

- Intellectual: Possessing or showing intellect or mental capacity of a high degree of an intellectual person
- Property: Owned by a person i.e. possession of a particular owner.
- Rights: Which is due to any one by claim, legal guarantees, moral principles

IP Evolution

Property → Right

INTELLECT – PROPERTY – RIGHT

Idea → Expression → COPYRIGHT

Idea → Innovation → Invention → PATENT

Idea → Quality + Identity → TRADEMARK

Idea → Appearance → DESIGN

**Idea → Keep Confidential
No Disclosure } → TRADE SECRETS**

Legal right	What for?	How?
Patents	New Inventions/Technical Intervention	Filing of Application and examination
Copyright	Original Creative or artistic forms	Exists automatically as well as Filing Application
Trade marks	Distinctive identification of products or services	Use and/or registration
Industrial designs	External appearance/Shape and Configuration	Registration by filing Application

Growth: Rise in Domestic business, Exports, New product Innovations.

- **Facilitating the technology transfer after WTO**
 - **Promoting the R&D and innovation**
 - **For the longer-term international competitiveness of industry**
- A better protection of IPR will strengthen the two drivers of growth: FDI, and Technology Innovation**

INTELLECTUAL PROPERTY

Intellectual property (IP) refers to creations of the mind: inventions, literary and artistic works, and symbols, names, images, and designs used in commerce.

- ❖ Intellectual property is traditionally divided into
 - (1) Industrial property (2) Copyright
- ❖ Industrial Property : Patents, Trademarks, Industrial Designs, Geographical Indications.
- ❖ Copyright : Copyright, Rights Related to Copyright, Collective Management of Copyright

HISTORY OF PATENTS

- 1911: The Indian Patents and Designs Act promulgated.
 - Product patent and Process patent in all fields
- 1970s: Patents Act 1970 comes into force in 1972.
 - Medicines, Food and Agro-chemicals removed from product patent (and put under process patent).
 - Term of patent -Product Patent (for items other than above) 14 years;
 - Process Patent 7 years.

IPR ISSUES

❖ IP is amalgamation of Law and Science and is a central issue in any industry as it facilitates collaborative activities in clinical trials, drug discovery and other areas.

❖ Robust intellectual property rights framework is the need of the hour

❖ India is already member of

-Paris Convention

- PCT

-Berne Convention

- Convention on biological diversity

-WTO

- Budapest Treaty

HISTORY OF PATENTS

1995: WTO – TRIPS comes into effect

- 1999-2002: TRIPS compliant laws
 - the First Amendment in the Patents Act
 - Mail Box provision-pharmaceutical and agriculture chemicals
- 2002: Second Amendment
 - India's Patents Law brought in line with TRIPs.
 - Patent term of 20 years for both product and process patents
 - Medicines, Food and Agro-chemicals to continue to be under process patenting till 31 Dec 2004.
 - Product patent in all other areas continues
- 1-1-2005: Ordnance passed introducing product patent in Medicines, Food and Agro-chemicals.

Innovation ?...

- ✓ Practical application of new ideas and concepts into something of value in the market, in society or in a organization, whether it is a new product, service, process or organization system.
- ❖ Value created through innovation may be inform of different currencies: economic, social, community or environmental value....
- ❖ Activities i.e creativity, ideation, invention and R&D are subsets of the innovation process

Commercialisation in the Innovation Process

In the innovation process, commercialisation is a relatively costly and difficult phase.

It is the process of taking new knowledge, process or product beyond R&D phase and actually introducing it into production or in the market place.

The location of this process is in the business sector and the R&D results may be self generated or outsourced.

There is a widely quoted 'rule of thumb' that for every dollar spent on research 10 dollars are spent in development and 100 dollars for commercialisation.

For commercialisation process to succeed requires:

-Sound research base

-Competent companies

-Congenial environment

Strategies for Successful Commercialization.....

- ✓ **Create an Entrepreneurial Culture**
- ✓ **Undertake Early Stage Market Research**
- ✓ **Embedding Innovation across Organization**
- ✓ **Establish Strong Alliances and Networks**
- ✓ **Identify Novel Funding and Resources**

Create an Entrepreneurial Culture.....

