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WIPO/INV/MTY/02/5
ORIGINAL: English
DATE: April 2002

MEXICAN INSTITUTE OF INDUSTRIAL PROPERTY

WORLD INTELLECTUAL PROPERTY ORGANIZATION

INSTITUTE OF TECHNOLOGY AND SUPERIOR STUDIES OF MONTERREY

INTERNATIONAL WORKSHOP ON MANAGEMENT AND COMMERCIALIZATION OF INVENTIONS AND TECHNOLOGY

organized by
the World Intellectual Property Organization (WIPO)

in cooperation with
the Mexican Institute of Industrial Property (IMPI)

and
the Institute of Technology and Superior Studies of Monterrey (ITESM)

Monterrey (Mexico), April 17 to 19, 2002

STRATEGIES AND TOOLS FOR EFFECTIVE INTELLECTUAL PROPERTY MANAGEMENT

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I. INTRODUCTION

1. The concept of "property rights," the right to possess, control and to exclude others, continues to develop and evolve, as it has throughout the history of mankind. Of the three general categories of property rights, personal property has existed in some form, since the beginning of time. Personal property rights were likely to accrue to the actual possessor of the personal property, which included food, domesticated animals and weapons. Common laws and statutes have since codified the rights to own, possess and control such goods. In the 1500s, in Tudor England, the "enclosure acts" allowed peasants to use and to take control over parceled land that was formerly held in public trust. The use and control could then be bought and sold for value. This has since evolved into the real property rights of today. However, the concept of protecting ideas and creations, other than the inherent control exercised by limiting another person's access to his or her idea or knowledge, is a comparatively recent phenomenon established by governments. These intellectual property rights provide incentives for creativity and investment in ideas that may improve the human condition.

2. Significant improvements in life quality and economic prosperity have paralleled the emergence and development of intellectual property rights. There is a strong historical connection between prosperity and the granting to inventors and creators of the right to exclusively benefit from their ideas and creations for a limited period of time.

3. As we enter the 21st century, intellectual property rights are also entering an increasingly difficult era, particularly with the acceleration of biotechnology, as humans come to better understand and provide increasing control over natural processes and organisms.

4. This presentation will discuss intellectual property management strategies, tools and issues to consider as we strive to improve the human condition through knowledge creation, discovery and implementation by use of the concept of intellectual property rights.

II INTELLECTUAL PROPERTY MANAGEMENT TOPICS AND PROGRAMS

5. Enterprises, universities and governments are placing increased attention on the overall intellectual property management process and related training. Institutions that focus on intellectual property management issues are more successful in supporting commercialization of research results (see Annex I). The University of Akron is developing an intellectual property management curriculum for outreach training for industry and governments as well as academic training. The University of Akron and the Intellectual Property Management Institute are cooperating in such efforts.

6. Considering the value that intellectual property brings to an organization at various levels, it is important to have the knowledge, tools and resources necessary to create develop and exploit such property from its creation to its obsolescence. The attached outline of intellectual property management topics is provided as a "cradle to grave" perspective and support system for effective development and exploitation of intellectual creativity.

III. INTELLECTUAL PROPERTY VALUE TO ORGANIZATIONS

7. It is important for the effective development, management and exploitation of intellectual property, that organizations understand where they are positioned in their awareness of intellectual property as an asset and where they desire to be positioned to maximize value to their stakeholders. Intellectual property may provide value to stakeholders at the following levels:

A. Defensive;
B. Cost Control;
C. Profit Center;
D. Integrated;
E. Visionary.

A. Defensive Value

8. Intellectual property provides a shield to protect a company from litigation. By holding intellectual property in any form, companies not only gain an asset to exploit, but they also shield themselves from litigation for use of such technology that they own and control and they are often able to use someone else's technology as they negotiate cross-licenses rather than go to court.

9. Best intellectual property management practices for creating defensive value include:

- Identifying what intellectual property you own;
- Obtaining and maintaining the intellectual property, particularly the good ones;
- Respecting the intellectual property of others;
- Being prepared to enforce your intellectual property.

B. Cost Control

10. The cost control element of intellectual property management has to do with the reduction and minimization of costs to obtain and maintain intellectual property. Companies often spend significant amounts of money, much of which, with the benefit of hindsight, was not directly economically advantageous.

