

GOING FOR GROWTH

The Role of Universities in Raising the UK's Business Competitiveness:

West Midlands Regional Annex

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1. Context

- 1.1. The environment the West Midlands' universities and AWM operate in is complex and the challenges are significant. In identifying how AWM and the universities are working together to improve the regional economic performance, it is necessary to understand the scale of the challenge and the structural issues which must be addressed, as well as the industrial focus and needs of the region.
- 1.2. The West Midlands regional economy has been badly hit by the recession and unemployment rates are the highest in the country. However, it must also be recognised that the region was underperforming before the economic downturn and performs poorly on a number of key issues: the region has 70,000 fewer people educated to graduate level in the private sector than the UK average, underperforms in terms of its innovation performance and is the only region where private sector employment has fallen since 1998.
- 1.3. In addressing these issues, it is important that:
 - weaknesses in the structure of the region's economy are addressed as well as the productivity of existing businesses; in particular, there is a need to shift the West Midlands economy to higher-value added sectors. The response to these issues needs to take an approach which:
 - connects skills, innovation and enterprise in order to drive the economy towards sustainable growth;
 - focuses on high-growth businesses (currently the region has the lowest proportion of high-growth businesses in the UK as defined by OECD) and the New Industry New Jobs agenda – both in developing regional strengths (and aligning them with national strengths) and in attracting inward investment; and
 - effectively connects businesses with the capability and expertise of the region's universities and with the investments made by AWM and national funding bodies in facilities, research, skills and people.
 - a balance needs to be maintained between the symptoms of poor economic performance and its causes. The growth of the West Midlands economy will be through creating employment in high-value private companies and increasing high growth businesses.
 - business demand needs to be the driver of skills, innovation and enterprise and the region's universities need to continue to develop their engagement with the region's businesses
 - the collective strengths and assets of the West Midlands' universities are nurtured to help develop, diversify and strengthen the regional and national industrial base.
- 1.4. AWM has worked with the region's universities to develop a shared vision, documented in the West Midlands Economic Strategy. This recognises the importance of the region's universities in working with business through knowledge exchange, the provision of expertise and skills training and their significant

contribution to the delivery of business support products through their strong relationship with Business Link. Through its Corporate Plan, AWM has invested substantially in the West Midlands' universities, particularly through the strategic functions of Technology Capacity and Business Innovation, International Business, Enterprise and Business Development and Skills for Business.

1.5. In general, regional economic growth can be generated through three pathways, all of which are supported by interactions with the region's universities:

- **The growth of existing businesses:** universities are a source of business, management and technology expertise and engage with external organisations in a range of activities from consultancy and advice to joint research. University facilities are used for research, prototyping and testing by external organisations with support from technicians (for example the National Pollen and Aerobiology Research Unit at the University of Worcester). The universities provide graduates and post-graduates for business, as well as other organisations, the professions and health service, and also provide a wide range of professional training programmes. Secondments and internships, student placements and exchanges are mechanisms for bringing new ideas and capabilities to business and bringing industrial relevance to researchers and teaching. The critical role of universities in supporting innovation in business has been recognised by AWM and a series of support programmes have been funded including Innovation Vouchers (which encourage businesses to start working with universities), Innovation Networks, KTPs and shorter KTPs, as well as an intensive programme of capital investment to increase interaction between business and universities in areas of technological strength that underpin the West Midlands industrial strengths. Such investments include the West Midlands Regional Food Academy, created at Harper Adams University College recognising the difficulties the food industry has in obtaining trained and skilled staff and the benefits technical support and knowledge exchange will bring to the industry, as well as providing facilities to de-risk innovative product development for SMEs. In addition, AWM and the region's universities maximise the benefit of ERDF in the region, with industry focussed facilities delivering both technological and innovation support – for example, the £19M Low Carbon Vehicle Technology project at the University of Warwick.
- **The creation of new businesses:** university spin-outs and the commercialisation and licensing of research and technology are one route to the formation of new companies in the sciences and social scientists and business schools also create business and professional services companies. University Science Parks provide close links to university research and facilities and connections with other technology companies (Keele Science Park, for example, has a focus on medical technologies, hosting medical and bioscience businesses such as Nanotherics, Dermal Technologies and Anaxsys Technology). Enterprise and entrepreneurship programmes such as SPEED (Student Placements for Entrepreneurs in Education led by the University of Wolverhampton) are a means of creating new businesses in areas of the region where there is not a strong culture of entrepreneurship. The Women in Rural Enterprise (WiRE) programme at Harper Adams University College supports women-owned businesses in the rural economy, which has been responsible for the creation of 274 new businesses. WiRE led the Regional Women's Enterprise Unit project, a West Midlands initiative that was the first cross-region activity in the UK to support

women entrepreneurs, and was a precursor to the Women's Enterprise Centres since launched by the Government.

