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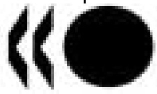

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CENTRE FOR CO-OPERATION WITH NON-MEMBERS
DIRECTORATE FOR EDUCATION

COMMERCIALISING INTELLECTUAL PROPERTY AT RUSSIAN UNIVERSITIES

OECD - MINISTRY OF EDUCATION OF THE RUSSIAN FEDERATION ROUNDTABLE

MOSCOW, 9-10 DECEMBER 2002

(Russian version available)

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FOREWORD

Within the framework of the Russia Programme of the OECD Centre for Co-operation with Non-Members (CCNM) and as part of the follow-up to the *Reviews of National Policies for Education: Tertiary Education and Research Policy in the Russian Federation*, the Directorate for Education, Employment and Social Affairs launched a pilot project in 1999 on intellectual property and research management in Russian universities. The results of this project were published in 2002 [CCNM/DEELSA/ED(2002)1].

The area of research and intellectual property is important for Russian universities as they strive to compete in the global market. In this context, the OECD, the Ministry of Education of the Russian Federation and the Civilian Research Development Fund (CRDF) organised a roundtable on 9 and 10 December, 2002, on the theme of Commercialising Intellectual Property at Russian Universities. The specific topics of the roundtable addressed issues of the legal and regulatory framework and practical issues from the institution perspective on Technology Transfer Offices (TTOs).

This report contains the principal presentations made at the roundtable along with an introduction by the Secretariat.

Eric Burgeat
Director
Centre for Co-operation with Non Members

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Introduction

As was noted in an earlier OECD report CCNM/DEELSA/ED (2002)1, the impetus for the OECD's co-operation with the Ministry of Education of the Russian Federation in examining policies for commercialising intellectual property at Russian universities came as one of the results of the OECD *Reviews of National Policies for Education: Tertiary Education and Research Policy in the Russian Federation.* The Review team concluded that "the development of the university-industry interface is of vital importance for the future development of the Russian economy"[1] and that "the basis of a new tradition of university-industry relationships needs to be nurtured." They further observed that: "technology transfer and commercialisation of scientific results should become an important priority for Russian Higher Educational Institutions (HEIs). At the same time, the review team observed that "many HEIs do not have proactive policies with respect to applied research and technology transfer" and recommended that the property rights of research products be defined more precisely.[2]

OECD Pilot Projects

In consultation with the Ministry of Education of the Russian Federation, the OECD followed up on the Review's conclusions and established pilot projects at three Russian universities (St. Petersburg State University, Saratov State Technical University, and Ural State Technical University). These pilot projects aimed at developing university technology management practices for intellectual property, a key foundation for any university-industry interface. The pilot project was carried out at each university's technology or patent and licensing office, the internal organisation entrusted with the legal protection and commercialisation of the university's intellectual property and with carrying out a university educational programme for intellectual property. It supported these university technology offices in: establishing technology office internet sites similar to those at OECD area universities, arranging internships for technology office staff at an OECD university technology office, and joining the Association of University Technology Managers (AUTM).

Further discussions with officials at the Ministry of Education and at the Russian universities involved in the pilot projects identified a series of key issues that face Russian universities in establishing successful Technology Transfer Organisations (TTOs). These policy issues centred on how to build a rules-based framework (determining ownership; establishing rules governing conflicts of interest and outside employment; and invention disclosure, confidentiality and publication) and how to go to market and finance the effort (evaluation of commercial potential of invention disclosures; organising the licensing effort: marketing, negotiation and contract management; and financing a university technology transfer programme). To understand better the appropriate policy initiatives that might be taken at both the university and federal levels, it was decided to hold a roundtable at which experts from the Russian Federation Government (Ministry of Education, Ministry of Science and Technology, and the State Duma), Russian and OECD area universities and from organisations involved in technology commercialisation could discuss the issues identified through the pilot projects. The Civilian Research and Development Foundation (CRDF), which has a programme for Basic Research and Higher Education with Russian

universities in partnership with the Ministry of Education, also contributed to the event through presentations and participation of representatives from the Foundation and from their partner universities.

Summary of Roundtable Discussions

The first day's discussions centred on how Russian universities should build a rules-based framework for commercialising intellectual property. A key issue in this area is the establishment of policies that help determine ***ownership*** of an invention or other creative work and the obligations of university employees. Several participants noted that the Russian patent law is undergoing changes, with a second reading in the State Duma expected in early 2003. Others mentioned that the Law on Contracts, a Presidential Decree, and a Law on Post-Graduate Education were other legal acts that affected intellectual property rights (IPR) ownership at Russian universities. Some participants suggested that some of these laws might be contradictory. A recent survey examining various aspects of IPR at Russian state research institutes, including several universities, was presented. It noted that almost two-thirds of institutes stated that IPR were defined principally by separate contracts, suggesting a wide variety of institutional practices. One participant stated that many of those involved in the general survey project had questioned the representativeness of the samples and therefore had cautioned accepting the conclusions as definitive. The participant presenting the survey, however, believed that the survey results accurately reflected the current state of affairs.

The continuing legal changes suggest that Russian universities operate in a legal environment that is still developing clarity. A survey of practices at OECD area universities concluded that legal approaches to university ownership of IPR varied considerably, but the clarity of ownership was most important for establishing successful Technology Transfer Organisations (TTO).

The second issue, how to manage the ***conflict of interests*** at universities, shifted the focus of the discussion from national legislation to university regulations. Here the issue of labour contracts with university employees and overseeing the outside contracts of staff members arose. It was noted by one participant from an OECD area university that best practices suggest the maintaining of a university Register of Interests, wherein university staff members must report all outside interests (contracts, stock ownership, etc.). Such a register is viewed as an indispensable tool in achieving transparency. Another participant linked the management of conflicts of interest to what in his view were problems in clearly defining ownership. Another suggested that more legislative or regulatory attention needed to be paid to the issue.

Invention ***disclosure, confidentiality and publication policies*** comprised the third discussion topic and also focused on university-level regulations. Here numerous participants from Russian and OECD area universities emphasised the unusual tension between academic goals of the open pursuit of knowledge with the restrictions placed on sharing knowledge by commercial interests. One participant suggested that this issue should be addressed by each Russian university in its own internal regulations and noted some difficulties with the current labour law. Several OECD area participants emphasised that universities needed to negotiate clear limits to the limitations companies wished to place on restricting information and suggested that universities should avoid obligations to control trade secrets.

A Russian participant suggested that some of the legal approaches to disclosure and confidentiality stifled the motivation of the scientist and cautioned that replacing a state-level bureaucracy with a university-level bureaucracy might not be a solution to improving the commercialisation of technologies at Russian universities.

The first day's discussions concluded with a detailed survey of the current status of the legal regulation of IPR at universities. Certain areas were highlighted as needing clarification, such as the rules

for utility models. Several issues were raised as they applied to state contracts for research. It was also suggested that there might be some federal or regional organisations established that could act as bridges to help universities in their IPR commercialisation efforts.

The second day's discussions centred on "Going to Market and Financing the Effort." The first topic examined the ***evaluation of the commercial potential of invention disclosures***. Three presentations revealed how different organisations approached the problem of the commercial potential of new technologies. Cost appeared to be a major factor in conducting such evaluations as they each required access to commercial information services. There seems to be growing Russian experience in this area, but how to make this experience available to universities that are under financial pressures probably remains a difficult issue. One participant cautioned that such technical analysis ran the risk of being too focused on technical aspects and too removed from customers' needs, *i.e.*, there seemed to be a tendency to favour technology push approaches to commercialisation.

The day's second topic centred on ***organising the licensing effort: marketing, negotiation and contract management***. One presentation placed this issue in a general framework of knowledge management, using an analysis conducted by the European Commission. Once again the tension between curiosity driven scientific research and use-inspired research was identified as a source of problems for university efforts aimed at commercialising IPR. The issue of knowledge management was reported as fairly new to many universities in the European Union and the European Commission (EC) is currently studying the matter in some depth. So far, it has concluded that universities need to pay careful attention to establishing procedures for the identification and disclosure of technologies with commercial potential. Moreover, the EC studies favour a marketing approach that looks solely at licensing. While several presentations and comments from participants noted that considerable experience has been gained from Russian technoparks, one participant believed that Russian universities needed to involve more students in these activities. A more systematic and orderly approach throughout Russia was also seen as important to improving the success of commercialisation.

In the roundtable's final topic, ***financing a university technology transfer programme***, one presentation outlined the wide range of international approaches. While the differences in approaches often reflected different cultural or legal environments, it was noted that universities from countries with significantly different cultural or legal traditions (for example, the United Kingdom and China) sometimes had chosen relatively similar approaches in financing their TTOs. Country approaches to financing often differed on the degree and duration of government support. Participants agreed that access to sufficient funding was a significant problem for Russian university TTOs. A detailed presentation by a representative of the Urals State Technological University (USTU) outlined one Russian university's efforts in planning and carrying out its innovation activities. The presentation outlined a creative effort to maximize the return from limited resources; nevertheless, the presentation concluded that USTU still needs greater funding to approach its planned development.

Possible follow-up

Participants agreed that the roundtable touched many of the most important policy issues facing Russian universities in their efforts to establish successful TTOs. While many of these issues were linked to federal level policies, they all required that the universities themselves undertake an active role in establishing consistent and transparent rules and procedures that govern the operation of university TTOs. It was observed that increasing the awareness among university Rectors and other senior level university administrators to the breadth of international experience and to the complexities of the issues discussed at the roundtable would be an important step in any programme that aims to improve university-level policies for technology commercialisation. Another important aspect might be increasing a similar awareness

among Russia's regional governmental officials to these issues, for many OECD area universities have experienced successful partnerships with local governments in promoting their TTOs.

A conference on these issues is being planned for October 2003 in Ekaterinburg in co-operation with the Ministry of Education of the Russian Federation and the Urals State Technical University.

[1] OECD 1999, p. 119

[2] Ibid. pp. 124 - 125

REGULATION OF INTELLECTUAL PROPERTY AT SAINT PETERSBURG STATE UNIVERSITY

IGOR F. LEONOV

I. Scope of university regulation of Intellectual Property (IP)

The University's procedures regulating Intellectual Property cover the:

- analysis (scientific and technical, patent and marketing examination) of the results of scientific research and all educational materials from the university to identify patentable (protectable) and commercially valuable IP.

- examination of the university's scientific research and educational work that are to be divulged through any kind of information that is prepared for open publication, use, exposition, or transfer to third parties, such as to information centres or for inclusion into databases and other sources of information that are accessible to an indefinite circle of persons.

- preparation of applications developed in any structural subdivision of the university for patenting and registering IP and the filing of these applications with Russian, foreign or international patent offices in which the university is specified as the applicant and the patentee (rights' owner).

- prompt payment of patent fees, registration fees and other fees for filing, examination, patent issuance and maintenance, as well as for executing any other legally significant actions connected with patenting, registration and other procedures.

- termination of patents and other protective documents when the university's concrete IP objects lose their commercial value.

- conducting examinations, participating in the negotiating and co-ordination of contracts made by the university for the creation, legal protection and commercialization of IP.

- conducting a preliminary inventory and economic (financial) evaluation of specific IP as intangible assets.

- checking on contract performance.

- informing the Rector about cases of infringement of the University's rights for IP created by its employees, in particular, about the facts of any illegal filing of an application for the University's IP by structural subdivisions, employees (post-graduates, students)-authors, as well as by external legal and natural persons.

- participation in the pre-judicial settlement of disputes between contracting parties.

- participation in judicial settlement of disputes on illegal use of the university's IP.

- maintenance of export controls for science intensive goods, technology and other results of scientific research activities, as well as educational services.

II. The legal protection of IP: Goals and Objectives

- IP, as any other type of property, needs protection. IP protection ensures the university its legal ownership of specific IP objects, creating thereby a legal foundation (exclusive right) for commercialising them.

- The legal protection of IP objects needs functioning legal regulations and procedures that are complemented by legal actions of the university. The latter must provide, in accordance with existing legislation: the identification of commercially valuable IP; the preparation, execution and filing of applications with Russian, foreign and international patent offices to patent and register IP; and the maintenance of patents and other protective documents.

- The foreign patenting of inventions, industrial designs and utility models created in the Russian Federation must occur at least three months after filing the application with the RF Patent Office.

A. The main goals of IP legal protection are:

- Preserving the university's intellectual potential.

- Creating the legal conditions to ensure the competitiveness, the attractiveness for investors and the efficient commercialisation of IP created in the course of scientific and educational activities of the university.

- Prohibiting illegal and unauthorized use of the university's IP and any other kind of unfair competition.

B. The objectives of IP legal protection are:

- To ensure a high level of the university's scientific research and educational materials.

- To implement the university's exclusive right for IP in accordance with the current legislation and the university Charter.

- To protect the university's proprietary rights for IP, as well as the proprietary and personal non-proprietary rights of its employee-authors who create IP.

- To create the legal conditions for the efficient use in the economy of the university's IP in such ways as a(n):

  - object of license agreements, IP right assignment contracts, right assignment contracts for filing applications for protective documents, and commercial concession agreements.

  - legal base for investment projects.

  - foundation for scientific and technological collaboration agreements; agreements on the creation, transfer and use of scientific and (or) scientific and technological production and other agreements (contracts).

