Extracting knowledge

Where to start?
We show you the route to success

Is your business well equipped?

Plus a four-page guide to accessing knowledge in Wales

Your guide to working with universities and colleges in WALES
As the world emerges from recession, it is vital to ensure that Wales is fit for the future and ready for the challenges of economic recovery.

Our aim is to build on our reputation as a resilient nation, equipped with an innovative, green economy that matches the needs of the 21st century.

So the Welsh Assembly Government’s Economic Renewal Programme focuses on driving up skills and encouraging the advanced research and development highlighted in this supplement.

That means it is vital to harness the knowledge and expertise of our world-class universities and colleges – the 21st-century equivalent of the raw materials that powered the Industrial Revolution. These institutions are accessible and approachable, ready to give all businesses in Wales the innovative cutting edge they require to succeed in their marketplace.

Devolved government is enabling us to draw together the great talent of our academic and business communities, breaking down the barriers that previously kept them apart.

The benefits of sharing knowledge are mutual, and pave the way to maximising the economic impact of our academic institutions.

Our programme of Academic Expertise for Business is investing £70 million to unlock the huge potential of our country’s higher and further education institutions. Launched in April 2008, it has already assisted nearly 150 projects that will help bring educational institutions and businesses together.

Business Innovation, part of Flexible Support for Business, provides an integrated package of innovation advice and funding for businesses and individuals. The Business Innovation team of Innovation Managers provides specialist support and access to Innovation Vouchers that can be used to part-finance work with private sector experts and universities and colleges.

And the recently announced all-Wales Incubation Network promotes further collaboration between academia and businesses in our Technium® facilities to help young technology-led businesses reach their potential.

Now is the time to ensure new momentum to launch the Welsh economy into the coming decade – with Wales’ business and academic communities working together as never before.

Ieuan Wyn Jones
Deputy First Minister and Minister for the Economy and Transport
Our Welsh universities and colleges are here to help your business become more innovative and competitive. You have the opportunity to work with people who are willing to understand your business and the barriers to development you may encounter. Their goal is to help you overcome these barriers and find the best solutions.

However, we appreciate that trying to find which university or college has the right expertise or facilities for your business, and finding the right person to contact, can seem challenging.

Accessing the resources of universities and colleges does not have to be daunting. This is why we have produced abc, your guide to academic expertise and facilities, complete with key contacts and an overview of their services.

Your business can be large or small, and it doesn’t need to work with leading-edge technology or undertake research to benefit from this expertise. Our universities and colleges provide a breadth of services including short-term diagnosis/problem-solving projects that typically take less than one day; student/graduate placements, from which your business can benefit from the latest academic training to help you solve an in-depth problem (knowledge transfer projects, KTPs); access to specialist equipment that is either too expensive to buy or not readily available in the marketplace; and collaborative industrial research and development projects.

In abc we showcase some of the range of equipment, collaboration and advice available to show you how accessible it all is.

On pages 4 and 5, you’ll find the path to follow to identify the right expertise or facility for you along with funding opportunities to help cover any costs.

We also have a quick-look guide to all Knowledge Transfer Centres (KTCs) – groups within universities and colleges geared to assisting companies, from individuals right up to larger organisations, located across Wales. Each KTC has a team dedicated to liaising with local industry, and is available to help your business by providing expert advice, access to specialist equipment and new ideas and research.

You’ll also find some testimonials from other businesses, like yours, which have already benefited from working with our universities and colleges. You will discover that your business can innovate with short-term project-based help as well as long-term strategic input.

The expertise is there for you, and accessing it is easier than you might think. What have you got to lose?
These days, our Welsh universities and colleges are geared towards working with businesses like yours. By taking on board their new knowledge and technology or using their specialist equipment, your business can benefit by becoming more innovative and competitive. The university or college you work with will depend on the expertise or facilities that your business needs. Identifying this may seem like an enormous mountain to climb. *Where do you start?* Help is at hand – we can help you find that first foothold on your route to the top.

**WHERE IS BASE CAMP?**
 Universities and colleges have commercial offices or technology transfer offices that are dedicated to helping businesses find the support they need. Information can be found on university and college websites. Welsh-based businesses can get support from the Welsh Assembly Government’s team of Innovation Managers, based throughout Wales. Innovation Managers can identify how your business can become more innovative and access expertise from the private sector and universities and colleges.

