

CHAPTER TEN

**EXPANDING THE IIT BRAND
THROUGH
INTELLECTUAL PROPERTY RIGHTS**

*“The patent system has added
fuel to the fire of knowledge”*

*Abraham Lincoln
(1809-1865)*

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Chapter 7 discussed the need and ways to enhance research in the IITs. This chapter will pay attention to IITs taking that extra step of translating their creative skills into practically useful innovations.

10.1 THE BACKGROUND

The General Agreement on Tariff and Trade (GATT), an international treaty to promote trade and economic benefits, was signed in 1947. During the Uruguay round of its negotiations in the year 1994, a decision was taken to form the World Trade Organisation (WTO). The WTO has brought about radical changes in the world's intellectual property regime and has activated worldwide the spirit of competition where it was dormant and intensified it where it existed already. In the face of this major international political development, changes have become inevitable in the approaches to S & T research and development. Knowledge production has spread beyond the realm of the academic institutions and has engulfed industry, national laboratories, non-governmental organizations and even individuals.

One of the radical changes in the IPR regime due to the WTO is the transition from process to product patent. The quickest response to the new regulations has come from the pharmaceutical industry in India. Between 1995 and now, the investment by the private pharmaceutical sector in R&D has risen more than five-fold. Major pharmaceutical companies like Dr. Reddy's Labs and Ranbaxy (just to name two examples from among several other companies in this sector) have undertaken substantial *ab initio* research ventures aimed at discovering new molecules with potential for their development as novel therapeutic drugs. In the changed context, these companies have also hired personnel with advanced research degrees like Ph.D. in larger numbers. Thus, the pharmaceutical sector in the Indian industry may be said to have blazed a new trail in this country to take on the challenges posed by the WTO. Among the national laboratories, the CSIR took the lead in imparting a major thrust toward the new patent regime. Their laboratories have not lost much time in coming up with their response and have steadily improved on their record of patents. In the current year, the CSIR has a proud basket of nearly 200 US patents.

However, the response of the academic institutions in India has not been impressive. In fact, even an awareness about establishing IPR does not exist among a majority of scientists. The Department of Science & Technology (DST) and the Department of Scientific and Industrial Research (DSIR) have played a facilitating role in bringing about awareness of the importance of patents and intellectual property asset generation and its protection. This has resulted in an attitudinal change as shown in Table 10.1.

Table 10.1: Patent applications by educational institutions*

Year	No. of patent applications by IITs & IISc	No. of patent applications by Universities & Institutes other than IITs & IISc	Total No. of patent applications
1995	31	4	35
1999 - 2001	137	99	236
2002	46	33	79

*Source: Patent Facilitating Centre, TIFAC, DST, New Delhi.

Prior to 1995, the total number of patent applications from the academic institutions was abysmally low and it stood at 35 for the year 1995 and the bulk of it was from the IITs & IISc. During 1999-2002 the first signs of changes were observed. The total from the academic institutes, which was hitherto 30-40 patents per year has roughly doubled. The number of patent applications from the IITs & IISc has increased, as may be noted from the data for 2002, so also the performance of non-IITs/IISc. **From the data collected by this Committee, the cumulative number of patent applications from the IITs as of March, 2003 stood at 166.** There is so much room here for the IITs to show their innate strength.

Poor patent production may be a reason why IITs have not been able to participate in or span powerful industrial clusters or innovation networks. Research into industrial clusters and innovation networks in USA (Silicon Valley, Massachussetts Route 86, California Wine Growers, life sciences), in Europe (Finland-Nokia, Italian districts), in Israel and so on has shown that top class universities can play a strong role in promoting and sustaining such clusters. For universities to be part of such networks, they need to compete with other institutions in industrial cluster/network for research funds and success critically depends on the ability of universities to convert research into intellectual property.

Thus, it is imperative that IITs develop a strong focus on intellectual property creation. By demonstrating their ability to translate research into innovations, IITs will become an invaluable resource to augment competitiveness of the Indian industry. **Highly competitive global economy is fundamentally dependent on innovation which, in turn, requires a strong science based engineering and technology system of schools. IITs are just that and, therefore, as a powerful academic system, have the onerous duty to add substantially to India's stature in international fora by generating a large and worthy patent portfolio. This will also show the way for students to become entrepreneurial.**

Some steps have been taken by IITs in this regard within the current structure of the Industrial Consultancy and Sponsored Research divisions. However, intellectual property creation, protection and its management require broader institutional change – they call for a more specific Intellectual Property System. The rest of the chapter discusses the issues pertaining to intellectual property creation in IITs and the design of an institutional model to address the same.