- ✓ Small biotechnology firm is exposed to a number of challenges impacting on its survival and sustainability...
- ✓ Entrepreneurial culture must be implemented to ensure effective leadership and management of limited expertise, resources and funding that may be available to successfully commercialize opportunities...

- ✓ Establish advisory board with required business expertise will ensure access to a balanced resource pool...
- ✓ Company/Firm at an early stage should start defining the products and services that will address a market need rather than a technology..
- ✓ Companies that quickly develop the products and services that customers need or want will have a greater chance of success....

2. Undertake Early Stage Market Research

- ✓ Biotechnology firm need to carry out market research early to identify specific market needs in order to drive their product and service development strategy...
- ✓ Identify market niche to ensure that market exists for product/service...
- ✓ Establish Market Driven Strategy...
- ✓ Ensure success in an initial market to further fund and develop core technology to mitigate into secondary markets with similar customer needs....

3. Embed innovation across organization

- ✓ Embed innovation across organization not just R&D functions...
- ✓ Innovation should include...
 - ❖ Process innovation, Organizational Innovation, Business model Innovation, Marketing Innovation and Product and Service Innovation
- ✓ Need to think creatively ...
 - ❖ Solve complex problems and differentiate business model from competitors
- ✓ Utilize the intellectual capital of employees through idea capture and encouraging team participation will definitely have a bearing on firms future success...

4. Establish Strong Alliances and Networks

- ✓ Need to establish strong, effective alliances, research collaborations and commercial relationships to be a significant player in biotechnology sector...
- ❖ Converting opportunities into tangible outcome: early stage “proof of concept” from latter stage translation of technology to a product/service.
- ✓ Adopt an “open innovation mindset”...that facilitates networking and collaboration in order to access expertise, channels to market and novel funding options: not just continue to rely on government support and funding..

5. Identify Novel Funding and Resources

- ✓ A novel approach to accessing expertise, resources and funding that has successfully been used in biotechnology is the “stepping stone” approach to commercialization...
- ❖ The approach involves:
 - ❖ Establish a collaborative strategic alliance with another larger, established organization or institution to co-develop the technology
 - ✓ The technology is essentially incubated in other organization where expertise, resources and funding can be fast track the development of the product/services..

IPR:

- Intellectual: Possessing or showing intellect or mental capacity of a high degree of an intellectual person
- Property: Owned by a person i.e. possession of a particular owner.
- Rights: Which is due to any one by claim, legal guarantees, moral principles

The term intellectual property refers broadly to the creations of the human mind. Intellectual property rights protect the interests of creators by giving them property rights over their creations.

The Convention Establishing the World Intellectual Property Organization (1967)

gives the following list of subject matter protected by intellectual property rights:

- ✓ literary, artistic and scientific works;
- ✓ performances of performing artists, phonograms, and broadcasts;
- ✓ inventions in all fields of human endeavor;
- ✓ scientific discoveries;
- ✓ industrial designs;
- ✓ trademarks, service marks, and commercial names and designations;
- ✓ protection against unfair competition; and
- ✓ “all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields.”

Copyright:

A copyright is a form of protection given to authors or creators of original works..

- An “original” work is one that was

- independently created, and
- shows a "degree of creativity"

Copyright is a legal term describing rights given to creators for their literary and artistic works.

The kinds of works covered by copyright include:

- ✓ literary works such as novels, poems, plays, reference works, newspapers and computer programs;
- ✓ databases;
- ✓ films, musical compositions, and choreography;
- ✓ artistic works such as paintings, drawings, photographs and sculpture; architecture;
- ✓ advertisements, maps and technical drawings.
- Fixation: A work is "fixed in a tangible medium of expression" when it is embodied in a material object of some kind –
 - ✓ the pages of a book,
 - ✓ a canvas,
 - ✓ magnetic tape,
 - ✓ a computer's hard disk,
 - ✓ a piano roll, . . .

copyright is a negative right

- ✓ It does not give the owner a right to do something with or to the work;
- ✓ it gives the owner a right to exclude others from doing certain things with or to the work
- ✓ Basically, a copyright entitles you as the author of the work to do the following or let others do the following:
 - ✓ Make copies of your work
 - ✓ Distribute copies of your work
 - ✓ Perform your work publicly
 - ✓ Display your work publicly
 - ✓ Make derivative works

Trademark:

A trademark is a word, phrase, symbol, or design, or a combination of these that identifies and distinguishes the source of goods of one party from those of others.

