

# Inventique®

The newsletter of Wessex Round Table of Inventors February 2008

10-11 March **BFIIN AWARDS, CARDIFF** [www.bfiin.com](http://www.bfiin.com)



## Innovation invitation

**Left: Broadcaster Adam Hart-Davis is a judge for the Home Invention of the Year challenge.**

COMPETITION THROWS DOWN A CHALLENGE TO HOBBY INVENTORS

**T**HE IDEAL HOME SHOW has joined forces with TV scientist and invention enthusiast Adam Hart-Davis to launch *Innovation Nation*, a nationwide search for the Home Invention of the Year. Entries deadline is Friday 8 February

*Innovation Nation* challenges people of all ages and abilities to devise ingenious solutions to everyday household frustrations. From solving the problem of the

out-of-reach remote control to designing a self-cleaning kitchen, anyone can submit their original inventions and ideas.

Adam Hart-Davis says: "There's a budding inventor or designer in all of us and you don't need any design qualifications to get involved. If you have a flash of inspiration for a home product that you know would work, then draw it, describe it and send it in!"

Adam heads an independent panel of judges who will select a short-list of ten ideas on 13 February. These will then be showcased at the Ideal Home Show, Earls Court, London from 14 March to 6 April, when show and website visitors will vote to award a £2,000 cash prize and the accolade 'Home Invention of the Year 2008' to the winning design. ■

● *To submit a design you will need a photograph or drawing of your invention (no bigger than A3), a description of no more than 300 words which includes its name, key functions and what inspired you to come up with the idea, plus your full name, address and daytime telephone number.*

**To enter, send your designs to:**  
[innovationnation@idealthomeshow.co.uk](mailto:innovationnation@idealthomeshow.co.uk)  
**or via surface mail to:**  
**Innovation Nation, Seventy Seven PR,**  
**77 Kingsway, London WC2B 6SR**  
[www.idealhomeshow.co.uk/competitions](http://www.idealhomeshow.co.uk/competitions)

### Next WRTI meeting WEDNESDAY 13 FEBRUARY

Guest speaker Brian Stickley on his experiences in developing and marketing Talking Products Ltd ([talkingproducts.co.uk](http://talkingproducts.co.uk)). Followed by Ian Moore on 'pricing' and an Inventors Clinic. Room HC 017, Herbert Collins Building, Southampton Solent University, commencing at 6 for 6.30pm. Guests welcome.

● *Non-members wishing to attend should e-mail: [secretary@wrti.co.uk](mailto:secretary@wrti.co.uk) or tel: 01420 562 378*

### BUSINESS SOUTH 2008 SHOW AT ST MARY'S STADIUM

GAINING NEW CONTRACTS AND GENERATING SALES to grow their businesses will be prime objectives for companies exhibiting and visiting the third annual Business South show, which takes place at St Mary's Stadium, Southampton on 5-6 March.

Business South allows exhibitors to maximise their potential by raising awareness, providing networking opportunities and driving increased sales, all under one roof. Almost 2000 visitors and 115 exhibitors attended last year's show, ensuring its place as a key date in the business community calendar.

Business 2 Business shows are business directories brought to life, and represent the broadest cross-section of the regional business community. ■

● **To discuss exhibiting and sponsorship at Business South 2008,**

**Tel: 01823 250556 / 250579 [sales@jobsurveevents.com](mailto:sales@jobsurveevents.com)**

**[www.business2businessshows.com/south](http://www.business2businessshows.com/south) [www.findmeaconference.com/515019](http://www.findmeaconference.com/515019)**

Wessex Round Table of Inventors meet at 6.30pm on the second Wednesday of each month at Southampton Solent University, East Park Terrace S014 0RP

## VIEW FROM THE CHAIR

SIR JAMES DYSON, inventor of the Cyclone Vacuum Cleaner (and guest columnist in the June '03 of *Inventique*) has been in the news lately. He was reputedly the second-highest earner in the UK last year, thus exploding the myth that inventing never pays.

However, it is his podcast 'The Business of Engineering' (log on to [timesonline.co.uk/businessideas](http://timesonline.co.uk/businessideas)) that most interests me, where he dissects the roles entrepreneurial engineers, innovators and inventors have to play in the future.

In days gone by, Britain's best and most entrepreneurial engineers created much of the world's wealth. Engineers, innovators and inventors still hold the key to solving many of this century's problems – and can offer the UK a glimmer of renewed wealth – but we clearly need many more such people than our schools and colleges currently produce.

