Enabling Access to Research Data in Developing Countries: Designing a Policy and Practice Framework for Malaysia's Public Research Universities

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Abstract

Members of the World Trade Organisation (WTO) are obliged to implement the Agreement on Trade-related Intellectual Property Rights1994 (TRIPS) which establishes minimum standards for the protection and enforcement of intellectual property rights. Almost two decades after TRIPS was adopted at the conclusion of the Uruguay Round of trade negotiations, it is widely accepted that intellectual property systems in developing and least-developed countries must be consistent with, and serve, their development needs and objectives. In adopting the Development Agenda in 2007, the World Intellectual Property Organisation (WIPO) emphasised the importance to developing and least-developed countries of being able to obtain access to knowledge and technology and to participate in collaborations and exchanges with research and scientific institutions in other countries. Access to knowledge, information and technology is crucial if creativity and innovation is to be fostered in developing and least-developed countries. It is particularly important that developing and least-developed countries give effect to their TRIPS obligations by implementing intellectual property systems and adopting intellectual property management practices that enable them to benefit from knowledge flows and support their engagement in international research and science collaborations. However, developing and least-developed countries did not participate in the deliberations leading to the adoption in 2004 by Organisation for Economic Co-operation and Development (OECD) member countries of the *Ministerial Declaration on Access to Research Data from Public Funding*, nor have they formulated policies on access to publicly funded research outputs such as those developed by the National Institutes of Health in the United States, the United Kingdom Research Councils or the Australian National Health and Medical Research Council. These issues are considered from the viewpoint of Malaysia, a developing country whose economy has grown strongly in recent years. Lacking an established policy covering access to the outputs of publicly funded research, data sharing and licensing practices continue to be fragmented. Obtaining access to research data requires arrangements to be negotiated with individual data owners and custodians. Given the potential for restrictions on access to impact negatively on scientific progress and development in Malaysia, measures are required to ensure that access to knowledge and research results is facilitated. This paper proposes a policy framework for Malaysia's public research universities that recognises intellectual property rights while enabling the open access to research data that is essential for innovation and development. It also considers how intellectual property rights in research data can be managed in order to give effect to the policy's open access objectives.

1. Developing Countries, Intellectual Property and Research Data

While the intellectual property law of most countries does not protect raw data or facts,[1] data sets or databases which are sufficiently original in terms of expression, selection,

[1] JH Reichman and Pamela Samuelson, 'Intellectual Property Rights in Data?' (1997) 50 *Vanderbilt Law Review* 72.

arrangement or compilation will be subject to copyright protection.[2] Article 10 of the Agreement on Trade Related Intellectual Property Rights (TRIPS) specifically requires compilations of data or other materials, whether in machine readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations to be protected as such.[3] Research data, which may take the form of textual records, fixed or moving images, sounds, algorithms or compilations of data and data sets in either digital or non-digital format, may be protected by proprietary rights.[4]

Countries which are members of the World Trade Organisation (WTO) and signatories to the TRIPS agreement are obliged to provide minimum intellectual property (IP) rights protection in their national law and effective mechanisms for enforcement of these rights.[5] Of 155 WTO member states, developing countries and least developed countries make up three quarters of the membership.[6] Developing and least developed countries signed TRIPS members in the hope that having an IP system in place will lead to increased flows of foreign direct investment and technology transfer, and stimulate local innovation.[7] However, in discharging their obligations under TRIPS, most developing and least developed countries have introduced IP protection without properly interpreting the TRIPS Agreement through pro-development lens.[8] As a result, the IP laws introduced pursuant to TRIPS have often failed to assist developing and least developed countries in furthering their development objectives.[9]

Like the WTO, over 80% of WIPO member states are developing and least developed countries.[10] In September 2007, the WIPO General Assembly adopted a set of recommendations aimed at addressing the interests and needs of developing and least developed countries within the international intellectual property system (the "Development Agenda").[11] Part of the Development Agenda requires IP-related policies and initiatives to be developed to promote innovation and transfer of technology to the benefit of developing countries. It also contains a recommendation that appropriate measures be taken to enable

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2 PK Yong, 'Database Protection: The International Debate: Balancing Users Rights and the Protection of Database' (2007) 6 *Malayan Law Journal Articles* 27.

