

INTELLECTUAL PROPERTY AS A TOOL FOR ECONOMIC DEVELOPMENT IN WALES

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ABSTRACT

This paper addresses the issue of Intellectual Property (IP) as a tool for economic development in Wales. The Welsh Assembly Government has articulated the vision of a knowledge-rich economy. With IP at its core, this vision proposes an economy driven by an indigenous University research base that is underpinned by science, technology, engineering, and mathematics (STEM). This paper discusses the issue of whether the current infrastructure for science and technology research in Wales is too weak and fragmented to successfully drive a knowledge economy. In particular, the paper reviews an important policy initiative establishing a new sector-based approach to economic development in Wales. The initiative is assessed in terms of Welsh universities' strength in patenting their research. The current interface between the Welsh universities and the indigenous micro, small, and medium-sized enterprises (mSMEs) is explored for evidence of commercially successful interaction.

IP Wales®

IP Wales is a UK£3.5 million-award winning business support initiative operated by the Law School at Swansea University.

In the first phase of this European Union (EU) funded operation, its mandate was to provide Welsh micro, small and medium-sized enterprises (mSMEs) with the knowledge and financial means to commercialize their intellectual property (IP) assets.¹ IP Wales was to pursue this mandate by focussing on three main objectives. The first was to raise awareness and understanding of IP amongst mSME businesses. The second was to enable businesses to make informed commercial choices about protecting their IP assets. The final objective was to help Welsh mSMEs in sustaining and growing their businesses by integrating the commercial use of their IP assets into their overall business plans.

Following the launch of IP Wales in June 2002, more than 2000 Welsh mSMEs became members. This was largely in response to the promotional message that IP assets can be used to protect and/or add value to their businesses. Of these, over 750 requested strategic IP advice. This resulted in more than one hundred client firms receiving assistance in securing 205 patents, 60 trademarks, and 12 industrial designs around the world.² The Project also helped to secure financial support for 25 IP licensing deals.

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¹ European Union Project Reference 53611.

² Motivation for mSMEs contacting IP Wales: 39 per cent patent enquiries, 25 per cent general IP enquiries, 15 per cent trademark enquiries, 12 per cent copyright enquiries, six per cent licensing enquiries, three per cent industrial design enquiries.

IP Wales made the following findings during this first phase of operation. First, the main ingredients for the success of a knowledge-based mSME are management, finance, and access to advanced technology and ‘know-how’. Second, experience demonstrated that a better management team will make better commercial use of a poorer technology than a poorer management team will make of a better technology. Third, financing will always seek out good management teams. Consequently, the focus for the next phase of operation has become the promotion of better Intellectual Assets (IAs) management. To this end, IP Wales has worked with the World Intellectual Property Organization (WIPO) to produce the following guides for mSMEs³:

- Understanding Open Innovation;
- Understanding Intellectual Assets;
- Establishing the Legal Freedom to Operate in your Market Place;
- Restricting Competitor Access to your Market Place; and
- Extracting Added Value from your Intellectual Assets

Vision for a new Welsh knowledge economy with intellectual property at its core

In September 2008, Wales hosted a WIPO-organized conference for national Intellectual Property Offices and IP specialists from the Organization for Economic Cooperation and Development (OECD) countries.⁴ At the Gala Dinner, the First Minister of the Welsh Assembly Government set out a vision for a new knowledge-rich economy for post-devolution Wales.⁵ This vision set forth an economy with IP at its core, driven by a University research base anchored in science, technology, engineering, and mathematics (STEM). The scale of the task in implementing this vision is not to be underestimated.

In March 2008, the then Secretary of State for Innovation, Universities, and Skills, sought advice from the Vice Chancellor of Lancaster University on how UK universities should manage their IP for their own benefit and that of the wider economy. Professor Paul Wellings reported that compared to counterparts in Australia, Canada and the United States, the performance of UK universities was ‘good and improving’.⁶

Praxis Unico commercialization surveys demonstrate a clear correlation between large research incomes derived from research funding/grants and the strongest commercialization performance.⁷

Yet research conducted by IP Wales paints a somewhat less dynamic picture for UK regional universities.⁸ This work formed the basis of a comparative analysis of patenting activity by universities serving the three recently devolved jurisdictions of Scotland, Wales, and Northern

³ www.ipwales.com

⁴ World Intellectual Property Organization (2008) WIPO/SMEs/CWL/*/INF/1

⁵ Rt. Hon. Rhodri Morgan AM (succeeded by Rt. Hon. Carwyn Jones AM in December 2009).