Sir James is, of course, founding the Dyson School of Design Innovation in Bath to foster them (*Inventique*, August 2006), yet it occurs to me that, as often happens, his latest invention could solve many more of the country's current ills than perhaps even he intended.

His youngsters in Bath will find that – as every WRTI member already knows – inventing and creating offer the best fun in the world. It may be challenging, but the exhilaration when it finally works can stimulate both the entrepreneurial ambition that led Sir James Dyson to be so successful AND a burgeoning self-esteem among these young people.

We owe it to the young to stimulate this enthusiasm in any way we can – inside and outside school, in youth groups, workshops and wherever facilities can be found. Just look at the benefits: a nation of entrepreneurial innovators, steeped in creativity, forging the foundations of our nation's future prosperity.

It's time to get out there and help your school or youth group catch the inventing bug. Sincerely, Peter

PETER HEBARD, WRTI Chairman

INVENTORATOR Treve Willis

# Open Innovation

IT'S OUT THERE ALREADY – AND IT'S GROWING

**O**PEN INNOVATION is a concept that in recent years has come to the forefront of innovation management. Different names are used to describe it (Procter & Gamble, its highest-profile user, call their programme 'Connect and Develop'), but Henry Chesbrough first coined the term in his seminal book *Open Innovation* (Harvard Business School Press, 2003).

Chesbrough's innovation was to create a common language for people and companies to describe to the world and each other what they do, and this has enabled them to examine and implement ideas much more quickly and coherently.

## Start at the beginning

'Closed' Innovation, which pertained for most of the last century, follows a linear path from idea to market, where ideas are dreamed up and developed within corporate R&D labs and then sold to a grateful market place.

The concept of Open Innovation, conversely, is that by looking outside their own boundaries, companies can gain better access to ideas, knowledge, technology and markets than would be the case if they relied solely on their own resources – a relatively uncomplicated theory which many people dismiss as being too simple or merely describing what they have been doing for years.

Indeed, *IBM Global CEO Study 2006* showed academia and internal R&D coming bottom of a list of eleven key sources for innovation, with employees, business partners and customers topping the list. So why is Open Innovation such a powerful concept?

While it is true that companies will have been undertaking some aspects of Open Innovation long before 2003, the world has changed over the last few years, making

Open Innovation both easier to undertake and more essential.

The list of reasons why this is so is a long one. It includes globalisation, the spreading of education (especially higher education), the world wide web, the creation of on-line 'knowledge market places' such as Yet2, Innocentive and Your Encore, the rapid rise in venture capital, the increasing proportion of R&D undertaken by small companies relative to large ones, the relative decline of corporate R&D, and increasing technological development, complexity and obsolescence.

## ...then look to the future

Open Innovation is not an excuse to close down all internal R&D; it is essential to retain such expertise, but to deploy it differently.

Open Innovation involves a culture change – looking intelligently outside for ideas, different leadership styles, changing staff incentivisation – while retaining the internal capacity to know a good idea when it comes through the door and being able to develop it for the market. ■

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● Treve Willis is Project Director at Innovation Advisory Service South East – the leading exponent and facilitator of Open Innovation in the region – and a Director of Oxford Innovation Limited.

A SEEDA initiative managed by Oxford Innovation, the Innovation Advisory Service helps to enable the required regional environment within which Open Innovation may flourish, and offers specific help with programme implementation and intermediary services such as scouting for ideas and organising Open Innovation events for specific companies.

● [www.iasse.co.uk](http://www.iasse.co.uk)

Tel: 01865 811177 [t.willis@iasse.co.uk](mailto:t.willis@iasse.co.uk)

## Thames Water's frog makes a splash

**B**RITAIN'S BIGGEST water company has come up with a small device it hopes will slash the amount lost to leaks.

Thames Water is launching the Leakfrog, invented by some of its own employees, which can be fitted to domestic water meters overnight and which detects if water is being lost, suggesting customers' pipes have sprung a leak.



Above: Thames Water's Jon Curry, one of Leakfrog's four co-creators.

Current leakage detection equipment is bulky, complicated to use and can be fitted to only about 15% of water meters, whereas Leakfrog could be used on all

meters at less than 10% of the cost.