11. Best intellectual property management practices of cost controls include:

- Correlating the intellectual property portfolio to business use and value;
- Establishing an intellectual property management team with cross functional members that include technical as well as financial perspectives;
- Establishing criteria for obtaining and maintaining intellectual property;
- Establishing criteria for patent filing and renewal of intellectual property;
- Reviewing the portfolio frequently to abandon intellectual property that no longer has sufficient value for the organization.

C. Profit Center

12. The profit center element is focused on the proactive strategies of creating additional revenue for the organization by use of the intellectual property that is not available to competing parties. Best practices for profit generation include:

- Obtaining management commitment and support;
- Developing a proactive licensing and commercial exploitation organization;
- Considering intellectual property donations and bundling;
- Organizing to create and extract value;
- Developing advanced screening criteria.

D. Intellectual Property Integration

13. Intellectual property becomes increasingly valuable when an organization uses it to serve the greater purposes of the organization rather than a single department.

14. Best practices for integration of intellectual property include:

- Aligning intellectual property strategy with company strategy;
- Maintaining intellectual property and related assets across multiple organization functions;
- Conducting competitive assessment of intellectual property;
- Codifying intellectual property resources and best practices and share it with business units;
- Focusing on strategic value extraction.

E. Visionary Intellectual Property Development and Management

15. Organizations that look into the future of the economic, industrial, technological and social environment and develop intellectual property strategies within this context are best positioned to capitalize on major intellectual property opportunities. Best practices include:

- Obtaining intellectual property protection strategically as a result of trends in the relevant industry;
- Developing performance measurement and reporting systems.

IV. INTELLECTUAL PROPERTY MANAGEMENT DISCUSSION

A. Market-Sensitive Intellectual Property Management

16. The pathways from idea creation to a product or service accepted in the market are as varied as the pathways of each of our own lives. Similar to our lives, many such “technology to market” (T2M) stories are filled with drama. Seldom is there an absence of “agony and ecstasy”. Failures and diversions along the pathway are common and often form the basis for later success. Successes usually have financial and social rewards in addition to the simple joy of reaching one’s objectives.

17. Is there a “best way to market?” The best way is project-specific and must be developed in the context of the specific technology, available resources, market, and other factors. Notwithstanding, there are common elements for a successful transition from research results to a market accepted product or service. These common elements generally include:

- A quality technology adequately protected as a property right;

- A champion for the technology;
- An existing or developed market;
- Experienced management; and
- Capital.

18. Important to the commercialization process is the specific project strategic plan. Just as important is the nature of the environment. An entrepreneurial environment has a significant impact on the success rate of transferring research results into market-accepted products and services.

19. Issues related to the commercialization of research results may be considered from the perspective of a variety of industrial property system users, including:

- Research laboratories and universities;
- Start-up enterprises;
- Small and medium enterprises;
- Large enterprises;
- Independent inventors.

20. One needs to consider environmental and support programs and resources used to improve the efficiency and effectiveness of T2M efforts.

B. Entrepreneurial Culture Development

21. Entrepreneurship often refers to the exploiting of opportunities such as market demands, technology advances, human resource skills and availability, intellectual capital and financial resources. Entrepreneurship may also be used with the more narrow definition of creating and building new firms. In either context, research shows that Entrepreneurship Culture Development is a significant factor in the ultimate success of the commercialization of research results. Research has identified entrepreneurship characteristics that may be developed and measured (See: Global Entrepreneurship Monitor (GEM) at www2.babson.edu/babson/babsoneshipp.nsf/Public/entOrganizationResearchGEM).

22. GEM scholars developed an index with which to do some measurement of entrepreneurial activity. The Total Entrepreneurial Activity Index consists of two measures: (1) the nascent start-up rate (proportion of adults engaged in process of starting a business); and (2) the new firm rate (person operating a business as sole or part owner, and the business had not paid salaries to anyone prior to 1997 – i.e. new firms 0-42 months old). The research performed by the GEM in 21 selected countries shows the following data points as comparisons (Mexico is not included in this survey).

23. The nascent start-up rate shows the number of adult persons in the process of starting a business. Selected points are:

- Brazil 1 in 8;
- United States 1 in 10;
- Australia 1 in 12;
- Korea 1 in 18;
- Germany 1 in 25;
- India 1 in 26;

- United Kingdom 1 in 33;
- Singapore 1 in 60;
- Ireland and Japan 1 in 100.