- **Attracting international investment to the West Midlands:** universities play an important role in attracting inward investment in high-technology industries by bringing together research, skilled graduates and connections with local supply networks. International trade and exports can also be supported by universities. The universities themselves attract many thousands of overseas students and staff, generating wealth in local communities and also building alumni networks across the world.

2. Direct economic contribution of West Midlands' universities

- 2.1. As well as their contribution to the growth of the regional economy, West Midlands' universities are a substantial industry in their own right and have a direct impact on the economy. As recent reports by Universities UK show, the universities in the West Midlands generated total revenue of £1.64 billion in 2007/08. Through 'knock-on' effects, the 12 regional universities and university colleges generated an additional £2.2 billion in other industries throughout the UK, with the majority (£1.6 billion) accruing in West Midland industries. West Midland universities generated income of £616M from the private sector and international clients.
- 2.2. The West Midland universities and university colleges provide 23,638 full time equivalent jobs across a wide range of occupations. A further 24,775 full time equivalent jobs were generated outside the universities, with the majority in the West Midlands.
- 2.3. West Midland universities and university colleges attracted 27,480 students from outside the UK to study in the West Midlands. In addition to direct revenue of nearly £194 million, these students spent an estimated £187 million off-campus representing a total of £381 million of export earnings. The off-campus expenditure alone generated £263 million of output and 2,481 full time equivalent jobs throughout the UK.

3. Capabilities

- 3.1. The capabilities of the West Midlands' universities in supporting business growth should be recognised in the context both of the regional economic environment and the range of growth pathways which the region's universities provide¹².
- 3.2. Within this broad framework, Advantage West Midlands is working with West Midlands' universities to identify and support the capabilities which are most likely to lead to business growth. There is a particular importance in identifying and supporting high growth companies³. The West Midlands Economic Strategy

¹ *The Connected University: Driving Recovery and Growth in the UK Economy*, Kitson et al, NESTA 2009

² *Knowledge Exchange between Academics and the Business, Public and Third Sectors*, Abreu M., Grinevich V., Hughes A. and Kitson M., UK Innovation Research Centre, 2009

³ *The vital 6 per cent. How high-growth innovative businesses generate prosperity and jobs*, NESTA Research Summary, Oct 2009

identifies a number of areas in which universities will drive the region's economic growth.

4. Harnessing knowledge and business innovation

4.1. The West Midlands universities are a core part of the distinctive regional technology landscape and maximising the benefit of this activity for regional businesses is essential. The West Midlands Innovation and Technology Council (ITC) has identified 6 areas of technology strength with the potential for high growth, supported by the regional knowledge base. These areas are clearly identified in New Industry, New Jobs and have a significant contribution to make at both a regional and national level.

4.2. AWM and the West Midlands universities have worked to develop these areas in partnership, guided by the Regional Economic Strategy, to provide business focussed facilities and underpinning business support products to maximise the impact that the universities have on business.

- **Low Carbon Vehicles:** West Midlands has particular strength in low carbon vehicle technology. Birmingham City University has facilities for testing heavy diesel emissions with JCB, the University of Warwick has centres of excellence in lightweight and hybrid vehicles and Coventry University have expertise in telematics and vehicle trialling. Aston, Birmingham and Coventry universities will continue to support the development of technology in this strategically important area through their involvement in the Technology Strategy Board Low Carbon Vehicle demonstrator.
- **Low Carbon Buildings:** the West Midlands has a wide range of strengths including bio-energy research at Harper Adams University College and the developing European Bio-energy Research Institute at Aston University, the Renewable Energy Supply Chain Opportunities Project at Staffordshire University, hydrogen fuel cell research at the University of Birmingham and sustainable building technologies at the West Midlands Centre of Construction Excellence, University of Wolverhampton and the Advanced Construction Technology Centre, Coventry University. Keele University has expertise in green computing and carbon capture and sequestration.
- **Advanced Manufacturing (including composites and medical technologies):** this is supported by centres of research excellence such as the Interdisciplinary Research Centre in Materials Processing at the University of Birmingham, working with Rolls Royce, the Innovative Product Development Centre at the University of Wolverhampton. Medical Technologies is also a regional industrial strength and an opportunity for many manufacturing businesses to diversify into a higher value-add sector, supported by facilities such as the Health Design & Technologies Institute at Coventry University. The partnership with Rolls Royce is now being developed into the Manufacturing Technology Centre, a £40M investment by AWM and EMDA at Ansty which will create an open innovation environment for advanced manufacturing.
- **ICT, Digital Technologies and Games:** there are a number of excellent facilities across the region including the Serious Games Institute at Coventry University, the e-Innovation Centre at the University of Wolverhampton, research at the