- ❖ A trademark is a distinctive sign that identifies certain goods or services as those produced or provided by a specific person or enterprise.
- ❖ It may be one or a combination of words, letters, and numerals.
- ❖ They may consist of drawings, symbols, three-dimensional signs such as the shape and packaging of goods, audible signs such as music or vocal sounds, fragrances, or colours used as distinguishing features.
- ❖ It provides protection to the owner of the mark by ensuring the exclusive right to use it to identify goods or services, or to authorize another to use it in return for payment.
- ❖ It helps consumers identify and purchase a product or service because its nature and quality, indicated by its unique trademark, meets their needs.
- ❖ Registration of trademark is prima facie proof of its ownership giving statutory right to the proprietor.
- ❖ Trademark rights may be held in perpetuity.
- ❖ The initial term of registration is for 10 years; thereafter it may be renewed from time to time.

A service mark is same as a trademark, except that it identifies and distinguishes the source of a service, rather than a product.

Functions:

- ✓ Indicates the source of origin of goods or services
- ✓ Helps guarantee the quality of goods bearing the mark
- ✓ Creates and maintains a demand for the product
- ✓ Used as a marketing tool to build a brand
- ✓ Can have great value to a company

Geographical Indications:

- Geographical Indications (GIs) of Goods
- Aspect of industrial property
- It refers to the geographical indication referring to a country or to a place situated therein as being the country or place of origin of that product.

- Typically, such a name conveys an assurance of quality and distinctiveness which is essentially attributable to the fact of its origin in that defined geographical locality, region or country.

eg:

- Basmati Rice
- Darjeeling Tea
- Kanchipuram Silk Saree
- Alphanso Mango
- Nagpur Orange
- Kolhapuri Chappal
- Bikaneri Bhujia
- Agra Petha

GI and Trademarks:

- GIs have been protected under the Trademark law in many national jurisdictions.
- Both the GIs and Trademark are source identifiers....
- Trademark - manufacturer
 - GI -place of production or origin
- Trademark is individual right

GIs are the community rights

Trademark can assigned as well as licensed

GI cannot be assigned, transmitted or licensed.

Industrial Design:

- ❖ From an intellectual property law perspective, an industrial design refers only to the ornamental or aesthetic aspects of a product.
- ❖ Design right refers to a novel or original design that is accorded to the proprietor of a validly registered design.

Although the design of a product may have technical or functional features, industrial design, as a category of intellectual property law, refers only to the aesthetic nature of a finished product, and is distinct from any technical or functional aspects

As a general rule, an industrial design consists of:

- ✓ three-dimensional features, such as the shape of a product,
 - ✓ two-dimensional features, such as ornamentation, patterns, lines or color of a product; or
 - ✓ a combination of one or more such features
 - ✓ What can be registered as a design?
 - ✓ The look of the product or part of the product
 - ✓ but
 - ✓ Not the function or idea....
 - ✓ The design must be NEW (Completely new look on the market prior to filing but could have been shown up to 12 months before filing)
- The design must be ORIGINAL(independently created by the designer and is not a copy or an imitation of existing designs)
- ✓ The design must have INDIVIDUAL CHARACTER (has to differ in various ways from the designs already known)
 - ✓ The design can also be protected as copyright (not only as a Design)

Tradesecrets:

- ✓ It may be confidential business information that provides an enterprise a competitive edge...
- ✓ Usually these are manufacturing or industrial secrets and commercial secrets.
- ✓ These include sales methods, distribution methods, consumer profiles, advertising strategies, lists of suppliers and clients, and manufacturing processes.
- ✓ Contrary to patents, trade secrets are protected without registration.

❖ IP is amalgamation of Law and Science and is a central issue in any industry as it facilitates collaborative activities.

