Governance of Intellectual Property Strategy for a Technical Institute: Effective Policy Formulation

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ABSTRACT

This paper presents strategies and processes which may be adopted by technical institute to generate and protect their intellectual properties through an effective policy formulation and governance. Suggested strategiesof governance are process centric and focus on the intellectual output of the human resource or the results of collective intellectual labor of the institute. It also features the governance of generated Intellectual Property (IP) at each stage. It highlights the rights and responsibilities of all the participants. A case study based on activities undertaken a by PhD students as a participant in the process is presented as a validity check of the strategies developed. A successful strategic policy formulation for IP management is the outcome of this process.

Keywords: IP strategy, IP of Technical Institute, Copyright, Patent, Trademark, Trade Secrets.

1. Introduction

Research is a part and parcel of academic activity in any technical institute. Research and academic activity can create a gamut of intellectual property - patent, copyright trade mark, trade secrets or undisclosed information, geographical indications, lay-out design of integrated circuits, new plant varieties, biotechnological product eligible for patenting, traditional knowledge. All of these IPs generated require serious techno-legal management on the part of the institute as well as of authors (Researchers, Techno mangers, students, Teachers) for economic and technical growth of national society in particular and global community in general.

The main purpose of this paper is to suggest a strategic policy for a variety of intellectual property artifacts, which will take care of the researchers' interest as well as of the interest of the technical institute. In order to formulate a strategic policy, the IPs generated require to be identified and clear definition of the roles played by different stakeholders in the process is to be given within the framework of the IP factory of the technical institute. The total process of IP management is explained with the help of a case study of a particular actor – namely, a PhD scholar.

This strategic policy formulation is focused to obtain patent/copyright for inventions/ software/ documents and to develop an entire portfolio of IPs for protection.

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Intellectual property gained importance in the present era as the protection of IP provides a business with competitive advantage. It also helps to improve the professional standing of the inventor. The inventors or researchers do not find problem to provide the technical content but dealing with the legal aspects remain one of the major IP blues for researchers. Development of a strategy helps the technical institute to:

- Prepare the most appropriate IP application.
- Recognize the format of IP and its best possible representation for registration process e.g. patentable inventions.
- Obtain the relevant patent for inventors/researchers.
- Generate the best possible IP portfolios for business venture of an institute/ author/ inventor.
- Address the business implications of patents in the preparation of patent applications.
- Work on patents and copyright on a routine basis (as done by the student through the process of submission of assignment or dissertation, thesis, prototype) (Knight, 1999).

2. Related Work

2.1 Existence of Intellectual Property Strategy

The age-old existence of various IP is highlighted by the existence of IP strategy for such particular IP e.g. patents, copyright etc. For example, patent strategy for academicians/researchers or innovators are discussed in a number of works and working papers of universities (Balcony & Lissoni, 2004; Smith, 2003; Ramanna, 2002; IIMA, 2004; UGC, 2004; ICMR, 2004).

Indian universities have started exploring the possibilities of Indian linkages without much thinking of the implication. The CSIR Case study shows the valorization of IP from publicly funded organization (Gupta, 2005). Capacity building in IP management is a natural outcome from such publicly funded institutions (Saha, 2005). The role of the Government is definitely going to play a major part as there has to be international compatibility (Bhattacharya & Meyer, 2002).

There is an attempt to create a patent strategy for researchers by defining patent strategy (Knight, 1999).

Patent Strategy:

1. Patent strategy for a product line is the science and art of employing the business, technical, and legal resources of a company to afford the maximum support to adopted policies with and without competition.
2. Patent strategy for a technology area is the science and art of managing research to meet competition in the market place under advantageous conditions.
3. Patent strategy for an invention is a careful plan for gaining an end including clever schemes for outwitting a competitor.

