

Lambert Review of Business University Collaboration

Response from Advantage West Midlands

1. Overview and RDA/HE relationship

1.1 Advantage West Midlands enjoys a positive working relationship with the region's HEIs and has undertaken a number of significant joint initiatives with the sector in support of regional competitiveness. The AWM Board has had since its inception at least one HE representative amongst its membership and AWM staff and Board members are closely linked or on the governing bodies of several of the HEIs. The developing West Midlands Higher Education Association partnership is working with AWM and GO-WM to develop future strategies for regional engagement of the knowledge base in support of both economic and social regeneration and has recognised the importance of even the most internationally active institutions playing a role in their home region.

1.2 The Regional Economic Strategy has three primary policy instruments – Business Clusters, High Technology Corridors and Regeneration Zones. The engagement of the HE sector in the first two has been fundamental to their development, with spin-outs forming the future growth potential of several of the developing clusters and the Corridors linking the opportunities offered by the knowledge base to physical development potential along three key transport corridors¹.

1.3 Whilst up to this time the RDA's role has been mainly reactive, responding to the opportunities created by the Universities and RTOs using decades of past national investment, it is expected that from here forwards the relationship will be more two-way, with the science base partners responding to regional priorities by investing in new research lines of enquiry and creating opportunities for greater interaction with business needs. The Cluster Innovation Managers that AWM has funded within the HEIs (£210k contribution from AWM) will develop a detailed understanding of the capabilities of the knowledge base in relation to the cluster and will communicate these to the clusters. They will also be cognisant of the demand side business needs and can help the research partners to respond positively where new avenues of enquiry are needed to grow the cluster into the future.

1.4 The West Midlands Higher Education Institutions collectively turn over some £950m annually. The economic impact of this on the regional economy is significant in itself, and the potential leverage of such income on AWM and ERDF/ESF matching funding is also great, if the missions of the HEIs are appropriately aligned to regional need.

1.5 At a strategic level, the region is still considering its response to the opportunity to develop a Science Council. We have embarked upon a

¹ See annex 1 – High Technology Corridors

process of cluster development² in which the HEIs are strongly engaged that will in effect make the linkages between the research base and business that the original science councils in the north east and north west were set up to achieve. We do not in the region have as significant a private sector research base as do those other regions, and there are strong links already between the major private sector employers and individual HEIs which we offer as case studies below. We do however see a need to raise the profile of the importance of business accessing the knowledge base, and also to provide an expert forum that can assist the region in prioritising its future investments in emerging technology areas. The Agency through this mechanism could also help to stimulate and aggregate demand from businesses to the point where universities and research organisations can identify a long term research programme to support their needs. It can also help businesses and individuals to understand the constraints under which the science base operates, so that expectations are set at appropriate levels and real partnerships of need and opportunity can be brokered.

1.6 We have agreed with the WMHEA that any body that is created will be complementary with our existing cluster work and will also have a wider remit than just science, as there is a clear opportunity for us to exploit more effectively the international standard research in the economic and social sciences that can help us potentially to address some of our deep-seated regional problems.

2. Question 1 – Best Practice in business-university collaboration

2.1 The RDA supports a wide variety of HE based projects and engages with the sector on many levels, encouraging greater interaction between HEIs and businesses. Our three identified roles as regional champion, regional coordinator and regional catalyst mean that we seek to maximise both formal and informal contacts between all areas of the economy in the region. Many of the areas picked up in your third bullet point will be reported on by individual HEIs, but the RDA would see itself having a role in promoting collaborations, and itself using the facilities and expertise of the HEIs to take a lead.

There are examples of good practice within West Midlands HEIs in all of the areas listed in the questions for consultation. We have selected a two as exemplars for this review where the RDA has had a significant role in developing the initiative.

2.2 Case study 1

International Automotive Research Centre

² See annex 2 – Cluster development model

The University of Warwick's Warwick Manufacturing Group has secured a new £70 million "International Automotive Research Centre" which will focus on supporting the manufacture of premium/luxury products - the key sector for future of UK engineering.

The new Centre launched on Wednesday 2nd of April 2003 with a special briefing for Midlands engineering companies working in the automotive industry supply by PAG head Bob Dover (the chairman and chief executive officer of Jaguar and Land Rover), Nick Paul (Chairman of the Regional Development agency Advantage West Midlands), and Professor Kumar Bhattacharyya (Director of the Warwick Manufacturing Group at the University of Warwick).

The development of volume manufacturing facilities in low labour cost countries has led to a significant part of UK automotive engineering concentrating on what it does best - the premium vehicle sector. However this sector will only continue to succeed if its supplier base continues to meet increasingly exacting demands in technology and craftsmanship. The new centre will thus put the supply industry at the forefront of its work ensuring that every link in the automotive supply chain has access to the latest technologies and business techniques.

The new Centre swings into action immediately with 20 research projects covering areas such as Advanced Body Joining Techniques such as laser welding, ultra high strength and sound damped steels, wireless tracking devices, sensor system to links the external environmental conditions with the chassis control systems, voice recognition, new tools to the supply industry, hybrid vehicle technologies, training and skills development for supply industry,

One of the Warwick Manufacturing Group's key partners in the new Centre will be Premier Automotive Group - Ford Motor Company's premium vehicle business group made up of Aston Martin, Jaguar, Land Rover & Volvo. Just as important will be partnerships with a range of Midlands SMEs that supply automotive companies. In total the new Centre will help secure around 50,000 jobs working in automotive engineering - the vast majority of which will be in the Midlands. The funding for the new Centre comes from regional development agency, Advantage West Midlands and the University of Warwick's industrial partners.