(United Nations have just released a report entitled *Innovation: Applying Knowledge in Development*. The UN report provides examples of countries which have been able to combine their science and technology policies with industrial policies into a comprehensive innovation policy).

10.2 FACTORS INHIBITING IP ASSET CREATION

Publications in internationally recognized journals have been the overarching criteria for determination of an individual's performance in academic institutions all over the world, so also in our country. Publications in prestigious journals and the quantum of citation of important papers have been the barometer of excellence in research. The IITs are not an exception to this rule. No wonder, therefore, that in the last 5 decades since their inception, the portfolio of intellectual outputs of IITs did not have a significant component of patents and generation of intellectual property rights with a commercial vector, as reflected in the data presented above.

With publishing scientific papers in technical journals having become a cultural feature among the academics, every research scholar experiences this pressure and is automatically trained and ground soundly in that activity right from his student days. As a result, no researcher depends on anyone else to convert his results and thoughts into a publishable document. However, this is not the case with the documentation of patents. What are then the issues related to patents?

- (i) preparing a document for filing a patent requires assistance from other areas of expertise, principally legal;
- (ii) the patenting process is expensive and time consuming;
- (iii) IP asset creation encompasses, besides the patent, a host of other issues such as copyrights, trademarks, regulatory clearance/approval and design registration.
- (iv) it is further complicated by the requirement of management of the patent(s) involving renewals, shared ownership, contracts, agreements, licensing, reassignment, infringement, damages, liabilities, indemnities etc.,
- (v) there is no clear career incentive at the present time and
- (vi) the financial returns are not assured in a reasonable time-frame.

Thus, the patenting process goes far beyond the principal act of inventing and the individual is less likely to take on the overall burden, that too without any incentive in sight. We have, therefore, to do as much as possible, first of all, to minimize the burden on the inventor and secondly to create a system of incentives.

While it is natural to compare the activities associated with patenting with those pertaining to a research publication, history of discoveries shows that the process of innovation and inventing need not be restricted to erudite researchers alone, but can extend to students, non-teaching as well as non-technical staff and even housewives. The analytical framework (discussed in

Chapter 2) suggests that the total available pool in the IIT system extends beyond the faculty, research scholars and others to those coming into contact with the system through various other avenues such as contractual arrangements and sponsored research. The drive towards patents should thus motivate the different segments of the IIT community. This requires a culture of its own which needs to be nurtured.

10.3 INSTITUTIONALISING AN IP SYSTEM

The potential for reaping the economic benefits of new and original knowledge is immense and IP asset creation is a strategic tool for achieving global competitiveness. The IITs have to mandate themselves to play a crucial and a leading role in the national IP asset creation. The primary mandate of the IITs being quality engineering and science education and research, it is necessary that the IP asset creation is dovetailed into the existing process of research outputs, including B.Tech., M.Tech. project dissertations, the Ph.D. thesis and the research publications. This would require institutionalizing an **IP system** in each of the IITs. In this connection, a stated policy of IP creation being a part of the research output is warranted.

An IP Management Cell will have to be set up to implement the policy and should be empowered with the necessary resources to be placed at its disposal. A reward and career incentive scheme has to be in place for the inventors who may be members of the faculty, research scholars, students in the B.Tech., M.Tech. and other educational programmes or non-faculty employees of the IIT community.

The IITs have since taken steps in this direction. IIT Bombay in March 2003 has come out with the policy document on IP and entrusted the management of it to the existing Industrial Research and Consultancy Centre (IRCC) while IIT Delhi in July 1992 has set up the FITT (Facility for Innovation and Technology Transfer) to handle IP related issues and technology transfer. Other IITs also have mechanisms as a cell or as part of an existing set-up for industrial consultancy and sponsored research. It is now appropriate to take these initial forays to the next logical step of creating a separate, full-fledged and comprehensive IP system.

As mentioned in the earlier paragraph, IP asset creation and its management is to be treated as a systemic activity and is required to be institutionalized as one. The IP system should comprise the following:

- (i) a defined IP policy;
- (ii) defined aims of the IP system;
- (iii) an IP management cell and
- (iv) a dedicated budget head to execute its functions.

Some of the features which may characterize the above are described below.