3 World Trade Organizations, 'Part II — Standards Concerning the Availability, Scope and Use of Intellectual Property Rights' <http://www.wto.org/english/tratop_e/trips_e/t_agm3_e.htm#1> at 9 July 2012).

4 Gideon Emcee Christian, 'Building a Sustainable Framework for Open Access to Research Data Through Information and Communication Technologies' (International Development Research Centre Canada, 2009) 18; Andrew Charlesworth, 'IPR and Research Data' (2011) *Intellectual Property Rights and Research in the Digital Age*, <http://www.lib.cam.ac.uk/dataman/pages/IPR.html> (at 28 June 2011).

5 The minimum standards prescribed by TRIPS are with reference to several multilateral treaties on intellectual property, particularly the *Berne Convention* and the *Paris Convention*. See World Trade Organizations, 'Intellectual Property: Protection and Enforcement' (2012), <http://www.wto.org/english/thewto_e/inbrief_e/inbr04_e.htm > (at 9 July 2012).

6 World Trade Organizations, 'Developing Countries' (2012), <http://www.wto.org/english/thewto_e/inbrief_e/inbr04_e.htm > (at 9 July 2012).

7 See Carlos M Correa, Trade Related Aspects of Intellectual Property Rights – A Commentary on the TRIPS Agreement (Oxford University Press, 2007).

8 See Peter K Yu, TRIPS and its Discontents (2006) Marquette Intellectual Property Law Review, 387.

9 Joseph Stiglitz, 'Intellectual Property Rights and Wrongs' (2005) <http://www.project-syndicate.org/print/intellectual-property-rights-and-wrongs>(at 17 July 2012).

10 World Intellectual Property Organisation, 'Member States' (2012), <http://www.wipo.int/members/en/> (at 9 July 2012).

11 World Intellectual Property Organisation, 'The 45 Adopted Recommendations under the WIPO Development Agenda' (2007), <http://www.wipo.int/ip-development/en/agenda/recommendations.html#b> (at 27 February 2010).

developing countries to benefit from various provisions pertaining to flexibilities provided for in international agreements, such as TRIPS.[12]

The adoption of the Development Agenda kick-started efforts to ensure that IP law and policy in developing countries serves all sectors of society and continues to serve the public good, by encouraging and rewarding creativity and innovation in a balanced and effective manner.[13] Through the Development Agenda, WIPO supports initiatives that promote innovation by facilitating access to technical knowledge and information.[14] WIPO's support for access to technical knowledge and information is consistent with the OECD's Innovation Strategy which requires access to publicly generated or publicly funded information to be open so as to allow innovative use and reuse of data and information.[15] Among the suggestions made by the OECD for strengthening national science and innovation systems is improving online access to scientific data and information.[16] The OECD recommends an open access model to boost innovation[17] and strongly supports open access to research data, particularly that produced from public funding.[18]

2. Access to Data as a Catalyst for Creativity and Innovation

Innovation theory is based on the premise that innovation makes use of and builds upon the IP foundation of pre-existing knowledge.[19] This interdependence of innovation and prior knowledge applies as much in the science and technology fields as it does in the arts and humanities.[20] The symbiotic relationship between knowledge, data and information[21] means that wide dissemination and better use of data and information is an imperative in any innovation system.[22] Making data easily accessible and reuseable, can increase knowledge, which in turn helps to further spur innovation.[23]

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12 See World Intellectual Property Organisation, above n 11, Cluster C: Technology Transfer, Information and Communication Technologies (ICT) and Access to Knowledge, Recommendation 25.

13 Janice T Pilch, 'Issue Brief: The WIPO Development Agenda' (2009), <http://www.librarycopyrightalliance.org/bm~doc/issuebriefdevagenda090109-2.pdf> (at 2012).

14 'WIPO Overview' (WIPO, 2011) 35.

15 Anonymous, 'Ministerial Report on the OECD Innovation Strategy: Innovation to Strengthen Growth and Address Global and Social Challenges' (OECD, 2010) 17.