⁶ P. Wellings, ‘Intellectual Property and Research Benefits’, (Lancaster University, 2008), page 11.

⁷ A charitable organization representing the technology transfer companies of UK Universities.

⁸ A. Beale (ed) ‘Study of Intellectual Property in UK HEIs with Emphasis on Wales’, IP Wales, (2005).

Ireland.⁹ While patent filings per researcher in Wales may be on a par with that of Scotland and double the rate of Northern Ireland, the academic research base in Wales is only around half that of Scotland in per capita terms. Furthermore, it is currently dominated by the performance of Cardiff University.

The current research base in Wales is too weak and fragmented to successfully drive a knowledge economy

Cardiff University stands as Wales' sole representative within the self-selecting 'Russell Group' of leading UK research universities. Therefore, the dramatic drop in its research ranking from eighth in 2001 to 22nd in 2008 is at best, discouraging.¹⁰ Moreover, this outcome resulted from the university's failure to submit a third of eligible research staff for scrutiny. This resulted in the lowest percentage submission within the top thirty UK universities.

The total number of researchers submitted on behalf of Wales under the Research Assessment Exercise (RAE) in 2008 was 2,578.¹¹ This was in comparison to 6,576 from Scotland¹² and 1,265 from Northern Ireland¹³. Of the ten Welsh universities which were part of the exercise, only four managed to achieve double digits in the percentage of their submissions deemed to be of the highest research quality. This premier ranking was reserved for research regarded as 'world leading in terms of originality, significance, and rigour'.

Moreover, RAE 2008 revealed a massive Welsh deficit when compared with Scotland in terms of world class science, technology, engineering, and mathematics research (STEM). Wales has fewer than 120 researchers operating in this field at the highest level, with nearly 80 per cent of these based at the leading engineering departments of Cardiff University and Swansea University.

The new sector-based approach to economic development in Wales has yet to be anchored within the patent strength of Welsh universities

In their new approach to Economic Development, the Welsh Assembly Government's Ministerial Advisory Group identified 14 key sectors for Wales. Three were deemed to be core enabling sectors (energy, environmental management, telecommunications and information communications technology – ICT); six were considered strategically important (bio-science, health, financial and professional services, creative industries, automotive, aerospace); and five were considered to be of economic importance (construction, food, defence, retail, leisure and tourism).

The move towards a new sector-based approach to supporting businesses in Wales was endorsed in the Welsh Assembly Government's *Economic Renewal: A New Direction*.¹⁴ Four research and development priority areas were cited for Welsh universities, namely, the Digital Economy (ICT), Low Carbon Economy (including climate change mitigation and adaptation), Health and Bioscience, and Advanced Engineering and Manufacturing.

⁹ A. Beale, D. Blackaby, L. Mainwaring 'University Patenting in Wales, Scotland and Northern Ireland: a comparative analysis', *Higher Educational Quarterly*, 62, (2008), 101-119.

¹⁰ Research Assessment Exercise (RAE) 'Table of Excellence', Times Higher Education (2008).

¹¹ 40 per cent from Cardiff University.

¹² Largest contribution of 25 per cent from Edinburgh University.

¹³ Over 60 per cent from Queens University.

¹⁴ Welsh Assembly Government 2010 'Economic Renewal: A New Direction', Department for the Economy and Transport.

However, these selected sectors are not reflective of Welsh universities' traditional areas of patent strength. When IP Wales investigated UK university patent holdings¹⁵ it showed a concentration of technologies in Human Necessities (medicines and devices), Chemistry and Metallurgy (genetic engineering and microbe testing), and Physics and Electricity (lasers). Welsh universities showed particular strength in the fields of chemical and physical analysis, and microbe testing. In relative terms, Wales' weakness was most pronounced in electronics and communications.

The Welsh Assembly Government has recently established six Sector Panels to advise on opportunities in its priority industries of Digital Economy, Energy and Environmental, Life Sciences, Advanced Materials and Engineering, Creative Industries, and Professional and Financial Services. An external mSME Panel is also to be created to advise these six Sector Advisory Panels.