  - basis for receiving grants, investments, tax privileges etc..
  - contribution of property rights to authorized capital (fund) of established legal persons.
  - legal and technological base for the exclusive production of new products and the rendering of services, for the development of competitive technologies and the creation new jobs.
  - source for financial rewards for the creative work of employee-authors and persons contributing to the creation and use of IP etc..

- To inventory and register the university's IP objects.

III. Intellectual Property of the University

- The university's research and educational activities result in creating various products of intellectual labour – namely, equipment, technology, substances, software, methods and procedures, micro organism cultures, lectures and other objects based on one or another type of IP.

- The university's IP is understood to result in its possessing the exclusive rights to its scientific and educational activities: inventions, industrial designs, utility models, software, databases, know-how, selection achievements and other results of intellectual labour in the field of science, engineering, production, literature, art and related fields, as well as any comparable individualisation of the legal entity, production, implemented work or services (trade name, trade mark, service mark etc.) regulated by patent law, and to copyright (works of science, literature and art). Such rights refer to industrial property (inventions, utility models, industrial designs, trademarks, service marks; selection achievements etc.), regulated by the patent law, and to copyright (science, literature and art works).

A. Intellectual Property Objects of the University

- The university's IP objects are the concrete results of its intellectual activity and equated to it means of individualisation of legal entity, production, executed works and services.

- Among the IP objects governed by the present Regulations are: inventions; utility models; industrial designs; trade marks; service marks; names of origin of goods; computer programmes; databases; topology of integrated microcircuits; know-how (manufacture secrets); selection achievements; and the works of science, literature and art.

B. Subjects of Legal Relations in the Field of Legal Protection of the University's IP

The subjects of legal relations in the field of the legal protection of IP are:

- The university as an integrated academic, scientific and research and production complex – educational institution.

- Employee-authors* of official IP objects.

- Persons contributing to the creation, legal protection and use of IP.

*The author of an IP object is the person who created this object by his/her creative labour. In cases when two or more natural persons participated in the creation of the invention, all of them are considered the authors of the invention. The procedure for using rights belonging to multiple authors is regulated by an agreement between them. Natural persons who did not contribute to creation of IP object through their personal creative work, but who rendered technical, organisational or material assistance only or who promoted registration of rights to IP object and its utilisation, are not considered the authors of the invention.

IV. The University's Ownership of IP Objects

- The university as an "educational institution is an owner…of the intellectual and creative labour products being the results of its activity" which include all IP objects.

- The university as an "educational institution is an owner…of the intellectual and creative labour products resulting from the activities of a higher education institution".

- The Saint-Petersburg State University has an exclusive right to the objects of industrial and intellectual property created by the university's employees in connection with performing their official duties or by others who received a specific task from the university, unless stated otherwise in the contract. Third parties cannot use these objects without permission of the university, except for those cases established by law.

- In the legal relationships linked to the creation, legal protection and use of IP objects, the university constitutes the unified and sole subject of the rights to the IP objects. This arises from the fact that the University (including its structural divisions and its internal enterprises, institutions, organizations with those authorized as legal entities) is an integrated academic, scientific and research and production complex – educational institution.

- According to existing legislation, the University acquires the right of ownership for separate IP objects and, therefore, the proprietary rights to them in the following cases (unless otherwise stipulated in agreements between the University and the employee-author):

  - inventions, utility models or industrial designs – when these IP objects are created by a University employee in connection with performing his/her official duties or through a specific job tasked by the University.

  - computer programmes; databases; topologies of integrated microcircuits; know-how, science, literature and art works – when the above mentioned IP objects are created in connection with performing official duties or during a specific job from the University.

  - selection achievements – if they are derived, created or identified in the course of an employee's official duties.

  - trademarks – in connection with the University's status as a legal entity.

- The University acquires the right of ownership for inventions, utility models, computer programmes and other IP objects mentioned in the section "Intellectual Property Objects of the University" when they are created in the course of scientific, educational and other activities of the University, including those created when performing any scientific research and developing educational documents financed from federal budget and non-budget funds, and for those

included in the University's long-term thematic plans or carried out in connection with a specific tasking by the University.

- The University's ownership rights for IP created by third legal and natural parties can arise by virtue of a patent assignment agreement or assignment agreement for filing a patent application or other protective document to the University.

V. The right to obtain a patent or another protective document

- The University has an exclusive right to:

  – carry out, according to established procedures, the legal protection and commercialisation of the University's IP objects created as a result of its scientific, educational and other activities mentioned in the paragraph 6 of the section "Right of Ownership of the University for IP".

  – present itself as an applicant and patent owner (rights owner) while performing the legal protection of specific IP objects of the University.

- The University has a right to file an application for a patent to an IP object (or other protective document; further – patent) or for the registration of an IP object in its name, or to assign a right to obtain a patent to third party, or to make decision to keep an IP object under the seal of secrecy.

- The University has a right to obtain in its name RF (Russian Federation) patents for inventions, which were protected earlier by the author's certificates of the USSR with the Leningrad State University as an applicant, on the basis of petitions terminate the author's certificates of the USSR with a simultaneous issuance of RF patents for the residual period.

- The employee-author has a right to file an application and to obtain a patent in his/her name when:

  – the University did not file an application for a patent or did not assign a right to obtain a patent to a third party or inform the employee-author about keeping the IP object under a seal of secrecy during the 4 months from the date of notification by the author of having created IP in accordance with paragraph 2 of the section "Procedures Regulating Legal Protection of the University IP".

  – the University considers the legal protection of the IP object inexpedient;

  – the employee-author created IP not in the course of his/her official duties or not from a specific task done through the University, and in the absence of conditions specified in the paragraphs 5.6 of the section "University Right of Ownership for IP".

If the employee-author, as it is specified in paragraph 4 of the present section, obtained a patent for an IP object, which was created with the financial, legal or other assistance from the University, including the use of its premises and equipment, the University has a right to obtain non-exclusive license for the use of this IP object.

VI. Procedures for the Legal protection of IP objects of the University

1. Deans of Faculties, Directors of Institutes, Heads of other structural divisions, Heads of Departments, Offices and Laboratories carry out the following functions:

- identify IP objects of the University created in the course of the University subdivisions' activities specified in item 6.6 of these Regulations, and report them to the IP Office before the essence of the IP object becomes available to all (through publication, production, use, exposition, transfer to third parties etc.) which, as a rule, excludes the possibility of its legal protection in the RF and abroad.

- take measures to end any subdivision's practice of filing an application for a patent (registration) for official IP objects in the RF and abroad in the names of employee-authors of such subdivision, external legal and natural persons, as well as preventing any unauthorized transfer of information about an IP object's essence to third parties before the University has filed a corresponding application in accordance with established procedures or before the University has made a decision not to file an application.

- prevent, in co-operation with the IP Office and Expert Commissions of Faculties (Institutes), any premature (before performing any legal protection of the IP objects) full or partial disclosure of IP objects created by the University subdivisions, in the RF and abroad, prohibiting the unauthorized publication, use, exposition, transfer to informational centres, entering into databases and other sources of information, accessible to indefinite circle of persons;

- participate, if necessary, with the IP Office in determining the expediency of the legal protection of IP object; and

- make the principal investigators of protectable R&D – carried out within the framework of scientific and technological programmes, federal special programmes, projects and grants – responsible for planning the costs of patent research, patent fees and registration fees in cooperation with the IP Office.

2. The employee-authors of the IP object carry out the following functions:

- Inform the IP Office about the creation of any official IP object, specifying all of the real authors.

- Assume the obligation to ensure the confidentiality of information related to the University's IP object: to not disclose it completely or partially within the country and abroad in any form (publication, use, exposition, transfer to third parties or to information centres, entering into databases and other sources of information accessible to indefinite circle of persons) without permission of the University.

- Participate in the scientific and technical examination for patentability (protectability), in the patent and market research carried out by the IP Office.

- Participate jointly with the IP Office in preparing applications for patents or for registering IP objects; in drafting responses and objections to the letters, requests and decisions of patent offices; and in analyzing the expediency of patent maintenance. Carry out, if necessary, any additional experiments and tests of the claimed IP object.

- Notify without delay the IP Office about any developed improvement of the claimed IP object.

3. The IP Office performs the following functions:

- Carries out scientific and technical, patent and marketing analysis of the results of R&D and the educational-training work of the University's subdivisions; identifies patentable (protectable) and commercially valuable IP; estimates whether patenting or registration is expedient; and determines national or international steps necessary for patenting (registration).

- Carries out the legal protection, in the Russian Federation and abroad, of the IP objects, including preparing and filing in accordance with established procedures the applications for patenting or registration with the Russian, national and international patent offices, mentioning St.-Petersburg State University as an applicant and a patent owner (right owner).

- Provides for the prompt payment of patent, registration and other fees for filing applications, examination, patent issuance and maintenance, as well as for the execution of other legal actions connected with patenting and registration procedures.

- Provides for the termination of patents and other protective documents when the University's IP objects lose their commercial value.

- Informs the Rector about the cases of infringement of these Regulations, in particular, about any facts of the illegal filing of applications for IP that is the property of the University, indicating the names of structural divisions, employee-authors and external legal entities and natural persons involved.

- Conducts an inventory and registration of protected IP objects of the University and provides reports on them.

VII. Procedures providing legal protection of the University's IP

- If the IP object is created or can be created during scientific, educational or other activities, it is advisable to make a preliminary consultation with the IP Office, which provides on behalf of the University consultations for University administrators and divisions, employees, students, postgraduates and persons performing the University jobs, on a wide range of organisational, legal, economical, informational and other problems connected with the creation, legal protection and commercialisation of IP in the Russian Federation and abroad.

- In order to perform the legal protection of the IP object, an employee-author submits to the IP Office a "Notification-Petition on the creation of an invention (utility model, industrial design, computer programme, other IP object) and the filing of an application for a patent (certificate) for an invention (utility model, industrial design, computer programme, other IP)" (further – "Notification-Petition"), as well as an enclosed document "Disclosure of Invention (utility model, industrial design, computer programme, other IP)" (further – "Disclosure of IP Object") which contains information on the IP object sufficient for pre-estimation of its patentability (protectability) and commercial value. The documents are the confidential information of the University and are kept at the IP Office.

- The date for the notification of the University by an employee-author about a created IP object is the date on which the "Notification-Petition" is accepted by the IP Office with its enclosed document "Disclosure of IP Object" and the registration of this date in the "Registry Journal for Applications for a patent (certificate) for an invention (utility model, industrial design, computer programme, other IP)".

- A "Certificate on acceptance for examination of 'Notification-Petition on the creation of IP object and filing of application for a patent for an invention' (utility model, industrial design, computer programme, other IP)" that mentions the date of acceptance and the time of examination can be given to an employee-author upon his/her request.

- The IP Office, within a period of 4 months from the date of acceptance of "Notification-Petition", reviews jointly with the employee-author the "Notification-Petition" and the document "Disclosure of IP Object", carries out patent and marketing studies and makes one of the following decisions, informing the employee-author(s) about it:

  - to file an application for a patent or register the IP in the name of the University.

  - to refuse to file an application for a patent or to register because of non-patentability (non-protectability) of IP.

  - to consider the legal protection of IP as inexpedient, for instance, lack of any prospects for the IP's commercial realisation, with the possibility of transferring to the employee-author the right for filing an application and obtaining a patent in his/her name in accordance with paragraphs 4 and 5 of the section "The right for obtaining a patent or other protective document".

  - to assign a right for obtaining a patent to a third party.

  - to keep the IP under a seal of secrecy.

- The IP Office prepares, executes and files according to established procedures the following actions that cover the University's IP objects:

  - Applications for Russian Federation patent grants to an invention, utility model, industrial design, or selection achievement; for registration of a trademark (service mark); for registration and grant of the right to use a name of origin of the good; for official registration of computer programmes, databases, or topologies of integrated microcircuits.

  - Petitions for termination of the USSR author's certificates, an applicant of which is the University, within the RF territory with the simultaneous issue of the RF patent for residual period.

  - National patent applications for the grant of foreign patent for an invention (utility model, industrial design, computer programme, other IP) in accordance with the foreign country procedures.

  - International applications for inventions in accordance with the PCT procedure.

  - Applications for European patents in accordance with the EPC (Eurasian Patent Convention) procedure.

- Eurasian applications in accordance with the Eurasian Patent Convention procedure.
- International applications for the international registration of marks in accordance with the procedure of the Madrid Agreement on International Registration of marks.

- When preparing and drafting the corresponding applications, the IP Office submits the applications for the grant of RF patents and the documents for foreign patenting, in accordance with the national and international procedures, to the Pro-rector for signature.
- The IP Office ensures the confidentiality of application materials; performs record preparation and filing; corresponds with the patent offices examining an application; and analyses whether patent maintenance is expedient.
- The employee-author immediately, at first request of the IP Office and within the legally established time, participates in preparing: the application materials; responses and objections to the letters, requests and decisions of patent offices; the analysis of the expedience of patent maintenance; and if necessary, in carrying out additional experiments and testing of the claimed IP object.
- The IP Office provides prompt payment of patent fees, registration and other dues for filing applications, examination, patent issuance, patent maintenance as well as for the execution of other legally significant actions connected with the patenting and registration procedures.
- Obtained patents and other protective documents are subject to rigorous reporting. They are kept at the IP Office, their copies are given to the employee-authors at the meeting of the Scientific Council or the University Senate.
- When the official IP object – science, literature and art works – is created, the IP Office jointly with the employee-author and the structural division carries out necessary protective procedures.

