PCB design tool, led by engineers in Bristol, who are also working on the next version for the end of the year.

The company has more than forty people working on CADSTAR related products

(such as Design Editor, P.R.Editor XR, SI Verify and CADSTAR 3D) at the Bristol site, along with around ten more at the Padderborn site in Germany.

The main difference in Cadstar Express is limitations in the component and pin counts that both Design Editor and

P.R.Editor XR will accept whilst still allowing the designs to be saved. Some of the key features being focused upon in CADSTAR 10 are version control, improved schematics and improved rules by area, and this will be ready for release at the end of 2007. ■

[www.zuken.com](http://www.zuken.com)



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## What a drag!

The 3GSM World Congress in Barcelona is the gathering place of the global mobile communications industry, and it was gratifying to see companies from the SouthWest making an impact. picoChip particularly made its mark, not only with its chips powering an award winning femtocell and one from neighbouring Ubiquisys (both here and in the halls at Barcelona), but for having a large stand on the main drag in the main hall of the show. While sometimes you can, and should, ask what the value is in investing in large stands, in this case it worked - picoChip had a strong, clear presence and people knew where to come. And they did, in droves.

That kind of presence put picoChip well and truly on the map - good for them and for many companies in the region.

**Look out for significant developments from SiliconSouthWest over the next few months, and make sure you reserve your place for the Wireless 2.0 conference in September. More details on page 12**

**Nick Flaherty, Editor**

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### On the web:

For comment, analysis and the latest videos on what is happening across the electronics industry go to the new blog by SiliconSouthWest editor Nick Flaherty at [www.flaherty.co.uk](http://www.flaherty.co.uk)

# ST targets \$350 universal high def DVD players

**S**T Microelectronics has been demonstrating its Sti7200 to customers making Blu ray and HD-DVD players, and says almost all of them are looking to develop universal units that play both formats.

“Out of 13 customers, three have not requested a universal option,” said Henry Nurser, HD DVD business line manager.

He plans to have a reference design for an universal player by the end of the year that is production ready with a target of \$350 for the retail price of the box.

“About two years ago we recognised that the market for this year was going to be very, very small for blue laser so rather than attempt to enter that market we concentrated on the satellite and cable high volume market,” he said. “The total available market in 2008 will be 8 to 10m units and becomes a significant market compared to 2 to 3m units in

2007. For 2007 the manufacturers have made their decision before the standards were mature. People either end up with an expensive, over-engineered box with full compliance or one that is slightly compromised without full DTS5.1, for example.”

“I think there will be whole range of units with various compromises in features over the next six months, but for the first half of 2008 you can't have a compromise player,” he said. “If you don't have a universal chip you miss the market.”

The main cost issue is not the chip but the optical drive to handle both formats. “Until the end of 2008 the thing that's going to dominate the cost is the optical drive to the incremental cost of doing a good job at the backend is pretty low. There isn't enormous price pressure – it's pressure on features and delivery schedule.”

[www.st.com](http://www.st.com)

## ClearSpeed accelerates South Africa's first national supercomputer

**C**learSpeed Technology is providing its accelerator chips and boards to South Africa's Centre for High Performance Computing (CHPC) as part of a \$1.4m project for the Meraka Institute, a national research centre of the Council for Scientific and Industrial Research (CSIR)

The supercomputer, funded by the South African Department of Science and Technology and supplied by IBM, was deployed in late January at the CHPC primary node located in Cape Town. The new supercomputer will be used to support the key priorities of South Africa's research and development strategy, including bioinformatics, aerospace, material sciences, geosciences and other large-scale modeling and simulation activities.

“Academic systems running compute-intensive applications have strict

requirements for precision, reliability and accuracy,” said Stephen McKinnon, ClearSpeed chief operating officer. “This is the environment where ClearSpeed's technology provides unparalleled performance advantages.”

The Meraka Institute Phase 1 system will feature:

- 160 compute nodes in a clustered architecture + five standby nodes
- Eight of the cluster nodes are equipped with ClearSpeed Advance Accelerator boards
- Each cluster node is equipped with two dual-core AMD Opteron 2.6GHz Rev. F processors
- Each cluster node is equipped with 16GB of DDR2 667MHz random access memory
- The cluster's high speed interconnect is Infiniband 4X SDR via HTX
- Shared storage capacity of 50TB

[www.clearspeed.com](http://www.clearspeed.com)

# Video phone maker secures second round VC funding for OEM licensing

**B**ristol-based video over IP equipment maker AuPix has won a further investment of over £500,000 for its video conferencing product development. £400,000 came from the South West Ventures Fund and Finance South West Growth Fund. Management, existing investors and a private investor also invested a further £125,000.