Engineering and Physical Sciences Research Council have also agreed in parallel to fund one of its "Innovative Manufacturing Research Centres" to support of this collaboration with PAG, including plans to establish a new 5 year appointment at professorial level to be co-funded by PAG, the University and EPSRC.

In Warwick Manufacturing Group the Region possesses one of the world's leading automotive R&D groups with a strong research vision, international acclaim for its research, extensive R&D facilities and the ability to migrate its research through to applied demonstrator projects and ultimately exploitation

on vehicles. It is proposed to capitalise on this capability through the creation of a Premium Automotive R&D Centre that will be a world leader in the key areas of technological opportunity for the premium automotive sector. It will become a “flagship” for the Region, demonstrating an international leadership in research for this high added-value sector.

The scope of this proposed collaboration between the University of Warwick and industrial partners represents a significant development in industry/academia relationships. The Parties involved in each of the projects will be WMG, Ford Premier Automotive Group and partners from the supply base.

WMG will provide:

- researchers
- core location for the research
- project management for all projects
- exploitation and dissemination routes/IPR control
- office facilities and support services
- financial management of the projects
- Programme Steering Group management (see Section 6 below)

Ford Premier Automotive Group and the supplier base will provide:

- key technology fact holders and skills
- test facilities and equipment: application “test beds”
- IPR realisation opportunities
- co-ordination of individual partner activities
- access to appropriate manufacturing facilities
- Programme Steering Group representatives

Through the R&D collaboration with the University of Warwick, Ford Premier Automotive Group and the supplier base will have access to the latest technology developments for application within the premium automotive market. The R&D projects proposed will involve a range of appropriate suppliers drawn from the first tier and below, materials and equipment manufacturers, software houses, trade and professional bodies and service sector companies.

It is proposed that twenty projects take place, covering the following areas:

- Manufacturing (seven projects)
- Business Integration (two projects)
- Product Research (nine projects)
- People and Skills Development (two projects)

As part of the development process, the proposal was shared with the DTI Automotive unit, where it has been regarded positively, both in terms of the West Midlands’ regional activities and also within the context of the DTI’s national strategy for the development of automotive centres of excellence.

INTELLECTUAL PROPERTY RIGHTS AND STATE AIDS

The non-IPR results of all the research projects will be widely disseminated and available to European industry on a non-discriminatory basis. In the project programme a range of companies will be involved as direct participants and in the awareness and dissemination activities. Each project will involve a mix of companies including, as appropriate, supply chain companies, SMEs, materials and equipment manufacturers, software houses, trade and professional bodies and service sector companies. The Programme Steering Group will oversee the appropriateness and breadth of business participation.

Foreground Intellectual Property Rights (Foreground IPR) is defined as any IPR arising from and developed in the course of the projects. Foreground IPR will be fully owned by Warwick Manufacturing Group, who will apply for relevant protection for it. WMG will have the right to licence third parties to utilise this IPR on a non-discriminatory basis and non-discriminatory royalties will be charged.

All other partners who make a contribution to the project will have royalty-free licence to utilise Foreground IPR for the life of the project and up to two years after the end of the project, but not to licence it to third parties. The Programme Steering Group will ensure that for a partner in a project the value of the royalty-free period to utilise this IPR will not exceed the financial contribution of the partner to the project.

The Brussels office of international corporate law firm Hammond Suddards Edge has been consulted throughout the development phase of this proposal and has confirmed that, in its opinion, the proposal does not involve state aids and therefore, no notification to the European Commission is necessary.

2.3 Case study 2

Mercia Spinner

The Mercia Spinner project has now been in operation since January 2002. It had as its key objective the creation of spin-out companies from West Midlands Universities' IPR. The initiative was stimulated by AWM through an initial series of meetings with all the HEIs to identify what the blockages were to commercialisation of knowledge held in the universities. There was a clear need for specialist support both in identifying and protecting potential IP, particularly in the new universities. A further need was identified however to help all the universities to move from the traditional route of licensing protected IP towards the 'riskier' company formation route. The skills needed to make the objectives a reality were not in place in most of the region's HEIs, and the funding needed also not available through normal university budgets. The budget for the project was increased in December 2002 following the success of the first year and evidence emerging that larger grants could help

to assist more technology intensive businesses to company formation more quickly.

The project therefore comprises three strands:

- Employment of specialist business development managers with experience of IP management and new company formation
- Specialist consultancy from the two West Midlands universities with substantial prior expertise in IP management
- Pathfinder and Accelerator grants to facilitate company formation and early growth

The project is part funded by the HECFE HEIF initiative and partly by Advantage West Midlands.

a. Employment of Business Development Managers

Employment of the Business Development Managers is now complete, after significant early problems for some HEIs in finding suitably qualified personnel, as there was national competition at that time for staff with IP and business formation experience.