**CAN ANYONE CLIMB THAT MOUNTAIN?**
 Any company of any size, however long established, from start-up to global enterprise, in any sector, anywhere in the world – all can access our Welsh universities and colleges to help develop their business – it doesn’t matter whether you are in a high-technology business or a more conventional industry.

**NEED A HELPING HAND?**
 Stuck between a rock and a hard place? You might need to discuss possible solutions with someone who understands technical problems. You might need access to specialist equipment to trial and test new products or procedures. Or, you might need to tap into expertise and know-how.
WHAT’S THE NEXT STEP?
Once you’ve identified the most appropriate university
or college you can begin to work with them to solve
your technical problems. You can visit a centre or they
can come and talk to you.

HOW LONG WILL IT TAKE TO REACH THE TOP?
Depending on the nature of your project, you could work with
a university or college on just a short-term interaction, with a
quick problem-solving diagnosis, or benefit from a graduate
placement within your business or longer-term collaborative
research work.

WILL COST SET US BACK?
The cost varies depending on the project. For businesses
in Wales, Innovation Managers can provide access to
Welsh Assembly Government Innovation Vouchers or
longer-term R&D funding. Funding is also available to
part-finance graduate placement schemes.

Do you have a mountain to climb?

For more information contact Flexible Support for Business
Tel 03000 6 03000, www.fs4b.wales.gov.uk
Sustainability

1 Delivering Low-carbon Buildings Cymru
Purpose To promote and demonstrate the benefits of sustainable design, construction and operation in the built environment
Services Sustainable design advice, building performance prediction, architectural services, environmental management, waste minimisation advice
Equipment Building performance monitoring and testing, building and urban scale computer simulation, physical scale model testing (wind tunnel and artificial sky)
Users Construction industry, particularly architects, mechanical engineers, quantity surveyors
Contact Huw Jenkins, Cardiff University. Tel +44 (0)29 2087 5959, email jenkinsh@cardiff.ac.uk, web www.cardiff.ac.uk/archi/cribe

2 Biomass Processing for High Value Products
Purpose Realistic scale-up of harvesting and pre-processing of grass feedstocks to determine the practicalities and economics of running a grass biorefinery ‘on farm’. Bulk reduction for transportation and stabilisation for long-term storage
Services Unique access to a demonstration facility and academic expertise for processing feedstock grasses from experimental plots prior to downstream juicing and fermentation
Equipment Dry biomass pelletiser, a demonstration facility including plant that provides a state-of-the-art recovery and purification platform and enables the rapid processing of laboratory- to pilot-scale volumes of natural and fermented liquors
Users Agricultural industry
Contact Dr Steve Fish, Aberystwyth University. Tel +44 (0)1970 823232, email stf@aber.ac.uk, web www.aber.ac.uk/en/ibers

3 Goniophotometer and Spectroradiometer
Purpose To promote the uptake of ultra-efficient lighting
Services Independent testing facility, consultancy, R&D
Equipment Specialist light measurement equipment which is required to make accurate assessments of current and next-generation lighting solutions
Users Lighting and construction industry, engineering and electronics industry
Contact Professor Paul Rees, Swansea University. Tel +44 (0)1792 295197, email p.rees@swansea.ac.uk

4 Sustainable Alternative Energy Technology
Purpose To become the premier alternative powertrain centre of knowledge transfer solely devoted to environmental and applied green performance technology. To improve the competitiveness and efficiency of these emerging sectors in producing clean energy technologies
Services Test facilities, technically experienced people, full R&D programmes
Equipment Rolling road testing, advanced fuel cell simulation systems, load bank simulation system, prototype build battery equipment, mobile laboratory, advanced software modelling, advanced CAN development studio, two specialised (non-mobile) energy storage systems
Users Automotive industry
Contact Jonathan Williams, Glamorgan University. Tel +44 (0)1443 483791, email jgwilliam@glam.ac.uk, web http://fat.glam.ac.uk/consultancy/cerea

