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Accelerating Intellectual Culture in University for Society Through Patent Application

Efridani Lubis, Universitas Islam As-Syafi'iyah, efridani@yahoo.com

Astriana Baiti, Universitas Muhammadiyah Jakarta, astri01@yahoo.com

Martini, Universitas Negeri Jakarta, martini_anwar@yahoo.com

ABSTRACT

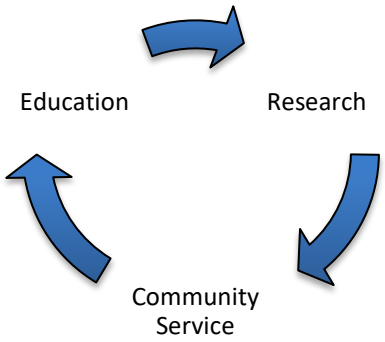
University atmosphere attached very closely to intellectual culture. Under the principle three pillars higher educations (teaching, research, contribution to society) the connection can be identified very clearly in Indonesia. The concept of three pillars drives lecturers to highly in teaching, research, and contribution to the society. These activities potentially offer intellectual products such as research result, books, and journals. From statistical point of view, we can see the picture. For the academic year 2014, lecturers all over Indonesia reached 230,915; if we combined with the obligation to do research minimum 1 research per semester, there are as much as 461,830 research results per year that can be processed for patents, copyrights, and other intellectual properties. However, the application of patent from Indonesian citizen in Indonesia Patent Office for example is very poor. Until February 2017, it was noted that from around 34 thousand patent's application, only 5% came from Indonesian while the other 95% was from foreigner's application. The smaller number was occurred when it came to international application. According to the WIPO data for the year 2016 period, it was only 15 application came from Indonesian. The number was doubled compared to the previous year that was only 6 applications though. When we compare to other ASEAN countries such as Singapore, Malaysia, and Thailand, this number fell far behind. Singapore for the same period applied 879 patents to the WIPO and Malaysia applied 190 patents, and Thailand registered 155 patents for the same period. This huge gap shows that university in Indonesia has not produced equivalent intellectual product yet which can be assumed that intellectual culture in this education institution has not optimal. The other issue is how to manage those intellectual products or commonly referred as intellectual property for the community. When the right cycles of intellectual property management in university take place then the welfare of the community and nation will parallel increase in the end. Therefore, it is necessary to 'waking up' the management of university in Indonesia to change its way of thinking in managing higher education activities. The mechanism for it is to maximize the management its intellectual property that link closely to the three pillars higher educations. At the same time, the role of the Government is vital for nurturing the intellectual culture in university that can make a good contribution to the society for better Indonesia's citizen life.

Keyword: three pillars higher education, intellectual property, patent

INTRODUCTION

A. Intellectual Property in Universities in Indonesia

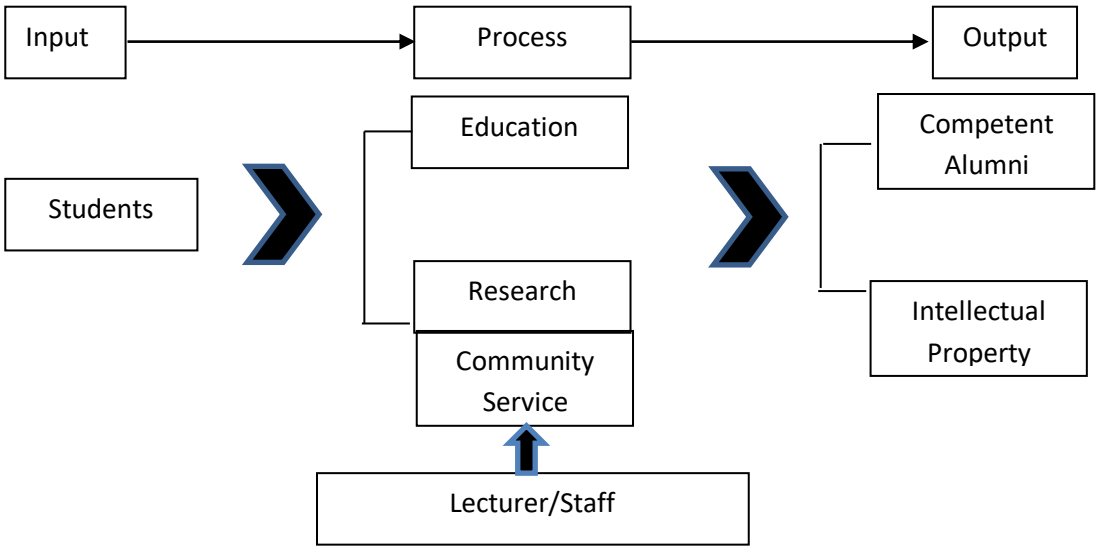
Intellectual property is very closely attached to universities activities due to three pillars principle in higher education system comprising education, research, and community service. Under this principle, it is assured that intellectual exercise will be conducted throughout its process.