16 OECD Global Science Forum, 'Opportunities, Challenges and Good Practices in International Research Cooperation between Developed and Developing Countries' (OECD, 2011) 7.

17 Anonymous, 'Ministerial Report on the OECD Innovation Strategy: Innovation to Strengthen Growth and Address Global and Social Challenges' (OECD, 2010) 4.

18 See, OECD Principles and Guidelines for Access to Research Data from Public Funding 2007; The *OECD Ministerial Declaration on Access to Research Data from Public Funding*.[18]

19 Joseph Stiglitz, 'Knowledge as a Global Public Good' in Inge Kaul, Isabelle Grunberg and Marc A Stern (eds), *Global Public Goods: International Cooperation in the 21st Century* (The United Nations Development Programme, New York, 1999), 315; Rebecca Fannin, 'Unlocking Innovation' (2005) *CEO Magazine* 40.

20 Seth Shulman, Trouble on The Endless Frontier: Science, Invention and the Erosion of the Technological Commons (New America Foundation and Public Knowledge, Washington DC, 2002) 7.

21 Information is contextual data which answers 'who', 'what', where' and 'when' questions. On the other hand, knowledge (tacit or codified) is information that answers the "how" question. See Paul Cooper, 'Data, Information and Knowledge' (2010) 11(12) *Anaesthesia and Intensive Care Medicine* 505; John A Lee, 'Data, Information and Knowledge' (2002) 3 *Oncology* 384.

22 See Vivek Kundra, 'Digital Fuel of the 21st Century: Innovation Through Open Data and the Network Effect' (Joan Shorenstein Center Harvard University, 2012) 15.

23 See Jon-Arild Johannessen, Bjorn Olsen and Johan Olaisen, 'Aspects of Innovation Theory Based on Knowledge-Management' (1999) 19 *International Journal of Information Management* 121; Robinson Esalimba and William New, 'Spurring Local Innovation in Africa By Improving Access to Information' (2009), <http://www.ip-watch.org/2009/10/19/spurring-local-innovation-in-africa-by-improving...> (at 25 March 2010).

The positive link between open access to data and innovation has been highlighted by numerous knowledge management and innovation experts. Dominique Foray states that open access to data is a key feature in the process of scientific discovery, invention and innovation.[24] Uhlir and Schroder comment that the innovation system should not be considered as a closed system as a specific degree and form of openness is required for it to function dynamically.[25] Peter Drahos states that one of the strategies to spur innovation is to ensure access to publicly funded research for various groups through an open access model.[26] Drahos further states that the model of governance for open access should give priority to maximising public participation in the innovation process as well as maximising the spill over benefits of knowledge, with a minimum social cost of accumulating knowledge.[27] Other scholars such as Norris, Olsen and Olaisen have observed that open access to and reuse of research data could become one of the keys to a new wave of innovation.[28]

Another explanation of the role of open access in stimulating innovation has been put forward by Australian information and innovation expert Dr Terry Cutler. Cutler argues that innovation requires an open model system, in contrast to the closed models of neo-classical economics.[29] According to Cutler, open access underpins the freedom to access and use prior art and knowledge in the exploration and development of new knowledge and insights. This freedom is essential to creativity and innovation.[30] By enabling open access and reuse, research data can usefully be packaged or integrated with other products or services, thereby fostering innovation.[31]

Cutler's argument was supported by the (then) Australian Minister for Innovation, Kim Carr, who stated that if Australia is serious about boosting innovation, it has to get knowledge and information flowing freely.[32] Other Australian experts, Houghton, Steele and Sheehan, investigated the benefits of enabling open access to and reuse of research data to innovation. Their report states that without an open access regime, research data will continue to be held by private custodians and under-utilised by other parties.[33] Houghton et al make the point that broad access to data and information enables the exploration of topics not envisioned by the initial investigators, thereby enabling new data sets to be created when data from multiple sources are combined.[34] Increasingly, enabling open access to research outputs - which

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24 Dominique Foray, 'Introductory Remarks by Session Chair' (Paper presented at the International Symposium on Open Access and the Public Domain in Digital Data and Information for Science, Washington DC, 2004).