AuPix has an on-going product roadmap that includes a range of medium to large screen video phones, screen phones and PC based video phones as well as video PBXs (Private Branch Exchange).

*“Third parties can purchase products or license technologies from us that will enable them to provide their own audio and video products and solutions.”*


The new funding will help AuPix get original equipment manufacturers (OEMs) to license and integrate AuPix’s technology into their own telephony devices.

“This is an exciting time for the video telephony market and we believe our rich technology platform and our experience, coupled with our on-going product development, puts us at the forefront of this specialist and complex sector,” said Graham Brown, managing director of AuPix. “Third parties can purchase products or license technologies from us that will enable them to provide their own audio and video products and solutions. [www.aupix.com](http://www.aupix.com)

## *South West Companies Show High Tech R&D Expertise to Texans*

The Texas Technology Transfer Mission visited the region last month, looking to help South West high tech and R&D companies get a foothold in the US marketplace or attract funding from US investors.

Representatives of the Texas Emerging Technology Fund, Austin Technology Incubator and the University of Texas Systems visited the Bath and Bristol Universities’ SETsquared centres and met local companies such as Mirifice, High Efficiency Skills, MMIC Solutions and OC Robotics.

Texas is home to 56 of the nation’s Fortune 500 companies, more than any other state in the USA, and looking to challenge California in high tech. 


## Embedded designs ramp up on 45nm

**C**hip makers are starting the characterisation of 45nm silicon for embedded and mobile phone products as early as the end of next year.

Broadcom, which has design centres in Bristol and Cambridge, jumped from 130nm to 65nm for its latest single chip GSM and 3G phones, and is starting the characterisation of the 45nm process and development of libraries. This will lead to designs starting by the end of 2007 and products out in 2008. It uses a range of foundries including TSMC, UMC and SMIC in China.

Qualcomm is shipping 65nm versions of its 3G single phone chips in volume this quarter, but is taping out test chips for 45nm in the middle of this year.

“At 130nm we were two years behind the IDMs,” said Berooz Abdi, general manager of the Qualcomm CDMA Technologies. “At 90nm we were six months behind and at 45nm we will be taping out in the middle of this year.”

It uses TSMC, UMC and the IBM/Samsung/Chartered group to make the chips. 

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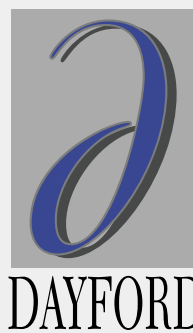
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# Project targets configurable embedded systems

Southampton University is part of a pan-European project looking at modeling, integration, and verification of architectures targeting embedded systems built upon configurable platforms along with STMicroelectronics.

The VERTIGO (Verification and validation of Embedded System Design workbench) project is part of the European Commission's Sixth Framework Programme and includes universities from Linköpings in Sweden, Tallinn in Estonia and Verona in Italy, as well as design verification tool vendors TransEDA Systems in Marlborough, UK, and Aeriologic in Normandy, France.

VERTIGO aims to bridge the gap between System Level Modeling and verification performed at the

Transactional Level and the traditional RTL (Register Transfer Level) signoff description. Although VERTIGO will not involve behavioral synthesis, the project will help checking the consistency of different Transaction Level Models (TLM) and the RTL. The case studies, taken from embedded systems developed by STMicroelectronics, will focus on mixed-level/mixed-language flows, involving both TLM and RTL.

"We hope to achieve several technology breakthroughs with VERTIGO," said Umberto Rossi, head of Functional Verification support at STMicroelectronics, which is the leader of the project. "The most important of these is the development of expression coverage criteria common to TLM and RTL that are capable of driving system validation between different abstraction levels."

## *SiConnect becomes powerline promoter*

SiConnect has become a Promoter Member of the Japanese-dominated Consumer Electronics Powerline Communication Alliance ([www.cepca.org](http://www.cepca.org)) as it tries to develop a specification for different powerline communication systems to coexist

The move allows SiConnect to directly participate in the creation of the technical specifications alongside founders Matsushita (Panasonic), Mitsubishi and Sony as well as Hitachi, Pioneer, Toshiba and Yamaha.