This new approach is significant because the use of IP can vary substantially across sectors. For example, ICT requires a rapid transfer of 'know-how' into its products. On the other hand, creative industries look for the transfer of skilled people into multi-disciplinary teams, while life sciences and the pharmaceutical sector demand strong IP protection.

There is little evidence to suggest that the current Welsh universities/MSME interface is facilitating effective commercialization of university research

The Gibson Review defined commercialization as, 'publicly funded activities by which IP created within the Higher Education Institutions sector can form the foundations for the creation of value'.¹⁶ The seminal Lambert Review explored ways of providing for better two-way collaboration between industries and universities. The Review reached three main conclusions. First, universities need to better identify their areas of competitive strength. Second, the UK government would have to do more to support business collaboration with academic institutions. Third, businesses will have to learn how to exploit the innovative ideas that are being developed within these academic institutions.¹⁷

Forward citation analysis can be a useful indicator of commercial interest in the technology.¹⁸ In this regard, research from IP Wales reveals that the performance of Welsh university patents has been notably poorer in recent years.¹⁹

Moreover, the recent announcement of the Welsh Assembly Government to close down six out of its ten flagship projects within the Technium network²⁰, previously at the core of its policy to generate an improved business and university interface, has been viewed by political opponents as a

¹⁵ A. Beale (ed.), 'Study of Intellectual Property in UK HEIs with Emphasis on Wales', IP Wales, (2005) pp. 24-39.

¹⁶ S. Gibson, *Commercialization in Wales: A Report by the Independent Task and Finishing Group*, Welsh Assembly Government, (2006), page 9.

¹⁷ UK Government, 'Lambert Review of Business-University Collaboration', UK Treasury, (2003).

¹⁸ The citing of an earlier patent in a later patent, either by the patentee themselves or by a patent examiner as part of a prior art search report conducted on the later patent.

¹⁹ A. Beale (ed.), 'Study of Intellectual Property in UK HEIs with Emphasis on Wales', IP Wales, (2005), pp. 40-43.

²⁰ Techniums to remain open: Digital Technium at Swansea University, OpTIC Technium at St Asaph, Technium Springboard at Cwmbarn, and Technium 1 and 2 in Swansea (treated as one Technium). Techniums to close: Technium Aberystwyth, Technium Sustainable Technologies Baglan, Technium Cast Bangor, Technium Pembroke, Technium Performance Engineering Llanelli, Technium Digital @ Sony.

long overdue admission of policy failure.²¹ However this decision resulted from an internal audit which is reported to have identified government department ‘management weaknesses’.²² The former Economic Development Minister remains of the view that the underlying concept was quite sound.²³

Government review on how IP can drive innovation and economic growth in the United Kingdom

Prime Minister David Cameron has announced that Ian Hargreaves, the newly appointed Professor of Digital Economy at Cardiff University, is to lead a UK government review of how intellectual property can drive economic growth and innovation.²⁴ In the previous year Hargreaves led a review of the Creative Industries in Wales for the Welsh Assembly Government.²⁵ The current review is expected to report its findings in April 2011. It has been given the task of investigating barriers to new Internet-based business models, the cost and complexity of enforcing intellectual property rights, the interaction between intellectual property and competition frameworks, and the complexity and costs faced by smaller companies in accessing services to assist them in protecting and exploiting intellectual property. The findings of this review are awaited with interest.

²¹ www.jennyranderson.org.uk/en/article/2010/119797/scrapping-techniums-is-an-overdue-admission-of-failure.

²² At the time of writing this information is not publicly available. First Minister Carwyn Jones has determined that it falls within Section 36 of the *Freedom of Information Act 2000* rendering its release ‘prejudicial to the effective conduct of public affairs’.

²³ www.bbc.co.uk/news/uk-wales-south-west-wales-11796879

²⁴ UK Government, *Blueprint for Technology*, Department for Business Innovation, and Skills, (2010).

²⁵ I. Hargreaves, *The Heart of Digital Wales: A Review of the Creative Industries for the Welsh Assembly Government*, Department for the Economy and Transport, (2009).

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