25 Paul Uhlir and Peter Schroder, 'Open Data for Global Science' in Brian Fitzgerald (ed), *Legal Framework for e-Research: Realising the Potential* (Sydney University Press Sydney, 2008) 201.

26 Peter Drahos, 'Access to Knowledge: Time for a Treaty?' (2005), <www.icstd.org> (at 17 July 2012).

27 Ibid.

28 Ray P Norris, 'How to Make the Dream Come True: The Astronomers' Data Manifesto' (2007) 6(Supplement) *Data Science Journal* S116; Johannessen, Olsen and Olaisen, above n 23, 123.

29 Terry Cutler, 'Innovation and Open Access to Public Sector Information' in Brian Fitzgerald (ed), *Legal Framework for e-Research: Realising the Potential* (Sydney University Press, Sydney, 2008) 29.

30 Ibid, 33.

31 Ibid, 32.

32 Bernard Lane, 'Carr Favours Open Access', *The Australian* (online), 24 September 2008, <http://www.theaustralian.com.au/higher-education/carr-favours-open-access/story-e6frgcjx-1111117564774>.

33 John Houghton, Colin Steele and Peter Sheehan, 'Research Communication Costs in Australia: Emerging Opportunities and Benefits: A Report to the Department of Education, Science and Training' (Centre for Strategic Economic Studies Victoria University, Melbourne, 2006) 99.

34 Ibid.

contain a wealth of data and information – is recognised to be a building block and key input of innovation.[35]

Despite the importance of open access for innovation, Robert Merges observes that the strengthening of property rights in information assets has put significant pressure on innovative industries, as information has been used by information proprietors as a pure instrument of rent seeking.[36] In an analysis of the consequences of the exploitation of intellectual property rights (IPR) on publicly and privately funded research results Paul A David found that patenting and enforcement of IPR in academic research results had the potential to present an impediment to innovation.[37] In this regard, Alan Greenspan, the former Chairman of the US Federal Reserve pointed out that there should be an appropriate balance between intellectual property protection and innovation.[38] Jerry Reichman also agrees that intellectual property rights need to balance the legal incentives to innovate against the benefits of free competition and promotion of the progress of science and useful arts.[39] To achieve a balance between IP protection and innovation, the WIPO Development Agenda encourages rethinking of the IP systems in developing and least-developed countries so that they are consistent with their development needs and objectives.[40]

3. Malaysia's Development Needs and Objectives

As a developing country, Malaysian economic growth to date has been driven by factors of production, mainly investment, energy and labour. In line with its vision to become a developed country by 2020, Malaysia is shifting its focus from a production economy to a knowledge-based economy so that it remains competitive in years to come.[41]

The World Bank in its 2007 report on "Malaysia and the Knowledge-Based Economy" stated that Malaysia's transformation into a knowledge-based economy requires the government to think creatively about models of governance for the production, dissemination and utilisation of information and knowledge among members of society.[42] The World Bank observed that Malaysia's quest for knowledge-based innovation is likely to be frustrated unless the links between Malaysian firms and universities and research institutes are strengthened.[43]Another report prepared by the World Bank in 2010 for the Malaysian

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35 See UNCTAD Secretariat, 'Information Economic Report 2007-2008 ' (United Nations, 2007); John Seely Brown and Paul Duguid, 'Local Knowledge: Innovation in the Networked Age' (2002) 33(4) *Management Learning* 434.

36 Robert P Merges, 'The Trouble With Trolls: Innovation, Rent-Seeking, and Patent Law Reform' (2009) 24 *Berkeley Technology Law Journal* 1583.

37 Paul A David, 'Mitigating "Anticommons" Harms to Research in Science and Technology: New Moves in "Legal Jujitsu" Against Adverse Consequences of the Exploitation of IPR on Publicly and Privately Funded Research Results' (2010) *SIEPR Discussion Paper 10-009* 1, <http://siepr.stanford.edu/system/files/shared/pubs/papers/pdf/10-030_Paper.pdf> (at 6 January 2011).