"Since an interoperability standard for powerline communication is unlikely to appear for some time, the interest of powerline communication users mandates the development of a coexistence standard," said Robert Stead, SiConnect's VP of Marketing. "CEPCA is unique among the PLC organisations in that it has in its membership 4 different PLC chip makers. This gives it a real advantage. We very much look forward to working with our fellow PLC promoters."

[www.siconnect.com](http://www.siconnect.com)  
[www.cepca.org](http://www.cepca.org)

## SOFTWARE: THE X-FACTOR

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[events@siliconsouthwest.com](mailto:events@siliconsouthwest.com)

# Walking with robots

Fly eating robots and robot societies are just some of the developments happening in the SouthWest. Nick Flaherty went along to a lecture at HP Labs to find out more.

What is the future for robotics? This is the kind of question that Alan Winfield is looking to answer. The Hewlett Packard professor of electronic engineering at the University of the West of England and a founder of the Bristol Robotics Lab, he has been working in the field for many years across a range of technologies, research labs and startups.

He has worked on robots that steer themselves with whiskers, on robots that use dead flies to provide their power, on swarms of robots and how robots might form societies.

He is also part of a key national project on the public view of robots that brings together the leading researchers to go out across the country with events and activities for young people.

But he has been at the heart of robotics research, looking to use robots to emulate animal behaviour and so getting a glimpse of the way that animal brains work. And he works not only with engineers but with biologists, neurologists, anthropologists and even artists.

He is particularly proud of the whiskerbot that used whiskers of shape memory alloy to steer itself, and an emulation of a part of the rat's brain to handle the processing. "To me this is fantastic," he said. "We have implemented that neural circuitry in electronics in this robot."

A swarm of these type of robots could be used in hard to access places such as collapsed buildings to locate survivors.

"The thing that excites me about this project is that we are not doing good robotics but science as well," he said. "Not only are we building a robot that

could be useful for real applications but also building a working model of part of the animal and discovering things about the rat because we have this working model."

The implications are wider than just robotics. "It's a new way of doing science," he said. "By building working models, robots are fantastic models of living system where we can discover new and interesting things about the real animal."

"Looking at swarm intelligence, we are interested in building an artificial system that behaves similar to way social insects behave," he said. This has led to swarms of wheeled robots and of robot helium balloons, looking at 3D swarms.

That is being taken forwards with his latest project, which is looking at how swarms of small robots interact in a form of society. The robots have rules for copying behaviour from each other, but not copying exactly, so that the behaviours evolve.


"Here we are interested in doing evolutionary anthropology," he said. "We will be looking for protocultural artefacts that might be the emergence of a very early robot culture, so we have a very strong team of people such as an evolutionary ethnologist, and an artist because one of the big problems we will have is interpreting what we see."

The other main project, Walking With Robots, has been running since the beginning of last year and is going around the country talking about the issues of robotics with the 'Young People's Robotics Task Force'. This includes a biped robot developed at the University of Essex and robots that mimic the human face.

The issues of robotics came to the fore at the end of last year with a poll by IPSOS-MORI into whether robots should eventually have to be given rights.

"Personally I think that's absurd, not in principle but for the 20 to 25 year timeframe," said Winfield. "Eventually robots might be sufficiently conscious that we might have to think about robot rights."

But this does not necessarily come with increased computing power. "I think processing power is nowhere near enough," he said. "We already have tons of processing power - there are already computers that are similar to the number of neurons in the brain but that does not make them smart. We are in my view decades if not longer from understanding the architecture of intelligence."

That's what's driving Winfield - not building a better mousetrap, but understanding more about intelligence. 

## The fly eating robots

While most robots are computationally independent, the ecobot is intended to be energy independent. It uses microbial fuel cells that generate power by using microbes to break down organic matter. It turns out that the best material for this is chitin, the exoskeletons of things like prawns. But dead flies work just as well, and are more easily available. So Ecobot, developed at the end of 2004, uses an array of fuel cells to drive it.

"It only moves at 8cm per hour, but it does it all on dead flies," said Alan Winfield, HP professor of electronic engineering at UWE and head of the Bristol Robotics Lab. "It behaves rather like a lizard, basking for a while then all of a sudden there's a burst of activity."

The cells are more efficient with running water, and the project is developing a robot boat based on the same technology. "That will be the world's first fly powered boat," said Winfield.