VIII. Rights of employee-authors and persons who contributed to the creation and use of the University's IP objects

- The employee-authors of the University's IP objects have the following rights:
  - To solicit the University for legal protection of IP object created in connection with performing their official duties or with having received from the University a specific job.
  - To be mentioned as an author in the applications for the grant of protective documents and in registration, as well as in the science, literature and art works.
  - To file an application and obtain a patent in their own names in cases specified in the paragraphs 4 and 5 of the section "Right to Obtain a Patent or Other Protective Document".
  - To receive an information about the University's decision to terminate patent maintenance.
  - To receive remuneration for the use of an IP object, the owner of which is the University, according to the procedures and at the rate set forth in the corresponding Rector's Order.[1]

[1] The SPSU Rector's Order of 26.01.95 №20/1 "On License Payments".

– Persons contributing to the creation and use of the University's IP objects have a right to remuneration for assistance in the creation and use of IP objects according to the procedures and at the rate set forth in the corresponding Rector's Order.[2]

IX. Protecting IP Rights

- Protecting the University's IP rights is carried out administratively and juridically.
- Administrative protection takes place in cases of:
  - violation by University officials of the rights of employee-authors of IP objects and persons assisting in creation and use of IP objects, regulated by the section "Rights of employees-authors of IP objects and persons assisting in creation and use of IP objects" by appealing against illegal actions of officials in accordance with established procedure, as a rule, before the Head of the IP Office, Provost for Science Work and/or Rector.
  - violation of existing legislation on the issuance of an RF patent for an invention, utility model and industrial design by lodging with the IP Office an appeal before the Rospatent Appeal Chamber against the decision of the Federal Institute of Industrial Property, and in case of disagreement with its decision – lodging an appeal to the Higher Patent Chamber.
- The following disputes are subject to juridical settlement:
  - IP object authorship.
  - Determination of the patent owner (rights owner).
  - Infringement of the exclusive right to use protected an IP object and other proprietary rights of the University-patent owner (right owner).
  - Conclusion and execution of license agreements on use of a protected IP object.
  - Rights of prior use.
  - Remuneration payments to employee-authors by the employer-University.
  - Compensation payments in accordance with the Patent Law.
  - Other disputes regarding the protection of IP rights.
- Any natural or legal person, using an invention (utility model, industrial design) protected by a patent issued to the University, or any other of the University's IP objects in violation of current legislation, is considered an infringer of the rights of the University – right owner.
- An infringement of the University's exclusive right – patent owner (right owner) – is the unauthorized manufacture, use, importation, offer for sale, sale, other commercial involvement or keeping for this purpose the product containing a patented invention, utility model, industrial design, as well as application of the method protected by a patent for an invention, or commercial

2 Ibid.

involvement or keeping for this purpose of the product manufactured directly by the method protected by a patent for an invention. In this case the new product is considered as obtained by a patented method in the absence of proof to contrary.

- An infringement of the exclusive proprietary rights of the University – right owner – is the manufacture, distribution and importation without its sanction of copies of works of science, literature, art; computer programmes or databases (counterfeit).

- When an infringement of the exclusive right of the University – patent owner (right owner) – takes place, the IP Office in accordance with established procedures ensures that demands are made to stop the infringement, with the recovery of the damages to the University – patent owner (right owner) – from the natural or legal person guilty of infringement, damages being established in accordance with the civil legislation of the Russian Federation.

X. Responsibility for infringement according to the current legislation of the Russian Federation and normative documents of the University in the field of IP

- The employees (students) of the University take the following types of responsibility:

  - Disciplinary liability in the form of disciplinary punishment for non-performance or improper performance of the commitments specified in the Charter and Regulations of the University through the employee fault.

  - Civil liability for infringement of the rights of the University – patent owner (right owner) in the following forms (depending on type of IP object and right infringement):

    - Recovery of damages.

    - Collection of income (instead of recovery of damages).

    - Indemnification at the rate of up to 50 000 minimal salary (instead of recovery of damages).

    - Collection of penalty at the rate of 10% of the fine imposed by court in favour of the plaintiff, to the RF budget in addition to the recovery of damages (collection of income or indemnification) at discretion of the court or arbitration court.

  - Criminal liability for infringement of copyrights and neighbouring rights; inventor's rights and patent rights; for illegal use of trademark of the University – right owner, in the form specified by the Law of criminal and legal sanctions.

OWNERSHIP OF RESEARCH RESULTS IN PUBLIC INSTITUTIONS

TERRY A. YOUNG

Intellectual property was not important to technology research in the United States even 20 years ago. Today, intellectual property rights (IPR) and the ownership of research results are critical components of the nation's research enterprise. In fact, the transparency and clarity of IPR ownership in universities and research institutes laid the foundation for the birth of the university technology transfer industry in the 1980s, assisted in the creation of the biotechnology industry in the 1980s, and fuelled the tremendous growth of the digital-based economy in the 1990s.

U.S. universities have traditionally held three missions: research, education and service. In achieving these missions, universities have engaged in technology transfer, such as the transfer of knowledge from the teacher to the student; research results published or presented at professional conferences; and the collegial exchange of information between scientists, today facilitated by the Internet. In summary, technology transfer is a core activity of academic institutions in achieving their missions of research, education and service.

In addition, every research university in the United States today operates a Technology Transfer Office (TTO) to manage a well-defined process of moving academic research results from the laboratory to the market for *commercial* application. There are 5 good reasons to establish a local university TTO:

- To reward, retain and recruit the best and brightest faculty members.
- To develop and create closer ties with industry.
- To promote local, regional and national economic development and growth.
- To commercialize research results for the public benefit.
- To generate resources for more research and education.

Brief History of Academic Technology Transfer in U.S. Universities

Prior to World War II, the scope of university research in the United States was limited; no more than 20 universities performed research of any significant amount. All changed, however, with World War II, as the Government looked to university scientists to develop many of its technical requirements. After the war, the Government began to make large investments in scientific research at universities to create a "pool of knowledge" to enhance the economic growth of the country. New government research agencies were created in the early 1950s, such as the National Science Foundation (NSF) and the National Institutes of Health (NIH).

During this era, title to university research results and IPR belonged to the national Government, with centralized control from Washington. Under this policy, the Government obtained approximately 30 ,000 U.S. patents. However, less than 5% of the patents were transferred to industry and even fewer resulted in any commercial application or product. The IPR policy of the United States was not working to impact

economic growth; centralized management of IPR from Washington was totally ineffective. Change was imperative! Thus, a tremendous debate took place in the U.S. Congress in the 1970s, resulting in the enactment of the Bayh-Dole Act of 1980, officially the U.S. Patent and Trademark Law of 1980 (P.L. 96-817). [3]

The Bayh-Dole Act

The Bayh-Dole Act was a *fundamental* change to U.S. patent law. Before 1980, the U.S Government owned and controlled innovations and resulting IPR funded by the Government. After 1980, the universities that created the innovations and IPR owned them. Furthermore, the Act promoted collaboration between universities and small businesses, and sought to promote private investment in the commercialization of university research. The Bayh-Dole Act was a conclusion by the U. S. Congress that:

- Creativity and innovation are national resources.
- The patent system is the mechanism which permits delivery of creativity and innovation to the market place for development of commercial products and economic growth.
- In a global market economy, it is in the nation's best interests to place ownership and stewardship of innovation and IPR in the hands of its creators, rather than the central Government.
- Existing U.S. policy was ineffective at a time when IPR was becoming the "global currency."[4]

The Bayh-Dole Act achieved its goal. Today, every U.S. research university operates a TTO. With the Government's encouragement, universities then developed policies to clarify ownership of IPR and to enter research relationships with industry from a position of strength. Thus, U.S. university IPR policies require researchers to assign their personal rights in inventions to the university, so that the university may comply with the Bayh-Dole Act and the institution's relationships with industry. Prior to 1980, industry was reluctant to fund research at universities; after 1980, industry partnerships grew, as clarity in IPR ownership protected corporate investment in university research and provided great incentive for industry-university research collaborations. Additionally, academic research now is critical to the nation's R&D capacity: a recent NSF study indicated that 73% of U.S. patent applications cite academic research as background art in the application!

Measurable results are equally impressive: the Association of University Technology Managers (AUTM) conducts an annual survey of licensing activities in the U.S. and Canada. The AUTM Annual Survey Summary for 2000 demonstrates significant economic impact of the technology transfer process:

- More than 6 000 U.S. Patent Applications were filed by U.S. universities in the year 2000.
- More than 4 000 royalty-bearing license agreements were executed between U.S. universities and industry partners for product commercialization in the year 2000.
- Nearly 400 new companies were created to commercialize university innovations in 2000. Since 1991, 3 400 new companies have been created to commercialise the results of university research.[5]

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3 The Bayh-Dole Act, amended and codified, at: http://www4.law.cornell.edu/uscode/35/200.html

4 "University Technology Transfer: Evolution and Revolution," Howard Bremer for the 50th Anniversary of the Council on Government Relations: http://www.cogr.edu/Bremer.htm

Indirectly, the birth of the biotechnology industry can be traced to inventions that emerged from U.S. universities in the 1980s, which were protected by patents and licensed broadly to industry. An increased tax base has resulted from the economic growth emerging from university technology transfer. Billions of dollars have been invested in new companies to develop university inventions. Thousands of new products on the market exist today because of this process of university technology transfer enabled by the Bayh-Dole Act. A recent study by MIT reported 270 900 jobs supported by product sales emerging from the licensing of university IPR. The study also estimated that university technology transfer had resulted in a USD 40 billion economic impact upon the U.S. economy.[6]

Under the Act, the U.S. Government retains a royalty-free right to use the research results and IPR its funds at universities on a non-exclusive, royalty-free basis for Government purposes only. Additionally, the Government retains "march-in rights" with authority to assume control over the commercialisation of an invention to assure that federally funded innovations at universities are effectively transferred to public benefit. Surprisingly, the Government has *never* exercised its march-in rights in the 22-year history of Bayh-Dole.

Importance of Clarity of Ownership in IPR

The basic premise of the Bayh-Dole Act is that ownership of IPR must be clearly and definitively established to provide incentive for the private sector to make investments in research and in the commercialisation of IPR. In the U.S., that ownership lies in the university, rather than in the faculty inventor, by university policies requiring researchers to assign their rights to the institution. As example, the policy of The Texas A&M University System includes the following policy requirements:

- "An Invention resulting from activities related to an individual's employment responsibilities and/or with support from University-administered funds or facilities or shall be owned by the University."

- "An Invention unrelated to an individual's employment responsibilities that is developed on his or her own time without University support or use of University facilities is not owned by the University."

- "This regulation is applicable to (i) all persons employed by the University; and (ii) any persons using University facilities. University employees should not enter into intellectual property agreements related to outside employment, such as consulting or summer employment agreements, without affirmative notice to the prospective employer that the intellectual property rights of the University cannot be subordinated to a third party consulting or employment agreement." [5]

Not every nation accepts the principle of university ownership of IPR as the foundation for technology transfer. For example, Canada does not have any law comparable to the Bayh-Dole Act, and yet, as proven by the AUTM Survey, Canada records comparable success in academic technology transfer. In Canada, universities are empowered to devise their own policies for IPR ownership.

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5 AUTM Annual Survey for 2000: http://www.autm.net.surveys/2000/summarynoe.pdf

6 "A Preliminary Model to Measure the Economic Impact of University Licensing," Lori Pressman, et.al. http://www.autm.net/pubs/journal/95/PPI95.html

5 http://sago.tamu.edu/policy/17-02-01.htm

Some Canadian universities place ownership of inventions in the university, much like in the U.S. Some Canadian universities place IPR ownership in the researcher that developed the invention. For example, the policy of the University of Alberta includes the following requirements:

- "The University Patent Policy is intended to encourage inventors to patent inventions and to provide a mechanism for the commercial application and utilisation of the inventions while rewarding the inventor and protecting the rights of the University."
- "An Inventor who makes an Invention and wishes to apply for a patent may do so as an individual independent of the University or may do so through the University, as set out in these procedures."
- "Any Inventor who makes an Invention must submit to the Intellectual Property Office a full description of the Invention. The Inventor must indicate whether or not the Inventor wishes to proceed independently of the University or wishes to proceed through the University." [6]

Two observations: (i) the policy maintains clarity of ownership, once the inventor makes declaration of intent, and (ii) this approach provides incentive to the Intellectual Property Office to deliver quality services, as the Office essentially is in competition with the private sector to earn the business of the university's inventors.