Based on these definitions, a patents strategy model is defined which can give some useful insight for an individual researcher (Knight, 1999). The model is named as Military Strategy Model. The basic principles for generating a patent strategy are as follows:

1. Objective: Extent of patent coverage desired.
2. Offensive: Method of acquiring intellectual property.
3. Simplicity: Identifying competitive advantage.
4. Unity of command: How will decisions be made?
5. Mass: The focus of efforts.
6. Economy of force: Response to competitive Patents.
7. Maneuver: Maintaining up to date.
8. Surprise: Co-ordination of filing.
9. Security: Protection of unprotected property

10. Changing the strategy.

On the basis of this model, questions for specific types of strategy can be developed e.g. patent Strategy for an Invention:

- What is the Invention?
- What is to be achieved by filing this patent application?
- What additional information is needed for the patent application?
- When must this application be filed?
- Who is going to develop the information for the patent application?
- Who is going to prepare the application?
- How much information should be disclosed in the application?
- How broadly can/should the invention be claimed?
- Where is patent protection wanted?

Even it can be a series of inventions for a longer period of time e.g. patent Strategy for a series of invention:

- What is the vision for the product line or series of inventions?
- What technologies will provide the product line with a proprietary position?
- What Technologies will match the vision of the future but will not be proprietary?
- What claims are wanted for each case?
- Where in the world are the stoppers?
- Where in the world should a patent estate be developed?
- When will the development of a technology area end?
- Who needs to work on these inventions?
- How much money is the business willing to spend?
- How will the consistency be maintained from case to case?

The legal system of individual countries influences much the selecting of appropriate model and development of a strategy.

2.2 Intellectual Property Strategy beyond India

All the strategies suggested here are concerned about the principles of Intellectual Property Rights (IPR) protection or increasingly pervasive digital technology or the results of the cross fertilization of ideas taken from the above two. This academic treatment of Intellectual Property (IP) is present in IP policy of various American universities. In some of the universities, there is no written policy whereas in some other university, for example, University of California, Berkley and University of California, Los Angles, there are existence of documents like "UCLA Library Copyright Policy" or "Policy and Guidelines for Reproduction of Copyrighted Material for Teaching and Research"(Crews, 1993; University of California, 1986; UCLA, 1989). This polices and the other similar policies are mere copyright policies to be used in the library to regulate the uses of information sources. Thus these policies cannot be equated with strategies of IP generation and management in a university. The Asia Pacific Intellectual Property Law Institute provides advisory services to public private entities and State and Federal Government of Australia (www.law.murdoch.edu.au, 2008). This is an example of providing service of generic IP policy as per requirement. Bournemouth University Centre for Intellectual Property Policy and Management is also a similar service provider in IP policy making (www.bournemouth.ac.uk, 2008).

The technical institutes are having their combined teaching and research goals. Faculty members of a technical institute are responsible for creating the articles, research papers, books, software, video, motion

pictures, blueprints, architecture design, prototypes, utility models and machines and others developments that has became the media of new IP products, In addition, technical staff, project managers and techno-managers create various products from printed products catalogues to computer databases. But these are usually patented or copyrighted in the technical institute's name. Faculty members, researchers and students who are authors of IP are allowed to own and control their IPs to the above mentioned products (Rome, 1989). A balance is required to be maintained between the interest of the author in their personal capacity and the technical institute's interest in term of its Intellectual Property Rights. The authors of IP usually develop a product or a product as the result of a process and want to gain IP rights as an Intellectual Property Rights (IPRs). IPRs are known to provide competitive advantage and credit to their faculty. The technical institute is certainly going to play a major role for defining a strategy.

2.3 Checklist for elements of Intellectual Property Strategy for an Indian Technical Institute

IP generations in India are generally categorized by the characteristics of authors/inventors. There are prolific authors/inventors in the first category and casual authors/inventors in the second category. The teachers come in the first category and students come in the second category. In order to bring all IP activities within an organized forum, Department of Scientific and Industrial Research (DSIR) has come forward to utilize the development and utilization of digital information resources and provide inputs to S&T research and industrial development (www.dsir.gov.in, 2008). Technology Information Facilitation (TIF) is one of the components of the Technology Promotion, Development and Utilization (TPDU) program of the DSIR to generate endogenous capacities. Such programme will strengthen the resource base of available information and provide a mechanism for optimal utilization of the information resources in the country. The objective of TIFP is to develop a set of strategies and a specific set of activities under each strategy. The technical institutes are welcome to avail such opportunity of project support for the development of a strategy.