Picture 1: Three pillars of higher education

Although the main activity in higher education is teaching, however the teaching process could not be completed by itself. The rich and dynamic teaching process could be supported by adequate research. The result of teaching and research activities can be implemented in society that could give fruitful feedback for better education in turn. This cycles will be benefit greatly if using continuous improvement approach.

The principle above will give clearer picture for intellectual products in university activities if we put it as a management process.



Students as input in this process enroll for academic activities in the university. They obliged to attend classes, doing research either in laboratory or under their supervisor (lecturers), produced papers, articles, or briefs. At the end of their study, they also make a contribution to the society through community service activity. Along with the process, lecturers also doing the same activities with staff supporting. Therefore, the intellectual property as a result of higher education system could be double in number if the system is processed systematically and carefully.

The number of the intellectual property produced by higher education system could be drawn from the amount of lecturers and students. For the academic year 2014 for example, lecturers all over Indonesia reached 230,915, while students achieved 5,839,587. If we combined the two, the intellectual property (IP) from university activity will be 6.070.502 per year. The trend is slightly increase every year.

Table 1: The number of students and lecturers in Indonesia 2014-2016

Year	Students	Lecturers	Ratio	IP Prediction
2014	5.839.587	230.915	1:25	6.070.502
2015	5.896.419	171.771	1:34	6.068.190
2016	6.924.511	247.269	1:28	7.171.780

Sources: BPS, 2018

The scope of the IP could cover 7 IP regimes: copyrights, patent, trademark, trade secret, design industry, circuit lay-out, and plant variety. However, the promising number above couldn't be implemented in reality. The patent application in the year 2017 for example, it was only 1.700 applications came from Indonesian citizen, the other 32.300 application came from foreigners. Therefore, the most challenging aspect to promote IP in higher education is the conducive system necessary so that motivated students and lecturers to change their way of doing three pillars that more oriented to IP purposes.

B. IP System for University

Intellectual Property (IP) or Intellectual Property Rights (IPR) introduced as a system for protecting the result of intellectual exercise. Through the Agreement Establishing the World Trade Organization (WTO), especially in TRIPS (Trade-Related Aspects of Intellectual Property Rights) the application of protecting IP has been knowledge worldwide. There are 7 regimes or types of IPR that has been agreed in TRIPS context, and later has been ratified and became national regulation in Indonesia.

1. Copyright
   Copyright basically grants the creator in literature and art original works exclusive rights to determine and decide whether, and under what conditions, this original work

may be used by others. According to Indonesia Copyright Law 2014, the work automatically protected based on declarative principle after such work manifested in certain form. Therefore, literature and art works are not necessary registered first to be protected. Copyright is applied for books, paintings, films, music, etc. For performers or artists, they can obtain performance right under copyright. Economy right for copyright is author's life time and 70 years after his/her death, however there is no time limitation for author's moral right.

2. Patent
   Patent is protection for innovation or invention in technology that meet the requirement of novelty, inventive step or non obvious, and industrial applicable. To be protected, the innovation or invention should be registered. According to Patent Law 2016, novelty means there is no same disclosure technology at the date of application. To make ensure the novelty, applicant should make searching through patent document both nationally and internationally. Inventive step means that the invention is nonobvious for average technical expert in the field. And industrial applicable defines as the invention is able to perform as patent description, in another word, it works. Patent is applied for apparatus, technical solution in mobile phone, computer, electronic devices, improving function in medical area, etc. However, there is no patent for life, theory and method in math, or curing method. The patent right is given for 20 years and 10 years for simple patent and unrenewable.