Some of the universities responded to the new funding stream by creating a new, more focussed organisational structure, which should have longer-term benefits, but has led to short-term delays. It is clear that during the first year of the project, the additional Spinner funding has put additional pressure on the bottleneck of the few pre-existing technology transfer staff in some universities. While many of these individuals have responded by redoubling their efforts, it is clear that the Spinner project will not be fulfilling its true potential until the second year of operation.

b. Consultancy by Birmingham Research and Development Limited and Warwick Ventures

An important element of the Project is that the two universities with established technology transfer activities are providing consultancy to the other six universities, so they can move more rapidly towards best practice.

This activity commenced with a series of visits to the individual universities, in order to form links with the senior management staff, as well as the technology managers. It has been possible to fruitfully use the consultancy activities to help get the other six universities get set up. A second surge in requests for support occurred once the Business Development Managers were all in post. The consultancy has also been used to assist the Steering Group in making investment decisions where there were uncertainties from the paperwork. The consultants have worked with the researchers to refine their proposals and clarify the real potential for independent spin-out companies where initial applications had indicated a danger that they might not be able to float free from the host HEI.

The project is now able to offer best practice examples for participant HEIs on issues such as value for money on procurement of legal and patenting services in this field, accessing specialist technology evaluations, and has made links into new potential VC sources internationally.

c. Small Grant Fund

Of the £7.4 million of funds in the original Spinner, £3.1 has been set aside for Small Grants. These grants are of two types:

- £2.2 million from the HEIF and AWM grants, is intended to fulfil the “pathfinder” requirement, that is, to support projects that have the potential to create promising spin-off companies, but are still at far too early a stage to apply to the Mercia Fund, let alone other venture capital sources (the Pathfinder grants). These Small Grants are for normally up to £15k, with a facility since December 2002 for grants of up to £50k.
- £0.9 million, all from the HEIF grant, is intended to provide “accelerator” support for the spin-off companies immediately after formation (the Accelerator Grants).

This aspect of Spinner has gone extremely well, and is clearly meeting a previously unmet need.

Awards to date were concentrated fairly heavily on support for patent filings, and the employment of consultants to undertake market research and business plan writing. The great majority of the grants are passing through the hands of the universities, and being used to employ third-parties to add value to the basic IP, moving it towards an investment-ready company. Since most universities were previously very poorly provided with such funds, there is clear evidence of additionality. In addition, the lack of new internal BDM resources in the first year has been compensated for, in part, by the use of a wide range of specialist external consultants. The Accelerator grants are now starting to come through, being mainly used for interim management and preparation for future investment.

d. Progress on Spin-off Companies

The objective of the project is to raise the number of spin-out companies from the eight West Midlands Universities from the previous level of 10 per year up to 33 per year by 2006. UK best practice (e.g. Imperial) is for one spin-off company per £5 million of research spend, so our £160 million research spend thus gives us a target of 32+ spin-offs per year. It is still early in its development, but it is nonetheless possible to already see progress towards company formation:

- 66 potential companies supported by Small Grants
- 76 pathfinder grants awarded – 68% success rate in gaining some funding, 49% of requested funding granted overall

- 11 Accelerator grants awarded – 79% success rate with 61% of funding requested being granted
- 16 new companies in existence (January 2003)

COMPANY FORMATION EXAMPLES FROM THE FIRST YEAR OF ACTIVITY

Sarissa Biomedical Limited (Warwick)

This recently formed company will concentrate on producing biosensors for brain research and for diagnosis of conditions such as stroke. The Spinner project assisted Sarissa with £15k small grants for the filing of three patents, for market research and for the production of a business plan by a specialist consultancy. With this underpinning, the company was formed, and the Plan presented to the Mercia Fund and to Catalyst Biomedica (the venture arm of the Wellcome Trust) both of which have indicated that they are willing to invest £250k (£500k in total). The company is projecting sales of £3m per year by 2006.

Metal Nanopowders Limited (Birmingham)

This recently formed company will be producing submicron powders of titanium and other specialist metals, which will be used for pressed metallic parts and for cold-gas deposition. Spinner provided £12k for patent protection, analysis of production methods and production of business plan by a consultancy firm. This has resulted in the Oxford Technology Venture Capital Trust investing an initial £150k in order to complete development. Pre-production prototypes will be ready within 8 months, with the company then able to manufacture and licence its technology worldwide.

Intelligent Orthopaedics (Keele and Staffordshire)

This recently formed company is a joint venture between the two universities, which will be exploiting an innovative method for fixing broken bones while they heal. The project was supported by a £12k grant from Spinner, which supported employment of a consultant to produce a business plan and advise on the requirements for Medical Devices Conformity. This work has now been completed, and since it showed that this was a very promising opportunity, the company was formed and is now applying for a Smart Award, and seeking additional investors.

3. Question 2 - Barriers to improved business-university relationships

3.1 The largest barrier that needs to be overcome, from an RDA perspective, is lack of understanding between the sectors. Once contact is made and mutual interests identified, the relationships between universities and business can be long-term, profitable and rewarding for both sides.

3.2 The West Midlands is the heart of UK manufacturing. It makes a larger contribution to the economy in the West Midlands than in any other UK region. Over 20% of West Midlanders in employment work in the manufacturing sector compared to 15.6% nationally. The sector accounts for nearly a third of West Midlands GDP compared to 20% nationally. In addition, the region exports over 60% of its manufactured goods, a higher proportion than in any other region of the UK. Manufacturing is, and will continue to be, of huge significance to the West Midlands economy. By 2010 we expect West Midlands manufacturing to contribute 24% of the regions Gross value Added (GVA) compared to 18.7% nationally. However direct employment is likely to continue to fall from 535,000 in 2000 to 406,000 in 2010 a decline of 24%. This suggests that in absolute terms output will increase as will labour productivity. Productivity in manufacturing is among the lowest of any UK region. Latest figures show the region achieved a figure 88% of the national average – ahead only of Northern Ireland. In all sectors there are strong performers but in many sectors there is a long, poorly performing tail. There's too much traditional low added value industry and not enough modern high added value industry.