There are similar initiative on the part of National Science and Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology (DST) and Federation of Indian Chamber of Commerce and Industry (FICCI) which has taken the shape of a project TIME. TIME is the information service for Technology, Innovation, Management and Entrepreneurship (www.techno-preneur.net, 2008). It provides the technopreneurs with comprehensive information source on industrial policies, incentives, funding options, infrastructural facilities, project profiles, technology sources and contact directories. One important characteristics of TIME is Online Interactive Services providing a 'Patent Guide'. 'Patent Guide' deals with patenting and compliance to patent related laws and regulations which are to vital importance to technopreneurs. The technical institute can make viable projects under TIME and can exploit its IP resources.

There is also international effort for creating innovation-led inclusive growth. It has even been recognized by World Bank (Dutz, 2007). It is suggested in the policy report from the World Bank that in order to create and commercialize knowledge, there is a need to improve support infrastructure for India's regime for intellectual property rights (IPRs). India's legal frame work for IPR has been modernized with 2005 amendments that brought its IPR laws into full compliance with the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). The book suggested that country- strategic policy advice on complex IPR-related issues can be resolved by creating a policy-oriented think tank on outstanding IP issues. There is explicit mention of legislation that required government agencies to issue research grant to motivate the universities, research institutes and other individual researchers to seek and exploit patents. In fact a patent management corporation structured as a public-private partnership and as replacement of National Research Development Corporation (NRDC) could play a major role in the management of patent portfolios from CSIR and other public laboratories and universities. Even commercial exploitation of such patents or IPs is going to change the IP management scenario of SMEs. In order to develop a pro-innovation public procurement policy, India's Sponsored

Research And Development (SPREAD) should be broadened to encourage collaboration between Indian Technical Institutes and other firms of similar goal. Collaborative commercialization is one of the required outcomes in this case.

The independent effort on the part of the institutes, such as Anveshan at the Center for Innovation Incubation and Entrepreneurship of Indian Institute of Management, Ahmadabad and supported by Department of Science and Technology, Govt. of India & Gujarat Government is directed towards providing necessary support to develop innovation based enterprise by giving them mentoring, infrastructural, technical/design support, access to seed fund and business planning amongst others (www.ciieindia.org, 2008). The Center works in a totally co-operative way in order to identify outstanding innovations from scientists/researcher/ entrepreneurship /innovators all over the country and to help them commercialize these innovations through on enterprise. There are mainly three programs under Anveshan namely:

- Start- up program.
- Top Innovation program
- Ideaz program.

Supports available from CIIE are:

- Incubation Support
  - Incubation for 20 months
  - Office space and physical infrastructure.
  - Technical and Designing support.
  - Seed funding on a case-to case basis
  - Business planning and fund raising
  - Mentoring, Intellectual and IPR support
- Technology Transfer support.
  - IPR support-drafting and filing of patents.
  - Search for licensing partner.
  - Matching Entrepreneurs and Innovators/Technologists
  - Showcasing Technology to the industry.

The strategy formulation suggested here is somewhat similar to the policy adopted by CIIE, but in essence it can be totally customized for a technical institute. The following is an example of a well-formed IP Policy of a technical institute, namely, Indian Institute of Science (IISc). The objective is definitive towards its goal. "The current and stated Intellectual Property Policy of the Indian Institute of Science (IISc) aims to facilitate the protection and valorization of intellectual properties generated during the scientific pursuit in the Institute and offer scope for wealth generation, alleviation of human sufferings and betterment of human life. IISc urges all faculty, staff and students to document their IP, so that they can be protected and applied to the gain of the country, the institute and the concerned inventors**.** IISc is keen to facilitate faculties and staff of IISc in a proactive manner in the generation, protection and transaction of Intellectual Properties which offer potential and scope for shared benefits to both institute and inventors. Through this policy, a system will be in place to bring order into the process of knowledge generation and commercial exploitation."