10.3.1 IP POLICY

- (i) To promote and support the creation and management of IP assets for a given IIT.
- (ii) To provide **continuous support and assistance to the inventor(s)**. The support has to extend from the stage of recording his invention, to creation of the patent and subsequent management of IP assets for and on behalf of the inventor(s) and the institution.
- (iii) To clarify unambiguously the ownership of the IP, i.e solely by the inventor or jointly with the institution. **The revenue sharing has to be spelt out. Since the patent culture is not there yet, the credit should largely belong to the inventor in order to encourage larger patent volumes.**
- (iv) To sustain and grow the creative and innovative spirit and the **IP Culture in an environment upholding high ethical standards.**

Often, the research done at the IITs is financed by government grants from the Department of Science and Technology, Departments of Defence Research, Space, Atomic Energy and various other agencies and instrumentalities of government. Barring confidentiality and specific IPR conditions in regard to strategic projects, in majority of cases the IP ownership arising out of these public funded research projects rests with the IITs. The IITs should have the freedom to license the IP assets created out of research funded by the government. Experience elsewhere points to the fact that nations benefit from a policy that permits academic institutions and industries to take up IP ownership generated under government funded projects. The balance between regulation and incentives with regard to IPR has to be worked into projects in the initial stage itself in such exclusively government funded projects. While IITs should in general be permitted to retain the ownerships of IP, as well as the licensing rights, there should be an appropriate revenue sharing policy with the inventor(s).

10.3.2 Defined Aims of the IP System

The foremost role of the IP system is **to take away the onus of translating the innovation into an IP asset from the inventor(s) and render a comprehensive support system to the inventor(s)**. In order to fulfil this fundamental objective, the IP system could have the following aims.

- i) To facilitate systematic and timely development of IP assets.

The principal activities under this include distinguishing creations between patents, designs, copyrights etc., assessment of creations for protection, patent search and analysis support, patent drafting, filing processes for patents and other IP in the required jurisdiction and take care of prosecution, pre-grant hearings/oppositions, renewal, assignments and reassignments and weeding out patents and other IP equations which have no further commercial interests; dealing with post-grant issues such as opposition and infringements, licensing etc.

- ii) To operate an IP system comprising the IP policy, IP culture, procedures and processes
- (a) In relation to the IP policy referred to in the earlier section, operation of the IP system would be required to articulate, in a transparent manner, the mission statement, the rules of the game, the support services and the rewards and incentives.
 - (b) One of the cornerstones in the operation of the IP system is the inculcation of a healthy and permeating IP culture. Initiation into the IP culture should begin at the B.Tech. stage. Education and training in IP matters are required to be imparted to the next generation of engineers and technologists. A system and methods to engage the undergraduate student population in the innovation and patenting activity requires attention. When the B.Tech. students are tapped, patents could be generated before they leave the IIT shores. Even if every year, and in every IIT, 2 - 5% of the B.Tech. student population gets into innovation and patenting, the total number of applications will be significantly large and the IP culture will be entrenched. We have suggested in Chapter 7 on Research issues, that the research project needs to be introduced at the 2nd year B.Tech. stage. The initiation into the IP area could as well be dovetailed into the 2nd year project assignment.

IP culture could be promoted in many ways, as part of B.Tech. education itself *via* short courses on innovation and creativity, as a recognized component of research, as an open competition in an innovation festival, much like the cultural festival which is open to all members of the community, as periodic training which addresses the different constituencies of the IIT community, as newsletters and other propaganda devices which bring to light innovations from across the world, other institutions in India as also in-house achievements and as promotion of innovation as a hobby activity amongst various sections of the IIT community.

- iii) While the IP policy and promotion of IP culture forms the basis for the IP system, operationalising the same depends on a comprehensive understanding and practice of several procedures and processes. Necessary procedures and practice of processes for various IPs range from first acceptance of a claim of an innovation to post-grant processes. Implementation, however, would require a dedicated multi-disciplinary and multi-functional team of professionals as part of an IP Management Centre.

10.3.3 IP Management Centre (IPMC)

In order to address the gamut of issues pertaining to IP, a structured set-up staffed with appropriate professionals and headed by a Dean, is required. IP Management centre should be in a position to access a digital library of existing patents to facilitate fast patent search and analysis. The IP issues encompass a multi-stage activity requiring different inputs and professional assistance at various stages. The various stages of IP system management are the following:

- (i) First Information Record of Invention (FIRI) and establishment of IP potential.
- (ii) All services to translate the invention into IP application; services ranging from patent search, preparation of documents, legal services, and execution of application.