Other Canadian universities place ownership jointly in the university and the inventor. For example, McGill University's policy statement includes the following:

- "The Inventor and the University jointly own the rights to inventions created by an Inventor: (a) with university assistance, or (b) with the use of University equipment, facilities or resources, or (c) in the course of academic duties or work in the course of study, research or teaching."
- "The Inventor and the Office of Technology Transfer shall co-operate in the development of a commercialisation plan which will serve the interests of both the University and the Inventor. The Inventor shall not protect or commercialise an invention independently of the University." [7]

In Europe, ownership of IPR developed at universities varies from country to country. For example, in February 2002, a new German patent law determined that university professors no longer held exclusive ownership of their inventions. German faculty must disclose their inventions to the university, and the university then can either claim the IPR or leave these rights with the employee. In Italy, faculty members own their inventions, but must share any proceeds resulting from commercialisation with the university. In the United Kingdom, much like Canada, each university is empowered to make its own rules for IPR ownership. [8] Finally, as one additional example, Japanese law specifies that university researchers are owners of the IPR they develop within the institution. However, the Japanese Government has funded establishment of TTOs at universities to assist faculty in commercialization of their inventions. However, in order to utilize the services of the TTO, the inventor must assign his or her personal rights in the IPR to the TTO. In 2004, Japanese law will give national universities and research institutions independent legal

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6 http://www.ualberta.ca/ILO

7 https://upload.mcgill.ca/research/ipcorrectfinal.pdf

8 "New Rules for German Professors," SCIENCE, Vol. 298, November 8, 2002, pp. 1173-1175.

status so that these national institutes likewise may allow individual ownership of IPR to encourage commercialisation of inventions.[9]

Two consistent principles are present in these all of these examples. First, the policies and regulations of each university affirmatively and transparently establish the rules of IPR ownership between the individual researcher and the institution. Second, whether in the U.S., Canada, Europe or Japan, IPR ownership is managed at the local, institutional level; there is no centralized control or management of IPR by the national government. In fact, a recent study by economists at Purdue University concluded that technology transfer is most effective as a "scientist-to-scientist" phenomenon, with the local TTO as a facilitator for building the relationships between the university scientist and the industrial scientist.[10] Thus, these two principles – clarity of ownership in policy and local institutional management of IPR – are critical factors in supporting the "scientist-to-scientist" interaction, and in providing the incentive for the private sector to fund research at the university and to commercialise its innovations.

9 "From Tech-Transfer to University Start-ups: How Japanese Universities Respond to New Policies," Akio Nishizawa, Tohoku University, Sendai, Japan, draft paper in review for publication, November 2002.

10 "Industry Perspectives of Licensing University Technologies: Sources and Problems," Jerry Thursby and Maria Thursby, AUTM Journal 2000: http://www.autm.net/index_ie.html

INTRODUCTION OF RULES FOR REGULATING CONFLICTS OF INTERESTS AND EMPLOYMENT OF FREELANCE WORKERS

TATIANA V. KLUEVA

Intellectual property (IP) management within the system of higher education is currently exercised in accordance with the package of legislative documents consisting of relevant articles of the Civil Code, Laws of the Russian Federation "On Education", "On Higher and Post-Graduate Professional Education", documents of the Russian Ministry of Education (Reference University Statute, etc.), and a number of special laws regulating intellectual property relations.

The aforementioned documents, controlling IP relations, have been adopted in the period of emergence of a new market in Russia. Practice shows that they are still not sufficiently adapted to effective regulation of ownership rights and intellectual property management.

The transition to a market economy and the end of the state's monopoly on the results of intellectual activity create a new awareness of the value of intellectual property in the sphere of science and technology and the system of higher education. IP is becoming a major resource of economic development. Universities are becoming motivated to look into the possibilities of accumulating and owning intellectual property. **IP is becoming a product,** around which market relations evolve.

As a rule, market relations are accompanied with a natural aspiration of their participants to gain some or other benefits and advantages. **This is something that triggers the emergence of a conflict of interests** of practically all participants **due to various reasons.**

Within the present context, the following **main groups of parties to the possible "conflicts"** can be categorized as parties to legal relations:

University	Government of the Russian Federation, represented by the Russian Ministry of Education and other federal bodies of executive authority
University	Regular staff, freelance workers – "authors of IP objects"
University	Private companies
Authors of IP objects	Private companies

In order to analyze the reasons leading to **conflict of interests,** they can be categorised into three major groups:

Regulatory and legal aspects.

Socioeconomic aspects.

Institutional aspects.

Below is a discussion of the reasons leading to conflict of interests because of the present-day contradictions on the legislative level and possible implications of amendments to the legislation proposed by the Government.

In accordance with article 39 of the RF Law "On Education," the **"university shall be entitled to the property rights…** to products of intellectual and creative work, which constitute the result of its activity" (item 7, art.39), which covers all objects of intellectual property.

However, the present legislation on intellectual property does not always consider IP objects of a university as its property. For example, the right to receive a patent for invention, utility model, or industrial design belongs to the university, if the created products indisputably conform to the business theme of the university[1]. Moreover, in order to exercise this right, the university should have acting documents regulating its policy in the sphere of IP, among which there should be a statute regulating the categorisation of objects of intellectual property or copyrights as official products. If such documents don't exist, the policy is not regulated, and there is a strong willingness to bypass this clause of the law, a Private company may become the holder of rights to these IP objects, having obtained them from the author at a meagre price.

If the university is engaged in scientific research financed by the customer, **the preferred ownership right** to results of jobs fulfilled for the customer, including those subject to legal protection, shall belong to the **customer,** in accordance with article 772 (part 2) of the Civil Code[2].

Steps at the legislative level

Attempts are being undertaken on the legislative level to eliminate the reasons behind the emerging conflicts, creating favourable conditions for the IP authors and protecting the interests of all participants of the creative and commercial processes.

One of the measures undertaken is the Draft Federal Law of the Russian Federation "On Introduction of Amendments and Additions to the Russian Federation Patent Law," submitted by the Russian Government for consideration to the State Duma in 2001.

It contains a new legislative **norm on priority of a worker's rights** to objects of industrial property created by the worker with the use of the employer's resources, but not in connection with discharging of the employee's official duties or fulfilment of a concrete assignment of the employer.[3] In this case, the author legally becomes the holder of rights to the patentable improvements, granting merely a nonexclusive license to the university, and in addition, receiving compensation for the job and also having the possibility to offer the license to a third party (for example, to a private company), thus creating a competitor to the university. Meanwhile, it is sometimes simply impossible to draw a line between official and unofficial duties. It is quite probable that the conflict will intensify, rather than vanish.

The Draft Law contains a new article, 9, which envisages alternative title in the event of fulfilment of jobs under state contract[4].

Consequently, in this case the conflict may become more complicated, as new stakeholders may join in it, for example, the state customer (acting on behalf of the Russian Federation or the RF constituent entity).

Moreover, after the new Tax Code entered into force, universities lost nearly all advantages over the other legal entities (for instance, private companies) in the sphere of taxation. In accordance with chapter 25 of the Tax Code, the sale of scientific-technical products by universities is currently qualified as an entrepreneurial activity, the revenues from which are subject to taxation at the same rates as any private company's.

Socio-economic reasons

The low level of salaries of the teaching staff and scientific workers of state universities and the considerable freedom traditionally granted to them in organising their activity, not directly connected with the educational process, enable and stimulate teachers and research workers to look for extra jobs in the private sector of the economy, primarily in the area of their professional scientific interests. In conditions of actual state promotion of the policy of secondary employment, such extra jobs in fact create a steady system of unsanctioned, uncontrolled channelling of the most productive scientific and technical products, created with the use of budgetary resources (*i.e.* taxpayers' money), to the private sector, stripping state universities of their possible incomes. Such patterns of transfer of technologies and know-how leads to considerable changes in the competitive environment in the market for scientific and technical products, noticeably reducing the expenses of private companies for R&D and for purchasing the rights to intellectual property, while depriving state universities of primary sources for additional financial income.

It is important to mention among social motivations the fact that most state university supervisors (rectors, pro-rectors in charge of scientific and innovation activity) are strongly convinced that a significant change of the current situation is impossible (and the teaching staff also regard it as inexpedient) until a relatively high (compared to other economic sectors) level of financing of universities and labour remuneration of the teaching staff from the federal budget is restored. The lack of corporate skills among university workers, including representatives of the administration, is another important reason.

The third group of institutional reasons include the following:

- According to tradition, most scientific and technical achievements of universities are so far "intermediate products," *i.e.* they require additional input for their practical use in instruments, devices, and new technologies. The classic innovation cycle "idea – research – product – marketing" is disrupted at one of its intermediary stages for a variety of reasons and prevents its participants (primarily authors of IP and universities) from gaining the anticipated incomes from scientific and technological activity.

- Moreover, the market of most "intermediate products" is a so-called imbalanced market, where demand and supply are largely inconsistent. One of the main consequences of such a state of affairs is the circumstance that the conclusion of deals in such markets requires a considerable marketing effort and the recruitment of high-qualified experts on patents and transfer of technologies, and therefore happens much more seldom than in the market for end products.

It is possible to conduct a policy suitable for tackling the aforementioned "institutional" problems only when the universities have sound IP management and technology transfer departments, staffed with competent, well-trained experts.

An example combining the traits of all the aforementioned reasons of conflict:

The authors of a scientific improvement, including inventions, software, know-how, and certain knowledge, and constituting an intermediate product, due to various reasons, for instance, insufficient university funding for making it into an end product, absence of a technology transfer department and the lack of funds necessary for foreign patenting, have patented the invention in the name of its authors and tried to find an investor and buyer of the invention on their own. Things could have turned out well for the authors, but because of their lack of experience in foreign patenting and the protracted quest and entailing negotiations with the potential investor and buyer, they have missed the moment of filing applications on the national level, therefore, foreign patents could no longer be obtained. The value of the invention in the eyes of the investor and buyer has dropped. And despite its remaining commercial value, the price has

become dramatically lower. By that time the university has received an opportunity to continue working on the invention, invest considerable funds in it and recruit specialists on patents and technology transfers

The following is a short report published in Komsomolskaya Pravda.[7]

Where Can A Scholar Make Extra Money without Leaving the Country?

St.Petersburg Chemist Vladimir Belov Receives USD 30 000 for Discovery

A peculiar scientific site appeared on the Web. Its idea is very simple. On the one hand, the world is full of large corporations, companies, and factories, encountering problems in the process of developing new products, which they are unable to tackle on their own. On the other hand, thousands of scientific geniuses pore over their work in research institutions all over the globe, not finding any practical application to their knowledge. How can they meet? On the Internet!

Large companies place ads on their scientific conundrums and the sums they are ready to pay a scholar who helps them overcome these bottlenecks.

"What we have is a sort of worldwide auction of scientific ideas," the company vice president and author of the site Ali Hussein explained." As many as 13 thousand scholars representing 100 countries are already co-operating with us."

- ***Which spheres of knowledge are particularly popular now?***

- *Chemistry, biology, and everything related to these scientific sectors. By the way, Vladimir Belov, a chemist from the St.Petersburg University, has recently made an important discovery and received some USD 30 000 compensation for it. The size of the reward is always open, and it can be easily checked.*

- ***Is there any sort of a scale?***

- *If only theoretical work is required, for example, to derive a formula of a substance, it costs from 10 to 15 thousand dollars. If the assignment involves lab experiments, the reward may be as high as USD150 000.*

- ***But the reward is granted only upon completion of the jobs?***

- *Yes. Only the end result is being evaluated. We do not engage in "brain hunting," we do not suggest that scholars should emigrate to other countries. We are trying to supply them with work where they presently live. Recently we received a request from a large pharmaceutical company that has been trying to tackle a scientific problem for two years. Specialists from Kazakhstan managed to solve it within 72 hours!*[8]

If this message were read out to an audience of researchers and designers, what question would they ask? **What is the address of the site?**

7. Report published October 24, 2002.

8. Alexander MILKUS , October 24, 2002.

Recommendations

1. Apparently, in order to eliminate or reduce the influence of the current reasons behind the "conflicts," it is necessary *to consistently shape a transparent, market-oriented policy* on the federal and sectoral (RF Education Ministry) levels.

2. At the same time, a number of considered problems in the sphere of intellectual property management and mechanisms of its implementation can be resolved by means of pursuing a consistent policy by state universities themselves. The principal aspects of such a policy should be fixed by the corresponding regulatory and legislative acts.

3. It is necessary to create incentives for the authors of IP objects to bring their ideas to the university.

4. Universities should have adequate units in charge of patent and licensing activity, marketing, and technology transfer.

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[1] RF Patent Law. Article 8, item 2.

The right to receive a patent on invention, utility model, or industrial design, created by a worker in the process of discharging his official duties or fulfillment of a concrete assignment of the employer, belongs to the employer, unless stipulated otherwise by agreement between them.

[2] Civil Code. Article 772. Parties' rights to results of the jobs

The parties to agreements on fulfillment of scientific research, experimental design, and technological jobs shall be entitled to use the results of the jobs, including those subject to protection by law, within the limits and on terms stipulated by agreement.

The customer is entitled to use the results of the jobs, handed to him by the executor, including those subject to protection by law, and the executor shall be empowered to use the results of the jobs for his own needs, unless stipulated otherwise by agreement.

[3] Article 8, item 3.

The right to obtain a patent to invention, utility model or industrial design, created by the worker (author) with the use of experience, physical, technical, or other resources of the employer, but not in connection with discharging of official duties or fulfillment of a concrete assignment of the employer by the worker (author), shall be long to the worker (author), unless stipulated otherwise by agreement between the worker and the employer. In this case, the employer shall be entitled throughout the period of validity of the patent, to obtain a nonexclusive license with the payment of compensation to the patent holder, the size of which shall be determined on the basis of the license agreement.

[4] Article 9. Draft Federal Law "On Introduction of Amendments and Additions to the Russian Federation Patent Law," #105481-3, in second reading.

The right to obtain a patent to invention, utility model or industrial design, created in the process of fulfillment of jobs on state contract for the federal state needs or needs of the Russian Federation constituent entity, shall belong to the executor (contractor), unless the state contract stipulates that this title belongs to the Russian Federation or the Russian Federation constituent entity, represented by the state customer.