3. Trademark
   Trademark Law 2016 defines trademark as a symbol in the form of drawing, logo, name, words, alphabet, colors in 2 and/or 3 dimension, voice, hologram, or combination 2 or more these elements using for identify and differentiate goods and/or service which is produced in the field of business. Trademark will be protected effectively after registration to Trademark Office. Identification of differentiation between goods and service should not fall into category unclear defined either too simple such as only simple line and a dot or too complex in contrary. Trademark protection is for 10 years and renewable. Examples for trademark is numerous in practice like Samsung, Aqua, Apple, Standard, etc.
   Other important issue stipulated in the Law 2016 is Geographical Indication (GI). GI refers to product or service that attached very closely with geographical situation either nature or human or both. This system provides the possibility to protect some indigenous or endemic natural resources. Since Indonesia retain numerous natural resources, this system could benefit greatly to the nation. An example to this is Salak Pondoh, Ubi Cilembu, Kopi Toraja.

4. Trade Secret
   According to Trade Secret Law 2000, trade secret refers to information unknown to public in the field of technology and/or business that has economy value and the

owner of the secrecy make necessary step to make sure its confidentiality. The value of information can be measured by its commercial value in business that potential to give a profit economically. The necessary step to make confidential means that the owner of the information put an effort to make the information does not disclosure to public through restricted procedure that assure the information under control and possible to trace any wrongdoing or misuse of the information. The classic and famous example to this is step that taken by management Coca-cola that put their trade secret in safety box in bank that only can be accessed by certain people.

5. Industrial Design
   Industrial Design according to Industrial Design Law 2000 refers to feature, configuration or composition of line or color or combination of those which is esthetics and implemented in product, goods, industrial commodities or handmade. The design must be new meaning that there is nor similar design when it is registered. Esthetics value in industrial design will be relative and subjective. The only limitation to that is against public order, religion, and moral. The protection's time is 10 years and unrenewable.

6. Circuit Lay Out
   According to Circuit Lay Out Law 2000, there are two elements that could be protected under the Law. First, integrated circuit that is a product consist of several elements which at least one of those elements is active integrated to semiconductor material for electronic function. The other is lay out design that is a creation of three dimension of several elements where at least one of those elements is active and some or all of them interconnected to integrated circuit. To be able to register under this system, the circuit or design must be new. All electronic devices have this function to be able to operate. The time of protection is 10 years and unrenewable.

7. Plant Variety Protection
   Plant Variety Protection means protection for variety that new, unique, uniform, stable, and named. According to the Plant Variety Protection Law 2000, variety is new if at the time of application, the propagation or harvest of such variety was never be traded in Indonesia or no more than a year in case has already been traded, or no more than 4 years for seasonal plants and 6 years for yearly plants if it was traded in international level. Uniqueness of the variety can be acknowledged when the variety clearly different with similar variety that public known. The uniform classification is measured by uniformity of main or important characters of the variety despite different planting method and environment conditions. Stability of the variety is considered when the main character of the variety has not changed after multiply re-planting. Giving a name of the variety should not suggest an ambiguity of the variety character, and trademark could also be considered as a name of the variety.

The time of protection for seasonal variety up to 20 years and 25 years for yearly variety and unrenewable.

No.	IPR Scope	Requirement	Method of Protection	Length of Protection
1	Copyright	• In the field of literature and art works • Original • In certain form	Automatically	Author's life time plus 70 years
	Patent	• In the field of technology • Novel • Inventive step • Industrial applicable	Registered	20 years and unrenewable
3	Trademark	• Symbol used in trade • Differentiable with others	Registered	10 years and renewable
	Geographical Indication	• Attached closely to geographical environment either nature and human or both		
4	Trade Secret	• Valued method/information which is disclose in appropriate manner.	Non registered	As long as the disclosure manner is maintained.
5	Industrial Design	• Esthetical • Industrial product	Registered	10 years and unrenewable
6	Circuit Lay-out	• Have an active element • Three dimension • Interconnected	Registered	10 years and unrenewable
7	Plant Variety Protection	• Novelty • Uniqueness • Uniform • Stable	Registered	• 20 years for seasonal plant • 25 years for yearly plant

From explanation above, it is concluded that the essential of IPR system is creativity and acknowledgment. These two principle becomes the core of higher education as well. By doing the system consistently it will make education and economy sector could be improved significantly.