Ownership is categorized in the category of:

- In-house Research
- Sponsored Research
- Collaborative Research
- Copyright

Technology transfer gets a prime place in the policy. Revenue sharing, infringements, damages, liability and indemnity are covered together with conflict of interest, dispute of resolution and jurisdiction. Operating guidelines are a help even for a novice. The formation of IP Evaluation Committee and their duties are spelt in providing support in case of IP like patent in national and through Patent Co-operation Treaty (PCT). There is scope of framing IISc IP Policy through amendments (dsl.serc.iisc.ernet.in, 2008). Intellectual Property Policy for IIT Bombay was published in March 2003. The Preamble says, "The vision of IIT Bombay is to be the fountainhead of new ideas and of innovators in technology and science and its mission is to create an ambience in which new ideas, research and scholarship flourish and from which the leaders and innovators of tomorrow emerge."(www.ircc.iitb.ac.in, 2008) The Industrial Research and Consultancy Centre (IRCC) is responsible in every way for deployment of this policy. Assessment of Innovation(s) for Protection is again taken up by a committee at IITB level. They too have the similar provisions on different aspects of IP management of the Institute.

I.I.T. Delhi was the first academic technical institution to develop its own explicit IPR Policy and also documented the same in print format in 1994 (www.iitd.ac.in, 2008). In 1992, a workshop was organized for sensitizing I.I.T. Delhi faculty in the area of IPR. This was followed by another Workshop on IPRs in 1993 for faculty members of all I.I.Ts & IISc Bangalore. In 1994, two Workshops on IPRs were organized for students & SMEs (jointly with CII & WIPO). An IPR Cell has been established in the Department of Management Studies of the institute. Timely focus on IPRs has resulted in an increasing number of patent applications filed by the Institute and this task is undertaken by the Foundation of Innovation & Technology Transfer (FITT) which is located at IITD. The establishment of the Rajiv Gandhi School of Intellectual Property Law (RGSOIPL) in the IIT Kharagpur campus in 2006 will provide a large number of trained lawyers to safeguard vital intellectual property in industries like bio-technology, nano-technology, bio-informatics, and information technology and computer software and ensure to protect the nation's IP in a more systematic manner (www.iitkgp.ac.in, 2008).

2.4 Strategy Framework and a Test Case of the frame work

General strategy framework can only be developed once the goal of each participant towards the consumption and contribution of IP becomes clear from role. Each participant in the IP system of the technical institute is either a consumer or a contributor or both. The participant consumes some IP resources either available in the technical institute or in outside world legally in order to produce his/her IP contribution to the technical institute, to the nation, to the global Society. The framework must take into account the territoriality, at the same time should have the open legal access worldwide. Let us consider the course taken by a research scholar in a Doctor of Philosophy (PhD) programme and see how he/she paves the way towards IP consumption and contribution.

Table 1: Test Case of a Ph D Student

Activity Undertaken	Actors involved	Possible IP being generated	Stakeholders involved	Rights Conferred
Notification of PhD Admissions and related information	Dean (Academics), Dean (Research &Development), Dean (Projects), Heads of the departments, Subject Experts	Public domain knowledge/ open ware proprietary copyrighted material	Technical Institute, Researchers, Supervisors, Research & Development bodies of GOI	Copyright, Freeware, Open ware
PhD Admission	Head of the departments (HODs), Subject Experts, Student-researchers	Business Method	Technical Institute	Business Method Patent