38 Marjut Salokannel, 'Global Public Goods and Private Rights: Scientific Research and Intellectual Property Rights' (2003) 1, <http://www.iprinfo.com/tiedostot/5icFWowu.pdf> (at 12 October 2010).

39 Jerry H Reichman and Jonathan A Franklin, 'Privately Legislated Intellectual Property Rights: Reconciling Freedom of Contract with Public Good Uses of Information' (1999) 147(4) *University of Pnennsylvania Law Review* 882.

40 Sisule F Musungu, 'TRIPS Issues Papers 5: Rethinking Innovation, Development and Intellectual Property in the UN: WIPO and Beyond', (Quaker International Affairs Programme, 2005).

41 Economic Planning Unit, 'Knowledge Content in Key Economic Sectors in Malaysia Phase II' (Government of Malaysia, 2009); Economic Planning Unit, 'Third Outline Perspective Plan 2001-2010' (Government of Malaysia, 2001) 119; Hans-Dieter Evers, 'Transition Towards a Knowledge Society: Malaysia and Indonesia in Comparative Perspective' (2003) 2(2) *Comparative Sociology* 360.

42 Anonymous, 'Human Development Sector Reports East Asia and the Pacific Region - Malaysia and the Knowledge Economy: Building a World-Class Higher Education System' (The World Bank, 2007) xxii.

43 Ibid.

Government stated that innovation is a complex undertaking which requires a comprehensive approach and that a policy which facilitates innovation is likely to stand the greatest chance of success.[44]

The New Economic Model (NEM) which was unveiled by the Malaysian government on 30 March 2010 aims to create a new generation of knowledge workers who can use their ideas to bring about innovations.[45] The NEM is expected to stimulate economic growth from greater productivity through the use of skills, innovation and IP rights.[46] It follows that, creativity and innovation are of key importance in the NEM.[47]

To complement the NEM, the Tenth-Malaysia Plan (10MP) which runs from 2011 to 2015 has been formulated with various new approaches towards becoming a high income and high productivity economy.[48] To achieve the target, the 10MP is focused on efforts to develop non-physical infrastructure, including human capital such as skills and strong innovation capabilities.[49] Focus is also given to research and development activities and venture capital funding geared towards promoting a higher level of innovation in the country.[50]

Throughout the 10MP, the Malaysian Government is aggressively promoting a grassroots innovation concept so that members of society will be more creative and innovative.[51] To encourage grassroots innovation, 14 Ministries are collaborating on various programs various programs aimed at tapping into the creativity and innovativeness of individuals from across a wide spectrum of the Malaysian society.[52]

4. Data Sharing and Licensing Practices in the Malaysian Public Research Universities

This paper explores data sharing and licensing practices in the Malaysian public research universities. Although research data is also produced by researchers in non-academic and private research institutions, this study focuses on the position in the public research universities. Unlike researchers in non-academic or private sector organisations, researchers in public research universities usually work in an atmosphere of openness in which they voluntarily share their data and research results. Data and information which are essential ingredients of innovation are mostly generated in the universities from scientific and non-scientific research activities.[53]

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44 Philip Schellekens, Yue Li and Ashley Taylor, 'Malaysia Economic Monitor : Growth Through Innovation' (The World Bank, 2010) 12, 85.

45 Economic Planning Unit, 'Tenth Malaysia Plan 2011-2015' (The Government of Malaysia, 2010) 43-45.

46 Anonymous, 'NEM Will Be Led By Three Principles', *The Star* 31 March 2010 2010, <http://thestar.com.my/news/story.asp?file=/2010/3/31/neweconomicmodel/5968223&sec=neweconomicmodel>.

47 Darshini Kandasamy, 'PM: Innovation is Key to Propel Malaysia Forward', *Malay Mail* (online), 20 July 2010, <http://www.mmail.com.my/content/43754-pm-innovation-key-propel-malaysia-forward>.

48 'Tenth Malaysian Plan 2011-2015: Speech by the Prime Minister in the Dewan Rakyat' (2010) *Office of the Prime Minister Malaysia*, <http://www.pmo.gov.my/?Menu=speech&news_id=297&page=1676&speech_cat=2RMK10 > (at 1 July 2012).