3.3 We need far more companies to match the success of the best. However, getting traditional industries to change the way they do business is not going to happen quickly. And they cannot do it alone. Generating new ideas, products and processes, and better skills takes time and money. Hard pressed companies have little of either to spare. They find it hard to take business advice from any source, and with few having formal university training themselves, the prospect of approaching an HEI for help is highly unlikely.

3.4 AWM Board member Norman Price has done some further work on this area, following on from the House of Lords inquiry into Science and Technology. He has identified the key role of the RDAs as **augmenting and introducing industrial demand** for SET and HE resources more generally. The following is an extract from his paper to the Lords inquiry:

This has four strands – which I call “the four As” – that may require different approaches.

- a. **Awareness.** Do businesses know what is available? Bring parties together. The cluster mechanism may be successful here.
- b. **Ambition.** Why should people create activity? Understand and augment the drivers: wealth, recognition, personal satisfaction etc.
- c. **Abilities.** We need the right staff quality and training in all functions from technician to MD.
- d. **Affordability.** This is very complex area – without which the others will not work – which has the following components.
 - **Direct.** The right financial instruments, including risk capital such as venture capital, private equity, public equity, unsecured loans and secured loans, Public and Private. Further work is being done here.
 - **Indirect.** Changing the risk reward balance as a result of which exploitation is more likely by:

- i. **Putting more public money into the development activity, beyond science so that the commercial risk is lower:**
 - o Funded through the Universities.
 - o Funded through such as Section 408 Institutes.
 - o Funded through new Institutes with newly defined charitable status.
 - o Intermediate Institutes related to Universities and their intellectual property.
- ii. **Using existing public funding of SET in ways that encourage exploitation:**
 - o More focused Third leg funding, perhaps in the hands of the demand side.
 - o MoD and NHS research exploitation programs
 - o Really emphasise the SBRI programme whereby SMEs have a share of public research contracts.

3.5 The ability of the HE sector to transfer technology depends critically on the ability of the business sector to receive it. We have described above how the RDA has supported the WM HEIs to develop spin-out companies to exploit their IP whilst retaining it for the benefit of the region. Our response to the House of Lords Inquiry again looked at the characteristics of different sizes of companies and the barriers to and opportunities for HE transfer of ideas into them:

A. SMEs

As a vehicle for technologically driven growth these are probably an under exploited resource but there may be cultural weaknesses with little compensating scale of infrastructure unless there is a SET bias in the existing business and management. Within the West Midlands, the SME population is heavily weighted towards traditional industries with no legacy of innovation expertise or management capability to introduce new technologies. SMEs also have little resource available to them and cannot afford to pay for HE expertise at a viable cost, hence public subsidy will be required for such partnerships to develop.

B. Middle markets

This could be a particularly fertile ground for exploitation, which is under-utilised at present and could probably on occasions generate new added value quickly.

- Existing infrastructure of systems and people including route to market
- Scale
- More discretionary resources, although probably still insufficient.
- More stability with its ability to cross subsidise.

The weaknesses are about the awareness and ambition and maybe specific abilities.

New SET could be a means of transforming existing Middle sized companies from a company with no future into a growth opportunity via transition or 'modernisation and diversification'.

On balance this size of sector is probably under-serviced and needs initiatives. A focus on SME support to the exclusion of other businesses has been prevalent in UK and European business support thinking for some time and should now be re-evaluated.

C. Large companies

These can generally look after themselves and have sufficient drive to growth but actions cannot be ignored.

- Existing industries such as Automotive need heavy R&D to stay in or ahead of the race. The potential spin offs from that both to similar businesses or to totally different industries can be high enough to justify public involvement.
- Awareness of regional expertise may be lacking and thus facilitating connections with other companies and the science base could be useful.
- Their strength can act as a catalyst for other smaller businesses and can be used within a cluster context.

3.6 On the academic side, the career path of most academics still lies within the traditional twin tracks of teaching and research. Whilst all HEIs now have a 'third stream' mission to some extent, even extending to income generation targets from non-traditional sources, the personnel practices have yet to recognise that career progression in this 'third stream' is vital to real engagement of the majority of academics. While the success of an individual remains judged by their showing in the RAE or their course development and management skills, there is little option for academics wishing to progress than to follow those routes. Business-facing academics have tended to be deeply committed individuals with a background themselves in industry, already persuaded of the benefits of external work. But they have not tended to rise into management positions in most HEIs hence the expertise remains sidelined.

3.7 It is also true, looking at the overall proportion of funding for third stream vs teaching and research that this is a marginal area of activity at present, and when pressures are put onto the sector in reduction in resources or higher student numbers, as businesses they have to focus on core mission and external work tends to suffer. This will clearly change over time as the third stream becomes a more significant aspect of their work, but the transition period makes reliability an issue as there is little depth in academic teams doing reach-out work and lead times for taking on industry projects can be too long to be of interest to companies.