Electronic Filing	Student-researchers, System Administrators	Software Copyright	Technical Institute	Patent / Copyright, Individual Copyright on the content of filled up form
Automated eligibility Checking	Competent authority appointed by HODs	Software Copyright/patent	Technical Institute	Software Copyright/patent/ layout design of integrated circuit
Call for test (Automated)	System Administrators	Software Copyright, Patent	Technical Institute, System Administrators	Software Copyright, Software patent
Checking the Test papers(Semi-automated and Unique grading scheme)	Dedicated System with information security	Trade Secrets	Technical Institute, System Administrators, Inventors/ Teachers	Different Legal Confidentiality Agreements formats
Call for interview and related services	Selected candidates, Interview Board	Trademark/Service mark	Technical Institute	Trademark/Service mark
Admission formalities after final selection	Selected candidates, Admission section, finance Section	Business method patent	Candidates for research, Sponsorship providers, Technical Institute	Business method patent
Research scholar's enrolment and participation in the course work or Repetition of the Course work/other	Research Scholar	Copyright through assignment/articles	Research Scholar, Technical Institute	Copyright/patent
Policy formulation	Technical Institute, Various Committees	Copyright	Technical Institute, research Grant Commission, R & D Bodies	Copyright, Freeware, Open ware
Comprehensive viva voce And other examination	Research scholar	Compilation of directed study material-copyright	Research scholar	Copyrighted material is available for academic use in the technical institute under the provision of "fair Dealing"
State of the art Seminar and other Intermediate progress reports or Development of a prototype	Research scholar, Supervisor	Copyrighted material / Patent	Research Scholar, Supervisor	. In case of full sponsorship of the project, moral rights and adequate compensation remains with the first and true inventors but IP rights (commercial) goes to technical institute

Open Defense	Research scholar, HOD Concerned, Supervisor, Invited Experts	Demonstration of product/ process, Presentation of original contribution	Technical Institute, Author / Inventor	Patent, Copyright
Thesis submission (Product and/or Documentation)	Research scholar, Technical Institute	Proof of original contribution to the body of knowledge	Technical Institute, Author / Inventor	Patent, Copyright
Award of Degree	Research scholar, Technical Institute	Certificate authorized by Technical Institute	Technical Institute, Author / Inventor / research Scholar	Services mark

3. Agents of IP Generation

The basic requirement for IP generation of a technical institute gets fulfilled by the organizational structure. A typical organizational structure of a Technical institute consists of students, teachers, academic administrative and technical staff, researchers and project officers. The administrative and technical staffs are facilitators of primary activities of teachers and students - that are teaching and research. Since their role is service oriented, they are not considered as primary agents of IP generation. Faculty and students including researchers, by very definition and by their activities are agents of IP generation (Figure 1).

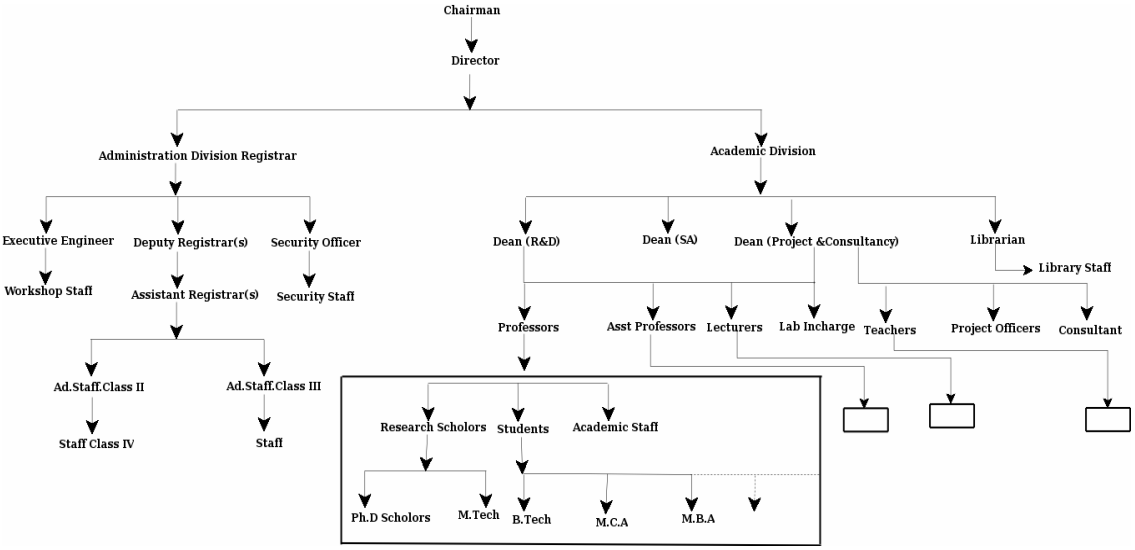

Figure 1: Organizational Structure of a Typical Technical Institute

The technical institute is considered on the basis of following prime businesses.