University of Birmingham and the International Digital Lab at the University of Warwick. The Birmingham Institute of Art and Design at Birmingham City University has built excellent relationships with the digital media businesses around Birmingham's Custard Factory. Birmingham City University have international EMEA CISCO academy status and Staffordshire University have also created a Cisco Systems Networking Academy. AWM has continued to facilitate the blossoming regional digital industry through the 4IP project and now the development of the HIT (Human-Interface Technology) Lab.

- **Business & Professional services:** this is supported by networks such as the Business Hub at University College Birmingham and by the region's business schools. The EREBUS (Engaging REsearch for BUSiness Transformation) capacity building cluster brings together the Business Schools at Aston and Warwick Universities and the College of Social Sciences at the University of Birmingham and is supporting business transformation in both the private and the public sector. In addition the universities are home to world leading automotive, medical technologies, ceramic and jewellery design.

- 4.3. West Midlands' universities have an important role to play in enterprise and start-ups. IP revenues among universities are growing and there are some major businesses (e.g. The Binding Site spun-out from the University of Birmingham now has more than 450 employees worldwide, while Temodal, a brain cancer drug developed at Aston University now has worldwide sales of \$1bn a year) but in general, they represent a small part of economic growth generated by universities. There is a greater role in the commercialisation of research to form new industries and problem-solving with high-growth companies. The Photonics Research Group at Aston University has renowned expertise in experimental and theoretical research in optical and photonic technologies which are now being applied in a range of industrial applications such as medical sensing and communications. AWM has invested in a number of facilities around which new businesses can cluster and has built up connections between regional universities and the AWM Innovation Clusters. Examples include the Health Design and Technology Institute (HDTI) at Coventry University which has worked with over 70 SMEs in the last 2 years to support the development and testing of new products for the assistive technology market. The region's HEIs run programmes to catalyse staff and student enterprise, such as the Enterprising Students, Enterprising Staff programme at Birmingham City University supporting students to start new businesses by working with academics to commercialise ideas.

5. Enterprise and Business Development

- 5.1. West Midlands' universities have been at the forefront of developing interventions to support sustainable business growth and have piloted programmes of business support such as the Innovation Vouchers and Shorter KTP programmes. The region's universities have developed a coordinated, demand-led approach which helps businesses to choose which of the 13 regional universities will meet their needs. £40M AWM funding has developed a range of interventions, brokered by the Business Link West Midlands Gateway, so that businesses can be supported up an 'Innovation Escalator' of Solutions for Business from initial short innovation projects with HEIs (Innovation Vouchers) to longer, higher value interventions (e.g. KTPs). This process effectively increases the number of businesses in the region who have the capability to work with universities and develops a broader base of high-growth companies.

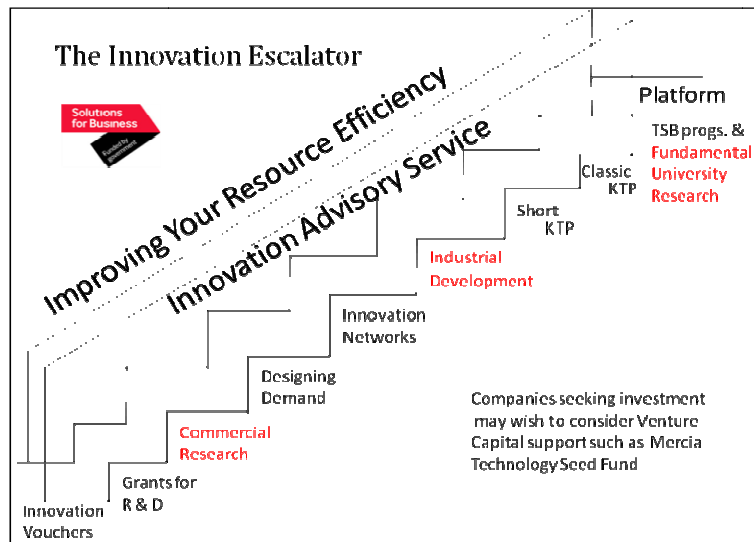


Fig 1: The Innovation Escalator of Solutions for Business: the regions' universities play a critical role in delivering business support and the relationship between the HEIs and Business Link is an important pillar of regional business strategy