5 Biochar for Business and the Environment
Purpose Demonstration and development of a biochar production facility for converting under-utilised organic waste streams into value-added products. Locally/nationally sourced dry organic wastes and biomass feedstocks may be ‘carbonised’ to produce a range of products such as combustible charcoal, a soil conditioner and carbon sink, and activated carbon for more high-end applications such as gas/water filtration systems
Services Processing dry organic wastes to pyrolysed/torrefied products such as biochar, bio-oil and activated carbon. Demonstration, feedstock trialling, and solid/gas/liquid product capture and evaluation
Equipment Automated gas-recycling carbonisation rig with 1t batch capacity. Pyrolysis conditions may be tailored to suit different feedstocks or favour production of certain products. The more sustainable process operates by gases produced during pyrolysis of the feedstock being recycled back through a burner to supply the heat required to drive the process. Solid/liquid products may be collected and stored
Users Charcoal producers, manufacturers, county councils, agri-chemical companies and supply chains, waste management sector, animal feed companies
Contact Dr Edward Hodgson, Aberystwyth University. Tel +44 (0)1970 823126, email ewh@aber.ac.uk, web www.aber.ac.uk/en/ibers
Materials

6 Cutting and Fabrication Technology Centre

Purpose To provide expertise and access to advanced diagnostic facilities for the quality enhancement of machined parts

Services Consultancy and specialist staff for short- and long-term R&D projects

Equipment Five-axis computer numerical controlled (CNC) machining with large-volume capability, autoclave for curing composites, wide range of non-destructive diagnostic and testing equipment, including thermography, very high-speed digital videography, digital polarimetry, laser Doppler scanning vibrometry

Users Manufacturing sector, particularly composites machinings

Contact Dr Tyra Oseng, Swansea Metropolitan University. Tel +44 (0)1792 481157, email tyra.oseng@smu.ac.uk, web www.smu.ac.uk

7 Welsh Composites Centre

Purpose To facilitate new materials and product development, design, modelling, manufacture and testing; to develop the most efficient and effective transfer of composites knowledge; to drive the uptake of new composites technology

Services Materials testing and characterisation, design and structural modelling, materials and process selection, new product development


Users Aerospace, marine, sports and leisure, construction and automotive industries

Contact Dr Anke Skrobek, Swansea University. Tel +44 (0)1792 602505, email a.skrobek@swansea.ac.uk, web www.welshcomposites.co.uk

8 Industrial Biopolymers

Purpose To help and support companies that wish to develop new products or processes using environmentally friendly biopolymers

Services Consultancy, feasibility studies (economic and technical assessment of new product opportunities), R&D (experimental protocols to develop prototype materials), mechanical and physical testing, pilot-scale production

Equipment State-of-the-art equipment for oxygen, gas and water vapour transmission rate testing, 26-mm screw diameter compounder, biodegradation testing suite, 50-litre scale-up capability, comprehensive analytical support, 500 m² of space dedicated to biodegradation testing suite, 50-litre scale-up capability, transmission rate testing, 26-mm screw diameter compounder

Users Packaging, construction, plastics, aerospace and automotive industries

Contact Rob Elias, Bangor University. Tel +44 (0)1248 364829, email r.m.elias@bangor.ac.uk, web www.bc.bangor.ac.uk

9 Field Emission Cryo-scanning Electron Microscope

Purpose A state-of-the-art electron microscope capable of imaging and analysing biological samples

Services Ultra-high-resolution imaging (1 nm resolution), elemental analysis, cryogenic sample stage for preserving biological samples, transmission imaging (0.5 nm resolution)

Equipment Field emission scanning electron microscope, X-ray detector, cryogenic stage, transmission detector

Users Healthcare and pharmaceutical companies, food industry, semiconductor industry, metallurgy, materials

Contact Dr Thierry Maffeis, Swansea University. Tel +44 (0)1792 602234, email t.maffeis@swansea.ac.uk, web www.swansea.ac.uk/engineering2/research/multidisciplinarynanotechnologycentre