- Teaching.
- Research.
- Management Tool/Business Method Development.
- Change Management.
- Consultancy

4. IP Generation in a Technical Institute

In each of the businesses, following IPs are likely to be created.

Table 2: IP Generation in a Technical Institute

Business	Products Generated	Corresponding IP generated
Teaching	-Formulation of course structure and experimentation -Lecture notes -Teaching aid creation -Learning techniques -Teaching methodology	-Business method/trade/secrets/ copyright -Copyright -Patent/copyright -Patent -Business method
Research	-Study material on a Research topic (for comprehensive, state of the art) -Research papers -Prototypes -A machine of some utility or a product of a efficient process -Thesis/ Dissertation	-Compilation/collective work (copyright) -Copyright -Utility model/ patent -Patent/design -Copyright
Management Tool/ Business Method	-Process/ system developed -Software tool -Business Method	-Process patent/Business method patent -Copyright/layout design of integrated circuit/ patent. -Trade secret/ Patent/ Copyright
Change Management	-Technology Management (including technology transfer) -Updating & Knowledge Management -Introduction of new courses	-Patent/Trade secrets/Copyright/Design. -Copyright/ Patent/Trademarks/Service marks. -Copyright
Consultancy	-Testing -Checking, Verification, Validation -Advisory	-Moral rights on Copyright/ Patents/Others under "work-made for hire" Trade mark/ Service mark. -Trademark/Service mark -Copyright/Design

Thus IP generation in a technical institute takes a number of agents who are responsible for IP generation and IP management.

Table 3: IP generation through various IP Agents

IP generating Agents	IP generated
Teachers/Supervisors	Copyrights/patent (product or process)/Layout design of integrated circuits/ Trade secrets/ Design.
Researchers	Copyright/Patents (product & process) layout design of ICs /Design.
Students	Copyright/Patents (product and process) Layout design of ICs/Design.
Technical staff	Software patent/Design/Copyright
Project Officers	Copyright/Design
Technical Institute	Copyright/patents/Public Domain material with attribution/ Trade mark/ Service mark/Trade secrets/Design/ Geographical Indication.

5. Strategic Thinking in IP generation of a Technical institute

This section intends to consider Indian as well as global issues in the management of IP generation. Legal confrontation take place between the researchers/teachers/authors/innovators and the technical institute about the ownership of innovations that comes out of the work under taken by the former in the role of an employee and latter in the role of an employer under the normal course of the assigned duty. But normal course of duty is considered to be interpreted in the context of the actual nature of the employment.

5.1 Global Panorama of Strategic Thinking

In the case M/s Euronet-Liffe Vs Dr. Pavel Pinkava, the UK Court of law adopted a much broader view of what constituted an employee's 'normal duties' that evolved over time and were not limited to the strict scope of written employment contract (saha, 2007). The view of the Court is of greater significance in the light of the fact that IP policies are being framed in technical institutes and universities worldwide and there is a serious debate about authors/inventor's right as an employee and should be compensated for contribution to patented inventions and other IP contributions. An effective employee-author-inventor compensation/incentive programme will go a long way toward strategic thinking in IP generation in technical institute and universities.