6. Skills for Business

6.1. West Midlands' universities have a central role in developing the business capacity through skills through graduate and postgraduate courses, graduate internships, training for business and student start-up businesses such as the SPEED (Student Placements for Entrepreneurs in Education) programme led by the University of Wolverhampton on behalf of a regional and national consortium of HEIs. Industry targeted activity includes the Rural Employer Engagement Development Network (REEDNet)- one of the most successful university employer engagement programmes in the country - on which Harper Adams University College has already registered over 2,100 students on a variety of work-based programmes nationally as part of a partnership with Royal Agricultural College. The Open University makes a distinctive contribution to the higher skills agenda and regional economy in that there are currently 1,200 students studying courses in Business and Management who are resident in the region and who are, in most cases, sponsored by their employer.

7. International business

7.1. Increasingly, inward investment opportunities in the West Midlands will be from companies seeking skilled labour, access to IPR, linkages to universities and other centres of excellence. The most notable local example of this is Tata's decision to establish its European Technical Centre within the West Midlands Region largely due to long term connections with the University of Warwick and also the fact that the region can meet Tata's requirements for such a centre. The region has also attracted other companies seeking skilled labour, access to IPR and access to University expertise into the region. These include Sega Computer Games, Solihull, Shanghai Automotive R&D Centre in Leamington Spa and Airbus, Solihull amongst others.

8. Birmingham Science City

- 8.1. Birmingham Science City has a key role in developing the region's economy. Birmingham Science City has developed into a region-wide partnership including the region's universities as well as local authorities, business and business intermediaries to develop and use science and technology to improve prosperity and quality of life in the West Midlands, with the development of initiatives to support business facing activity, including innovative public sector procurement and the demonstration of key regional technology strengths. This activity is driven through the strong partnership that underpins Birmingham Science City, with joint working between the universities and local authorities, particularly around innovative procurement.

- 8.2. Through Birmingham Science City Research Alliance, pulling together Birmingham and Warwick Universities as the two largest research intensive universities in the West Midlands, AWM has invested £57m in the key regional technology strengths of energy, translational medicine and advanced materials. This investment is in long-term projects and has already levered £27M of external funding to the region (including £9.6M from HEFCE to attract 20 world-class research fellows to work between the two universities and with industry) creating new high-technology businesses and jobs. Connections with businesses and other regional universities form an important part of this activity. AWM has also invested in demonstrator projects building on the research and knowledge exchange capabilities of 8 regional universities in areas such as wireless technologies, bio-energy, virtual worlds, end of life care, ocular allergy and low carbon vehicles.

9. Exemplars

9.1. Solutions for Business – the West Midlands Business Support programme

- 9.2. West Midlands' universities have been at the forefront of developing interventions to support sustainable business growth and with £40M AWM funding have developed a coordinated, demand-led approach which allows businesses to choose which of the 13 regional universities they work with. This process is supported by Business Link West Midlands to deliver a joined up and business-led programme of support.
- 9.3. West Midlands' universities have led collaborative pilot programmes of business support such as Innovation Vouchers and the shorter KTP (Knowledge Transfer Partnerships) programme. Innovation Vouchers (led by Aston University) provide short, flexible innovation engagements worth £3,000 to small businesses, many of whom will not have worked with universities before. For example, University College Birmingham working with Haven Nurseries (Worcestershire) to produce a range of tomato-based juices from surplus produce not sold to supermarkets. The Shorter KTP programme (a national pilot led by Coventry University) supports 4-8 month graduate placements in regional businesses and is a new version of the highly successful KTP format. The West Midlands' 'Classic KTP' programme is coordinated by the University of Wolverhampton who are recognised as one of the UK's leading KTP providers. The impact of KTPs has been recognised nationally in terms of the value generated to the business with 2 new jobs created for every KTP placement and £200k improvement to profits. 80% of students are retained with the company after the KTP. Some have transformed traditional industries such as the award winning-partnership between Staffordshire University and Aynsley China focussing on design and product development. Many businesses come back repeatedly for KTPs: for example the ongoing relationship between Birmingham City University and Morgan Cars on developing the use of aluminium and the styling of the Morgan Aero 8 (winner of the regional KTP of the year award in 2010).
- 9.4. Businesses are supported up an 'Innovation Escalator' of Solutions for Business from initial short innovation projects with HEIs (Innovation Vouchers) to longer, higher value interventions (e.g. KTPs). This process effectively increases the number of businesses in the region who have the capability to work with universities and develops a broader base of high-growth companies.