Leakfrog is the brainchild of Jon Badger, Nic Clay-Michael, Jon Curry and Leo Kiernan, and was developed for production in partnership with Qonnectis Plc, which specialises in energy and water conservation technology.

### Leaking cash

Thames said their £150m mains replacement programme is generating significant leakage reduction, but added that about a quarter of its leakage losses – 170m litres a day – came from customers' own pipes.

"Until now, this water loss has been extremely difficult to pinpoint," said John Halsall, Thames Water's director of water services.

"Leaks are not only an unnecessary waste of water, but left undetected can add hundreds of pounds to bills and cause damage to the property. Customers are often unaware if they have leaking pipes."

Source: *Thames Water/guardian.co.uk*

● [www.qonnectis.com](http://www.qonnectis.com)

### eCUBE SENSES SALES

INVENTOR Guy Lamstaes

and colleagues have invented a way to make fridges far more energy-efficient. Barely a few inches across and made of wax, his device had little impact until last year, when it was reinvented as a simple way to reduce household and industrial emissions.

Now called the eCube, the box has taken sectors of British industry by storm, and is now doing the same in the US. It won't save the planet, but it offers a perfect example of the simple steps that can make a difference. The cube mimics food and fits around a fridge's sensor, which usually measures the temperature of the circulating air. Because air heats up more quickly than yoghurt, milk or whatever else is stored inside, this makes the fridge work harder than necessary. With the cube fitted, the fridge responds only to the food temperature, which means it turns on and off less often as the door is open and closed.

Source: *guardian.co.uk*

● [www.ecubedistribution.com](http://www.ecubedistribution.com)



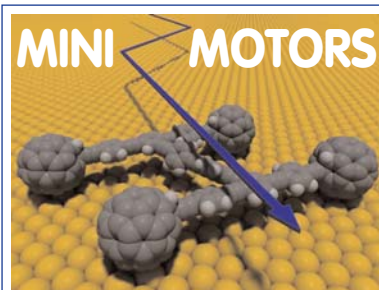
## HONEYCOMB CIRCUITS

**PRINTED CIRCUIT BOARDS** are sometimes used in devices that experience high G-forces, such as military aircraft, rockets and missiles. In these circumstances, the high G-forces can cause the PCBs to bend and resonate. This in turn can cause components attached to them to come loose.

So Honeywell International, a US avionics company, has found a way to make the boards lighter and more rigid by making them out of a honeycomb-like structure.

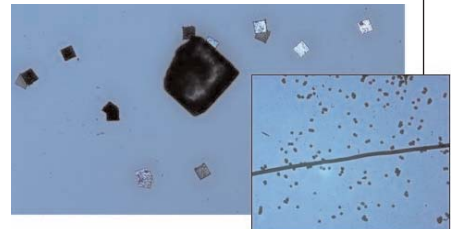
Reducing their weight has obvious benefits for aerospace applications and the improved rigidity keeps the board flat during high G-operations, ensuring that components remain attached to the board.

Source: *guardian.co.uk*



**SCIENTISTS HAVE** developed this 'car' that is just 4 nanometres across – about the same width as a strand of DNA. Nanovehicles could eventually be used for transportation in molecular-sized factories.

© Y. SHIRA/RICE UNIVERSITY



**RADIO GAGA** Hitachi's latest innovation is this minuscule radio chip, which is so small it can be used as a 'powder' and incorporated into other products. The chips carry small pieces of information which can be read over short distances, and measure less than 0.05mm across – above they are shown in comparison with a human hair.



### PAPER POWER

Developments are really moving forward at the nanotechnological level. This flexible 'paper' battery from researchers at the Rensselaer Polytechnic Institute contains a series of carbon nanotubes that can bend and flex without breaking – while still storing enough energy to power a light bulb. Source: *guardian.co.uk*

© RENSSELAER POLYTECHNIC INSTITUTE/FELEXDIB



**Graduate recruitment**

CHILWORTH BUSINESS CLUB is hosting a lunchtime workshop on 'How local SMEs can recruit graduates' by Graduate Jobs Southampton on Wednesday 13 February. Admission is free upon registration and includes a light lunch.

GraduateJobSouthampton.co.uk has over 1,700 registered students and graduates looking for opportunities in the region, and 800 local companies use the site for graduate recruitment.

For SMEs, the benefits of using GJS include quick and easy graduate recruitment, free vacancy advertising, and on-campus and intranet presence at both Universities.