*"By building working models, robots are fantastic models of living system where we can discover new and interesting things about the real animal."*

# SouthWest strength at 3GSM

Nick Flaherty reports from the 3GSM World Congress, the biggest gathering of mobile and wireless companies, where SouthWest companies played a significant role.

## Icera takes a shot at the notebook PC market with Espresso

Icera has launched its cellular high speed data card for the next generation of broadband cellular integration to laptop PCs with a card that is ready for manufacturing.

The Espresso PCI express Mini-card platform fully supports 3GPP Release 5 multimode for HSDPA/EDGE which delivers peak data-rates of 3.6Mbps and is fully scalable to 7.2Mbps and HSUPA – without hardware change. It is based on Icera's Livanto ICE8020 chip

and Adaptive Wireless HSDPA/EDGE wireless soft modem

"Icera is focussing on the fast emerging cellular data market and is providing the world's first optimised Cellular WWAN Mini-card reference platform," said Nigel Toon, Vice President of Sales and Marketing at Icera. "This platform will enable our customers to fully support the next generation of laptop broadband cellular WWAN requirements. Icera technology is today delivering the highest

HSDPA performance in real network deployments with a throughput advantage of up to 2x."

"We are targeting this reference design at datacard OEM's to support them in producing embedded Cellular WWAN modules. We have worked closely with cellular carriers, laptop chipset vendors and laptop OEM's to provide a comprehensive ready for manufacture solution, while the reference design can also be used as the basis for Express Card 134 and small sized USB Stick broadband Cellular peripheral devices."

The card has an optimised bill-of-materials and is ready for manufacture with full software, firmware and certification support. ☒

[www.icerasemi.com](http://www.icerasemi.com)

*"Icera is focussing on the fast emerging cellular data market and is providing the world's first optimised Cellular WWAN Mini-card reference platform"*

## Next generation wireless broadband starts

The SouthWest is at the forefront of work on the next generation of high speed wireless cellular broadband through a new standard that will provide download speeds up to 28Mbit/s to 3G mobile phones.

The HSPA+ standard goes beyond the existing HSDPA and HSUPA speeds, and both Qualcom and Icera are planning to support it. Bristol-based Icera's next chip, due later this year, will be upgradeable to HSPA+ in software, said Nigel Toon, VP Marketing.

"HSPA+ could be an upgrade deployment path for operators as it adds the MIMO diversity and higher speed, particularly in femtocells," said Rupert Baines, VP marketing for basestation chip maker picoChip. "But LTE has stopped being an evolution and it's now a 4G network, it's totally different."

HSPA+ moves to multiple antennas for transmit and receive, and uses 64QAM coding down and 16QAM for the uplink instead of QPSK coding.

Qualcomm is supporting the standard, which is part of the 3GPP Release 7, as well as the next generation Long Term Evolution (LTE) technology. "We are committed to mobile broadband with HSPA+ and then to LTE," said Behrooz Abdi, general manager of Qualcomm CDMA Technologies. It is working with companies such as Cingular in the US for HSPA+ services next year. ☒

*"We are committed to mobile broadband with HSPA+ and then to LTE"*

## Ubiquisys looks to production femtocells by the end of the year

Swindon-based femtocell maker Ubiquisys is planning to have its Zonagate products in production by the third quarter of this year, says founder and chief technology officer Will Franks. The company was demonstrating its reference design at 3GSM making 3G phone calls, and the production version will go into production in September with a phone operator. It's manufacturing partner is Sony in Wales, although it has just signed a deal with NEC as well.

The company has also developed a module that will go into home gateways being made in December. Both the femtocell and the module use the PC202 chip from picoChip. ☒  
[www.ubiquisys.com](http://www.ubiquisys.com)

# IPwireless sees successful mobile TV trials in Bristol

Vodafone, Telefónica, Orange, and 3UK has successfully trialled the mobile TV technology developed by IPwireless of Chippenham.

The trial of TDtv delivered up to 14 high quality channels in 5MHz of TDD spectrum using 35% of the 3G cell sites of a broadcast system, covering a wide area of Bristol and South Gloucestershire with just 12 cell sites.

TDtv is the UMTS TD-CDMA-3GPP Multimedia Broadcast and Multicast Services (MBMS) standard for mobile television, using the universal unpaired 3G spectrum bands that are available across Europe and Asia at 1900MHz and 2010MHz. The trial helped to demonstrate that dual mode TDtv/3G handsets are viable without interference

*“Trials are an extremely important part of our strategic product development and help us build a comprehensive understanding of how the technologies work”*

and that the technology works at speeds up to 70mph.