49 It was reported that the 10MP allocation for non-physical infrastructure will be increased to 40%, compared with 21.8% in the 9MP, Ibid.

50 Ibid.

51 'Malaysia Inovatif 2010' (2010) *Ministry of Science, Technology and Innovation*, <http://www.malaysiainovatif.gov.my/> (at 4 October 2011).

52 Anonymous, 'Programmes to Create an Innovative Society', *The Star* (online), 18 January 2010, <http://thestar.com.my/news/story.asp?file=/2010/1/18/nation/5493723&sec=nation>.

53 Anonymous, above n 15, 7.

As both academic and research institutions, the public research universities have increasingly been viewed as the fountain of knowledge and the engines of economic growth, fuelled by the technological innovations they foster. It follows that the transmission and diffusion of new knowledge from the universities is just as significant for innovation as knowledge creation by the universities.[54] The public research universities are expected to contribute to free and open sharing of knowledge, data, information.[55]

In light of this expectation, the Malaysian research public universities should take a leading role in enabling open access to and reuse of research data in Malaysia. The universities' research and innovation policies which support unrestricted data sharing and open content data licensing practices, will eventually become the pillar of the nation's development agenda.

While data sharing through online open access repositories is the preferred way to diffuse data,[56] not a single Malaysian public research university has open access archiving, open access publishing or a data archiving policy.[57] At present, only nine out of 20 public universities in Malaysia, have their institutional repositories registered under the Directory of Open Access Repositories (OpenDOAR).[58]

None of Malaysian public research universities has become a signatory to the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities which calls for the dissemination of research data and results online through open access initiatives.[59] As a result, research data produced in Malaysian public research universities is locked up behind restrictive data sharing and fragmented data licensing practices.

The restrictiveness of current data sharing practices in Malaysian public research universities is illustrated by the fact that none of the existing university policies allows the use of research data beyond what is permitted under the fair dealing exceptions in the *Malaysian Copyright Act.*[60] Nor do any of the existing policies provide a set of criteria to guide the assessment of whether the use can be considered fair. Further, none of the universities has a policy that mandates or encourages open access journal publishing or self-archiving in open access repositories.[61] The absence of such a policy means that the scope of legitimate use of research data is restricted to specific purposes, specific kinds of use, or specific types of bodies or institutions.

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54 Ibid, 19.

55 Simon Marginson, 'Open Source Knowledge and University Rankings' (2009) 96 *Thesis Eleven* 18.

56 Suber, *Open Access* (MIT Press, Cambridge, Massachusetts 2012), 52.

57 'Sherpa Juliet: Research Funders' Open Access Policies' (2009) *University of Nottingham*, <http://www.sherpa.ac.uk/juliet/> (at 21 June 2010).

58 OpenDOAR an authoritative directory of academic open access repositories.The Malaysian public universities with the institutional repositories registered under OpenDOAR are Universiti Kebangsaan Malaysia, Universiti Malaysia Perlis, Universiti Putra Malaysia, Universiti Sains Malaysia, Universiti Teknologi Malaysia, Universiti Teknologi MARA, Universiti Tun Hussein Onn Malaysia, Universiti Utara Malaysia and University of Malaya. See, 'Directory of Open Access Repositories', <http://www.opendoar.org/find.php?search=&cllD=&ctID=&rtID=&cID=131&IID=&...> (at 18 February 2010).

59 'Signatories' (2010) *Open Access at the Max Planck Society*, <http://oa.mpg.de/openaccess-berlin/signatories.html> (at 12 July 2010).

60 The fair dealing exceptions under the *Malaysian Copyright Act*, is restricted to specific purposes, specific types of uses or specific types of bodies or institutions. See, *Copyright Act 1987* (Malaysia), s 13(2)(a) – nature of copyright in literary, musical or artistic works, films and sound recordings.

61 See Ministry of Higher Education (MOHE) Application Guidelines for Fundamental Research Grant Scheme (2010 Amendment), Publication, [1.9.1]; Guidelines for the Application of Sports Research Grant, Publication, Intellectual Property Right, and Royalty [1.9.2]. See also, Universiti Malaya (UM) Research and Development Policy 2002, Vision, [3.1]; Universiti Putra Malaysia (UPM) Research Policy 2009, Dissemination of Research Output, [6.6(e)]; Universiti Malaysia Sarawak (UNIMAS) Research Policy (Version 7.0) 2006, The Governing Policy on Research, [3.1].