Nick Canfor, Operations Director at iMeta Technologies said "iMeta Technologies is a local software development firm that is growing and recruiting graduates and work placement students. The Graduate Jobs Southampton Project has proved to be an ideal organisation to put us in touch with graduates from the Southampton Universities. We hope to work with them for a long time to come".

The presentation will be followed by a 20-minute Q&A session.

● **For further information, contact:**  
**Karen Morgan Tel: 023 8076 3795**  
**info@southamptonhub.com**  
**Chilworth Business Incubator,**  
**2 Venture Road,**  
**Southampton Science Park, SO16 7NP**

# Kent Innovation Challenge

**E**NTREPRENEURS AND innovative businesses have until Monday 18 February to enter the Kent Innovation Challenge – and with it the opportunity to take home £20,000.

The search is on for the region's brightest entrepreneurs and most innovative businesses. If you have a great idea or your business is developing an innovative product or service, then the Kent Innovation Challenge's £20,000 cash prize could be yours for the taking.

And it couldn't be easier – a two minute pitch to a panel of Dragons on Monday 3 March could see you well on your way to the top prize.

More than 150 entrepreneurs and businesses have entered the Kent Innovation Challenge since its inception five years ago.

A £20,000 prize will be presented to the lucky winner on Thursday 3 April at a gala dinner during the Kent 2020 conference and exhibition.

In addition to the cash prize, the winners will also receive one year's rent-free office space at an Enterprise Hub site in Kent Science Park, the University of Greenwich or the University of Kent; free NatWest business and banking support for 18 months; 10 days free business mentoring from Business Link Kent; £5,000 of legal support from Vertex Law; production of a corporate video to the value of £5,000 and two years' membership of the Confederation of British Industry.

● **To enter the Challenge, go to:**  
**www.sehl.co.uk/Innovation.htm**

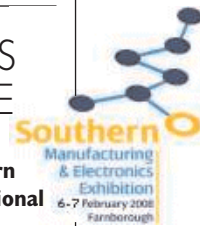
## AUTOAERO'08 LAUNCHED AT THIS MONTH'S SOUTHERN MANUFACTURING SHOWCASE

**AUTOAERO'08, a new exhibition focused on the autosport and aerospace engineering markets, is taking place on 6-7 February alongside the Southern Manufacturing & Electronics Exhibition, Farnborough – the UK's largest regional manufacturing technology, electronics and subcontracting exhibition.**

**AutoAero'08 is promoting the latest products and services available from leading high-performance engineering and technology suppliers, including suppliers of surface engineering and coatings, composites, tooling, digital manufacture, engine components and assembly integration.**

**Visitors to the SM&E Exhibition can resolve manufacturing issues by having technical drawings reviewed, and meet regional and national suppliers, attend free technical seminars, discover innovations and new products, attend live demonstrations and view the Laffin-Gas Rocket Car.**

● **Southern Manufacturing & Electronics Exhibition / AutoAero'08**  
**Farnborough International Venue, Farnborough Aerodrome, Farnborough, Hampshire GU14 6XT**  
**Tel: +44 (0)1252 532800 enquiries@farnboroughfive.com www.industry.co.uk**



● **NEEDING A SINGLE MACHINE** that could handle everything on his 100-acre farm but unable to find anything suitable, farmer James O'Kane built something himself – and won the Farmers Weekly Farm Inventions Competition in November, plus a £400 prize and a trip to the Agritechnica show in Germany. The competition attracted more than 60 entries.

Dubbed the Tele-Trac, James' tele-handler is a rigid-chassis unit with four-wheel steering, centre-mounted boom and cab, plus a rear linkage and pto. The power-plant is a reconditioned Perkins four-pot sourced from a fire-damaged JCB Loadall, as are the axles. The gearbox is a brand-new JCB four-speed torque-converter unit. With an engine mounted directly under the cab, power transfer from the crankshaft to the pto is almost direct, thanks to a gearbox arrangement that you would usually find between the front link arms on a tractor.

Everything else – including the telescopic boom, linkage and cab – is home-made, with cutting and rolling of heavy-gauge steel undertaken by a local engineer and welding and assembly done in the O'Kane farm workshop in County Derry, Northern Ireland.

Source: www.fwi.co.uk



**T**HE EASIEST, most attractive – but probably least useful – way to do biomimetics is simply to look at natural systems and see what ideas occur.