Engineering

10 Cardiff University School of Engineering

Purpose (a) Environment, (b) performance engineering, (c) green communications

Services To facilitate knowledge transfer and collaborative industrial research

Equipment (a) Assessment of the impact of solid wastes, bespoke environmental process engineering solutions, characterisation of organic and inorganic materials
(b) Provision of four cutting-edge technologies: rigid body dynamic analysis acoustic emission non-destructive testing for damage assessment, structural health monitoring, identifying manufacturing defects; digital image correlation optical strain measurement; autoclave for the manufacture of large-scale high-quality composite components
(c) Help companies design, develop and supply the network infrastructure to reduce the electrical power consumption of future communication systems

Users (a) Mining, water treatment and waste management industries
(b) Automotive, aerospace and defence industries
(c) Aerospace communications and manufacturers of electronics and components, printed circuit boards and measurement instrumentation, computer-aided design software developers

Contact Simon Parker, Cardiff University. Tel +44 (0)29 2087 6584, email parkersr@cardiff.ac.uk, web www.innovation.engineering.cf.ac.uk
11 Manufacturing Engineering Centre

**Purpose**
World-class R&D in advanced manufacturing

**Services**
Contract manufacture services in rapid prototyping/rapid manufacturing, tooling and micro and nano-fabrication, feasibility studies and technology demonstration products; consultancy services to develop new products; identify best technical solution; adapt existing technologies; long-term R&D projects

**Equipment**
Micro-machining systems, micro-fabrication equipment, quality control systems, focused ion beam system with integrated scanning electron microscopy; SLA rapid prototyping machine

**Users**
Automotive and motor sport; electronics, consumer products; medical devices; communications; aerospace/defence; design/modelmakers; engineering/toolmaking

**Contact**
Geraint Evans, Cardiff University. Tel +44 (0)29 2087 4641, email evansdg@cf.ac.uk, web www.mec.cf.ac.uk

14 User-centric Design Lab

**Purpose**
To improve the design capabilities of SMEs to enable them to realise the business rewards of better product development practice

**Services**
User research, innovation management, product design, packaging and graphic design, rapid prototyping, short-run, low-cost manufacture, tooling management and production

**Equipment**
Observational research facilities, 3D computer-aided design, various rapid prototyping technologies, vacuum casting and rapid metal casting, high-speed machining and toolmaking

**Users**
Various, including the medical device, automotive and aerospace industries, food producers and financial services organisations

**Contact**
Jarred Evans, University of Wales Institute, Cardiff. Tel +44 (0)29 2041 6725, email jevans-pdr@uwic.ac.uk, web www.pdonline.co.uk

15 Textile Technologies

**Purpose**
To increase access to advanced technology for pre-production and production processes for the textiles sector

**Services**
R&D, prototyping

**Equipment**
Specialist technology for design and pattern cutting: computer-aided design/computer-aided manufacturing, laser joining technologies

**Users**
Apparel, textile and technical textile industries

**Contact**
Suzi Park, Coleg Sir Gar. Tel +44 (0)1554 740238, email suzi.park@colegsirgar.ac.uk, web www.colegsirgar.ac.uk

16 Inert Environment Fabrication and Characterisation Facility

**Purpose**
To allow devices to be fabricated and tested in a dust-free atmosphere and one that is free of the ‘contaminating’ effects of atmospheric oxygen and moisture, which is not possible in a conventional clean room. There is no similar regional facility

**Services**
Fabrication of organic devices, advice and support in thin film deposition, device fabrication, materials characterisation, electrical characterisation of materials

**Equipment**
Class 1000 clean room with inert atmosphere glove box incorporating a thermal evaporator for organic thin film deposition as well as a spin-coater for solution processing of organic materials

**Users**
Businesses involved in thin-film transistor, radiofrequency identification, organic photovoltaics, organic LEDs

**Contact**
Professor Martin Taylor, Bangor University. Tel +44 (0)1248 680696, email d.m.taylor@bangor.ac.uk, web www.engl.bangor.ac.uk/research/optoelectronics
## Creative industries

### 18 Moving Image Wales

**Purpose**
To support established businesses, emerging talent and the creation of new businesses in the creative industries. Provides tailor-made advice and guidance to businesses working across the creative sector in Wales, representing a range of disciplines including TV, film, fine and applied art, architecture, photography and graphics.