The other function of IP system for higher education becomes a source of knowledge. Patent document for example contains with latest information in the area since the first criterion of patent is novelty. It means not all patent application will be approved unless the technology is new globally. Japan Patent Office for example, receive around 370,000 patent application annually, and only about 100,000 of them were granted or 27,03%. Nevertheless, the refused patent application still having

significant information that applicable in improving technology in the area through further research and development.

WIPO (World Intellectual Property Organization) (WIPO: 2015, 8-9) identify that Patent information comprises all information which has either been published in a patent document or can be derived from analyzing patent filing statistics and includes:

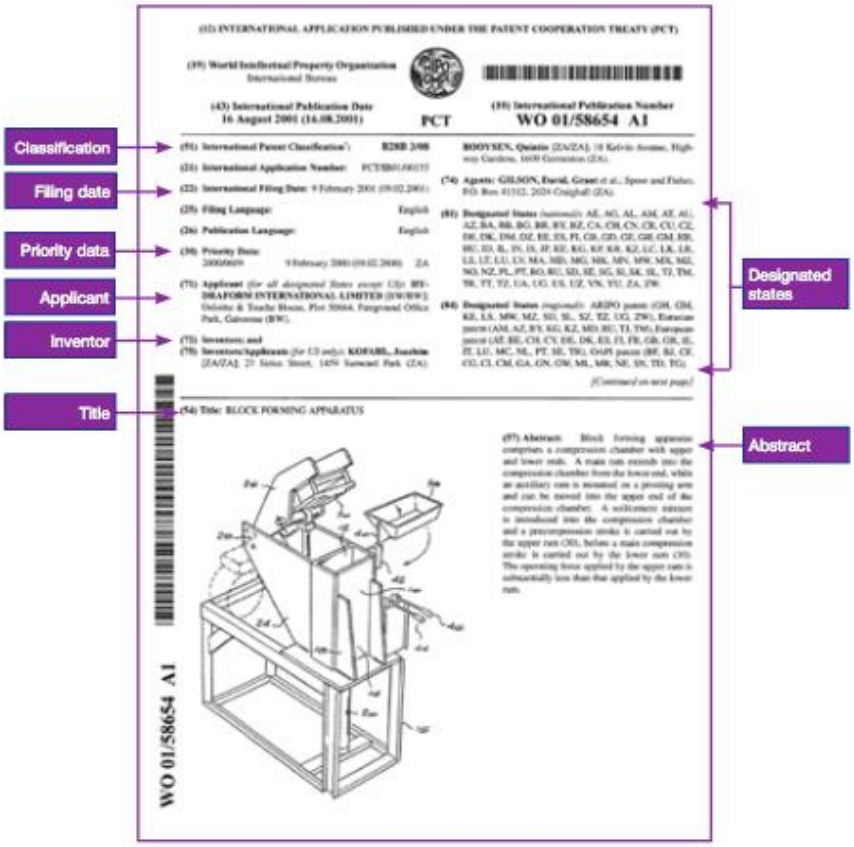
- ✓ Technical information from the description and drawings of the invention;
- ✓ Legal information from the patent claims defining the scope of the patent and from its legal status;
- ✓ Business-relevant information from reference data identifying the inventor, date of filing, country of origin, etc.;
- ✓ Public policy-relevant information from an analysis of filing trends to be used by policymakers, e.g., in national industrial policy strategy.