24. Selected points of a country's level of adults in new firms are as follows:

- Korea 1 in 11 adults in a new firm;
- Brazil & United States 1 in 23;
- India 1 in 33;
- Singapore 1 in 100;
- Japan 1 in 200.

25. The research shows that:

- Entrepreneurship is related to economic growth;
- New companies are usually started by men, with peak activity between ages 25 and 34;
- Financial support is highly associated with the level of entrepreneurial activity;
- Education plays a vital role in entrepreneurship capacity;
- Policies geared toward boosting entrepreneurial activity should not be confined to the entrepreneurship sector *per se*; and
- The perceived social legitimacy of entrepreneurship makes a difference.

C. Commercialization Strategies and Issues

26. Success rates of T2M activities show a strong preference for "market pull" as opposed to "technology push" except in cases of disruptive technologies.

27. Research efforts that are motivated and performed in response to a human or social need are in the "market pull" category as the market is pulling for products or services that fill a pent-up market demand. On the other hand, research that is performed solely for the academic purpose of learning something new, with no motivation related to a human or social need, may also result in new inventions. Commercialization of such inventions is often referred to as "technology push," as the technology is being pushed into a market that is not yet developed. Successful technology commercialization occurs more readily under market pull conditions. The technology push scenarios have the more challenging task of market development. An exception is that of a disruptive technology, a technology that is foreign to the market and disrupts or displaces earlier products or services. The market doesn't recognize the need until the technology exists. In any case, it needs to be recognized that the future of intellectual property lies in "getting the marketing strategy right."

28. Enterprises must have commercialization support capacity. Small companies either need to develop the skill in-house or outsource the services. Many large organizations and universities have fully staffed technology transfer or intellectual property offices whose function is to:

- Mine intellectual property from the research;
- Assess its protectability as a property right;
- Assess its commercial viability;

- Obtain intellectual property protection;
- Develop and carry out a commercialization strategy:
  - Consider internal development and commercialization if within core competency and mission of enterprise;
  - Consider bundling with other technologies for either internal or external commercialization;
  - Consider a license to another enterprise;
  - Consider spin-off or start-up business;
  - Consider donating for tax or charitable purposes;
- Monitor the ongoing commercialization.

a) Internal Exploitation

29. Small and medium-sized enterprises and large enterprises often directly commercialize the results of their own internal research efforts. Frequently the research has been directed sufficiently so that the results are known to fit within the core competencies and interests of the enterprise. Difficulties sometimes occur when a company's culture is focused on either research and development or commercialization to the exclusion of the other. Occasionally, companies have expertise in both areas and carry it out well. Research shows that the commercialization process usually costs several times more than has been expected, and takes substantially longer. Successful companies recognize the challenges and plan accordingly. Upon identification of the technology, it is appropriate to form commercialization teams that represent all aspects of the overall commercialization effort, including, marketing, finance, personnel with the scientists and engineers.

30. The most common mechanism for commercialization of research results is out-licensing:

- Licensing is accomplished by identifying an enterprise that is well placed to commercialize the technology successfully and negotiating an agreement for the enterprise to proceed with the commercialization. The resultant license agreements usually provide for licensor compensation in the form of royalties and fees and occasionally equity. A listing of issues to consider in the license agreements is available from the presenter.

- Affiliated business start-ups can be effected with appropriate support:

  - Many licensors as well as governments and universities are developing infrastructure to support the formation of new start-up business to commercialize research results. There is recognition of the economic development value of new entrepreneurial firms. Taking equity in start-up business has significant financial reward potential;
  - The spin-off businesses usually receive a license similar to the out-licensing discussed above;
  - New business support infrastructure is developing to foster new business formation. Support programs take many forms, with frequent overlaps of functions. Examples of support mechanisms include:

  - Business accelerators

- Organizations thataccelerate the growth of emerging businesses by pooling multidisciplinary resources. Pooled resources address the following Critical Technology Acceleration Factors:
  - Capital;
  - Seasoned Management;
  - Consolidated financial/professional resources;
  - sophisticated advisors;
  - Informed entrepreneurs;
  - See www.t2m.com.

- Investor Organizations
  - Angels investor programs are organizations made up of wealthy individuals interested in early-stage financing that prefer to keep there anonymity and have a "front person" interface with potential investment opportunities;
  - One model is "COPS," referring to "Cashed out Presidents" who meet regularly on a local level to discuss investment opportunities;
  - Venture capital community – most venture funds have well paid investor executives who manage the investments and sit on boards of directors of the companies invested in.