3.8 Universities generally do not have an effective way of mapping their own resources or making the information easily accessible. AWM has recently funded a number of case studies to be generated by the HEIs to support our

inward investment activities. There is a need for the Agency to show potential investors the strength and depth of HE research and knowledge transfer activities as important factors in many companies decisions to locate, and the HEIs were not in a position to provide that information easily. The resultant information will also be used on the new AWM Innovation web site in its regional resources section.

3.9 It is not yet clear what the effects of the recently announced changes in research funding will be on the sector. For the RDAs, the worst case scenario would be that research and IP generation are vested in a small minority of HEIs, charged with transferring that expertise to the top 10% of companies, where the margin for the HEI on the work is attractive. That would leave the rest of the sector without primary technology to transfer but with the remit to deliver know-how to the bulk of our businesses. Such a system could be extremely divisive, breaking down the collaborations that have been created through hard work and commitment of our local partners, and providing businesses with a worse deal overall. The issue of technology transfer **within the sector** must be addressed as a matter of urgency in the new arrangements.

3.10 For businesses, even those persuaded of the value of engaging with the HE sector, the route to assistance is complex, with many potential points of contact and a plethora of different schemes. It is hoped that the new Knowledge Exchanges planned will encompass all the region's HEIs to avoid yet another high profile project that will add to end user confusion.

3.11 Finally as a barrier is the experience that many have had with external funding streams such as ERDF and ESF where the burden of administration and accountability is such that it is often loss making for the HEI overall. Many HEIs are now sceptical of the value of such funding streams and more reluctant than in the past to engage. This presents real difficulties for the RDAs where we are seeking to maximise leverage of our funds through the use of the Objective 2 programme regionally.

Case study 3

To try to overcome some of the barriers above, AWM sponsors and runs each year the Lord Stafford Awards, to showcase the best in HE/business interaction. The Lord Stafford Awards was created to celebrate excellence in business/HE interactions and is creating 'innovation champions' through its annual awards scheme. Award categories 2002 for development and achievement are being extended in 2003 to include best student business plan and best HEI spin out. It has also been recognised through the process that rewards to (and recognition of) academics are an important part of creating champions within the HEIs and a Lord Stafford Fellowship for Enterprise is under development for 2003. Plans are in place for the awards to become a major regional event annually with more categories added each time, emphasising different aspects of the innovation mix, and moving beyond the business/HE sphere. The awards will be used both to celebrate success and stimulate greater engagement by businesses by positioning the event as

a 'gold standard' for innovation that companies will aspire to winning. The Steering Group for the Lord Stafford Awards provides an opportunity to create a group of innovation champions for the region.

DEVELOPMENT IN INNOVATION

Award Winner 2002

GVR Products Ltd

in collaboration with Staffordshire University

GVR Products Ltd were established 8 years ago, specialising in the development of low cost aids to Ear Nose and Throat (ENT) diagnosis. Consisting of only 3 employees and Dr Reddy, a local GP, GVR Products had worked closely with a US based company to produce a conventional head-light system called the ReddyLite, based on filament bulb technology. With over 10,000 sales worldwide, GVR Products were spurred on to develop further, but found themselves impeded by their inadequate knowledge of new technologies and specialised electronics.

Approaching the Midlands Electronics Design Support Centre at Staffordshire University, they proposed to engineer a low cost pre-production prototype of a diagnostic head-worn light for physicians, utilising novel LED technology and embedded microelectronic control. The new product will have long battery and bulb life, the ability to dim and strobe for vocal chord examination and incorporate security encoded electronics. In addition, the electronic design will be centred around a low-cost mechanical element, greatly improving it's market potential.

"Winning the Lord Stafford Award has given us the confidence and motivation to tackle future innovations and inventions. In fact, we will be using the £5000 prize money to re-invest in the development of a new light prototype, which will continue to drive the business forward."

Mark Farrell,
GVR Products Ltd

4 Question 3 – Graduate Skills

4.1 The future growth and productivity of business in the West Midlands relies on tackling low achievement, low aspirations, and skills shortages and laying the foundations for the delivery of learning programmes to allow the region to take advantage of the opportunities offered by the knowledge and information economy.

- Strengths
 - 13 Higher Education Institutions
 - 36% of students studying in the region actually come from the region

- *46% of students who study in the region actually remain in the region.*
- Weaknesses
 - *Participation rate growing more slowly than most other regions (2000-01 to 2001-02) and relatively few additional students numbers in 2002-03 (eighth)*
 - *West Midlands Region is a slight exporter of higher education graduates.*
 - *Relatively low proportion of adults qualified to NVQ level 4 or equivalent (24% - sixth equal), below national average*
 - *Regional Economic Architecture*

4.2 The West Midlands Framework for Regional Employment and Skills Action (FRESA) was published in 2002. The purpose of this Framework is to develop co-ordinated and collaborative regional approaches to identifying key challenges and delivering actions to address regional employment and skill needs that support the Regional Economic Strategy and provide the foundations for the creation of a healthy labour market. HEIs, colleges and employer representatives were amongst over 100 organisations invited to comment during the consultative phase which resulted in the identification of a set of key priorities and actions for the region. HEIs, along with the Local Learning and Skills Councils and Job Centre Plus have been identified as the lead organisations for the implementation of two of the six key priorities. Priority two, upskilling the region's workforce, recognises the need to develop the skills of the workforce to support the ten key clusters and growth sectors. Priority three, equipping the region's potential workforce identifies amongst its actions, the requirement for the further development of working relationships between FE and HE institutions to increase the number of students moving onto higher level training. The West Midlands Higher Education Association represents the HEIs in the region on both the FRESA Operational Group and the Executive Group.