10. Premium Automotive R&D (PARD) Programme

- 10.1. The £72M PARD Programme (£38M AWM matched with contributions from the region's automotive industry) was launched in 2003 to improve the design and manufacturing capability of the West Midland's automotive supply base with a specific focus on premium and high-value add manufacturing. The West Midlands has 30% of the UK's automotive manufacturing but 60% of automotive R&D. At its height, more than 100 engineers and researchers worked on the programme at Warwick Manufacturing Group (WMG) in areas such as Advanced Materials and Body Joining, Electrical and Software Integration, Simulation, Hybrid Vehicles and Innovation Skills. More than 600 businesses worked with WMG on the programme and these ranged from Jaguar Land Rover and their tier 1 suppliers to smaller companies.

- 10.2. A total of 238 new products and processes were developed and more than 5,400 jobs safeguarded. Nearly 3,000 people were involved in skills training around the PARD technologies. Evaluation of the PARD programme showed that over £12 of GVA were created for each £1 invested by AWM and also identified strengthened relationships within the Jaguar Land Rover supply network as a result of PARD.
- 10.3. Centres of Excellence have since been created at WMG through AWM funding in Lightweight Technologies, Customer Interface Technologies and Materials Applications. These have helped to reinforce the West Midlands at the centre of low carbon vehicle technologies and Aston, Birmingham and Coventry universities are engaged with business in demonstrating low carbon vehicles as part of the Technology Strategy Board demonstrator.

11. Strategic relationship with Rolls Royce

- 11.1. The Interdisciplinary Research Centre in materials processing at the University of Birmingham is part of a partnership with Rolls Royce which has extended over 20 years. The centre takes a design-driven approach to the development of new materials, novel materials processing and manufacturing technologies and the subsequent use of computer aided materials engineering to allow efficient transfer to industry. It includes a major project on the use of advanced materials for turbine blades which provides the company with manufacturing cost savings of several £M per annum and with a competitive advantage in the aerospace industry. The partnership is integral to several major innovation initiatives involving major companies and midlands Universities, including the Environmentally Friendly Engine programme (supporting UK industry targets for reduced engine emissions) and SAMULET (supporting the UK aeroengine supply chain).
- 11.2. The partnership also underpins the funding and establishment of the Manufacturing Technology Centre (MTC), which is a new model of collaborative partnership in which industry, universities and research & technology organisations are working together in an open innovation context to bring about major improvements in competitiveness for UK manufacturers and their supply chains. The partners include Rolls-Royce, Jaguar Land Rover, Airbus and Aero Engine Controls, the midlands Universities of Birmingham, Loughborough and Nottingham, and The Welding Institute. Located at Ansty Park near Coventry, the MTC has secured £40M of government funding through AWM and EMDA for a business plan which projects a further £90M of industry investment over the next 10 years and a direct industrial GVA of c£1 Billion. The MTC will provide an environment for businesses and researchers to engage in new ways and develop technologies which will support advanced manufacturing in key industry sectors.

12. The West Midlands Internship Scheme: a response to the recession

- 12.1. The WM regional target for the HEFCE 2010 Internship programme is over 1,200 placements. These are being met by successful proposals from Keele, Worcester, Coventry and Aston all building on their ECIF programmes in 2009 plus a new pilot programme from Birmingham and Warwick Universities. The Aston programme is a consortium approach and includes Staffordshire University, Birmingham City University, Wolverhampton University and University College Birmingham. Programmes will work with FSB members to focus on high growth sectors, specifically in low carbon and NINJ sectors.