The network also proved very reliable with 99.999% availability during the trial. MobiTV, the international mobile and broadband television services company, provided the client application, as well as facilitated the mobile content and media delivery components of the trial. Roke Manor Research in Southampton, an independent technology assessor for the mobile industry, developed and

implemented the test plan and published results for the trial.

“Trials are an extremely important part of our strategic product development and help us build a comprehensive understanding of how the technologies work and the customer experience they will offer. The outcome of this trial will help us evaluate the commercial potential of TDtv as part of the MBMS assessments we are undertaking,” said Professor Michael Walker, Director of Research and Development at Vodafone. This also fits with Vodafone’s emphasis on controlling the link and the content for mobile TV. ☒

[www.ipwireless.com](http://www.ipwireless.com)

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## Imagination teams with Sharp for mobile digital TV....

Sharp in Japan has licensed the multi-standard Broadcast Receiver IP Platform from Imagination Technologies to develop a new range of system-on-chip devices for mobile TV.

The platform is based on Imagination’s META and UCC processing cores, the latter developed by the Enigma division in Chipstow, and includes firmware, software drivers, and development tools. ☒

[www.imgtec.co.uk](http://www.imgtec.co.uk)

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## ... and launches HDTV core

Imagination has also launched an HDTV decoder core based on the same Universal Communications Core (UCC) and META family of RISC/DSP engines.

The PowerVR MSVDX core is capable of decoding JPEG, MPEG-1, MPEG-2, MPEG-4, DivX, H.264, WMV8/9 and VC-1 at high definition resolutions and frame rates, including 720p, 1080i and 1080p by using a highly configurable engine. A stream decode processor identifies the video standard on input and reconfigures the highly flexible multi-purpose modules in the core accordingly.

“Imagination has a long history of providing high quality video decoding cores to volume consumer electronics markets, ensuring the best consumer experience. Our advanced multi-standard video decoder technology provides our customers with the confidence to create reliable multimedia system on chip solutions where die size, power consumption and adherence to standards are critical to the success of their products,” said Peter McGuinness, Director of Business Development at Imagination in the US.

Initial silicon from the licensing partners is expected shortly. ☒

[www.imgtec.co.uk](http://www.imgtec.co.uk)

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## Ubiquisys in global base station deal

Swindon based femto-cell designer Ubiquisys has teamed up with Japanese electronics giant NEC to deliver its femtocell basestations worldwide.

NEC will offer the Ubiquisys ZoneGate femtocell - plug-and-play 3G access point that uses a mobile subscriber’s xDSL connection to transport voice and data calls - as part of its 3G Home Gateway Solutions portfolio.

“The Ubiquisys femtocell access point cuts the cost of 3G deployment and call provision, and enables operators to offer aggressive, home-zone packages which drive fixed-mobile substitution and reduce churn, helping to lock-in users and even entire families,” said Tadatoshi Fujiwara, General Manager of Mobile Network Solutions Division at NEC. ☒

[www.ubiquisys.com](http://www.ubiquisys.com)

# Bristol incubator appoints Resident Entrepreneur

**G**reville Commins, formerly Marketing Director of STMicroelectronics (UK), is to take over as Entrepreneur in Residence at the SETsquared Business Acceleration Centre in Bristol. Providing focused hands-on support and strategic guidance to the early stage companies in the Centre, he starts two days a week at the start of March.

“Greville brings with him extensive international experience of business development and marketing of new technologies, as well as comprehensive knowledge of start-ups. In particular, he can offer guidance from both sides of the IP fence, as both seller and buyer which will be immensely useful to the Centre’s entrepreneurs in the process of launching

their technology businesses,” said Nick Sturge, centre director.

The Centre, one of five in the south and south-west of England, is part of the SETsquared Partnership, the collaboration of the Universities of Bath, Bristol, Southampton and Surrey, which supports early-stage, high-tech, high growth-potential ventures both from within and outside the universities to accelerate their businesses. Following an expansion programme in 2006, the Centre grew

by over one third after and now offers over 80 desks to 35 early-stage start-up companies from region.