**Services**
Innovative cross-media investment models involving digital technology (e.g. live action TV, HD media, iPhone apps, augmented reality, games); high-definition production and post-production workflows; laser cutting and etching.

**Equipment**
RED One and other HD cameras, AVID editing suites, laser cutting/etching, water-jet cutting, digital textile printing.

**Users**
TV, film, animation, media, textiles, fashion, graphics, illustration. The technology might be employed in most industry sectors including industrial design, engineering and manufacturing.

**Contact**
Chris Holtom, Swansea Metropolitan University. Tel +44 (0)1792 295091, email c.holtom@smu.ac.uk, web www.smu.ac.uk/ciric

### 19 Medialab

**Purpose**
To develop a demonstration HDTV studio showcasing the latest HDTV production camera equipment, special effects and animation techniques and processes. To provide access to a render farm facility.

**Services**
Creative environment to produce new digital content. New product opportunities, networks with national and international media companies.

**Equipment**
HDTV camera equipment, high-grade render farm animation facilities, AVID digital editing suites.

**Users**
Digital media sector, creative industries.

**Contact**
Peter Hodges, Glamorgan University. Tel +44 (0)1443 668676, email phodges@ glam.ac.uk, web www.cci.glam.ac.uk

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## Communications

### 20 Multiple Input Multiple Output (MIMO) Testbed

**Purpose**
To provide support for the development, testing, evaluation, research and demonstration of 2.5, 3G and beyond 3G mobile and wireless air–interface standards, with a special focus on real-time testing.

**Services**
Consultancy, research testing and evaluating new wireless equipment and services.

**Equipment**
World-class test equipment, wireless testing, performance validation.

**Users**
Communication sector, global industry leaders.

**Contact**
Tim O’Farrell, Swansea University. Tel +44 (0)1792 602768, email t.ofarrell@swansea.ac.uk, web www.swan.ac.uk/engineering/telecommunications/facilities

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## Printing technologies

### 17 Print Functional Materials

**Purpose**
To provide a well-equipped resource and expertise to support product and process development in the printing industry.

**Services**
Work with companies to develop their printing technology and expertise to add value to their products. It also looks to work with new companies (both spin outs and inward investing) to develop high-skilled manufacturing.

**Equipment**
Air-conditioned laboratory, printing presses, colour measurement, press equipment.

**Users**
Printing industry.

**Contact**
Glyn Davies, Swansea University. Tel +44 (0)1792 295091, email g.r.davies@swansea.ac.uk, web www.swan.ac.uk/printing

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## Quick guide

We appreciate that many of these centres are multidisciplinary and cut across many sectors. So, this is only a rough guide. For further information on capabilities contact the individual centre.

- Biochar for Business and the Environment
- Biomass Processing for High Value Products
- Cardiff University School of Engineering
- Cutting and Fabrication Technology Centre
- Delivering Low-carbon Buildings Cymru
- Field Emission Cryo-scanning Electron Microscope
- Goniophotometer and Spectroradiometer
- Industrial Biopolymers
- Inert Environment Fabrication and Characterisation Facility
- Manufacturing Engineering Centre
- Medialab
- Moving Image Wales
- Multiple Input Multiple Output (MIMO) Testbed
- Print Functional Materials
- Simulation-based Product Design
- Sustainable Alternative Energy Technology
- Textile Technologies
- The National Automatic Identification and Data Capture Centre for Wales
- User-centric Design Lab
- Welsh Composites Centre
Besides consultancy and collaboration, universities and colleges can offer you access to specialist equipment. This gives you the opportunity to broaden your business's expertise and skills in a cost-efficient way and enhance your capabilities to achieve the competitive edge you need for success. Here we feature three types of equipment – which usually come at a high cost – available at universities and colleges in Wales for your business to access.

### Quick prototypes

Are prototypes essential to your business?

If so, the Manufacturing Engineering Centre (MEC) at Cardiff University is just one of many academic centres in Wales which can help you.

The MEC is certainly no stranger to industry. Its state-of-the-art facilities, some of which are unique in the UK, have been accessed by firms for many years for successful microengineering collaboration.

The MEC has recently expanded and has purchased even more specialist equipment for industry to access. One such piece is the Perfactory® SLA rapid prototyping machine, which uses stereolithography to turn a 3D computer-aided design drawing into a solid object.