- (iii) Management of granted IP assets: ownership management, licensing, legal services for fighting cases of infringement and opposition, de-licensing etc.

Add to the above, administration of incentives and rewards scheme for the inventor(s) as well as proceeds from licensing, IP training schemes, and all activities pertaining to nurturing IP culture as outlined earlier.

The management of the above activities would be facilitated by establishment of two sets of teams under a unified management of a senior faculty member at the level of Dean or a senior professional in IP matters with a dedicated office for handling all IP related issues. The human resource requirement for the IP centre would be multi-disciplinary and multi-functional professionals with appropriate experience in IP matters, financial, commercial and legal professionals and scientific, technical, library sciences and IT related personnel to do internal patent search, internal examination of patents and analysis on a routine basis.

Once a candidate comes up with a claim for an item invented by him, a professional team should study and evaluate the claim. This team may comprise discipline experts and Dean/Head of IP centre as chairman for establishment of IP potential. A protocol for reporting and recording of the first information on invention with systematic documentation of significant results, findings, dates and record books etc. would be the starting point of the activity. **If the candidate's claim is accepted, he should be rewarded with a letter signifying acceptance of his claim. This can be included by the candidate in his list of academic achievements.**

In the next step, a second team of professionals in the IP centre will take over the second and third stage activity together with the help of legal retainers and consultants to prepare and process the application as well as manage the granted IP assets for entering into various agreements and licensing.

The IP centre should be adequately empowered to engage professionals with proven abilities to handle legal, financial and commercial aspects required for the centre. **Retaining a law firm to handhold the IP Management Centre would be required.**

When a patent is granted, the original author(s) credited with the record of invention action should be rewarded financially. The quantum of the reward is to be worked out as part of the IP policy. This financial reward is independent of any revenues that may be generated from a successful patent.

10.3.4 Dedicated Budget

In order to effectively execute the IP system, each IIT shall have a dedicated budget allocation to meet the following requirements:

- i) maintenance of the IP centre;
- ii) pay and allowances and fees for dedicated professionals and legal retainers for handling all procedures and processes;

- iii) to cover fees and expenses involved in the IP process (Indian and foreign);
- iv) to cover expenses towards maintenance of IP assets and post-grant expenditures including legal defence in case infringement related issues arise;
- v) rewards and incentives for inventors at various stages;

A budget allocation for IPR matters is to be regarded as an investment in the future. As a matter of policy, the Government deliberately invests in education, training and research in the expectation that the individual beneficiaries would prove to be a success and generate worthy assets for the nation. Similarly, the return on IPR investments can only be expected in the future and would be contingent upon the success of the patented idea, product or process.

10.4 SUMMARY OF RECOMMENDATIONS

- (i) The suggestions made here are aimed at bringing to the fore the spectrum of requirements to be met in order to make a greater success of the IIT IP regime. The need for institutionalization of an IP system is clear. The IITs should take steps to set up an IP system on the lines described above with suitable modifications matching the ethos of each institution and their own assessment of the requirements in this regard.
- (ii) The system should be managed and operated by a dedicated IP management centre staffed with appropriate professionals and personnel. The core purpose of the IP management centre is to take away the burden on the inventor, once he has made his seminal contribution. The IP management centre should be headed by a Dean.
- (iii) A separate budget head for IP centre and IP related activities is necessary and allocations for it shall be made in the annual budget plans for each IIT. The budget should have a provision for financially rewarding the inventor.
- (iv) Such a budget head needs to be accepted and put in place by the MHRD. The Committee would recommend an initial grant of Rs.50 lakh for each IIT for this purpose. Once the budget head is created, further annual allocation by MHRD would naturally be based on the performance by each IIT and its stated requirements.
- (v) **Looking into the future, IITs may have to promote a new thinking about innovation. Innovation today is understood primarily from a techno-economic and a narrow commercial perspective. However, if technologies have to address persisting issues of poverty, emerging challenges of sustainable development and creative networks of the knowledge economy, a much broader concept of innovation will be required. Such a concept should embrace many institutional dimensions and allow people from different sections of the society to participate. IITs, as institutions of national importance and endowed with a range of intellectual resources, have a crucial role to play in promoting such a broad notion of innovation. It is in this direction that the IPR concept of IITs may evolve.**