- Entrepreneurship Institutes
  - Usually centered on universities, they generally have three primary functions:
    - To promote entrepreneurial spirit and practices essential to the flourishing of free enterprise;
    - To instruct students and the community in entrepreneurship and to provide relevant research, knowledge and tools for effective entrepreneurial participation in a free enterprise system;
    - To facilitate business development for the community.

- Mentor programs
  - Experienced entrepreneurs linked with emerging entrepreneurs to provide shadow leadership.

- Entrepreneur, identification, development and training
  - Efforts to identify and pool experience and entrepreneurial talent for networking into the emerging business pipeline.

- Market identification and development support
  - Efforts to research data on market potential and competition and advise on market positioning.

- Intellectual property strategy development support
  - Efforts to provide intellectual property strategy support, usually with a team of attorneys and businesspeople.

- Business plan development support
  - Efforts to actually help plan and write business strategies to attract the necessary resources to successfully carry out the business venture.

- Business incubators
  - Administration of business incubation programs including the provision of related services such as advice and assistance, office support, office equipment, conference facilities, etc. (see www.nbia.org).

- Research and science parks
  - Support for and/or administration of real estate and facilities initiatives to bring entrepreneurial resources to tenants (see www.aurrp.org).

- Technology Start-up Seminars and support groups
  - Periodical coursework and practical training in start-up business development.

- Entrepreneurial Internships
  - Internships provide students with first-hand experience by allowing them to work directly with entrepreneurs and venture capitalists.

- Technology Transfer Offices
  - These provide intellectual property management and licensing services for university intellectual property portfolios (see www.autm.net).

- Intellectual property management programs
  - Cooperative effort with law school to teach and undertake research on intellectual property management and valuation.

V. UNIVERSITY & INDUSTRY-SPECIFIC INTELLECTUAL PROPERTY MANAGEMENT ISSUES

31. Universities are increasingly becoming engines for economic growth in the global knowledge economy. See Annex II for outline of University and Industry-Specific Intellectual Property Management Issues.

VI. CONCLUSION

32. Industrial and intellectual property offices and users have the opportunity to support the commercialization of research results by becoming increasingly aware and supportive of intellectual property management. The process may be challenging and at times uncertain, but the rewards are significant. The only real security is in opportunity. Let us seize the opportunity to effectively develop and commercialize intellectual property.

[Annexes follow]

ANNEX I

Intellectual Property Management Topics
(ssee http://www.ipinstitute.com/)

The Business of Intellectual Property:

- IP department organization/operation
  - Independent creators
  - Small & medium-sized enterprise creators
  - Large company creators
- Managing the "business" side of an R&D program
- IP ownership issues (employee vs company)
- IP Creation and Nurturing
  - Harvesting inventions
  - Invention disclosures
  - Processing invention disclosures
  - Inventor compensation
  - Corporate incentive plans
  - Patenting
  - Technical publications
  - Patent marking
  - Outside submissions
  - Ownership of IP (patents, trade secrets, software)
  - Management of employee inventions
  - Employment/invention agreements v. Termination agreements/exit interviews
  - Lab notebook keeping
  - To patent or to padlock
- IP audits and due diligence
- Allocating company resources (evaluate the direction of the R&D budget)
- Understanding the objectives of management, stockholders
- Managing and enforcing in-house IP protection practices
- Participating in mergers and acquisition teams
- The IP holding company
- Developing corporate identity program
- Assisting business managers on strategy, forecasts
- Insuring non-duplication of IP development
- Evaluating R&D resource allocation
- Acting as clearing house for outside IP searches
- Managing IP exploitation program
  - Licensing
  - Joint ventures and alliances
  - Partnerships
  - Strategy development
  - Co-branding
  - Franchising
  - Distribution relationships
  - Charitable donations
  - Joint research and development

- Managing the interface with in-out house tax

Communications:

- Communicating IP matters to management
- Communicating IP practices to inventors, R&D personnel, marketing, advertising people
- Social/business customs around the world

Ethics:

- Ethical responsibilities as corporate officer and/or advisor
- Conflicts of interest
- Disclosure
- Fiduciary responsibility

Legal:

- Establishing IP rights
  - Federal
  - State
  - Common law
  - Patents
  - Trademarks
  - Copyright
  - Trade secrets
  - Protection geography
  - Patent or not
  - Patent vs trade secret
  - Patent and trademark protection synergies
- Legal remedies
  - Injunctions
  - Damages
- Managing IP litigation and understanding its economics
  - *Sabre*-rattling to full court action
  - Estimating litigation costs
  - Using outsiders
  - Working with experts
  - Controlling litigation costs
  - Foreign IP practice
  - IP remedies for damage (case law)
  - As the defendant
  - As the plaintiff
  - Estimating litigation success
  - Litigation alternatives
- Economics of various forms of protection
- Legal aspects of licensing, joint ventures, co-branding, etc.
  - International issues
  - Bankruptcy issues
  - Antitrust issues
  - Hart-Scott-Rodino
  - Dept. Justice/FTC guidelines

- Legal aspects of mergers and acquisitions
  - Due diligence
  - Tax implications

Accounting/Taxation:

- Basic accounting principles
  - Accounting theory
  - Financial reporting
  - Business statistics
  - Cost accounting
  - Balance sheet
  - Income statement
  - Sources and uses of funds
- Using public financial information
  - Market intelligence
  - Adversary investigation
  - Searching for partners
  - Evaluating licensee strength
  - Finding, analyzing potential infringers
- Understanding international accounting standards
- Assisting in due diligence and accounting audit services
- Understanding accounting issues in licensing, joint ventures, co-branding, etc.
- Understanding the issues in IP taxation
  - Transaction-related
    - Capital gains
    - IP development agreements
    - Taxation of royalties
    - Withholding
  - International issues
  - Transfer pricing
  - *Ad valorem* taxation
  - State tax issues

Finance/Economics/Valuation:

- Principles of finance
  - Sources of capital
  - Role of IP
  - Mathematics of investment
  - Financial markets
  - Pricing products/services
  - Financial statement analysis
  - Capital budgeting
- Principles of economics
  - Managerial economics
- Economic evaluation of the forms of exploitation
  - Sale
  - Purchase
  - Licensing
  - Joint ventures and alliances

- Swaps
- Portfolio licensing
- Searching for infringers

- Analyzing and quantifying IP "rent" in all its forms
- Preparation and evaluation of business plans, financing alternatives
- Preparation of prospectus and offering materials
- Interfacing with financial institutions
- Acting as intermediary in licensing, sale, purchase, joint ventures
- Knowing availability of exogenous sources of information
- Evaluating the effect of market research
- Understanding consumer/buyer behavior
- Knowledge of forecasting theory and available tools
- International business differences
- Banking, currency
- IP valuation - theory and practice
  - Premise of value
    - Value relationships
    - Cost, market, income approaches
    - Discounted cash flow techniques
    - IP assets and the business enterprise
    - Monetary, tangible, intangible assets
    - IP assets as a portfolio
    - Relative risks
  - IP royalties - theory and practice
    - Sources of market data
    - Investment/rate of return techniques
    - Other analytical techniques
  - Quantifying damages
    - Trademarks
    - Patents
    - Non-infringement business damages

Marketing:

- Using, directing market research
- Making forecasts
- Interface with marketing, advertising in-house and out
- Understanding of price-volume-profit relationships
- Competitive intelligence
- Interface of markets and R&D programs

Human Resources:

- Searching, hiring, retaining IP staff
- Training IP staff

Information Technology for IP Management:

- Database management of IP portfolio
- Dissemination of IP resources within the organization
- Using spreadsheets for analysis of IP financial performance
- Using Internet resources

Negotiating:

- Develop negotiating skills
  - For transactions
  - In litigation
  - Internal discussions

International Issues:

- Doing Business Worldwide
  - Differences in culture, language
  - Essential differences in intellectual property law
  - Essential differences in taxes
  - Essential differences in accounting practice
  - The nature of worldwide markets for intellectual property

Industry Practices:

- The role and importance of intellectual property in various primary industries
- Relative importance of various intellectual property types from industry to industry
- The relative value, economic life, and risk of intellectual property from industry to industry
- Essential financial reporting and taxation issues by industry

Intellectual Capital:

- The nature of intellectual capital
- Intellectual capital versus intellectual property
- The importance of intellectual capital within a business enterprise
- The management of intellectual capital
- The quantification of intellectual capital

[Annex II follows]