This method assumes that problem-solving relies on a special combination of intellect and inspiration, and that the process is unpredictable and hard to control, in the belief that only special blends of talent, experience, knowledge, black coffee and magic can deliver results, and that these results can never be delivered to order.

This method – let’s call it the Baconian phase of a new science – also requires intense facilitation, and is unreliable and untargetable: assemble data with as neutral a frame of mind as possible, see what patterns are generated, and formulate a more general approach from which general rules and predictions can be formulated. Thus a science emerges and the area of study is not only unified but made more useful.

**There’s just one problem...**

But this is wrong. Science is really done by imposing patterns (theorems) on the data and seeing how well they work. This is difficult with biomimetics, however, because it is complex and interdisciplinary, and biology and technology use different languages.

Lexical analysis allows much more directed solution-finding, but although it has identified successful counter-intuitive routes to the solution of specific problems it provides no help with the definition of a problem.

At Bath we use TRIZ (*Inventique*, May-December 2003). This Russian method of analysis, definition and resolution provides a structured approach to the inventive solution of problems, increases the productivity of practical solutions by an order of magnitude, and significantly increases productivity and profitability within industry. Perhaps most importantly, TRIZ defines the design environment within which a given problem occurs.

Current thinking suggests that it is the hierarchical arrangement of

that environment which gives biology its adaptability and effectiveness – a concept very close to modularisation in engineering.

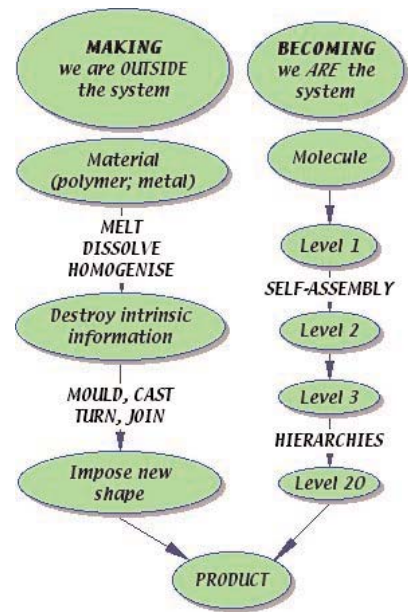
In the Technology hierarchy (‘Making’, top left) we are outside the system; our approach is to destroy most of the patterned structure within a material and impose new patterns, which we do largely by manipulating energy.

In the Biology hierarchy

In accordance with Professor Vincent’s commitment to the principles of Open Access, the ideas presented here are freely available. In demand as a lecturer and consultant to industry, he welcomes consultation or research enquiries by companies and entrepreneurs.

(‘Becoming’, top right) we *are* the system and so cannot impose ourselves on it. The system (you, me, a tree) assembles itself using the patterned structure derived from DNA by cellular processes, using only short-range forces. This not only requires far less manipulation of energy but dictates that large objects can be achieved only with a hierarchical structure.

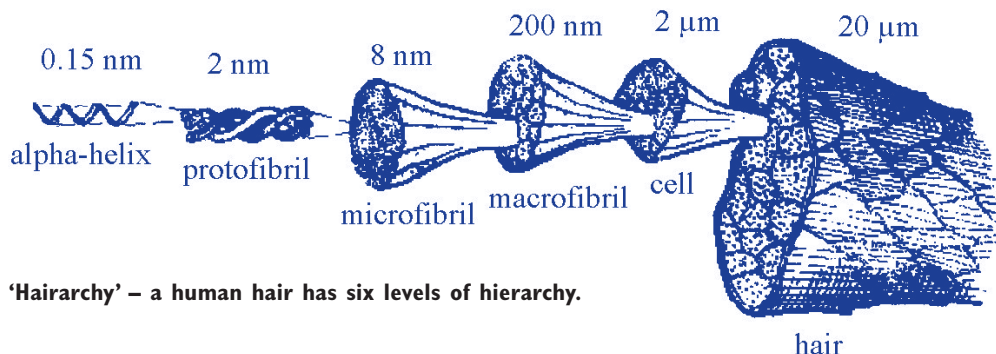
Such a structure has a distinct advantage, since the control of stiffness, for instance (which occurs at the nm to µm level), can be separated from the control of fracture (which occurs at the µm to cm level),



Above: Materials processing in technology (Making) compared with biology (Becoming).

yielding materials such as mother-of-pearl, in which durability is obtained without compromising stiffness – a difficult trick to pull off in technology, since the structural size ranges are not differentiated so completely.