In particular, this information refers to the following:

- ➢ Applicant. Name of the individual or company applying to have a particular invention protected;
- ➢ Inventor. Name of the person or persons who invented the new technology and developed the invention;
- ➢ Description. Clear and concise explanation of known existing technologies related to the new invention and explanation of how this invention could be applied to solve problems not addressed by the existing technologies; specific embodiments of the new technology are also usually given;
- ➢ Claims. Legal definition of the subject matter for which protection is sought or granted; each claim is a single sentence in a legalistic form that defines an invention and its unique technical features; claims must be clear and concise and fully supported by the description;
- ➢ Priority filing. Original first filing on the basis of which further successive national, regional or international filings can be made within the priority period of one year;
- ➢ Priority date. Date of the first filing from which the one-year priority period for further applications starts;
- ➢ Filing date. Date of submitting an individual patent application at a particular patent office;
- ➢ Designated states. If the application is regional or international, the countries to which the rights may be extended;
- ➢ Legal status. Indicates whether the patent has been granted or not; if granted, the countries or regions in which the patent has been granted; and whether it is still valid or has expired or been invalidated in a particular country or region;
- ➢ Citations and references. Certain patent documents also include references to related technology information uncovered by the applicant or by a patent examiner during the patent granting procedure; these references and citations include both patent and non-patent documents;
- ➢ Bibliographic data. Refers generally to the various data appearing on the front page of a patent document or the corresponding applications and may comprise document identification data, domestic filing data, priority data, publication data,

classification data, and other concise data relating to the technical content of the document;

- Document kind codes. Used to distinguish published patent documents according to type and status; for example, with respect to published international applications under the PCT, the code A1 denotes an international application published with the International Search Report (ISR) while the code A2 indicates an international application published without the ISR, and the code A3 designates an ISR published with a revised front page
- INID codes ("Internationally agreed Numbers for the Identification of [bibliographic] Data"). Identify different elements of bibliographic data; for example, the code 11 is associated with the patent number and the code 54 is associated with the title of the invention; the full list of INID codes can be found at: www.wipo.int/standards/en/pdf/03-09-01.pdf#INID
- Country codes. Specify different countries by a unique two-letter country code for example, the code "WO" indicates the International Bureau of WIPO; a list of country codes is given in WIPO Standard ST.3 available on the WIPO website.

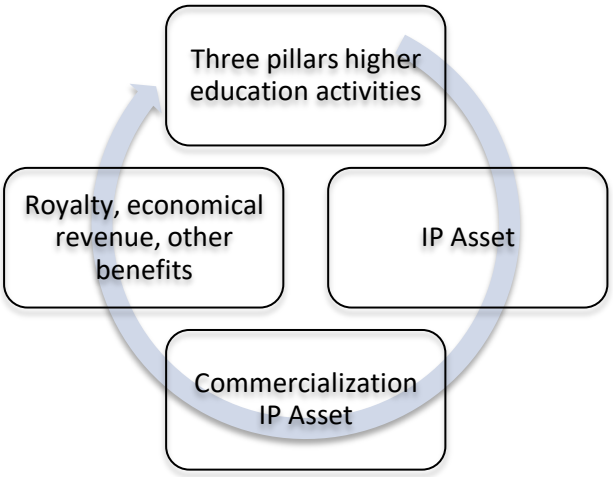


Picture 1: Type of Information in Patent Document
Sources: WIPO Guide to Using Patent Information, p. 10

C. IP Management for Academic Based on IP System

In order to make IP management in higher education is effective, it is necessary to make sure that the three pillars of higher education have taken place properly. When the

system has been IP oriented in the beginning, then the opportunity of generating IP will be extensive. Besides, the possibility of making similar IP will be minor at the same time. Therefore, when those IP are implemented in the future, the infringement to other IP will be minimal. The next step is protecting these IP through legal system that make their value increase due to the right to monopoly the production the IP in market. Once the IP penetrate the market, then economical benefit will be back to the university in turn, that can support new or further research and development.