To date, the SETsquared Partnership has helped new ventures to raise more than £25 million of early stage funding. Over 50 ventures a year are supported with a network of more than 450 seasoned technology entrepreneurs, investors and support professionals. ☒

[www.setsquared.co.uk](http://www.setsquared.co.uk)

*“Greville brings with him extensive international experience of business development and marketing of new technologies”*

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## China academic joins picoChip advisory board

**p**icoChip has significantly strengthened its advisory board with the appointment of Professor Wenbo Wang, Professor and Dean of School of Telecommunication Engineering at the Beijing University of Posts & Telecommunications (BUPT). One of the world’s leading authorities in the field of digital signal processing and wireless communications, Professor Wang joins existing members of the board Professor Simon Saunders and Professor David May.

“Professor Wang’s reputation in the wireless community is global, and his

role in underpinning the technological base of our company will be a key one,” said Guillaume d’Eyssautier, President and CEO of picoChip. “We believe that his appointment will further strengthen our relationships in China, which we see as one of the key areas in today’s global economy.”

In addition to his role at BUPT, Professor Wang is a member of the standing committee of Beijing Institute of Communication, and spent a period in the US working in a commercial R&D role. His current research interests include 3G, B3G and WiMAX radio transmission

technology, wireless network theory, digital signal processing and software radio technology. ☒

[www.picochip.com](http://www.picochip.com)



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## picoChip and Kineto team in UMA-enabled femtocell market

**K**ineto Wireless is to use the chip and software technology from Bath-based picoChip to develop a Femtocell reference design that can handle Unlicensed Mobile Access (UMA) technology that combines cellular phones with WiFi wireless networking.

UMA provides scaleable access to mobile voice, data and IMS services over broadband IP access networks and allows mobile operators to deliver fixed-mobile convergence services such as dual-mode cellular/Wi-Fi handsets,

where subscribers roam between cellular networks and public and private Wireless LANs.

Kineto is one of the leading software suppliers for UMA and the reference design will make it easier for operators to provide femtocell basestations in the home to provide such services.

“UMA technology overcomes the technical challenges for network operators trying to deploy and manage millions of femtocells in the network,” said Rupert Baines, vice president

of marketing for picoChip. “By collaborating with Kineto Wireless, companies are able to develop an advanced reference design for femtocells to enable mass-market adoption.”

“We are pleased to be collaborating with picoChip, a leader in the Femtocell market,” said Gary Sarson, vice president of business development for Kineto Wireless. “Combining UMA with picoChip’s low cost silicon and HSDPA software sets the stage for a robust Femtocell market.” ☒

[www.kineto.com](http://www.kineto.com)

# Venture Capital booms in 2006

In 2006, VCs wrote more and bigger cheques for technology businesses in the UK and Ireland. The funds they invested in the sector during the year grew by over 40% to £710m whilst the number of companies receiving money increased to 175 - up from 159 in 2005.

Chart 1

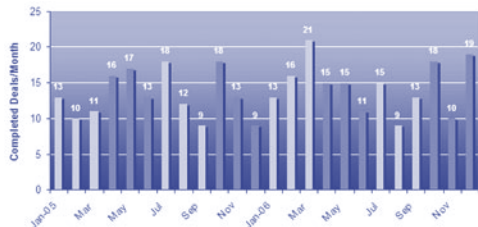


Chart 2

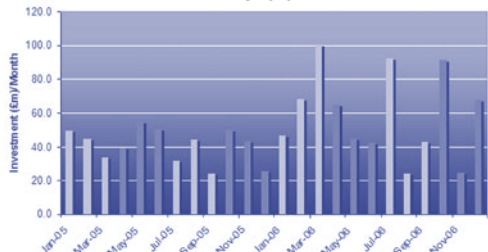


Chart 1 shows the modest pick up in volume during 2006 with March and December being usually high. Having monitored investment trends in the sector for more than 10 years, our belief is that year end peaks usually coincide with buoyant markets. This is supported

by Chart 2 which clearly highlights the significant increase in funds invested by VCs in the sector.

However it is important to dispell the belief that we are experiencing a repeat of the “bubble” in 2000. In that year, the market peaked in November when, in just 4 weeks, 67 companies received over £550m. 2006 was a good year but we are some way from the heady days of 2000.

The top ten deals accounted for a total of just over £200m – approximately 28% of the market. This represents a modest increase value concentration over previous years.