If, in accordance with the state contract, the right to obtain a patent belongs to the Russian Federation or the Russian Federation constituent entity, the state customer may file an application for the issuance of a patent during six months from the moment of his written notification by the executor (contractor) of obtaining a result, subject to protection by law as invention, utility model or industrial design. If the state customer fails to file an application during the aforementioned period of time, the right to obtain a patent shall pass over to the executor (contractor).

CONFLICTS OF INTEREST

BRIAN GRAVES

The traditional role of universities in our society has been to educate and conduct research. Their prestige is founded on academic rigour, scientific method, and peer review. Also, having the status of a charity has helped to maintain an unbiased approach to funding research.

Recently, in addition to serving the public good, universities are increasingly involved in knowledge transfer. That is bringing the fruits of research to the market to enable commercial adoption of the most marketable Intellectual Property (IP).

This commercial interest is beneficial to society and if managed appropriately will avoid corrupting the integrity and trust held by universities as cradles of knowledge.

However, promoting commercial activity and commercially funded research also presents the danger of personal financial gain distorting academic rigour and scientific results.

This conflict of interest between personal gain and loyalty to the professional standards and ethos of the university is an important issue, since it is key to the preservation of the reputation of universities and their intellectual freedom.

Reputation itself depends on actual as well as perceived behaviour. For example, if a scientist were falsifying his test results, peer review and repeatability of experiments would soon uncover his cheating and he would be discredited. However, if his research were funded by a major tobacco company and concerned the health implications of smoking, even with normal controls on the methods, there may be a suspicion of bias, even if it did not exist. Hence the influence that external commercial forces can bring to bear on university activities can be pernicious if there is inadequate monitoring and control.

Universities are accustomed to a large measure of self regulation as a means of maintaining professional standards and peer group review is a key to transparency and regulation in this area. The creation of spin-out companies, licensing of technologies, industrial sponsorship of research bring with them new sources of conflict ranging from financial incentives to bias research for personal gain to divided legal responsibilities to the university as an employer and the fiduciary duties of an academic who is also a spin-out company director.

The range of potential sources of conflict can be identified and categorised, but they represent only broad areas of concern, in practise, there are many subtle and unexpected conflicts which are difficult to foresee. Therefore the management of conflicts of interest depends heavily on awareness, attitude and the process put in place to resolve them. The rules surrounding conflicts of interest are not always clear and black and white, but often fuzzy and grey.

Turning to specific conflicts of interest, there needs to be an understanding of ownership rights around IP. Where IP is automatically owned by the university, which is the usual circumstance in the UK, the normal means of commercialisation involve entities with multi-stake holders. That is, the university is the key owner and manages the transfer of ownership and other parties receive a return or stake in the commercialisation depending on their involvement. For example in a spin-out company, the university will contribute its IP either by assignment or exclusive licence in return for shares or cash. The inventors are

also normally involved at this stage through providing know-how to develop the IP. Additionally, investors and professional managers may also be involved through providing capital and managerial expertise. This multi-stakeholder approach provides a significant set of checks and balances because of the mutual dependence each stakeholder has in making a contribution to the development of the company.

Ultimately, good corporate governance of spin-out companies is an important check on conflicts of interest, but by no means infallible.

Where spin-out companies, and for that matter other external industrial concerns sponsor university research, if the researcher has a stake in the company, there is the potential for personal greed to overcome professional judgement. The area of clinical trials is particularly sensitive to potential biasing of test results.

Also, when negotiating a development contract from a spin-out company with a university department, where the department member is also involved, with a spin-out company, there is the potential for that person to be representing both customer and supplier. In these circumstances, the person has to be excluded from influencing both sides of the negotiation.

Commercial influence could also affect the way entrepreneurial academics allocate and supervise student work. Students may find themselves becoming low cost labour for spin-out companies, which could weaken the quality of their education.

This element of exploiting the intellectual resources of the university can also be manifest in whole university departments becoming surrogate research departments for spin-out companies. This will be detrimental to the academic standing of the department if taken to an extreme. The role of the Head of Department is crucial in managing this use of resources.

Similarly, staff members can also devote too much time to their commercial activities to the detriment of their academic responsibilities. This dilemma is even more acute when fiduciary duties as a director of a spin-out company intrude on their duties to their university employer to fulfil their employment obligations.

Another more subtle area of conflict surrounds disclosure and confidentiality. One academic may approach another to discuss and develop a commercial idea, being unaware that the other party has an interest in a commercial activity such as a spin-out. Unless there is understanding on confidentiality, new inventions, before they are protected by a patent, can be stolen by the unscrupulous.

Management of conflicts of interest can be done either through codifying every eventuality and prescribing a remedy or better still, for a university environment, to ensure that guidelines and protocols are established but to use the effects of transparency, peer group governance and multi-stake holder interest ensure an effective self-regulation.

Often, conflicts are identified and remedies proposed by university research contract and technology transfer offices because they are most aware of the particular interests of the parties involved in a negotiation. This underlines the need for a means of registering the commercial interests of individuals which can be accessed by all parties involved in a negotiation to ensure awareness of those interests and appropriate actions taken to avoid them.

In the first place, common sense and good commercial practice should prevail, and individuals should declare an interest and relinquish their role in a negotiation to an appropriate independent party. Written guidelines and protocols would constitute good practice in this area. However, where unusual circumstances occur, which are inadequately covered by the guidelines, there should be a referral

procedure to an independent body for a recommendation on how to proceed. If these judgements are left to the individual parties to resolve on a case by case basis, even if they make the right choice, consistency of decision making, and the perception of good governance are compromised.

Increasingly, external funding bodies are seeking evidence of good practice in the area of conflicts of interest. However, because knowledge transfer is a relatively new activity in universities, so good practice in the conflicts of interest that comes with it are evolving. Good practice in this area requires awareness, transparency, governance and communication with the aim of developing good self-regulatory procedures. Basic guidelines must be documented and disseminated for example on the university's website, registration of interest is a key element and independent policy making needs to be independent if the commercial activity for which it is setting guidance.

DISCLOSURE, CONFIDENTIALITY AND PUBLICATION AT SAINT PETERSBURG STATE UNIVERSITY

IGOR F. LEONOV

Disclosure, Confidentiality, Publication

- *Invention disclosure* means an element of University procedure to ensure legal protection of intellectual property (IP) objects, consisting in disclosure of the *essence of the invention* by its author, who is a University employee, to the employer-University for the purpose of ensuring its legal protection, technology transfer and commercialisation.

- In accordance with the RF legislation and the St. Petersburg State University Charter, the University *holds the title to IP objects* created by its employees in the process of discharging their official duties, and as an employer adopts the necessary measures to create conditions for protecting its title to inventions of University employees.

Confidentiality, Publication

- Among such measures, the University uses auxiliary *preventive procedures that ensure confidentiality of information* on the invention. These procedures are a form of cooperation of the administration and employees in safeguarding corporate interests in the sphere of IP.

- A representative of the University *Intellectual Property, Patent and Licenses Department,* in charge of analysing and evaluating information and carrying out the function of *chief expert on IP,* participates in all such procedures.

- The procedures are regulated by orders of the University rector and are mandatory for all University employees.

- These **procedures** have the following code names:

  - publications review.

  - export control.

  - expert examination of agreements.

  - confidentiality agreements with legal and natural persons.

  - commercial secrecy regime.

- **Publications review** – is a review of results of the University's scientific and educational activity, presented in information sources, prepared for open publication, use, exhibit, and

transfer to third parties and information centres, and for inclusion in databases and other types of information media available to an indefinite range of persons.

- Its objective is to prevent premature (before filing a patent application) and unsanctioned disclosure of the essence of the invention by timely identification of patentable (subject to legal protection) IP objects that have commercial value for the purpose of subsequent protection of exclusive rights of the University to inventions, utility models, achievements of selectionists, computer software, databases, know-how, copyrights, and transfer or regulation of title to them on the basis of licensing, option, or other agreements.

- The following information sources are subject to review:

  - articles, books, manuals, commercial and other similar publications.

  - reports on completion of R&D work.

  - scientific degree theses.

  - deposited materials.

  - scientific, technical, technological, engineering and other documentation (information).

  - description of inventions, utility models, industrial designs attached to applications for the issuance of protective documents of the RF and foreign states.

  - descriptions of know-how.

  - descriptions and designs (prototypes) of devices (instruments, equipment, mechanisms, etc.), substances, cultures, output of breeders (breeds of plants and animals).

  - descriptions of technological processes (modalities, methodologies, etc.).

  - exhibits on display and accompanying documentation.

  - other sources of information on the University's intellectual output.

- Employees-authors shall submit the aforementioned information to expert commissions of the University departments and divisions, empowered to sanction the publication (open usage, exhibiting, transfer) or to suspend it until the filing of a patent application, or to recommend that the author introduce relevant amendments to the text. The results of the review are reflected in the Act of Review.

• **Export control** – is the control over the export of science intensive products, technologies and other output of the University scientific research.

  - Its purpose is to prevent unsanctioned transfer of new science intensive products, technologies, services, and other objects banned for export, including items of military, special, and dual purpose, by the University and its structural units in the process of scientific and technological co-operation with foreign countries.

- **Expert examination of agreements** – is a review of draft agreements (contracts, covenants) concluded by the University with other legal and natural persons.

  – Its purpose is to guarantee the interests of the University in the sphere of IP with its participation in the civil process by regulating legal relations in the IP sphere in agreements (including sections (articles) on title to IP and confidentiality) and direct participation in negotiations.

  – The University has elaborated reference agreements, incorporating the corresponding sections (articles) on title to IP.

- **Confidentiality agreements** – are agreements on nondisclosure of information as agreed by the parties, concluded when appropriate by the University with legal and natural persons.

- **Commercial secrecy regime** – involves procedures for the protection of information constituting actual or potential commercial value resulting from its unfamiliarity to third parties, lack of free legal access to it; hence, the owner of this information adopts measures to protect its confidentiality.

  – This regime will be introduced in the first half of 2003. It is currently at the phase of completion and discussion. For a time being, problems connected with keeping commercial secrets are being tackled through the employment of the aforementioned procedures of ensuring confidentiality.

Invention Disclosure

- The disclosure of information on invention is regulated by the Statute of Legal Protection of IP Objects of St. Petersburg State University (2002).

- In the process of creation and legal protection of inventions, the University acts as the only entity entitled to IP objects, as it constitutes a single science and education complex – an educational institution incorporating its structural units (departments, institutes, centres, as well as affiliated enterprises, institutions and organizations);

- In this connection, the University acts as the sole applicant and patent-holder, regardless of the particular unit where the invention has been made.

- The University is entitled:

  – to file a patent application in its own name,

  – to concede the title to patent to another person,

  – to pass a decision to keep a certain IP object secret.

- In order to ensure *legal protection* of an invention, the author who is an employee shall submit to the IP Department:

  – an Application-notice on the creation of an invention and filing a patent application on the invention (see annex)

  - a document entitled *Invention Essence Disclosure*, presenting sufficient data on the invention to make a preliminary appraisal of its patent and commercial value.

- A certificate of acceptance of the *Application-notice on the creation of an invention and filing a patent application on the invention* for consideration may be issued to the author-employee, specifying the date of its acceptance and the consideration period.

- The IP Department shall consider the *Application-notice* and the *Invention Essence Disclosure* jointly with the author-employee within the period up to four months from the date of its acceptance, conduct patent and market studies and pass one of the following decisions, of which it shall notify the author (authors):

  - file a patent application in the name of the University.

  - refuse to file a patent application as the invention is not patentable.

  - recognise legal protection of the invention as inexpedient, for instance, in connection with a lack of prospects for its commercial implementation with the possible concession to the author-employee of the right to file a patent application and receive a patent in his own name.

  - to concede the title to patent to another person.

  - to keep the IP object a secret.

- The IP Department shall prepare, document and file the relevant patent applications directly with the Russian, foreign or international patent agencies.

- The author-employee is empowered to file a patent application and receive a patent in his own name in the following cases:

  - the author-employee has created the IP object not in connection with discharging his official duties or a concrete assignment.

  - during four months from the date of notification of the University by the author-employee of the invention, the University:

    - has not filed a patent application;

    - has not ceded the right to file an application to another person;

    - has not informed the author-employee of keeping his invention secret;

    - has adopted a decision on inexpediency of legal protection of the invention.

- If the University had rendered financial, technical, legal and other forms of support in creating the invention, including the use of its premises and equipment, to the author-employee who has obtained a patent in his own name, the University shall be entitled to free nonexclusive license to use the invention.

Alternative Disclosure Procedures

- The aforementioned procedures for *formal disclosure* of invention are typical for the practice of American and other western universities.

- The procedure is relatively new for the Russian universities. This is connected with the lack of its legal regulation and the existing practice of informal analysis of the invention (*e.g.* without presentation in the form of "disclosure"), which in accordance with the legislation ends with the preparation and filing of an RF patent application, in the case that patenting is expedient. The applicant is entitled to file an application directly with the RF Patent Agency (without the mediation of a patent attorney).

- At the same time, in connection with the need to develop the technology transfer and commercialisation mechanisms, the aforementioned approach is the most rational one, as it allows for a comprehensive analysis of prospects for commercial sale of the invention prior to the application filing.