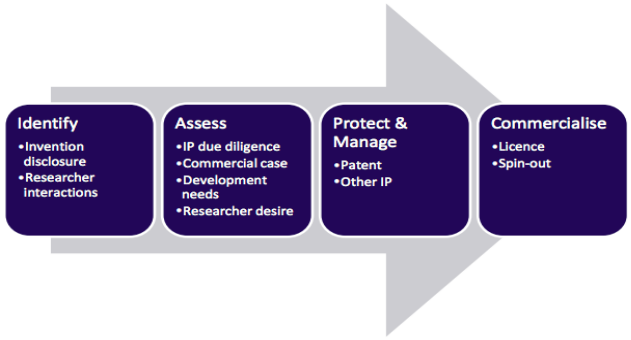
Picture 2: The cycle of utilizing IP in University

To achieve the concept above, there are 3 main factors should be prepared: curriculum, IP information and consultant center, and IP management. Curriculum of higher education that concentrated to IP is in line with the curriculum of Ministry of Education so called curriculum based on qualified out put (KKNI). In this term, the innovative framework has been introduced to the curriculum, for example the Entrepreneur subject becomes obligatory for all higher education. However, the best opportunity goes to science and technology faculties which is very closely to the patent, design industry, trade secret, circuit lay-out, and plant variety protection. The social science faculties could be benefit best from copyright and/or design industry. In order to make students and lecturers willingly involved in the system, they should aware of the system either through formal education under IPR subject in their curriculum or informal information from IP information and consultation center. It is suggested to provide IPR subject for all higher education students at least in semester 5 or before they take their final assignment, so that they can emphasis their assignment to IPR result systematically.

IP information and consultation center is essential in promoting IPR in the university. This unit focus on providing IPR information, consultation, dissemination, rising IPR awareness,

IPR data base and searching system for stakeholders. The unit also involve in constructing policies that could improve or support conducive IPR application in the university. In term of IPR application, the unit provide assistance for processing IPR protection application, such as patent document, and provide friendly procedure in processing the application using electronic or internet devices. Along with the protection procedure, the enforcement of universities' IPR must be assured, and the unit becomes the frontline for that.

In IPR management unit, it focuses basically in managing resulted IPR in order to commercialize them. It is understood that penetrating market for early stage technology and IPR products is not an easy task. Therefore, system, strategy, and method that enable to promote the IPR is fundamental task for IPR management unit in university. Promotion, negotiation, licensing strategies are among of skillfulness that needed for managing IPR in university. Licensing strategy can be also embodied with Entrepreneur subject, so that the curriculum of entrepreneur contains idea of making use the product.



Picture 3: Scope of IPR Management in University
Source: Eggington, 2017, 13

Combining with the research activities in universities, the IPR management in university can be proceed as picture below