Top Ten Investments 2006

FX Alliance	£42m
Picisel Technologies	£25m
Pipex Wireless	£25m
Icera Semiconductor	£23m
Apertio	£17m
Real Time Worlds	£16m
Airwide Solutions	£14m
Perlico	£13m
3V Transactions	£13m
Digiweb	£13m

There was also a notable uplift in the number of active investors in the sector. We recorded 217 investors who participated in funding transactions for

technology companies - up from 174 in 2005. The busiest investors were 3i, Accel and Esprit who all completed more than 10 deals. Other groups who were very active in 2006 were Benchmark, Amadeus, Atlas, Close Ventures, Enterprise Ireland, and Sigma Technology.

Looking at the various subsectors, investment in Software recovered to £215m (just £153m in 2005) making it the biggest individual sector. Renewable Resources/Energy enjoyed the biggest YoY growth of over 300% but the sub-sector still only received just over £50m of VC money.

As has been widely reported, Internet and Mobile services investment grew substantially during the year rising by 215% to £176m, with 40 deals being completed. This growth has been at the expense of investment elsewhere as the sub-sector attracted 25% of funds invested in all technology deals in 2006 compared to 14% in the year before. However, looking historically on a quarterly basis, Internet/Mobile Service investment has yet to match its peak share of investment – 54% of funds invested and 46% of deals in Q3 2000. So as stated above we are still some way from the heady “bubble” days.

Top Ten Semi/Opto Deals

Icera Semiconductor	March	£23.0m
	Oct	£10.6m
Picochip		£11.3m
Virtensys		£6.4m
Firecomms		£5.6m
Redmere		£5.5m
Azuro		£5.1m
Gigle Semiconductor		NA
Oled-T		£3.8m
Critical Blue		£2.0m
Light Blue Optics		£1.3m

After a very good year in 2005, investment in Semi-conductors dropped by 14% to £81m, although this money was shared amongst more companies – 22 last year versus 18 in 2005. Icera closed 2 major rounds during the year with 3i following Amadeus, Accel, Benchmark and Atlas. The most active investors were 3i, Esprit Capital Partners, NESTA, Pond Ventures and TTP. There was also a large group of investors who each invested in an average of 2 semi/opto deals during

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# UK fabless operations unite

the year – adhering, at least superficially, to some notional asset allocation model. However it is worth noting that since the start of 2007, 3 significant semi/opto transactions have been announced - Plasticlogic (£51m), Frontier Silicon (£16m) and Silistix (£3m). Even though semiconductor deals tend to favour the 1st quarter of each year, it is unusual for investment in the subsector to account for close to 50% of the cash invested in the whole technology sector and for 3 deals to be equivalent to near 90% of all the funds in the semi/opto sector in all of 2006 – all in the first six weeks of the year! It looks as though 2007 could be a bumper year for the sector.

Ascendant's 2006 data also highlights a major shift in the geographical distribution of funds. From 2002 through 2005, venture capital has been invested throughout the UK, favouring certain areas e.g. Cambridge, Ireland, Scotland, etc., but showing no real or marked regional preference. This changed in 2006, with London receiving over £230m of the funds invested in technology businesses which is equivalent to close to 33% of the whole market. It is many years since London has had such a dominant position, and it has largely been driven by the huge growth of investment in Internet/Mobile Services investing. With the exception of Bristol and Bath ("B&B"), all other regions experienced a reduction of their share of funds invested. 4 technology businesses based around B&B received £63m. Icera took the lion's share (£34m), but Apertio (£17m), Picochip (£11.3) also raised significant funds. In February, Aupix became the first technology business from Bristol to raise VC this year - picking up £0.5m from SWV et al.

2007 has started well. At the time of writing (St Valentine's day), 21 companies had received over £150m. We look forward with optimism for the rest of the year and based on the trends reported above and our pipeline of fund raising projects; expect a further increase in funds being invested in 2007.

For further information on investment trends or advice on raising capital, contact Stuart McKnight on 020 7993 8700. [smcknight@ascendant.co.uk](mailto:smcknight@ascendant.co.uk).

Fabless companies throughout the UK have come together for the first Operations Network Meeting to be organised by the National Microelectronics Institute (NMI).

The new network aims to help members improve operational effectiveness and to increase awareness of the UK fabless sector. Chaired by NMI's John Moor and hosted by semiconductor sector research analysts Merrill Lynch, this first meeting was attended by senior Operations Management from many of the UK's leading fabless companies, including CSR, Jennic and picoChip, but with a strong SouthWest presence through clearSpeed, SiConnect, 3Dlabs and Nanotech.