Thanks to this machine, you will be able to produce – quickly, easily and inexpensively – solid prototypes of your products.

This is of particular interest if you are involved in the automotive, aerospace, electronics, medical, casting, jewellery, design and modelmaking industries – particularly if you cannot afford to slow down or stop your design and development programmes. Once you have the prototype you can, for example, review assembly techniques, reduce parts count and improve ergonomics.

This specialist SLA machine gives greater definition to components than existing technology, allowing for the use of different materials to create the objects. For example, a biocompatible material can be used to produce thin-walled components, which would be suitable for medical applications such as hearing aids. Traditional SLA machines first have to create a base upon which to build. This machine, however, builds from the top down, removing the need for a base, and thus streamlining the prototype creation process.

### Contact

Frank Marsh, Cardiff University
+44 (0)29 2087 4641
marshfd@cf.ac.uk
www.mec.cf.ac.uk
Low-energy light sources

Step into Bangor University’s School of Electronic Engineering and you’ll find the latest addition to its facilities: inert atmosphere glove boxes. Used for fabricating organic electronic devices, such as light-emitting diodes (LEDs), it incorporates an organic evaporator and spin-coater.

Organic electronics differs from traditional electronics in that it uses carbon-based materials (conductive polymers, plastics and small molecules) rather than metals. It’s all housed in a clean room – a special type of atmosphere with a low level of environmental pollutants such as dust.

This equipment, available for joint research with industry, is ideally situated to benefit the strong opto-electronics cluster in North Wales, focused on Technium® OptIC at St Asaph. The facility has already attracted the interest of opto-electronics spin-out companies based there.

Steve Kelly of SmartKem Ltd says that the new facility will be especially useful for fabricating test devices and circuits, including displays, made from the range of new organic materials which the company is developing, while Gene Koch of Lomox Ltd expects that it will greatly assist his company in performing physical parameter and fabrication process evaluations of its new state-of-the-art photopatternable organic LED materials.

The facility is available for specialist projects, such as the fabrication of organic radio frequency identification (RFID) tags, which in turn can enhance brand recognition and security.

Contact Professor Martin Taylor, Bangor University +44 (0)1248 382686, d.m.taylor@bangor.ac.uk www.eng.bangor.ac.uk/research/optoelectronics

Computer-generated imagery

The University of Glamorgan’s Cardiff School of Creative and Cultural Industries contains cutting-edge technologies and facilities for the creative disciplines.

Here, Medialab provides the environment for the creative industry to produce new digital content, product applications, disseminate new project opportunities and upskill staff, while also developing new graduate talent and networks with leading national and international media companies.

You also have the opportunity to access the render farm facility. A render farm is a computer cluster built to render computer-generated imagery (CGI), typically for film and television visual effects, using off-line batch processing.

The software purchased as part of the render farm facility will be installed by March 2010. The aim is to provide access to rendering software to the Welsh digital media industry by installing further commercial software licences.

Medialab can be utilised for computer animation, visual effects for high-definition (HD) television and film industry, computer games development (from iPhone apps to full HD gaming experience) and 3D/stereoscopic presentation for games, television and projection.

Peter Hodges, head of Medialab, remarks, ‘This specialist equipment is expensive and out of the reach of many SMEs. They could access all the facilities separately, but this brings together the facilities and industry-focused research and development under one roof. In fact, this is the only render farm facility of its type in Wales.’

Contact Peter Hodges, Glamorgan University +44 (0)1443 668676 phodges@glam.ac.uk www.cci.glam.ac.uk
Swansea-based housing association Grŵp Gwalia Cyf, which builds and maintains sustainable, high-quality housing, required interior kitchen and bathroom tiles for its new SA1 development. The tiles had to be designed and made from recycled material and produced to stringent technical specifications, but also capable of being mass produced.

At the Cutting and Fabrication Technology Centre (CFTC) at Swansea Metropolitan University (SMU), senior research associate Dr Tyra Oseng was researching the production and application of a new material made from 100% recycled bottle glass. Applying this research to tile development in an R&D collaboration with Grŵp Gwalia demonstrates how a university’s latest thinking can easily be put into industrial practice.