Problems

- At present, the preference of some or other procedure of ensuring confidentiality or invention disclosure is inessential. *The main problem consists in the underdeveloped state system of innovations treatment,* restraining the development of transfer and commercialization of technologies.

- The ample potential of universities comes to face the actual conditions for development of such activities, or to be more exact – *lack of the necessary conditions.* Development in this sphere is hampered by the following *negative factors:*

  – Lack of the necessary legislation and current state policy, ensuring *the formation of basic legal conditions for interaction between all participants in the process* of creation, protection, transfer and commercialization of technologies oriented on innovative development of the economy.

  – Russia *has practically no framework for regulating matters related to commercialisation of technologies developed by universities* and other scientific institutions. In this connection, university science research usually evolves without consideration of particular needs of the market and industrial production, and innovation processes are spontaneous and ineffective.

  – *Lowering of the volumes of state financing of science and education*. As a consequence, a low level of financing science and commercialization of its output by universities.

  – *Lack of legal and economic mechanisms* stimulating the creation, legal protection and transfer of IP (investment, crediting, tax exemptions, etc.).

  – Lack of an active local policy in the IP sphere and transfer of technologies at the level of ministries, universities and other scientific institutions.

  – Lack or insufficient level of development of their specialised innovation infrastructures that would meet the present-day international requirements (technology transfer units, incubators, innovation centres, etc.) and *regulatory acts (Russian, sectoral, local)* regulating management

procedures, ensuring comprehensive formation of research projects oriented on commercialization of technologies.

- Underdevelopment of the industry sector of the economy and its inability to accept innovation.

- Insolvency of potential licensees.

- Lack of an effective state policy guaranteeing genuine protection of IP from illegitimate usage (“piracy”).

- *Shortage of qualified personnel* and practical absence of experts on technology transfers.

Promoting Universities’ Activity in Technology Transfer and Commercialization – an Acute and Perspective Focus of the Russian Education Ministry

- The aforementioned problems determine our perspectives.

- Naturally, the **basic frames** of activity in the sphere of IP should be created by **the state**. However, many problems **can be addressed** already now within the context of the existing legislation **by the university itself** as an economic entity. A fresh view of IP is needed.

- The education system and universities should reorient themselves towards market innovation mechanisms of scientific performance. The priority task of universities is to guarantee the use of their internal intellectual potential by creating the necessary conditions and management mechanisms, that would enable them to transform the results of applied studied into industrial output.

- Every Russian university should ***flexibly adapt to the impact of market and legal factors,*** adjusting their research, patent and licensing policy, governance methods, organizational forms, as well as the internal procedures for legal protection and commercialization of IP objects.

- In this connection, the Scientific Research Department of the Education Ministry conducts a timely policy by considering technology transfer as a strategic area of improvement of the education system and one of the crucial factors of intensive development of scientific, technological, and innovation potentials of universities.

- This is confirmed both by this programme, and by the anticipated reorganization of the existing IP departments of universities (or in the event of their absence – their creation) into a different type of technology transfer unit, conforming to international standards. Their objectives include cooperation with industry, governance in the IP sphere, including marketing, identification, selection, assessment, storage, and commercialization of IP.

ST. PETERSBURG STATE UNIVERSITY

INTELLECTUAL PROPERTY, PATENTS, AND LICENCES DEPARTMENT

CONFIDENTIAL

Copy № ____

APPENDIX

To the Notification-Request for Creation of an Invention and Application for Issuing a Patent for the Invention

Date of submission: « »__________200__

DISCLOSURE OF INVENTNION

1. Name of Invention

2. Information about the Authors (to be filled for each author separately):

Last Name, First Name, Patronymic (in full):

Work Place:

❑ **University:**

Faculty Sub-faculty

Research Institute ___________________Department Laboratory

Centre

Other sector

Position

Phone number Fax E-mail

Home address:

Home phone number__________ Fax E-mail

❑ **Other:**

Name

Body, organization, enterprise, company

Address

Phone number Fax E-mail

Home address:

Home phone number: Fax E-mail

3. Information about the Invention

3.1. Technology area

3.2. Object of the invention

3.3. Brief description of the invention

3.4. Advantages and unique capabilities of the invention in comparison with analogues

3.5. The closest analogue (prototype of the invention)

3.6. Comparative analysis of the invention with the closest analogue (prototype of the invention)

3.7. Disadvantages of the invention

3.8. Possibilities of elimination of the disadvantages of the invention

3.9. Possibilities of "avoidance" of the invention or development of an alternative option

3.10. Primary application areas of the invention, products, that can be produced by means of the invention

3.11. Existing alternative technologies (products)

3.12. Know-How availability

3.13. List of key words (terms) that reflect the nature of the invention

4. Information about the Innovative Nature of the Invention

4.1. Well-known publications and patents of the authors and third persons who bear a relation to the invention

4.2. Was the information on the invention included in the author's thesis?

4.3. Well-known publications and patents of third persons who bear a relation to the invention

4.4. Has the information on the invention become open (for unidentified individuals) in other forms (conference and seminar presentations; speeches on TV and radio; expositions; open usage; deposition; transmission to partners and information centres; inclusion into databases; Research & Development reports; applications and technical requirements for programmes, projects, grants etc.)?

4.5. Is transmission of this kind of information planned in the near future?

4.6. Has an application for this invention been submitted before?

4.7. Was the patent search for this invention carried out? When was it carried out? What are the results of this search?

4.8. What is the information source where the closest analogue (prototype of the invention) has been described?

5. Information on Technical (Technological) Level (Condition) of the Development

5.1. The research project has not been completed

5.2. The research project for the invention has been completed

5.3. Laboratory (experimental) pattern (model) has been made

5.4. The technology has been developed

5.5. Laboratory (experimental) pattern (model), technology have been tested

5.6. The product that was made with the usage of the invention has been tested

5.7. Technical (technological) documentation has been developed

5.8. Experimental design work on the invention has been implemented

5.9. Industrial production has been introduced

5.10. Can the laboratory (experimental) pattern (model) be demonstrated?

5.11. Can the technology be demonstrated?

5.12. Can the product that was produced with the usage of the invention be demonstrated?

5.13. Is additional research required?

5.14. Is additional experimental design work required?

5.15. Prospects of the technology development.

6. Information about Commercial Prospects of the Invention

6.1. What specific market requirements does the invention meet (what utilitarian problem does it resolve)?

6.2. Commercial importance of the invention

6.3. Technical and economic indicators of the invention in comparison with the best object-analogue that was made in the Russian Federation.

6.4. Technical and economic indicators of the invention in comparison with the best object-analogue that was made abroad

6.5. Product (technology) that is a competitor of the invention in the world market

6.6. Companies potentially interested in this invention

6.7. Market size for this invention

6.8. Unit product cost if the invention is to be implemented in production

6.9. Unit product cost for the product-analogue

6.10. Annual volume of sales of the product-analogue.

6.11. Additional works (development) that should be carried out so that this invention becomes ready for the license sale.

6.12. Are there any international agreements, normative acts of the Russian Federation that cover this invention and regulate financial assistance for commercial sale of the invention and/or the products made on its basis?

6.13. Potential sources and forms of funding additional work on the invention in order to make it ready for industrial use.

6.14. Potential forms of commercial sale of the invention:

- Sale of license for the invention use
- Sale of license for the know-how use
- Option agreement
- Usage of the invention in own production
- Creation of a new production with establishment of a new legal entity

- Contribution of rights for the invention into the equity of newly established legal entities
- Conclusion of an agreement on concession of rights on application for the invention to the third party
- Obtaining a patent for the invention and conclusion of an agreement on concession of the patent to the third party
- Basis of research and technology co-operation agreements, agreements on research development implementation and other contracts

6.15. Information about the stakeholders (organisations, enterprises, companies and other persons)

6.16. Information about managers of the stakeholder organisations (enterprises, companies) with whom preliminary negotiations on the invention usage have been carried out

6.17. Information that was given to the managers of the stakeholder organizations (enterprises, companies).

6.18. Information on facts of illegal usage of the invention and possibilities of identifying the facts of illegal usage, for example on the finished product, documentation, other information.

Author (s) ____

(____________________)

signature (s) Last name, initials

EVALUATING COMMERCIAL VIABILITY OF INTELLECTUAL PROPERTY

V.S. KORTOV
D.B. SHULGIN

High expenses for technology commercialization require high quality of their triaging. High attention also should be paid to high innovative potential and significant amount of innovations at the universities. For example at the beginning of 90 years about 200 applications for inventions were submitted a year. During the period of the reform inventory activity at the university went down, but it was determined not by decreasing of university intellectual potential, but due to the absence of the corresponding justification charts and the common decrease of innovation market activity.

At the present time innovative activity at the Russian universities increases again due to the more active position of the university administration at the area of protection and commercialization of intellectual property. Thus the methods of technologies selection for commercialization should be formal sufficiently to provide the work with the large data expanses and also to increase the objectivity of decision taking.

At the report notorious common methods of selection of various objects are reviewed briefly and also the approach based on these methods for evaluating of commercial potential of technology introduced at the USTU-UPI at present is given.

Notorious methods

In practice the task of selection of commercialized inventions from the flow of technical decisions and innovative ideas handed in to the Centre of university intellectual property (CIP) or to the Transfer Technology Centre (TTC) comes to allocation of scientific-technical developments according to some complex criterion which is convenient to identify as commercial potential or commercial viability of rights on its using. The various methods of integrated evaluation of the object attributes such as method of hierarchies analysis, qualimetric analysis and others can be used.

Method of hierarchic analysis Method of hierarchies analysis developed by T. Saati is a systematic procedure for hierarchic representation of the elements defining the heart of any problem. Method consists of the problem decomposition on the simplest constituent parts and the further processing of judgement successions of a person taking the decisions in pairs comparison. Pairs comparison between the criterions are carried out using the scale of the relative importance. In the most elementary form the hierarchy is being built from the apex through the intermediate levels (criterions of which the subsequent levels are depended) to the lowest level, that is usually the list of alternatives.

Qualimetric analysis The analogue approach is used at the method of qualimetric analysis developed by G.G.Azgaldov, E.P.Raihman, A.V.Glichev. The method algorithm comes to composition of the

multilevel attributes tree and calculation of some integral parameter which is for example the quality of the object from the point of view of rights commercialization on its using.

In spite of the simplicity of algorithms of hierarchy analysis and qualimetric analysis methods some stages of the development of methods using these algorithms in particular for evaluation of commercial invention potential demand to call in qualified specialists such as market researchers, financiers, patent officials and also persons responsible for decisions making.

The tasks are following:

- Composition of hierarchic structural charts of the object attributes that are necessary and sufficient for evaluation of its quality;
- Selection (at each level of attributes definition) of the basic indicators;
- Method definition for weight coefficients determination for the integrated evaluation of the object quality;
- Analysis of quality evaluation and making the decision.

Along with it in spite of the necessity of some recourse expenses at the development stage the algorithms obtain a very important value – they can be easily adopted to any organization, science and technical area, industrial branch.

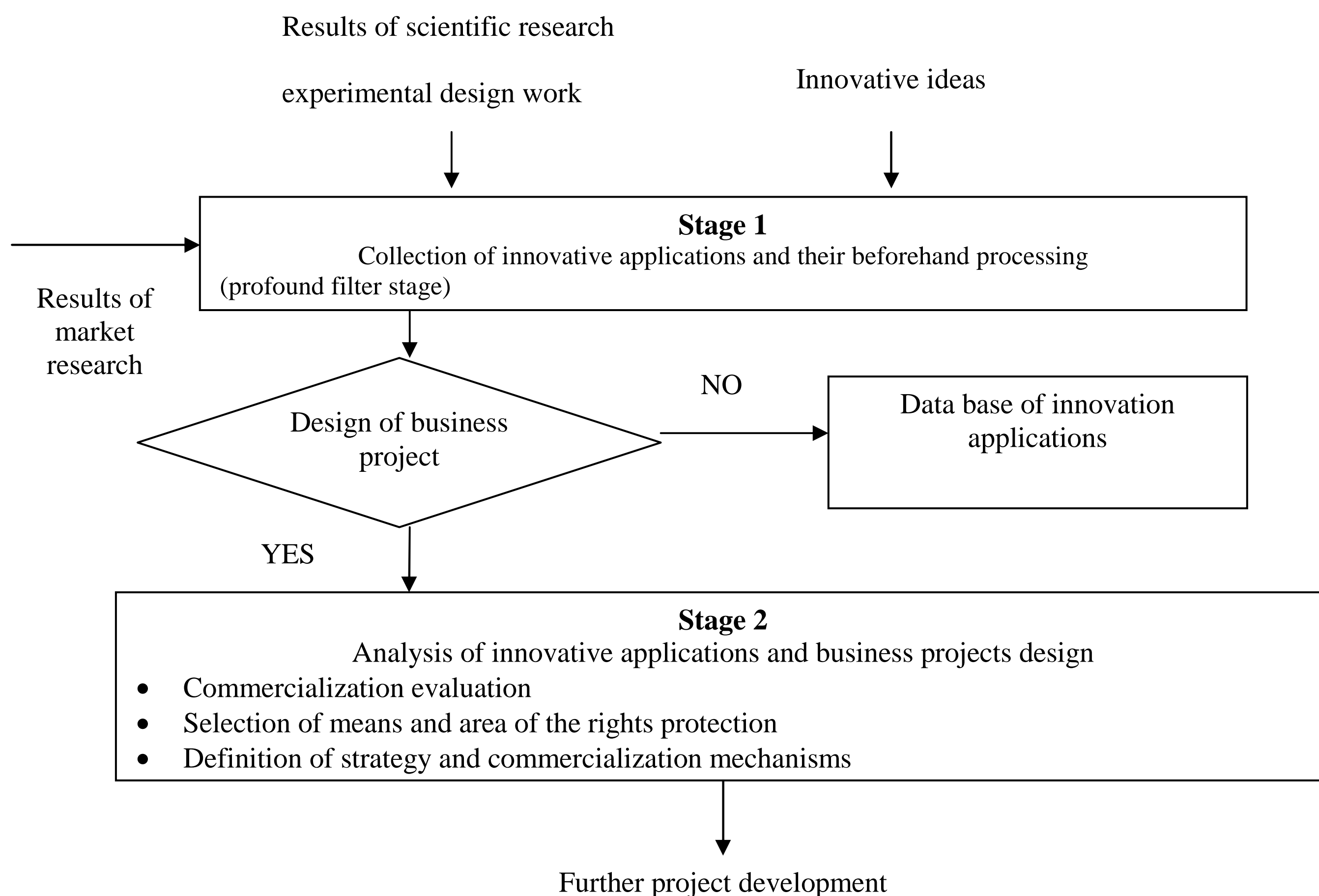
Method selection

The second of the cited above methods –qualimetric analysis – as the most formulized from this group is taken for the definition of the commercial potential of innovative developments at the USTU-UPI. The method based on this algorithm may be easily modernized and computerized. The important advantage of this method is its universality and ability to introduce corrections into modules correspondent to the expert evaluation of the object attributes.