As for fragmented data licensing practices, none of the existing policies of Malaysian public research universities adopt licensing procedures which simplify access to and reuse of research data. Therefore, the right to access and reuse research data in Malaysian public research universities is subject to negotiation between data user and data owner. In exercising their rights to license, a data owner has a broad discretion to determine who will be permitted to access and reuse the research data and to what extent the rights to access and reuse is to be granted. In the absence of a specific policy which requires open content licensing, the data licensing regime in Malaysian public research universities is non-standardised and fragmented.

It is clear that, while most public universities in Malaysia encourage wide dissemination of research findings to the public and the world at large,[62] their policies have not been developed with the objective of enabling open access to and reuse of research data. As a consequence, enabling open access to and reuse of research data in Malaysian public research universities is merely voluntary and is not a matter of policy obligation.

5. Designing a Policy and Practice Framework for Public Research Universities

According to Ioan Voicu, the push towards an innovative society requires a policy which allows diffusion of knowledge to reap its returns in the form of innovation.[63] Advocates of open access to data, such as Uhlir and Schroder,[64] Moskovkin,[65] Arzberger et al,[66] and Lievesley,[67] have all agreed that an open access data regime requires a comprehensive framework of policies and procedures based on a complete set of supporting principles and guidelines. The need for a policy to support open access to and reuse of research data in public research universities is also supported by Fitzgerald et al in "Legal Implications Surrounding Data Access, Sharing and Reuse". Fitzgerald et al argue that academic and research institutions need to have in place a regulatory framework which facilitates access to and reuse of research data. They propose that to achieve seamless access to data it is necessary not only to adopt appropriate technical standards, practices and architecture, but also to develop legal frameworks that facilitate access to and use of research data.[68]

Based on the above recommendations, it is necessary to design a policy and practice framework enabling access to research data in Malaysian public universities. The policy and practice framework must recognise and manage the universities' IP rights in research data, while enabling open access to and reuse of research data.

The policy framework enabling access to research data should contain procedures designed to implement the policy. The proposed procedures are as follows:

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62 See Universiti Malaya (UM) Research and Development Policy 2002, Clause 3.1 – Vision; Universiti Putra Malaysia (UPM) Research Policy 2009, Clause 6.6(e) – Dissemination of Research Output; Universiti Malaysia Sarawak (UNIMAS) Research Policy (Version 7.0) 2006, Clause 3.1 – The Governing Policy on Research.

63 Ioan Voicu, 'Towards Innovative Societies' (2007), <http://www.onlineopinion.com.au/view.asp?article=6262> (at 24 October 2010).

64 Uhlir and Schroder, above n 25, 216-217.

65 VM Moskovkin, 'Institutional Policies for Open Access to the Results of Scientific Research' (2008) 35(6) *Scientific and Technical Information Processing* 269.

66 Peter Arzberger et al, 'An International Framework to Promote Access to Data' (2004) 303 *Science* 1777.

67 Denise Lievesley, 'Information is Power: Overcoming Obstacles to Data Sharing' (2009), <http://inspire.jrc.ec.europa.eu/events/conferences/inspire_2009/presentations/plenary/inspire2009_lievesley.pdf> (at 2 October 2010).

68 Anne Fitzgerald, Kylie Pappalardo and Anthony Austin, 'Understanding the Legal Implications of Data Sharing, Access and Reuse in the Australian Research Landscape' in Brian Fitzgerald (ed), *Legal Framework for E-Research: Realising the Potential* (Sydney University Press, 2008) 162.

i. Data Release Procedure: designed to ensure research data is made accessible and reuseable in timely manner for responsible use to both local and international community on equal terms with as few restrictions as possible. It should also be designed to ensure access to and reuse of the research data is user-friendly, easily accessible by internet and as much as possible will be made available for free.

ii. Data Security Procedure: designed to balance the rights, interests and security of all stakeholders. The procedures can help to protect the legal rights, legitimate interests and security of other stakeholders that may be restricted by legal, ethical and data security requirements.

iii. Data Retention, Preservation, Maintenance and Disposal Procedure: designed to govern long-term retention, maintenance and preservation of the research data in the appropriate repositories which allows future access and reuse.

iv. Data Documentation and Recordkeeping Procedure: designed to document the research data (the "Metadata"). The metadata which is made available online allows the research data to be easily discovered and its quality is to be effectively assessed by data users.