The state-of-the-art material developed by the CFTC differs from other similar products because of its production process. ‘It uses less energy than conventional hot glass recycling,’ explains Dr Oseng.

Technical specifications from the architects also required strength and stability testing of the recycled glass material. This was able to be done at the CFTC using its specialist non-destructive testing (NDT) facilities. SMU is the only university in the UK which specialises in architectural glass. NDT equipment can be used to test any materials (metals, composites, glass, polymers) for flaws and residual stresses. The centre uses dedicated equipment, such as its high-speed digital video camera which can take up to 109,000 frames per second to research impact damage such as stone chips on windscreens.

The centre’s networks also came in useful for this project – the tiles were produced with the help of glass designer and SMU research fellow, Rodney Bender, at his company Innovative Glass Products Ltd.

Following installation in a show apartment, Grŵp Gwalia expressed its interest in using the tiles in other housing, and Dr Oseng was recommissioned to produce more tiles at a later stage.

Our research helped Grŵp Gwalia find a product that ticked all the right boxes for its sustainability agenda. It was made from 100% recyclable glass, strong, aesthetically pleasing and able to be mass produced. Such a product would be difficult to find in a commercial environment.

Dr Tyra Oseng
Cutting and Fabrication Technology Centre

In brief

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What can barcodes do for your business?

Teddington Engineered Solutions (TES) Ltd, based in Llanelli, South Wales, designs and manufactures bespoke bellows and expansion joints for piping systems. Teddington wishes to do what every business desires: increase efficiency to improve competitiveness and market penetration.

Because of the bespoke nature of the market, each order enquiry requires a complex design and estimating stage before a quote can be prepared. Streamlining this pre-quote process to derive accurate cost estimation in a reduced time is critical to obtaining order information and knowing that jobs will be profitable.

Richard Thomas, director of TES, met the commercial services of Glamorgan University via a networking meeting, beginning a relationship which led to a two-year Knowledge Transfer Partnership (KTP) between the company and the Automatic Identification and Data Capture (AIDC) Centre for Wales at the University of Glamorgan. Key to this is the full-time involvement of a proficient graduate, backed up by academic help on a regular basis.

Barcoding is the simplest of a range of enabling technologies for automatic identification and data capture. It is not a new or sophisticated technology, but its applications can bring powerful benefits to businesses. As Richard says, ‘The payback came as a result of the effective combination and use of the technologies.’

The university suggested a range of potential solutions, but the problem solving was very much a two-way process: many of the generalities were often the result of input from the KTP associate or the supervising academic, whilst the specifics were the result of ‘local’ knowledge. The partnership is also beneficial to the academic institution, providing as it does ‘real world’ examples and experience.

Implementing the barcode technology suggested by the AIDC Centre allows better visibility of work in progress and inventory. ‘Eventually other members of the supply chain may be included to have accurate, timely and integrated information flows,’ Richard explains. This can result in short payback periods and a good return on investment. The changes may have future benefits too; it has prepared the ground for the use of other technologies such as radio frequency identification.

For the company, the benefits extended beyond shortening the time to prepare a quote, such as greater visibility of the shop floor, allowing supervisory staff to make scheduling decisions based on accurate information.

Furthermore, Richard strongly believes that bringing the university on board was more beneficial than using an industry business consultant. ‘Whilst “conventional” business consultants could certainly have had an input to the change required,’ he explains, ‘it is unlikely that this degree of assistance could have been provided, and certainly not at an economic rate.’

The AIDC Centre for Wales provides consultancy to identify problems and propose solutions associated with the identification of documents, parts and people, together with the data collection and subsequent IT processing required.

Manager of the centre, Hywel Williams, says it is not just barcodes that are involved. ‘Other technologies include two-dimensional codes, active and passive radio frequency identification, and various biometric techniques, some or all of which can find applications in almost any business.’

**Relatively simple technology such as bar codes can help to identify objects and people, and the speed and accuracy of data capture allows us to have better visibility of the organisation.**

Richard Thomas, Director
Teddington Engineered Solutions Ltd
Semantise Ltd is a communications and data management software company that helps organisations improve teaching and learning. It has developed osisreport, a reporting and assessment software product for schools. However, a lack of Welsh language proofing tools proved a barrier to entering this market within Wales, as many schools were required to produce reports in both English and Welsh.