❖ India is already member of

-Paris Convention

- patent Cooperation Treaty (PCT)

-Berne Convention

- Convention on biological diversity

-WTO

Budapest Treaty

Patent:

A patent is an agreement between the government and an inventor whereby, in exchange for the inventor's complete disclosure of the invention, the government gives the inventor the right to exclude others from using the invention in certain ways.

What is granted is not the right to make, use, offer for sale, sell or import, but the right to stop others from making, using, offering for sale, selling or importing the invention.

There are three types of patents:

- ❖ Utility: granted to those who invent or discover new and useful machines or processes
- ❖ Design: issued to inventors of new, original and ornamental design for an article of manufacture
- ❖ Plant patents: given to those who invent or discover and then asexually reproduce a new plant type

What must an inventor show to get a patent?

- ❖ The invention is novel and nonobvious
- ❖ The invention is useful
- ❖ The application describes the invention in sufficient detail to allow the public to make and use the invention.
- ❖ In addition to the above criteria, a description of the material or tool for which a patent is sought cannot have been published in print.
- ❖ Also, if the invention has been on sale or in use in a country for a year before the application is filed, a patent will not be awarded to the invention.

"Infringement" of a patent occurs when a competitor makes, uses, sells, offers to sell or imports an embodiment of the invention without the permission of the patent owner.

The typical remedies for infringement are:

- Damages
- Injunction (stop use by infringer)

Indian Patent Scenario:

- 1911: The Indian Patents and Designs Act promulgated.
 - Product patent and Process patent in all fields
- 1970s: Patents Act 1970 comes into force in 1972.

- Medicines, Food and Agro-chemicals removed from product patent (and put under process patent).
- Term of patent -Product Patent (for items other than above) 14 years;
- Process Patent 7 years.

1995: WTO – TRIPS comes into effect

- 1999-2002: TRIPS compliant laws
 - the First Amendment in the Patents Act
- 2002: Second Amendment
 - India's Patents Law brought in line with TRIPs.
 - Patent term of 20 years for both product and process patents
 - Medicines, Food and Agro-chemicals to continue to be under process patenting till 31 Dec 2004.
 - Product patent in all other areas continues
- 1-1-2005: Ordinance passed introducing product patent in Medicines, Food and Agro-chemicals.

Research and Development:

Research and development (R&D) is of utmost necessity to develop a country's production potential and also its science and technology sector.

It helps a nation to progress and bring about innovation in all sectors.

The Government of India has always supported this sector and has invested significantly in setting up universities and technological institutions as well as various research centres.

Research and Development plays a critical role in the innovation process.

It's essentially an investment in technology and future capabilities which is transformed into new products, processes, and services.

Why should we be investing in research and development?

- Proven Sales Growth
- Competitive Advantage
- Innovation
- Furthering Company's Mission

Connecting with End-Users

- The purpose of business or organizations is to create and keep customers.
- If we begin with a product or an idea and start to find ways to sell it, we will get the whole equation wrong.
- Research and development should and must connect business or organizations to the End-Users, the customer.
- And to do that one has to ask the right questions. Who is our customer? What are his needs? What are his wants? Who are currently providing it?
- These questions allow business and organizations to channel research and development to the right direction.

Deviations During Research and Development

- Deviations and variations are frequent occurrences in the modern marketplace.
- It is the business or organizations research and development that will identify such deviations in customer and customer behavior way ahead of the competition that will make a tremendous effect to the business or organizations operations.
- There are no magic formulas in research and development, but the one logical thing to do is that if you find a deviation, and then make the necessary correction.

Unpredictable Scenarios

- Deviations may be small unusual movements in the marketplace, scenarios are major movements in the marketplace.
- Such movements if not easily identified will spell tragedy on business or organizations.
- It is only well-planned and well-coordinated research and development that will forewarn company of such events, unpredictable scenarios. They can become predictable through the research and development program of the business or organization.
- Strategic planning aided by a well-planned and well-coordinated research and development should take note of these things

University technology transfer and commercialization

- University technology transfer and commercialization are complex processes. It involve licensing inventions or starting up enterprises based on the university's research.