5.2 Typical Indian Scenario of Strategic Thinking

The Department of Education, Ministry of Human Resource Development, Government of India has initiated several measures in the past for strengthening the enforcement of copyrights through the constitution of a Copyright Enforcement Advisory Council (CEAC), creation of separate cells in state police headquarters, encouraging setting up of collective administration societies and organization of seminars and workshops to create greater awareness about copyright law among the enforcement personnel and the general public (www.indianembassy.org, 2008). Collective administration of copyright is enforced by copyright societies for different classes of works. At present there are three registered copyright societies. These are the Society for Copyright Regulations of Indian Producers of Films & Television (SCRIPT) for cinematography films, Indian Performing Rights Society Limited (IPRS) for musical works and Phonographic Performance Limited (PPL) for sound recordings. These societies, particularly the PPL and the IPRS, have been quite active in anti-piracy work. The PPL has even set up a special anti-piracy cell under a retired Director General of Police. The enforcement of copyright laws in the country during the year 1997 98 results in (as per the data relating to copyright offenses available with the National Crime Records Bureau), the number of copyright cases registered has gone up from 479 in 1997 to 802 in 1998. The number of persons arrested has increased from 794 in 1997 to 980 in 1998. The value of seizures has gone up from Rs.2.88 crore (28.8 million) in 1997 to Rs.7.48 crore (74.8 million) in 1998. These figures reflect the general improvement in the enforcement of the copyright law as a strategic measurement.

5.3 Catch 'em Young!

Strategic thinking in IP generation of a technical institute should reflect in every activity related to IP management as per IP Strategy. An example of such can be shown from the following part of the application of a project submitted to Ministry of Communication and Information Technology. The project on 'Development of educational Content and Associated Depository of Web Services for Intellectual Property Rights' is subjected to strategic thinking process as per yet-to-be-completely-developed IP strategy of MNNIT (Samaddar & Sharma, 2008). It clearly identifies the IP artefacts, duties assigned, rights acquired on the part of the investigators and the technical Institute, namely MNNIT.

Table 4: Expected Outcome of IP Project at MNNIT

5. Objective of the Project : A main objective of this project is to prepare educational content for Intellectual Property considering the specific requirement of students, researchers, academicians in Engineering and Technology. Development and encouragement in study in specialized courses in IPRs in higher education system using a number of web services is the goal of this project. **Expected Outcome:** a. A pedagogical content to cater the specific need for IPR education in B Tech, M Tech, PhD course work, particularly in engineering, technology, science and academy in general. b. An interactive depository of web services to cover the computer based and assisted assignment and its solution. c. An open source based tool/system for IPR and WTO literature/material/case studies/web services at Institution (MNNIT) level with Creative Commons license. d. Instructional Manual to be used by the teachers for proposed IPR Course for classroom teaching.

6. IP Management through IP Identification

From the test case presented in the earlier section, it is clear that a process can be evolved which will be able to identify the IP generated by a technical institute in the course of its routine activities for each participant by following the total process of the activity and can be co- related with IP Strategy. IP management, in essence, is the implementation of the IP strategy through a well tested framework. The process is also able to check the important do's (and some of the don'ts) as listed below:

- Plagiarism check in case of a copyrightable material identified (Open source software tools can be used)
- Prior art search process in case of a product or a product originated by use of a unique process.
- Certification by the local (technical institute based) IPR committee (Knowledge Management and Technology Watch Group) for recognition for further processing towards IPR procurement.
- Resolving issues related to
  - Work-made-for hire
  - Fair dealing
  - Transformative derivative work
  - Use of open source ware/freeware with or without attribution.
- Registration process for copyright/patent at the certain territorial authority depending upon the commercial and academic suitability.
- Providing necessary help in assignment/license issues considering the various parameters like territorial consideration, time period, cross-licensing schemes in case of dependent patent etc.
- Not to discard an IP on the basis of a single checking process and knowing the various resources for such counter measure activity.
- Developing a technology-aware human resource capable of change management.
- Legal process of ensuring rights must be considered while developing a strategy.

7. General Guidelines for Strategies of IP Management

The efficiency in IPR strategy is reflected by a number of projects on tools for plagiarism detection, watermarking digital video, software protection tools, tools for IPR management etc. In the year 2007-2008 the completed projects are:

- IPR Technical Support and Solutions and Text and image based tools for mapping for patent literature, IIT Kanpur
- Software for e-verification of Trademarks – Dayalbagh Engineering College, Agra
- IPR Technical Support and Solutions IISc Bangalore

Further commercialization and deployment of some of these will be explored (mit.gov.in , 2008).