4.3 The Agency is investing £12 million to directly support the Learning & Skills development programme, with projects focusing on priority skills shortages, workforce development and workplace learning, including facilitating the uptake of 'E' and distance learning. This includes a £2.4m Basic Skills Programme, which is recognised by DFES as an exemplar programme.

4.4 Having identified the region's target clusters, Advantage West Midlands is keen to work with employers and colleges to address the needs of each, including addressing skills shortages and raising skills levels. LSCs are taking a lead on identifying cluster skills needs and working with providers at all levels to respond positively to their requirements. HEIs are fully engaged in this process and through individual HEI programmes, collaborative initiatives such as the New Technology Institutes and new work around management development are contributing positively to this agenda.

4.5 Employer links with HEIs vary a great deal, with many having employers panels advising on curriculum development and all having private sector representatives on Governing Bodies. Many of the new universities have longstanding links with major employers and business sectors as providers of training and upskilling programmes. Responding to employer feedback at this level is notoriously difficult as the lead times on graduate programmes are long and employers seldom speak with one voice on issues. It is also the role of HEIs to forecast future demand, and several have made good use of the Foresight programme's outputs to help to plan forward-looking technology programmes that will feed tomorrow's businesses.

4.6 AWM is working with the HEIs to assist them in accessing the West Midlands Objective 2 programme ESF allocation, where the issue of co-financing and collaborative management of the funding have been hard to overcome. The funding is geared towards assisting small businesses hence of great interest to the RDA that the higher level skills should be picked up as well as LSC supported activity.

4.7 [The West Midlands is currently a slight exporter of graduates, approximately 46% of students who study in the region actually remain in the region on completion of their studies.](#) Graduate retention is being addressed through an AWM funded collaborative project across the HEIs to work both with students and employers. The outcome will be improved awareness amongst students of the benefits of working in a smaller company and in the company of the value that graduate skills can bring. Initially piloted in Aston and in North Staffordshire, the programme will roll out across the West Midlands in 2003.

4.8 AWM also supports an extended TCS-style programme for the region, in clusters not normally supported by DTI but where employer demand is clear, for example tourism and leisure. A second, related project KITTS (knowledge, innovation and technology transfer scheme) provides students and graduates on shorter placements in companies to tackle specific problems. These shorter placements are particularly attractive to smaller companies unable to commit to the longer TCS programme.

Case study 5

Thumbnail case studies of the key programme supported by AWM

Graduate Advantage

- Lead by Career Service of Aston University, all regional HEI's involved
- AWM funding £3.2m of £5m project over 5 years
- Designed to stimulate the attraction to and retention of graduates in West Midlands economy, by stimulating business interest in hiring graduates and provide a vacation placement programme for undergraduates and post graduates.

What it includes;

- Web portal, accessible to students & employers
- Pre-training for students on general business practice
- Matching students/potential projects to business needs
- Support during placement
- Project Reviews
- C&G Personal Development Award

HE Full Circle

- Lead by Staffordshire University (Keele University)
- AWM funding £3.8m of £5m project over 5 years
- HE Full Circle intends to help people in Staffordshire into Higher Education and then support graduates into employment through specialised business development.

What it includes

- Widening access –Foundation Degrees
- Mentoring
- 16 week project based monitored industrial placement

High Level Vocational Qualifications

- Lead by University of Central England, Technology Innovation Centre.
- AWM funding £640K of £1.1m project over 2 years
- The project provides training for those employed & unemployed, including work placements which could potentially lead to employment.

What it includes

- Mixed entry, graduates or experience in industry
- 9 month flexible training programme leading to vocational qualifications.
- 16 week project based monitored industrial placement

Year in Industry

- Lead by Regional Year in Industry
- AWM funding £122k of £550k project over 3 years
- The project specialises in the placing of gap year students with companies for a year to gain experience before they start their degree courses

Why participate?

For the student:

- Quality experience for student
- They earn £10-£12k p.a.
- Improve chances of sponsorship
- Increase employment opportunity

- Help confirm career choice
- Gain extra business qualification

For the business:

- Access to bright, motivated people
- Address company needs
- Future resource
- 96% of company managers find it useful
- 75% come back year after year

Graduate Fair

- Lead by Birmingham Future
- AWM funding £18k of £40k project
- Birmingham Future Graduate Fair aims to bring together graduates mainly from WM Universities and Colleges with employers from the Professional and Financial sectors in Birmingham

What it includes;

- Promotion of Birmingham as place to work and live
- Facilitate students in finding opportunities/career planning issues
- Support employers of Birmingham to meet possible employees

Graduate Apprenticeship in Engineering & IT

- Lead by Aston University (UCE and FE College)
- AWM funding £105K of £155m project over 3 years
- To develop and deliver a broad portfolio of teaching and learning modules, within the existing EMTA Graduate Apprenticeship framework. The scheme is focused predominantly on offering these projects in the workplace within SMEs.