Best practices for addressing restrictive data sharing and fragmented licensing practices should also be developed. Such practices should be designed to allow the scope of legitimate use of research data produced in the Malaysian public research universities beyond fair dealing exceptions provided under the Malaysian copyright law.[69]

To overcome fragmented licensing practices, a licensing practice that simplifies and accelerates access to and reuse of research data should be adopted.[70] The Creative Commons (CC) Version 4.0 License Draft which was released for public comment in April 2012 includes *sui generis* database rights and other "copyright-like" rights as part of the licensed subject matter.[71] The best practice for promoting open access to and reuse of research data is to apply a CC Attribution (CC-BY) licence which allows data to be openly shared and used, but preserves data creator's right to attribution.[72]

Adopting the recommended procedures and best practices as part of the policy framework would facilitate access to and reuse of research data in the Malaysian public universities.

6. Conclusion

The introduction of IP systems in developing and least developed countries in compliance with their TRIPS obligations must occur in a manner that recognises their development needs and objectives, by promoting creativity and innovation. According to innovation

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69 See Kai Ekholm, 'Access to Our Digital Heritage' (2011), <http://www.casalini.it/retreat/2011_docs/ekholm.pdf> (at 8 June 2011); P Arzberger et al, 'Promoting Access to Public Research Data for Scientific, Economic, and Social Development' (2004) 3 *Data Science Journal* 146; Graham Greenleaf, 'Unlocking IP to Stimulate Australian Innovation: An Issues Paper' (University of New South Wales, 2008).

70 See Christian, above n 4, 22; Kim Zwollo, 'Collective Licensing: Enabling Global Content Sharing' (2011), <http://www.casalini.it/retreat/2011_docs/zwollo.pdf> (at 8 June 2011); Stephanie Woods, 'Creative Commons - A Useful Development in the New Zealand Copyright Sphere?' (2008) 14 *Canterbury Law Review* 38.

71 See Diane Peters, 'Version 4.0 – License Draft Ready for Public Comment!' (2012), <http://creativecommons.org/weblog/entry/32157?utm_campaign=newsletter_1204&utm_medium=blog&utm_source=newsletter> (at 18 May 2012); '4.0 License Subject Matter' (2012) *Creative Commons*, <http://wiki.creativecommons.org/4.0/License_subject_matter> (at 18 May 2012).

72 See Anne Fitzgerald, 'Sharing Environmental Data: The Role of an Information Policy and Copyright Licensing' (2009), <http://www.eresearch.edu.au/docs/2009/era09_submission_122.pdf> (at 20 June 2011); Cameron Neylon, 'The Open Practises E-science Network: A Research Network to Enable Data Sharing in the Real World' (2007), <http://precedings.nature.com/documents/1370/version/1/files/npre20071370-1.pdf> (at 20 June 2011); DISC-UK DataShare Project - Policy-making for Research Data in Repositories: A Guide (May 2009 Version 1.2).

theory, enabling access to data, information and knowledge stimulates creativity and innovation. Using Malaysia as a case study, this paper proposes a policy and practice framework for enabling access to and reuse of research data in Malaysian public research universities. Adoption of an open access policy and practice framework governing data sharing and licensing practices is essential if research data is to be made available for access and reuse. The framework recommends procedures and best practices to facilitate access and reuse, while also recognising and managing IP rights in research data. Making data sharing and licensing practices less restrictive and fragmented can accelerate creativity and innovation. While the policy and practice framework has been designed for adoption in developing countries such as Malaysia, its recommendations are consistent with the growing support in developed countries for access to and reuse of research data produced with public funding.

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