- 12.2. In reply to the Regional Minister's request for a response to the economic downturn - and the anticipated reduction in graduate level jobs in the region, AWM in partnership with Graduate Advantage established the Graduate Internships Options Steering Group. Chaired by Aston University, membership of the group includes representatives from the IoD, JCP and many of the region's universities. This group mapped out an action plan for addressing the immediate need of creating as many graduate level employment opportunities as possible for graduates in the region in a period of recession and to build this into a sustainable plan for the next five years.
- 12.3. The West Midlands Graduate Internship Programme, administered by Graduate Advantage was quickly developed to address this and to create 250 Graduate Internships: improving the chances of graduates finding a job, and giving businesses support during the downturn. Demand for this project from employers and graduates, has been overwhelming and thus the scheme was extended to 500 places in November 2009.
- 12.4. Building on the regional approach, in December 2009, AWM supported a bid from Graduate Advantage to secure additional funding from HEFCE to increase the number of internship opportunities for regional graduates. By building on the infrastructure and resources already in place, and funded by AWM, Graduate Advantage were able to adapt their current placement scheme to offer a further 700 work placements this year. This bid draws on the successful collaborative work of the West Midlands Graduate Internship with Graduate Advantage working in partnership with Aston, Birmingham City, Staffordshire, Wolverhampton, Newman University College, the Open University, the IoD and FSB.

13. Strategic Intent

- 13.1. Although much has been achieved, recovery from the recession will need greater commitment on all sides to address the region's challenges. Priority growth industries have been clearly identified at both a national and regional level through New Industry, New Jobs (NINJ). A focus on high-growth industries will present challenges of up-skilling those in employment: enabling them to be more productive and helping businesses to retain and make better use of the graduates they employ. The region will need to address the skills and productivity gap between the West Midlands and the UK average in numbers of graduates, attracting more graduates to take up full-time positions and supporting the way these new graduates contribute to the needs of industrial growth sectors. The West Midlands universities have significant assets and these will need to be better utilised for the benefit of West Midlands businesses.
- 13.2. Advantage West Midlands and the West Midlands' universities are committed to working together to drive up demand from business for higher level skills, to exchange knowledge with regional businesses and to focus on ensuring maximum impact for every pound of their joint investment. The region has a strong group of universities with a range of facilities and capabilities and the ability and willingness to work together to deliver regional business support programmes. The strategic prioritisation of the industrial growth areas brings together AWM and the WM universities to focus on technologies for growth, aligning policy interventions through skills, enterprise, international business, innovation, and access to finance.
- 13.3. The universities will play a major role in the regional economy and AWM would like to see this reflected in discussions around the new Research Evaluation Framework.

14. Areas of Strategic Focus:

14.1 Creating the right environments for bringing universities and business together:

AWM has made a very substantial capital investment in the portfolio of university facilities and is now working with university partners to nurture regional assets to support and enable business growth. A key aspect of this is fostering interactions with business through the design of facilities and programmes to create the right environment to bring businesses into the university.

- The Digital Technology Portfolio: using the regional facilities including the International Digital Lab at the University of Warwick, the e-innovation Centre at the University of Wolverhampton and the Serious Games Institute at Coventry University to provide interactive working environments for high-technology businesses and connections to the full range of university people, facilities and expertise.
- The Manufacturing Technology Centre at Ansty: an off-site manufacturing facility which forms part of the national network of manufacturing centres; an industry-university partnership with 3 universities and TWI working collaboratively, funded by AWM and EMDA.
- The Quantum Technology Partnership pulls together national expertise with a core partnership between the universities of Warwick and Lancaster and QinetiQ;

driving industrial engagement with technology and ensuring the UK seizes this emerging market opportunity.

14.2. Improved commercialisation of research: many of the major AWM-funded university programmes have aimed to bridge the gap between university research and commercial application. Focus on priority sector areas will require policy alignment to drive commercialisation of research. This is being addressed in several ways:

- New models focusing on the leaders of the future - facilities such as the Human Interface Technology Lab bring together post-graduate students from the universities of Aston, Birmingham, Birmingham City, Coventry and Warwick to form innovative partnerships and develop commercial thinking outside the confines of a single university.
- New ways of multi-partner working - the Midlands was recently announced as the Low Carbon Economic Area for Advanced Automotive Engineering. The Midlands programme of low carbon automotive projects includes Aston, Birmingham, Loughborough, Warwick, Birmingham City and Coventry universities in collaboration with leading automotive businesses such as Toyota, LTI, Mitsubishi, Microcab, Smart plus, EON, MIRA, JCB, Ricardo, JLR and Tata alongside the Technology Strategy Board and other regional development agencies. The research includes intelligent transport systems, vehicle lightweight technologies, systems integration, the national ultra low carbon vehicle trial (known in the West Midlands as CABLED), niche vehicle research and development and vehicle customer interface technologies.
- High growth supply chain companies (particularly in the key technology areas of low carbon, digital and transport) need to be linked more closely into centres of regional excellence by increased engagement in the Technology Strategy Board innovation platforms and with the Knowledge Transfer Networks will support the commercialisation of research and strengthen alignment with national strategy.