ANNEX II

UNIVERSITY & INDUSTRY-SPECIFIC INTELLECTUAL PROPERTY MANAGEMENT ISSUES

Universities - Roles & Culture

- Teaching
- Research
- Service

Industry - Roles and Culture

- Providing goods and services for a profit
- As compared with Universities, Industry tends to be:
  - Secretive
  - Short time-frame
  - Applied rather than basic research
  - Profit-driven

Intellectual Property - Industry

- Driven by R&D investment
- Pace increasing
- Trend towards sourcing technologies
- Employee turnover
- Stockholder perceptions

Intellectual Property - University

- High profile during past 10 years
- Fundamental culture change
- Appropriateness of direction questioned
- Traditionalist views sometimes vehemently opposed to the entrepreneurial style embraced by more progressive faculty and institutions
- Now accelerated by agency funding changes

Intellectual Property Creation - Universities

- U.S. Morrill Act of 1862
- U.S. Federal Funding of Defense
- Related Research – World War II –
- Cold War U.S. Bayh-Dole Act of 1980 currently evolving

Effect of Bayh-Dole - Universities

- Spawned biotechnology industry
- Significant advances in other technology

- Intensive industries
  - Telecommunications & e commerce
  - Medical & biotechnology
  - Advanced materials

Intellectual Property Creation - Industry

- $264 Billion R&D in U.S.
- 75% industry
- Sourcing of technology – trend towards acquisition
- Shift from manufacturing to IP
- Transfer and brokering of IP
- Globalization
- Role of IP in industry

University Intellectual Property Policies

- Evolving
- Seek to strike a balance
- Work made for hire
- Teacher exception rule
- Academic freedom

Key Elements of a Successful University Intellectual Property Policy

- Ownership – work for hire – employment agreements
- Inventions
- Instructional materials
- Academic works
- Sponsored research
- Use of University resources
- Administration
- Sharing of rewards

Industry Intellectual Property Policies

- Work for hire
- Employment agreements
- Invention rights
- Confidentiality
- Scope of employment
- Sharing

Identification & Mining of Intellectual Property (both University and Industry)

- Disclosure systems
- Direct contacting
- Targeted development
- Third-party mining

Confidentiality & Publication

- Industry
  - Maintain as trade secret
- University
  - Traditional release of scholarly works
  - Proprietary/contract research
  - Publication delays
  - Partitioning proprietary information from publishable results at the initiation of the contract if possible
  - Incorporating students and accommodating degree requirements for publication of scholarly works

Assessment of Intellectual Property

- Technology validation
- Protection availability
- Commercial viability
- Internal & external assessments

Exploitation of Intellectual Property

- Licensing
- Start-ups
- Sale or donation
- Release to inventors
- Lock-out

Value to Universities

- Royalties and fees
- Sponsored research revenues
- Faculty recruiting
- Student recruiting
- Practical experiences for students & faculty
- Credibility with stakeholders (legislature)

Pitfalls

- Unrealistic expectations
- Conflict of interest
- Conflict of commitment
- Administrative costs
- Sponsor rights
- Commercial sponsors vs disinterested inquiry

Value to Industry

- Profits
- Competitive position

- Public relations
- Recruiting

Success Criteria for Exploiting Research Intellectual Property

- Research capacity
- Vision
- Commitment
- Administration
- Support organizations
- Market definition

Relationships with the Inventor

- Importance of inventor support
- Resource materials for the inventor
- Seminars
- Establishing a presence

Inventor Resource Materials

- Policies
- Brochures
- Patent information
- Newsletters
- Disclosure forms

Establishing a Presence

- Attending faculty meetings and presentations
- Walking the halls
- One-on-one
- Institutional presence

Seeking Intellectual Property Protection

- Use of online databases
- Use of professionals / attorneys
    - Roles
    - Selection
    - Costs
    - Communication
- Industry networking
- Publication factors
- Assessment of the protection

Assessing Commercial Viability of the Intellectual Property

- Industry contacts
- Patent review committees

- Professional services
- Common sense

Commercial Exploitation Alternatives

- License to mature or Start-up Businesses
- Assignments
- Royalty vs equity

Core Resources for a Technology Transfer Office – see Handout

Professional Organizations

- Association of University Technology Managers (AUTM)
- Licensing Executives Society (LES)
- Association of University Related Research Parks (AURRP)
- National Business Incubator Association (NBIA)
- Various venture capital and financing organizations

University Indices

- Research funding
- Disclosures
- Patents
- Licenses
- Revenues
- Key technologies

[End of Annexes and of document]