The broader view of the strategy framework is likely to appear if we consider each participant role wise, generation of various IP wise, IPRs wise and legal procedure for protection to be followed in each case. However, the general guidelines for strategy building which will facilitate IP strategy creation for a technical institute are:

- Introduction Appreciation level/Awareness programme/Sensitization programme for undergraduate and post graduate courses.
- Introduction of a compulsory core paper on IP at Masters and Doctorate level. Achieving the minimum grade is a requirement for continuation of such courses.
- Display of sources of information for different IPR management at laboratories, class room, library and reading rooms.
- IP identification and recognition by a local committee/ Technology and Knowledge Management Watch Group in case of products from a project leading to research/ testing/ consultancy/ survey/

dissertation/ thesis/ project report.

- Registration activity to be undertaken by the technical institute on behalf of the student/ teacher/ researcher/ institute. IP ownership can go to one or more from the above mentioned group.
- Formulation of drafting/ filing/ follow up/ granting/ maintenance/ licensing/ assignment policy at institute level. Drafting and negotiating agreement involving IP transfers should be undertaken with expert legal advice.
- Unbalance negotiation should be avoided (where only one side is represented by legal council). The negotiated agreement must take care of uncommon or unknown technologies at the time of transfer.
- Formation of an Intellectual Property Rights Management Cell in technical institute with one or more IP expert from Government bodies or from industry with consideration of commercial implication of IP generated within.

7. Future direction of work

The judicial decisions on IPR are based on the interpretation of the Acts concerned in its true spirit. The strategies derived logically on the basis of prevailing Act and judicial decisions obtained on the basis of the measures of these interpretations must be cross-checked and answers to this 'how-to's will be able to create consciousness about various forms of IP management and their commercial utility. Over a period of time, the Acts are likely to be influenced by new elements as its replaces the old ones, and strategies formulated here may require certain changes as well. The strategies related to these changes issues, for examples, digital issues are delivered in the light of global practice of IPR. The further work can be taken up to decide upon the body of knowledge at the introduction of various levels of IPR as a subject. The history of IP and IPR of a technical institute can project a future strategy plugging the techno legal loop holes and suggesting a robust legal framework.

8. Concluding Remarks

The operational framework is a dynamically designed methodology to reflect the laws related to patents, copyrights, trademark etc (Wadehra, 2004). A typical customization of the above IP policies can be obtained through the following operational framework ICRISAT. Policy of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) on Intellectual Property Rights (IPR) is able to deliver an open policy which is the need of the day by considering their operational framework. "Therefore, as its basic policy, ICRISAT pursues publication and full disclosure and the open sharing of ICRISAT data, information and knowledge through the release of ICRISAT research findings and products into the public domain. ICRISAT respects the rights of others when using their materials, data, and other intellectual property, in research for development. … In addition, ICRISAT respects the IP rights of others, and will acknowledge and obtain appropriate permission for the use of other's data, knowledge and technology." (www.icrisat.org, 2008). The key issues of techno-legal management of intellectual property in a technical institute include the understanding of the processes of generation of intellectual property, and the roles of different stakeholders in this process. The studies in the literature provide limited practical information about the nature of IP being generated and the related issues of techno-legal management during the process of research leading to Ph D degree or dissertations submitted by students during Master's or Graduate degrees. Several unique IPs are likely to be created in a technical institute either independently or in a team, which may include faculty members, students or researchers. It is suggested to develop a comprehensive understanding of IP generated by students through interactions with teachers and evolve appropriate guidelines to rationalise the IP strategy in technical institutes leading to feasible IP generation governance. The IP generation governance in a technical institute may involve delineation of (i) Researcher's approach to IP strategy, (ii) iinstitute's approach to IP strategy, and (iii) faculty guidance on student intellectual property rights. Salient features of which have been outlined. There is a need to take

initiatives for creation of IP awareness specific to the field of science and technology among students as well as teachers.

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