14.3. Responsiveness of the universities to business needs: as well as the longer-term technology drivers for the West Midlands, the universities will need to be able to respond quickly and collaboratively to regional business needs.

- The universities have developed and collaboratively deliver a programme of successful mechanisms, managed and brokered by Business Link WM under the 'solutions for business' banner. This will be further promoted and developed to drive up the demand for university support by regional businesses.
- The coordination of the universities' capabilities in response to the needs of business will be an important part of the regional economy. The highly successful graduate internships programme was developed by the region's universities and AWM in a matter of weeks demonstrating the capability to provide a rapid collaborative response. The Higher Education Association, Universities WM, will play a key role in this process.

14.4. Collaboration between HEIs for the benefit of business: West Midlands' universities have a strong history of collaboration and there will be increasing emphasis on joining the complementary strengths of the region's universities for the benefit of business. It is important that the benefits of internationally renowned

research assets are maximised for regional business. This will require increasing the absorptive capacity of regional business as well as increasing the flow of business-university interactions. Stronger collaboration will be required between research centres, knowledge transfer offices, and skills and training activity; both within and between universities.

- Birmingham Science City is a model for collaboration that focuses on moving research from theoretical and fundamental research to commercial viability. The Science City Research Alliance at the universities of Birmingham and Warwick is a world-class collaboration of research strengths which is attracting external investment, researchers and businesses and raising the profile of the region's knowledge base. The programme is linked to innovative procurement at a city council level. The Research Alliance will pull in the expertise of all of the region's HEIs, with increasing collaborations as the programme continues. It is essential to build this cross-regional collaboration between the initial Research Alliance partners and the wider expertise of the regional HEIs.
- The Knowledge and Innovation Communities (KIC) is a ground-breaking European Institute of Innovation and Technology (EIT) programme in climate change and mitigation. West Midlands' universities and businesses are involved along with 5 of Europe's top universities (including Imperial College), 10 major businesses and 6 regions. The West Midlands has led on a Regional Innovation Implementation Community with 5 partner regions: each bringing together its key regional development players – universities, research and technology organisations, industry and regional and local authorities. This programme will bring universities from the UK and EU together collaboratively to support businesses and to develop the next generation of highly skilled specialists in the low carbon economy.

14.5. Using the reach and international connections of universities to support business: the West Midlands' universities have wide reach across the world through alumni, professional networks and research alliances, academic conference visits and international offices.

- AWM and the West Midlands' universities will develop mechanisms which maximise the benefits of international trade both for the economic benefit of the region and for the universities themselves, recognising the importance of the collective voice on the international stage.

14.6. Skills for business: crucial to the future of the West Midlands will be the skills of the workforce both to improve productivity to compete in current industries and to develop the economy into higher-value sectors. The universities will have an essential role in increasing the number of graduates working in the West Midlands, providing demand-led employer training – particularly in management and leadership - and also identifying and moving their delivery towards the future skills required by new industries such as those which will develop around Birmingham Science City in the hydrogen economy, advanced materials and low carbon vehicles and construction – work is already underway to understand the job opportunities and skills needs of the 20 regional Investment Impact Locations these will be key to the future growth of the regional economy. The prioritisation through New Industry, New Jobs enables a focus for future skills.

- 14.7. The 'Civic University':** the important role universities play within the community will be recognised in the Regional Integrated Strategy. Physical regeneration will support the focus on high-growth industries and the universities will play a central role in ensuring all parts of the region are engaged in the knowledge economy.
- AWM has invested in a range of major projects which will revitalise the role of the 'civic university' in the local and regional economy. University Quarter Stoke is a major partnership in education-led regeneration with Staffordshire University, while the new Library facilities at the University of Worcester will place the university at the centre of the city and the community.