"The NMI is acutely aware of the challenges faced by our fabless

community in the global supply chain, and helping to improve competitiveness is a key objective in the creation of an effective peer support group here in the UK," said Moor, himself a former fabless operations manager with ClearSpeed Technology, and based in Swindon. "We understand the contribution the fabless sector makes to the UK economy and the potential for growth it offers, it's our aim to make sure it's recognised." 

## *Fabless together*

- 3Dlabs • Artimi • CSR • CamSemi
- ClearSpeed Technology
- Frontier Silicon • Jennic • Mirics
- Nanotech • picoChip • SiConnect.

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# Ocean Blue Releases Freeview DVB-IP for IPTV set top boxes

Bristol-based the specialist digital TV software developer Ocean Blue Software has released Sunrise DVB-IP, a DVB & MHEG-5 software suite for IPTV set-top boxes, incorporating the latest Freeview standard. The Sunrise DVB-IP can be used alongside most IP middleware products to capture free-to-air digital TV channels in a hybrid IPTV set top box.

DVB-IP is based around Ocean Blue's Sunrise product and includes Sunrise (DVB-T & S), Surfsoft PVR (Freeview Playback compatible) and Voyager MHEG-5 & DSMCC middleware software. These software layers compliment and enhance normal IP software components such as Java virtual machines and browsers.

When used in conjunction with IP middleware, it provides comprehensive support for music, video, TV, High Definition TV, images, text and the data necessary for a hybrid IPTV set top box. It also provides support for conditional access and pay-per-view security systems.

"IPTV is still in its infancy, but growing up fast," said Ken Helps, Managing Director of Ocean Blue Software. "Set-top box designers need ready-to-use software components that incorporate the latest standards, such as Freeview, in order to bring hardware to market quickly. Ocean Blue is committed to bringing quality software and innovation for the Digital Home market."  [www.oceanbluesoftware.co.uk](http://www.oceanbluesoftware.co.uk)

## Events

**6-7 March**  
**MicroTech 2007**  
Daventry  
[www.imaps.org.uk](http://www.imaps.org.uk)

**16 March**  
**Software: the X Factor**  
Silicon South West, Bath  
[events@siliconsouthwest.com](mailto:events@siliconsouthwest.com)

**21 March**  
**Great Western Research conference**  
HP Labs, Bristol  
[www.knowledgewest.org.uk](http://www.knowledgewest.org.uk)

**6 July**  
**Silicon South West, Swindon**

**28 September**  
**Wireless 2.0**  
1st Silicon South West International Conference, @Bristol, Bristol

### Dear Silicon South West readers


The Silicon South West network has become a destination for electronics start-ups – a place for entrepreneurs to share war stories, meet investors, and access EDA tools and incubation space. Through the newsletter (now with a circulation 860+) and the seminars, we are promoting the region's electronics sector, but of course there's more work to do.

To help continue this work, we are launching an annual 'fund raising' International Conference, Wireless 2.0. While the rest of our events remain free, delegates to this Conference will be charged £250 (ex-VAT) and the profits will be reinvested to grow the network. I hope you will support Silicon South West and join us at Wireless 2.0 in September - the full speaker programme will be announced when tickets will go on sale later this Spring. Due to the venue, places will be limited so to pre-reserve your place email [events@siliconsouthwest.com](mailto:events@siliconsouthwest.com) Subject: Wireless 2.0

Regards  
Simon Bond


## X-FAB extends support for analogue and mixed-signal

X-FAB Silicon Foundries in Plymouth has completed the rollout of its statistical modeling suite for Monte Carlo simulation on its 0.6um and 0.35um analogue/mixed-signal technology platforms. This gives designers full flexibility to accommodate all variations associated with designing and manufacturing analogue/mixed-signal integrated circuits (ICs).

"Designing analogue and mixed-signal ICs is quite complicated and requires a depth of experience," said According to Thomas Ramsch, director of design support at X-FAB. "We are pleased to offer full statistical modeling support because it helps take the mystery out of this process, leading to a robust solution and faster time to market for our customers."  [www.xfab.com](http://www.xfab.com)

## MMIC raises more cash

Malvern-based startup MMIC Solutions has raised an additional £800,000, bringing the total investment to £1.4m. The money was raised from a Midlands venture capitalist and angel networks.

The company, which is part of the Anglo-Scientific technology incubator of 5 companies, has licensed intellectual property from defence research group Qinetiq and is currently running in stealth mode. More on Anglo-Scientific in the next issue.  [www.mmicsolutions.com](http://www.mmicsolutions.com)

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