What it includes;

- Partnerships
- Broad portfolio of teaching and learning modules
- Flexible learning

5. Question 4 Financial Considerations

5.1 As described in the barriers section above, one of the major considerations is the relative importance of the third stream funding in comparison with the teaching and research budgets.

5.2 It is also important to recognise that while the funding remains competitive, a disproportionate amount of HE resource needs to go into securing the funding in the first place, from an already overstretched staff base. While the funding also remains time limited, the ability of the HEIs to attract and retain the calibre of staff ideally needed for this work is also

compromised. The evidence of the Spinner programme cited above shows the difficulties faced by most of the HEIs in getting the right staff in place.

5.3 It is not yet apparent that the R&D tax credits have changed company behaviours significantly in relation to HEI engagement, although this could reflect the relatively weak data collection in this area rather than the reality of the situation. This is certainly a priority in the West Midlands where business investment in R&D is below the national average overall and significantly below in the manufacturing sector.

5.4 What is apparent is that the up-front resources needed by a business to make the time and space to innovate are not readily available, and AWM through its modernisation and diversification programme as well as other support mechanisms such as the Manufacturing Advisory Service is trying to address this issue. Funding for business growth, for example for spin-out companies is also being addressed by the Agency through the creation of a large regional 'fund of funds' to support a range of access to finance options.

Prepared by Hilary Chilton, Head of Innovation, Advantage West Midlands
hilarychilton@advantagem.co.uk
0121 380 3808

Annex 1 High Technology Corridors

The three High Technology Corridors are based in areas of traditional industry. They are the Birmingham to Worcestershire Corridor, the Telford to Wolverhampton Corridor, and the Coventry, Solihull and Warwickshire Corridor.



The aim is to start up and grow more technology based and high value added businesses by developing science parks linked to universities and R&D centres, improving the link between the region's universities and attracting more businesses to locate within the corridors. Business plans for over 30 projects have been approved and over £140 million has been allocated to the development of the corridors.

- Coventry, Solihull and Warwickshire Corridor

£1.5 million has been committed to provide skills and ICT training, support for innovate state-of-the-art design technologies and innovation networks aimed at sharing best practice.

- Wolverhampton and Telford Corridor

The Agency is investing £3.5 million to enable the expansion of Wolverhampton Science Park. This will link to research facilities at Telford, where the development of engineering and polymer clusters is gathering pace. £2.5 million has been committed to develop a cluster of polymer

companies, increasing the level of R&D, assisting inter-firm trading, skills training and new company formation.

Case Study: Polymer Cluster

The key to the success of such 'clusters' is the transfer of knowledge and technology between the universities, other research institutions and the private sector.

As a result of a successful collaboration between the University of Wolverhampton, the NHS, Warwick Manufacturing Group, Shropshire Business Link and various private companies, a new invention will shortly be marketed which will greatly decrease costs and simplify procedures for NHS staff and patients.

Prototypes produced using the universities' cutting-edge technology and equipment enabled staff at the hospital to see a perfect likeness of the finished product in plastic, so they could accurately evaluate its usage and potential.

The University of Wolverhampton, in conjunction with Advantage West Midlands and Business Link for Shropshire, then introduced New Cross Hospital to Maxell in Telford as a potential manufacturer and packager of the 'J Hook.' Maxell's strengths clearly lay in the spare capacity of its injection moulding equipment and the skills of its staff.

An added bonus was its clean room conditions. The company therefore decided to target high-class trade moulding in the automotive sector as well as the medical/healthcare sector, and this is where their links with the NHS came into play.

Maxell has also involved one of its suppliers, another Telford company, Sprint Tool and Die Ltd. Sprint designs and manufactures plastic injection mould tools and has been asked by Maxell to potentially get involved in the design and development of the 'J Hook.' The company is currently working in a wide variety of sectors, including the medical and health care sector and is an OEM supplier.

Also involved in the project is another Shropshire organisation, Rapra Technology, formerly the Rubber and Plastics Research Association. Rapra will assist in selecting a plastics material for the 'J Hook'. In this selection process, consultants will consider particular performance requirements and of course, cost. In this case, the product will have to perform under long-term load, will need to be repeatedly sterilised, have a good quality glossy finish and be injection-mouldable.

The design of the 'J Hook' is almost finalised and the prototype samples produced will be used for a research study/trial at New Cross Hospital as part of a validation procedure. In order to produce the large volumes of prototypes necessary for this research, another local

company, MCP, based in Stone, has also become involved in the project. It is envisaged that the research study will take place in September or October of this year and if the trial proves a success, the product could be ready for distribution within six months. After the product has been marketed within the NH nationally, the 'J Hook' could have potential markets in the private sector in the UK as well as abroad.

- Birmingham to Worcestershire Corridor

ICT and medical technologies present the major cluster opportunities based on the research specialisations of the Universities of Birmingham and Aston.

To take these opportunities forward, the Agency has bought the Pebble Mill site in Birmingham and part of the former UEF site in Bromsgrove to develop as potential technology parks and is promoting commercialisation at Birmingham University.

To capitalise on the electronics and Microsystems specialisations Qinetiq based in Malvern, the Agency is funding a feasibility study into the expansion of Malvern Hill Science Park to provide additional space for existing tenants and assist in attracting new business start-ups.

And the Agency is bidding to bring the National Centre for Microsystems to the corridor to support many thousands of new manufacturing jobs and improve products and our competitive position. We are negotiating the purchase of 40 acres of MG Rover's Longbridge site to house the centre.