From nm to km there are fewer than ten levels of hierarchy in technology – from ethylene monomers to an aircraft at an airport, for instance. Compare this with biology, which can have twenty levels (from hexose sugars to a forest). A strand of Kevlar may have only two levels of hierarchy; a human hair (below) has six. © Julian Vincent 2008



‘Hairarchy’ – a human hair has six levels of hierarchy.

*Julian F V Vincent is Professor of Biomimetics at the University of Bath. Biomimetics is the concept of taking ideas from nature and implementing them in another technology, such as computing, design or engineering.*

● Professor Julian Vincent, Director, Centre for Biomimetic & Natural Technologies  
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 Tel: 01225 386 596 j.f.v.vincent@bath.ac.uk  
 www.bath.ac.uk/mech-eng/biomimetics

“To invent, you need a good imagination and a pile of junk” – Thomas Edison ●

# www.wrti.org.uk

THE INVENTORS WEBSITE

**CENTRE OF EXCELLENCE** Marine South East

## The waters of life

SUPPORT FOR THOUSANDS OF MARINE COMPANIES

**M**ARINE SOUTH EAST is an initiative of SEEDA, the South East of England Development Agency, to help marine companies in the region attract and win new business.

The UK has the largest marine sector in Europe. With an annual turnover of £37bn and employing more than 250,000 people, the sector is twice the size of the aerospace industry and is highly successful in key export markets.

The south east represents 40% of this sector, employing over 105,000 people, many of them highly skilled. The region is home not only to commercial and leisure marine companies, but also to a plethora of trade bodies, research organisations, testing facilities, training providers and other support organisations.

In addition, the sector has over 4,000 companies supplying marine

markets. Small firms dominate: 95% of marine companies in the region are SMEs and 50% have fewer than six employees.

The Solent is internationally renowned as the centre of the UK's marine industry, and the core geographical concentration of marine sector firms is located in the area. This is a significant cluster and includes commercial port and naval activities, maritime services, high-technology marine electronics and a huge number of marine leisure firms. Smaller clusters exist along the coast at Chichester, Medway, Brighton and the port towns of Kent. ■

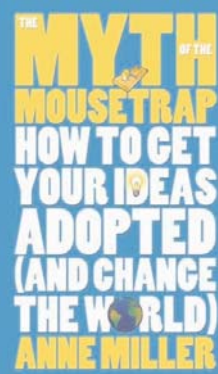
● **Marine South East**  
**Chilworth Business Incubator**  
**2 Venture Road**  
**Southampton Science Park**  
**Southampton SO16 7NP**  
**Tel: +44 (0) 2380 111 590**  
**admin@marinesoutheast.co.uk**  
**www.marinesoutheast.co.uk**

### BOOK OF THE MONTH

**The Myth of the Mousetrap: how to get your ideas adopted (and change the world)**

by Anne Miller

Cyan/Marshall-Cavendish  
ISBN: 0462099156 £16.99



This important, stimulating book is ideal for anyone who ever had an idea for making the world a slightly better place – but no one would listen. Or if they did listen, they said it wouldn't work, or was too risky, or not their area – or they just made so many objections that you got fed up and dropped the whole thing...

This book changes all that. It explains why it's so difficult to get new ideas adopted – and how to get your ideas taken seriously and put into action.

Starting her career with an MA in engineering, Anne Miller spent twenty years leading teams developing innovative products for the world's leading companies. A prolific inventor, she holds 39 patents for a diverse range of products – from the manufacturing system for the Femidom to power tools and medical products – and founded The Creativity Partnership, providing consulting and training for successful organisations.

### BUSINESS LINK INNOVATION CLINICS

Are you thinking about developing a new product, process or service? Have you invented something and don't know what to do next? Through its series of free Innovation Clinics, Business Link provides confidential and impartial guidance on such subjects as investigating an innovative idea, product development, working with universities, R&D funding sources, protecting intellectual property rights and licensing. Innovation Clinics are held throughout the SEEDA region.

● **Advice Hotline: 0845 600 9 006** [innovation@businesslinksoutheast.co.uk](mailto:innovation@businesslinksoutheast.co.uk) [www.businesslink.gov.uk/southeast](http://www.businesslink.gov.uk/southeast)

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