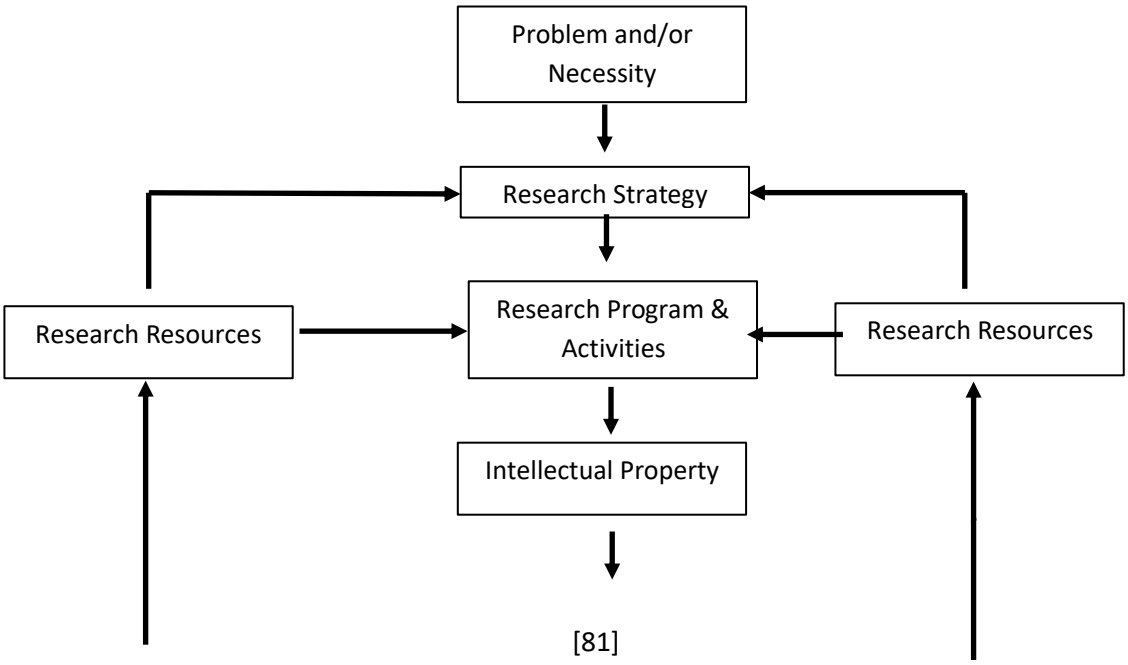


Diagram 1: IPR in Research Activity
Source: Setyowati et.al, 77.

According to Article 13 par. 3 of Law No. 18 Year 2002 Regarding National System for Research, Development, and Science and Technology Application, universities and research organization obliged to establish of IPR center according to its capacity and ability in order to manage IPR resulted from three pillars of higher education activities. The said IPR center should make use any IPR resulted from research, development, engineering, and innovation especially funded by the Government and/or local government. One of the make use of the IPR through technology transfer as stated in Article 16 of the same Law.

In doing technology transfer, Setyowati et. al suggested that the best step taken by university as describe below.

Picture: Technology Transfer Process in University

Source: Setyowati, et.al, 101

Nevertheless, there are many obstacles in managing IPR in universities, the main problems could be:

1. **Changing orientation of university's stakeholders**

   To change and make university's stakeholders aware with the idea can begin with research activities. Despite doing research based on researchers' interests only, it is necessary to make a plan of producing IPR of the activities from the beginning. Some of research grants from Ministry of Higher Education have put this idea as an obligation out put. In this sense, introducing patent searching for example can benefit two folds: guarantee that the research is new to the world through identifying prior art in the area and giving an inspiration for developing the research further by studying patent document internationally.
   Another effort made by the Government is embedded IP principle into institution and study program accreditation. Referring to Accreditation Guideline 2010, the best score for research result goes to those that published in accredited journals and applied as copyright, patent, or other IPRs. We can see this in point 7.1.4 of 3A Documents of S1 Accreditation, in point 7.1.7 of 3A Documents of S2 Accreditation, and point 7.1.6 of 3A Document of S3 Accreditation.

2. **Ownership issue**

   For the IPR resulted from research activities funded by the Government and/or local government will be owned by the Government and/or local government accordingly as stated in the Government Regulation No. 20 Year 2005 of Technology Transfer of

Intellectual Property and Research and Development Result by Higher Education and Research and Development Institution. However, if it was funded together with other parties, then the ownership will be joint ownership, but the usage of the IPR must follow the Government and/or local government indication or based on mutual consensus which is the management of it handed to relevant university's IPR management unit. Nevertheless from practice perspective, there are 5 agreement models in ownership at least out of funded by the Government and/or local government.

Table: Models of Making Use IPR Resulted from Research Collaboration

Model	Principle Agreement	Ownership
1	Sponsor has non-exclusive right for using the IPR in certain field which is no-sub-license	University
2	Sponsor could negotiate for further license of part or all university's IPR	University
3	Sponsor could negotiate for several further assignment for the university	University
4	University has right to use for non commercial purpose	Sponsor
5	University could make a publication only after have prior concern of the sponsor	Sponsor

Sources: Setyowati et.al, p. 93

3. Human Resources of IPR Management

Looking at the scope of IPR Management in university, it needs qualified human resources to involve obviously. However, not all universities have same understanding of the importance of the issue. Therefore, capacity building and training from the Government is essential in order to increase the awareness and the capability. The background of staffs involved in IPR management in universities must be from 3 different background minimum: technical, legal, and economy/marketing. The synergy of these qualification can protect and commerce university's IPR optimally.

CONCLUSION

In order to make use IPR in university resulted from three pillars activities

1. Akreditasi
2. Gufron
3. Semendawai

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