Different "stakeholder" groups who are involved in university-industry technology transfer:

- Companies, although generally seeking to enhance business competitiveness, will partner with universities for a variety of reasons, including intellectual property acquisition, access to potential new hires, and access to cutting-edge ideas and expertise. However, these outcomes

are often attenuated for small firms, because of a variety of mismatches with university practices and policies.

- *Universities will partner with industry for reasons of mission and resource acquisition, and for opportunities for strategic partnerships and application settings.*
- Researchers in the university will seek partnerships for resources, personal entrepreneurial opportunities, and a venue for doing paradigm-shifting research.*
- *Government will be significantly motivated by aspirations regarding economic development and state or institutional prestige, and the economic geography of technology transfer outcomes (what happens where).*

The mechanism of university-enterprise transfer

- 1) Market requirements**
- As in many technology transfer models, the point of entrance is lead and defined by the Market.
- “*The unsatisfied needs*” represent a lot of opportunities for entrepreneurs and universities.
- A good understanding of the market is necessary when somebody is trying to introduce new products or technologies.
- 2) “Imaging phase”**
- Here a solution and process is developed. In this phase, not only market needs should be considered but also it is important to look at the political and economical environment in order to foresee the actual viability of the product introduction.

3) Seeking Technology

- Once a solution has been created and documented, starts the seeking of available technologies.
- A common practice is the creation of joint ventures between university and companies.
- A company having the idea and a business case, typically starts to look to universities trying to find available technologies that may satisfy the needs. In those ventures, the university typically provides the technology and “know-how” of the core business while the partner provides the know how on administrative tasks (accounting, human resources, taxes, etc.)
- **4) Product design**
- Here we see a very important loop going back and forth until the technology is ready for the enterprise conditions. The chosen technology must be adapted to fulfill not only market needs, but also regulatory aspects such as technical specifications and security norms.

- **5) Implementations phase**
- When the technology is ready, starts the implementations phase. If the technology is a final product, i.e. it goes to a consumer, the implementation phase may be the commercialization and consequently the logistics period for importation, delivery and so on.
- If the technology to be deployed is part of a manufacturing process or infrastructure of a venture, the implementation phase exactly that, deploying the technology up to the point it is ready to produce the final products. When needs are not being satisfied, a loop back to step 4 should be considered.
- **6) Life Cycle Management**
- The product, the market, the process should be constantly evaluated. If needed, a loop back to the adaptation step may be considered, but if needs are dramatically changed or if new opportunities are detected, a loop back to start the cycle should be considered.
- A good opportunity to adapt existing technologies to new processes or products is there available for the implementation step.

Constraints on University-Industry Technology Transfer

As a developing country, the need for greater university-enterprise collaboration and research commercialization is hampered by a number of constraints including:

- ❖ the dominance of foreign investments in the critical sectors of manufacturing;
- ❖ lack of really effective R&D funding in industry;
- ❖ the lack of highly capable scientists who can lead in terms of knowledge frontiers,
- ❖ the lack of innovative entrepreneurship
- ❖ the focus of universities towards teaching thus creating a divergence of objectives between university and industry.
- ❖ The industrial perspective on working with the universities is that it is difficult to gain the academic's active interest in R&D activities pertinent and specific industrial problems.
- ❖ The industries are alert of the large amounts of know-how in the universities, but find it difficult and time consuming to extract the details.

Salient recommendations for a successful technology transfer and its commercialization:

- ❖ • A Strong and Focused University Research Base: Feeding products in the Pipeline for Commercialization
- ❖ • Suitable Government R&D funding: Provides a Critical Base for Technology transfer and Commercialization Efforts
- ❖ Private Corporations and Foundations can play a major role
- ❖ Early – Stage Capital is a critical ingredient in Launching University Start-Ups

- ❖ Innovation Centres at Institutions Can Provide a Focal Point for Technology- Based Activities
- ❖ The Entrepreneurial Culture of a University is Key to its Technology Transfer
- ❖ Networking is Key to Technology based startups and technology commercialization therein
- ❖ Entrepreneurship Programs Can Add Value to Technology transfer Efforts
- ❖ Incubators and Research Parks Provide a Visible Technology Presence