Annex 2 Cluster Development Model

Clusters

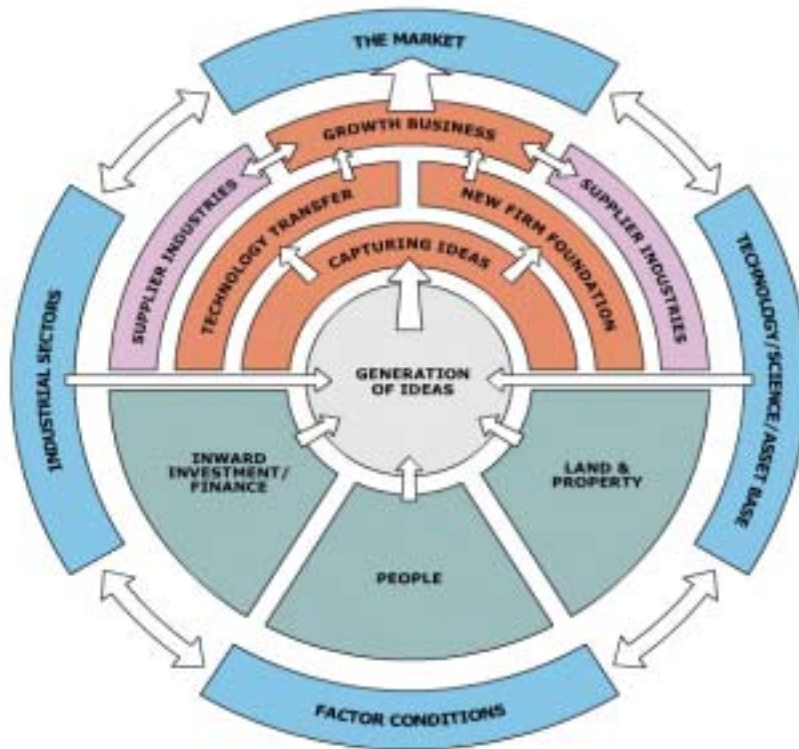
Linked groups of firms built around a technology or an end product, but including supply chain linkages and the specialist education, finance, research and training support infrastructure

Traditional	Transport technologies Building technologies Food & drink Tourism & leisure High value consumer products
Growing	Specialist business services Information & communication technologies Environmental technologies
Embryonic / Aspirational	Interactive media for education & entertainment Medical technologies

Cluster Process

The model adopted in the West Midlands has at its heart the generation and exploitation of ideas – innovation. Taking this with the clusters prioritised for the region, it is clear that we will need to draw heavily on the science and technology being generated in the West Midlands Universities and research organisations as well as forming positive partnerships with specialist knowledge providers in other regions and abroad.

Each cluster will be strategically led by a business focused Cluster Opportunity Group. To support the development of the cluster, AWM has funded specialist support staff in the Business Links, local Learning and Skills Councils and Higher Education Institutions (AWM funding of £7.8m over three years). These staff will develop an in depth knowledge of the needs of the cluster and the opportunities from within their service sector for products, services and programmes to be geared towards the clusters' needs. In this way we can maximise the advice going into the business led clusters, ensure that provision is demand led and also that no opportunities are missed for new directions for the cluster that the market itself may not yet have caught onto.



Examples of cluster science and technology activity

Building Technologies

We have established a Centre for Knowledge and innovation in Building Technology at an established RTO, CERAM. AWM is contributing £850k over 3 years to a total project cost of £1.5 million over 3 years. The Centre will be managed by the lead Business Link for Building Technology, Staffordshire B L. It will provide companies with a searchable database on technology and products and an e-mail alert service that will inform them of any new developments relevant to their business. SMEs will be offered subsidised support for new product and process development and advice on the certification of new products and patent protection.

Recently the EPSRC and the Carbon Trust asked all universities about their plans to research in areas which support the development of Low Carbon technology. AWM's CEO met with University of Birmingham's Pro Vice-Chancellor to discuss the University's research plans and the ways in which AWM could help with the commercialisation of the research results.

AWM is helping the Carbon Trust by hosting one of their Regional Managers who will help local companies' involvement with the Trusts Low Carbon Innovation Programme.

AWM has drawn together a group of industrial companies and universities to propose to the DTI how the Centre of Excellence in Low Carbon and Fuel Cell Technology should be created and managed

Information and Communications Technologies

The Midlands Photonics Cluster has successfully transferred technology from the Photonics Research Group at Aston University to some 60 organisations with a combined turnover of £500m, including QinetiQ the largest research organisation of its kind in Europe employing some 450 photonics professionals. Three new companies have been formed which are directly supported by the Cluster.

A Centre of Excellence in Computational Intelligence and Applications is being established in the Computer Science Department of Birmingham University to enable transfer of their world leading expertise in evolutionary computing to industry in the region with applications in optimisation, data mining and design. AWM funding contribution of £2.5m.

A Solutions Development and Demonstration Laboratory is being established at Aston Science Park to demonstrate to ICT SME's leading edge technology to enable them to deliver complete business solutions to their end customers. This work will link into the National B2B Centre at Warwick University. AWM funding contribution of £1.2m.

A proposal for an Open Source Software Solutions Centre in the region is currently being developed with the University of Central England, the National B2B Centre in Warwick Manufacturing Group and the National Computing Centre.