Semantise enlisted the help of the Language Technologies Unit (LTU) at Bangor University to integrate Welsh language proofing tools with its specialist software. The LTU is the co-ordinator of a special interest group in the field of speech and language technologies, SALT Cymru, which was established in 2008.

‘It was easy to approach the university as we had good contacts already through previous projects,’ says Semantise director Oggy East. ‘Discussions identified a mechanism whereby its multilingual language proofing software could be integrated to create “osisadrodd” and to provide Welsh language proofing.’

An associate, David Chan, was employed on the project. He created a bilingual reporting system, incorporating proofing tools to support the production of bilingual reports, opening the way for further multilingual development.

Semantise is one of many companies that SALT has already helped. SALT devises new projects designed to help the Welsh language move to the forefront of multimedia technology developments. ‘With our work with Semantise and SALT in general, we’ve been looking at how developing bilingual software for Wales helps us develop multilingual software for a global market,’ explains Delyth Prys, head of the LTU at Bangor. ‘We find that working with local companies helps us to concentrate on relevant issues to the local economy.’

For Semantise, the collaboration with SALT and the development of osisadrodd has opened up opportunities to support schools in Wales. This project, together with the continued input of LTU’s expertise, will allow the software to be offered to schools, further reducing costs. ‘We received a second project grant to take the proof of concept to a market-ready solution,’ says Semantise’s Oggy. ‘The project also allowed us to establish contact with local schools’ ICT provisioning service.’

There are also beneficial effects on other areas of the business. ‘The technical skills used in the project are being adopted to extend the range of software we can offer,’ explains Oggy. ‘In the long term, the technology allows for other language combinations, which, as well as being attractive internationally, will prove valuable in supporting a range of language requirements of parents. There is great scope for increased sales of the software to schools in Wales and schools in and beyond the UK that require multilingual student reports – the LTU’s expertise has opened up a potentially huge market for us.’

In brief

| Business  | Semantise Ltd, www.semantise.com |
| University | Bangor University, www.saltcymru.org |
| Industry  | Information technology/communications |
| Technology | Language software |
| Duration   | 3-month short Knowledge Transfer Partnership |
| Key result areas | Development of new product, increased market opportunities |
Finding the right fit for your business

Norman Cox, project manager, provides an overview of the newly established Textile Technologies project

Tell us the basics
Based at Coleg Sir Gar in West Wales, we began in September 2009 and will run for three years. Our aim is to transfer knowledge from academia into business across a broad range of manufacturers involved in almost any kind of textile use in Wales.

What expertise do you have?
A wide range – we can collaborate with clothing, footwear, furniture and engineering companies that cut, sew and join fabrics to make different types of products.

What can you offer businesses?
Computer-aided design (CAD) facilities, manufacturing, laser joining technologies and prototyping in the apparel, textile and technical textile sectors.

What technologies do you have available?
We have the advantage of very powerful software. We have a state-of-the-art Gerber CAD system for the creation and manipulation of flat pattern pieces, to optimise fabric usage to make cutting easier while reducing wastage. We also have available a Texwel Pro 140 joining machine that can join fabrics using laser and ultrasound technology. This will be used to test fabrics in R&D collaborative projects with participating companies.

Do you have links to other services?
Swansea Metropolitan University’s Creative Industries Research and Innovation Centre (CIRIC) is a partner on this project and has complementary high-tech equipment for use in a variety of textile applications. This includes laser cutting and engraving, water jet cutting, digital fabric printing and digital embroidery.

What sort of companies have benefited so far?
Companies enrolled on the project so far come from a range of industries. They include makers of leather goods, upholstered furniture, inflatables, rescue equipment and also those involved in defence and aerospace.

Any unique projects on the go?
We are helping a company to develop a belt and buckle for Carl Hester, the British entrant for Olympics 2012 Dressage. He is the current national champion, so there should be great interest in this product throughout the equestrian community.

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For further information on how the Welsh Assembly Government can help you and how to access universities and colleges contact:

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