Two-level chart of evaluation of commercial invention viability

The Centre of Intellectual Property of the USTU-UPI encountered in practice with the problem that is typical probably for many organizations. It is appeared that the inventor unawares about market and economic aspects of the developed technical-technological decision. As a result the carrying out of comprehensive analysis of commercial potential at the first evaluation stage was difficult feasible and the process began to 'spin around'.

Figure 1. **Stages of evaluation of commercial invention viability**



Taking into account this circumstance the two-level chart of evaluation of commercial invention viability is being introduced at the USTU –UPI at present. The first stage – the beforehand analysis of invention that is carried out at the information base represented by inventor. The second stage – comprehensive analysis attracting market researchers, financiers, patent officials and other experts, figure 1.

On the each stage collection of information is carried out on the base of unified form of informational list (Annex 1). The main distinction of the first level from the second is that at the first stage parameters are evaluated at the quality level ('high', 'low', 'significant' etc.), whereas at the second stage quantity indicators are used as a rule. Experts working together with the inventor are called in for the quantity indicators evaluation.

Stage 1. Form for the evaluation of commercial potential of the invention at *the first stage* is cited in the table 1.

Table 1

Parameter	Significance	Weight	Result
1.Threats of the third persons claims			
2. Means of rights protection			
3. Application areas (market capacity)			
4. Solvent demand on the merchandise using the technology			
5. Competitor advantages provided by the new technology			
6.Area of the technical exceptional nature of invention (the possible increase of market share due to the exclusive rights)			
7. Market barriers			
8. Possible applications at the other areas.			
9. The displayed interest of competitors (customers of technology)			
10. Interest of inventor and extent of his participation in thecommercialization process			
Summary			

Stage 2.

Evaluation of commercial viability at the second stage is carried out using the method of qualimetric analysis. Technology attributes hierarchic structure aimed on quality evaluation from the point of view of commercializing of rights on its using is given at the figure 2.

According to our model (figure 2) integral quality of object (zero level) is defined by the four attributes of the first level – market, financial, property rights and scientific-technical factors. At the present time methods of calculation of parameters value K_0 –$K3_{10}$ are approved at the USTU-UPI. The method of Delfi is used as a methodological base to carry out the evaluation of weights.

Figure 2. **Hierarchic structure of invention innovative parameters**

Level 0	Level 1	Level 2	Level 3
		Market structure K_{21}	Dynamics of market development K_{32}
	Market factor K_{11}	Interest of customers K_{22}	Number of inquiries K_{33}
			Dynamics of inquiries K_{34}
			Number of license agreements K_{35}
			Dynamics of license agreemeents K_{36}
		Interest of competitors K_{23}	Number of patents K_{37}
			Dynamics of patents issue K_{38}
		Market risks K_{24}	Competitive risk K_{39}
			Human factor K_{310}
		Own experience of marketing K_{25}	
		Expenditures for making experimental sample K_{26}	
	Economical factor K_{12}	Current cost of revenue from using K_{27}	
Commercial viability of the invention K_0		If there are a partner for financing of brining up the development to experimental sample K_{28}	
	Property –legal factor K_{13}	Opportunity for confidentiality securing K_{29}	
		Availability for the obtaining of the Russian patent K_{210}	
		Availability for the obtaining the foreign patent K_{211}	
		Opportunity for the control of rights infringement K_{212}	
		Technology age K_{213}	
		Periods for brining up the technology to experimental sample K_{214}	
		Advantages compared to analogues K_{215}	
	Scientific-technical factor K_{14}	The presence of test results K_{216}	
		Stage of the development K_{217}	
		Is the rights owner able to bring up the development to the experimental sample? K_{218}	
		If there are a partner for the technical making of the development up to experimental sample? K_{219}	

EXEMPLARY TECHNOLOGY INFORMATIONAL LIST

1. Full name of the authors, contact information
2. Brief technology description (without of disclosure of know-how)
3. Technology age
4. Who is the rights holder?
5. Opportunity of confidentiality securing
6. Was the any part of invention described in printed publication (including the reports)?
7. If yes, then where and when?
8. Was the any manuscript or report describing any part of invention sent for publication?
9. If yes, then when and whom.
10. Was the any part of invention reported at the meetings, symposiums or conferences?
11. If yes, then when and where?
12. Opportunity of check up of rights infringement.
13. The presence of production secret.
14. Implementation stage.
15. Is there is the possibility of demonstration of the acting object?
16. Application area.
17. Evaluation of the presumable product market capacity, sum, rubles, $.
18. Customer claims or competitors interest displayed.
19. Organizations – potential customers.
20. Significance (role) of the invention in the product for sale at the market?
21. Are there any analogues, if yes, then what and in what country?
22. Technical-economic advantages of the technology application (compared to the analogues)?

23. Possible means of the technology commercialization (licensing, new business foundation, others).
24. Tentative terms and expenses for bringing up of the technology to experimental sampler
25. stage.
26. Information about competitors.
27. Probability of production by competitors of the analogue product (not infringing rights on this technology) up to the moment of product output to the market.
28. Are there manufacturing powers at the enterprise for the technology implementation?
29. Probable degree of the inventor participation in technology commercialization.

LICENSING ACTIVITY ORGANIZATION

TATIANA V. KLUEVA

The main target of this report is to try to analyse the ways and methods of safeguarding the output of scientific research activity for the purpose of its marketing. The scientific research output becomes a product only when it can enjoy consumer demand. But to this end, the scientific research output should, firstly, be competitive on the market of scientific research produce and, secondly, have sound legal safeguards. The possibility of its most profitable marketing depends on the degree of legal protection of the object. Apart from the existence of a concrete document protecting the object of industrial property, an important role is played by the aggregate amount of all measures safeguarding the output of creative work.

An attempt to analyse the path covered by new technological developments from idea to end product from the point of view of strategy of its promotion on the market and efficiency of its safeguards into three stages:

Stage 1: idea – experiment – output of scientific research.

Stage 2: prototype – technological-design documentation – pilot sample.

Stage 3: experimental production run – serial production – product marketing.

Stage 1: idea – experiment – output of scientific research. This stage is crucial for ensuring safeguards of scientific research output. It is important at this stage to “claim” the main area of research. Scientific research (R&D) can result in creation of objects of intellectual property that could form the necessary basis for the end product. At the same time, R&D may produce spin-offs that could be used in future developments. During this period it is still difficult to define what exactly the path from idea to a marketable end product will lead to.

The first step in ensuring legal safeguards of R&D output at this stage is to ban any publication disclosing the idea and the result of experiment. It is common knowledge that ideas are not subject to protection either by copyrights or by the patent law. The publication of a new idea underpinning R&D activity may point to the perspective area of work. The publication of results of experiment may enable the competitor to use it in its own R&D, saving time, financial and technological resources and offering an opportunity to proceed directly to implementation of the idea and hitting the market with the end product within a shorter period of time.

When the end result of R&D is achieved, it is necessary to take concrete measures to reveal, and ensure protection of IP objects.

- Objects of industrial property: As far as these objects are concerned, it is necessary, first of all, to file invention applications for a device, method, or substance. The filing of applications enables to claim the priority and scope of legal entitlement. It is necessary on this stage to decide whether it is expedient to conduct an expertise of the inventions in essence and obtain a patent, or not go beyond temporary legal safeguards within the limits of the published formula.

- Objects of copyrights: Such objects as computer software, databases, and other objects of copyrights can be created on the first stage. They need registration with RosAPO and RAP.

- Know-how: The establishment of a regime of confidentiality requires an aggregate amount of administrative and legal safeguards.

Upon the receipt of end results of R&D and implementation of measures to ensure their protection, it is possible to publish information and advertising material without disclosing the essence of the experiments.

At the end of the first stage, it is necessary to conduct market studies in order to establish the ways and expediency of proceeding. The studies should answer the question which results of R&D are worthy of marketing, which products with what consumer properties, at what price and in what quantities should be released on the market. Experts on marketing recommend: “Don’t try to sell what you have managed to produce, but focus on manufacturing something that will be purchased.” Three problems shall be analysed in the course of market studies: production, need, and consumption. On the basis of the information obtained, the options should be compared using the profit-and-cost criterion.

Of course, market research should also be conducted before launching R&D activities, but as a rule, R&D financing is not connected with market and end-product evaluation. The path from idea to product marketing is rather complicated, lengthy and requires much professional and financial effort. The involvement of investors is usually necessary at a certain stage in the life of an object of intellectual property. However, investor interest in an original R&D upshot can be aroused only on condition there is a certain scientific and technological reserve. At the same time, studies show that the demand for the new development on the market can be stimulated by:

- fundamental novelty of the development, that improves its functional parameters.

- objective necessity of expansion or restructuring of the customer’s production.

- availability of a free sector or growing demand on the product market.

- strict ecological restrictions on existing production.

It is advisable to take these factors into consideration during the selection of areas of research.

Therefore, the market study enables to make the following decisions:

- To suspend the job after completion of the first stage and/or:

    - publish.

    - obtain documents protecting intellectual property objects.

    - conclude agreements on the transfer and/or concession of the title to IP objects.

    - maintain the results of the job in the know-how regime.

To proceed with experimental-design jobs.

Stage 2: "prototype – construction-design documentation – pilot sample." The implementation of jobs of the second stage should begin with revealing unprotected objects of industrial property. New inventions, utility models and know-how can be created as a spin-off of jobs of the second stage, when the results of R&D are developed into utility models, and prototypes and technical documentation are being elaborated. The appearance of the product begins to play a prominent role here. Taking this factor into account, it is necessary to work on product design during the creation of drawings and file an application for design, considering the results of the studies. It is also important under what trademark the product will be manufactured and whether or not the consumer will be able to distinguish it from similar-looking items.

The end product of this stage can consist in a prototype, technological-design documentation, or pilot sample. Each result obtained can be marketed independently or in aggregate by means of:

- non-recurrent marketing,
- regular sale of the created produce.
- conclusion of license agreements and concession agreements on objects of industrial property and copyrights.
- use as the basis for stage three.

In the event of *non-recurrent marketing* of the produce created in the course of implementation of the second stage, it is necessary to determine whether it is expedient to register the IP objects. If the costs of obtaining safeguards exceed the profits from the sale of produce, registration may turn out to be inexpedient. In some cases it is possible to hand over the title to the IP object together with the marketed prototype, construction-design documentation or pilot sample.

In case of *regular sales*, the commercial value of the development is also connected with a high level of preparedness for commercial marketing, *e.g.* its marketable appearance. The marketable appearance of scientific and technological produce is the degree and quality of elaboration of scientific-technical documentation, availability of duly performed drawings, calculations, etc.

The fulfilment of jobs at any stage of R&D involves certain expenses, and the farther on with the development, the higher are the costs. If there are sufficient funds for R&D jobs at the initial stages, the completion of R&D into an end product, whether it is the second, or particularly the third stage, requires an incomparably larger amount of funding. Therefore, it is important to quest for and attract partners-investors immediately after obtaining the first results of marketing, *i.e.* when the future prospects for the jobs become clear. Investors may render direct financial support, proceeding from the anticipated profit, or participate in the jobs and/or become co-owners of IP.

At this stage, it is expedient to *conclude an option agreement*. The university grants to the investor an exclusive non-transferable right to purchase licenses to IP objects on a certain territory for a stipulated period, for compensation. During this period, the university undertakes not to conclude licensing agreements with anyone else except the investor (buyer). The university hands the technical documentation over to the investor against the payment. The university may supply the investor with additional remuneration with a sample of the produce – a prototype, technological-design documentation, or a pilot sample. The materials, handed over to the investor, may be used only for the purposes of the given option agreement on confidentiality terms. If the parties conclude a licensing agreement upon the expiration of the aforementioned period, the option sum shall be set off in future payments. If a licensing agreement is not concluded, the option sums shall not be refunded.

Stage 3: experimental production run – serial production – product marketing.

If the studies conducted reveal that the objects created in the process of R&D can be transformed into a product with consumer properties and demand, it is time to launch the implementation of jobs of the third stage. It is unusual for the university to carry out the third stage of the jobs on its own. As a rule, besides the funding needed for developing the R&D output into concrete produce, its serial production and sale, a certain material and technological basis is required. At the outset of this stage, it is necessary to make calculations and estimate the cost of the end product in order to open up the opportunity to build mutually beneficial relations with the product manufacturer, exercising serial production and sale.

The next stage is the revision of the existing rights to IP objects. It is necessary to establish what safeguarded objects are used in the end product, how they are protected, and what measures should be taken to settle the issues connected with the exercising of exclusive rights.

The output of produce involving the use of IP objects may only be based on license or concession agreement. This triggers the emergence of questions connected with receiving compensation in exchange for granting exclusive rights. The compensation can be paid in the form of flat (lump sum) payments, combined, or royalty payments. Each form of payment has its advantages. Flat payments give the university a chance to obtain more or less significant sums that can be used for solution of some or other problems; if the form of royalties is selected, monetary funding would be gradual, and the more produce is manufactured, the more money shall be channelled to the university account. In practice, combined forms of payment are preferable.

It is very important for the university to correctly estimate the cost of the transferred output of scientific research and establish the form of settlements, relying on accurate economic calculations. This would enable it to set the price of the product in question. The university's ability to correctly estimate the volume of the transferred rights is also significant. The volume of transferred rights should be necessary and sufficient for enabling the partner (investor) to manufacture the product, but on the other hand, not to cut off the university's opportunity for further scientific research in this domain.

The implementation of all steps of the route covered by the research product from idea to serial production is a complicated and often painful process of the university's market entry. It requires the pursuit of a certain policy by the university, leading to the alteration of internal relations within the organisation itself. An important element of the university's internal policy is the conclusion of contracts with the employees and personal remuneration of authors of the R&D in the event of their successful commercialization.

The *market value* of scientific produce is gained only when the university is able to prepare the necessary material for handing it over to the customer. An extremely important element in this respect is the university's ability to ensure a high level of confidentiality and IP safeguards. If there is a lack of confidentiality or legal protection of the development, a serious firm would never agree to co-operation or to the purchase of IP.

Adequate settlement of relations with the university staff and freelance workers on issues involving intellectual property is another important factor. Moreover, there should be a conscious willingness of the staff to conduct activity through its own organisation, specifically. The policy of some international foundations and support centres recruiting individual Russian scholars, rather than universities in general, is no more than an attempt to obtain R&D practically "for a song".

The formation of a conscious willingness of the staff to engage in commercialisation of the developments via their university is totally out of the question where there is no trust for the university

administration or a stable policy of the university in this sphere. The presentation of scientific developments on behalf of the organisation should guarantee more stable and high incomes than their concession by the author on his own behalf.

The availability of high-skilled experts on IP protection, marketing, and law at the university is an extremely important factor. Professional knowledge alone is insufficient for successful performance on the market. It is necessary to be an expert on copyright, patent and tax law, marketing, and accounting.

ORGANISING THE LICENSING EFFORT : MARKETING, NEGOTIATION AND CONTRACT MANAGEMENT

DOMINIQUE FORAY (OECD/CERI)

While intellectual property is only one element of the "intellectual capital" of universities, its importance is continuously increasing. The market for IP is growing in volume and diversity, and there is a trend towards a more proactive approach to technology licensing among academic organisations.

Organising the licensing effort is becoming, therefore, a key issue. This managerial capability involves seven facets:

Identifying licensable inventions

Evaluating inventions to be licensed

Designing the post-invention process

Defining a strategic view for the development of the invention

Identifying appropriate licensees

Managing the negotiation process

Managing post-licensing activities

Each of those facets will be discussed with examples and cases from France and Germany.

- **Invention disclosure**: there is no great natural incentive for academic scientists to disclose new research methods or instruments they have created for internal use. Many research tools are "do-it-yourself" technologies and the goal of the invention is to solve problems that occur in the in-house research process. Profit objectives are, thus, not present. There is, therefore, a need to create an incentive structure as well as an organisational procedure to incite academic scientists to disclose the new knowledge.

- **Technology assessment**: one of the primary objectives of the internal IPR management is the supervision of the technology portfolio. Before deciding on protection methods and market exploitation of intellectual property, inventions and new research and discovery technologies have to be properly assessed.

- **Designing the post-invention process**: it is also important to have an idea about the way the post-invention process will happen. This can be a case for:

  - *transfer* which concerns technologies that with slight modification can be commercialised or incorporated (as in a case of process technologies) by a private firm;

  - *co-development* which involves technologies developed by the laboratories that require much more substantial modification and additional development for commercial

introduction (these technologies require an extended period of collaboration between the two partners). In many instances the results of these projects will differ substantially from initial project goals.

– *R&D services* which involve the use by private firms of the unique facilities, expertise, and equipment of the laboratories for technology development or R&D activities that are defined by the private firm.

These three project categories have very different requirements for managing the licensing process.

- **Defining a strategic view for the development of the invention**: The university's unit may have a particular strategic view about the future of its invention:

  – either the unit wishes to keep control of the general development of the technology (in which case it will license the technology only for specific applications).

  – or it wishes to transfer the technology in order to externalize post-invention costs and the license will be broader than in the first case.

- **Identification of appropriate licensees**

- **Managing the negotiation process**: The negotiation process involves three issues: negotiating the rights of the university in terms of using the generic knowledge, pricing the invention and agreeing about a payment method.

  – The definition of the scope of knowledge which is transferred as well as the identification of what is generic and what has been created prior to the involvement of the licensee (*i.e.* no subject to private appropriation) are key issues in order to maintain free access for university researchers to the basic knowledge for re-use in other research projects.

  – The measurement of an invention price raises difficulties, and in order to set the price for a license indirect methods have to be applied. The price can be calculated as a share of the licensee's profit (the percentage usually varies between 25 and 50) or by taking into account the transfer cost.

  – In addition to the determination of the price managing the negotiation process includes decisions on payment method and the term of the license agreement.

- **Post-licensing activities**: this last step included activities such as supporting the implementation process by technical assistance, if required. During the license term, the responsibilities of the licensing function within the invention provider also include looking out for infringements of its patents or licensing agreements.

Conclusion: There is no single best structure for intellectual property management. In some organisations, licensing and IPR management are the functions of a separate department. In others, these functions are integrated within a department dealing with other technology transfer matters. Elsewhere, a subsidiary company can be employed.

Managing IP also includes the creation of a reward system to provide incentives for employees to be actively involved in the filing of patents or in the exploitation of know how. Many cases show this to be a key factor in successful IPR management. Incentives can be monetary or non-monetary: individual

scientists respond to different sorts of incentive ranging from cash to professional recognition and increased resourcing for their chosen fields of research. Incentives need to operate at the institutional level as well as the individual level – the unit or the institute should benefit directly from a profitable exploitation of its IP. Successful organisations combine institutional and individual incentives in order to foster further active involvement of institutes and employees.

FINANCING UNIVERSITY TECHNOLOGY TRANSFER OFFICES

TERRY A. YOUNG

Just as there are many different models for transferring university research and Intellectual Property Rights (IPR) to commercial application, there are many different models for funding the Technology Transfer Offices (TTOs) responsible for managing an institution's technology transfer process. This briefing illustrates several alternative models for funding TTO operations, by examining practices from several different countries, presented in alphabetical order.

Australia

In Australia, there is no specific Government funding for TTOs, and each university is responsible for financing its own technology transfer activities. While Government funding for research requires universities to have IPR policies, there is no equivalent to the U.S. Bayh-Dole Act to mandate how IPR is commercialised. Most universities claim ownership of IPR and share benefits with inventors; most have recognized their obligation to commercialize IPR. In this relatively unregulated environment, various models have emerged in Australia. The two main models are (a) the formation of a separate company, and (b) the establishment of a university TTO.

In the company model, the company generates cash flow through a variety of related business activities such as consulting, conference management and professional development courses, with the proceeds enabling the company to support the university's technology transfer function. In other cases, the university has provided seed funding to support company operations.

In the university office model, the university provides funding directly to the TTO, which is then regarded as one of the central administrative functions of the university. The adequacy of the funding is very much dependent upon the support of the university's central administration and the ability of the TTO to demonstrate the benefits that it brings to the institution.

France

TTOs in France often are more focused upon Collaborative Research Agreements (CRA) than in IPR licensing. In fact, IPR licensing and commercialisation are for most universities new activities added following the "Law on Innovation" of July 12, 1999, and the “Recommendations for IP Policy” issued by of the French Ministry of Research in 2001.

Most French universities are public institutions. Therefore, a TTO receives funding by the dedication of a portion of the funding provided to the university by the French Government. These dedicated funds are largely symbolic (EUR 15 000 to EUR 40 000). However, the autonomy of each university gives it the authority to allocate its budget at the sole discretion of its governing board. Therefore, current practice for supporting TTOs have evolved into two basic models:

- If the TTO is part of the university, its budget is determined by the university's board, and may be supported in part from (1) a percentage of the amounts received from CRAs, and (2) a percentage of revenues received from IPR licensing, if any.

- If the TTO is operated as an affiliated subsidiary of the university, support is solely provided from a percentage of all incoming revenues, from either CRAs or IPR licenses.

India

There is no formal legislation for organizing and financing TTOs in India. However, over the last 10 years, most technical universities and research institutes in India independently have 0established organizations for industry-academia interface. Such organizations perform many of the technology transfer and IPR commercialisation activities typically assigned to TTOs in other countries. Some of these autonomous entities were initiated with seed funding provided from State Governments or the Central Government. For instance, the Indian Institute of Technology Delhi has established a Foundation for Innovation and Technology Transfer (FITT), with a corpus grant equivalent to USD 400 000 from the Ministry of Human Resource Development. In other cases, the organizations were formed by funds appropriated by the governing board of the autonomous university or research institute.

In all cases, such support is provided for a limited time only as these organizations are expected to attain self-sufficiency, working as "profit centres" with a well-managed business plan. Income may be derived from service charges levied for industrial consultancies and other related business-development activities, as well as an allocation of a percentage of the royalty income for technology transfer transactions.

Recent attention has sought to link research institutions with Small and Medium Enterprises (SMEs). The Government has funded Science and Technology Entrepreneurship Parks (STEPs), "Industry Interaction Cells," and Technology Business Incubators (TBIs), major conduits for transfer of technology from academic institutions to SMEs. In all cases, the organisations are expected to achieve self-sufficiency after initial seed funding from the Government.

Japan

In 1998, the Japanese Government enacted legislation for creation of government-approved university TTOs. Once a TTO is approved, the Japanese Government provides two-thirds (2/3) funding for its operating cost (without the remuneration of patent attorney expenses) to the equivalent of USD 300 000 per year for a period of five years. At the end of the five-year period, the TTOs are expected to be self-sufficient from the income streams resulting from commercialization. Upon realization that the expectation of self-sufficiency in five years cannot be achieved, the Japanese Government currently is considering a new funding system for government-approved TTOs. Furthermore, in 2004, Japanese law will give all national universities independent legal status so that they may participate in TTO initiatives. There are 27 approved TTOs in Japan.

Finally, some Japanese TTOs found that the funding provided by the Government was not sufficient to support their operations. These institutions created associated for-profit companies to assist in start-up companies for the commercialization of university R&D results, and asked faculty members to invest in the company. Thus, several faculty-owned companies associated with university TTOs assist in commercialization through the start-up companies. This step also provides incentive for faculty members to disclose their inventions, as they have a personal stake in the commercialization company.

People's Republic of China (PRC)

In 1998, only Tsinghua University and Peking University in Beijing operated TTOs. Today, each of the major research universities operates a TTO, originally supported by the PRC Government from a portion of the general Government appropriation to the institution. However, as China moves from a state-

planned economy to more of a market-based economy, this TTO funding model is changing. Most of the TTOs today are operated as associated private companies, solely owned by the university, and initially supported with university funds. As private companies, these TTOs are very active in business development services, such as incubators, assistance in preparing business plans, assisting in start-up company requirements, investing in new spin-off companies with university-based venture funds, and so on. Most often, the TTOs negotiate for significant equity shares in new university start-up companies, and may wholly own some start-up companies. Eventually, the TTOs are expected to become self-sufficient from the equity holdings, as well as from income received from licensing and other related technology transfer activities.

South Africa

South Africa has identified Government support for research and innovation as a key part of the national economic development strategy. In August 2002, the Government approved a new national R&D strategy; discussions currently are in progress to develop plans for implementing the new strategy, including national funding for technology transfer. Although funding for commercialisation activities and patents is critical, a major capacity building and development effort is also underway. This effort will build upon embryonic capabilities that exist in a few universities and public research councils.

South Africa is seeking to build strong linkages between its emerging technology transfer system and its research system, to build a new culture of innovation in the research community and to ensure that all benefits of research (including the non-commercial or social benefits) are also understood and exploited. To support this integrated approach, the Southern African Research & Innovation Management Association (SARIMA) was formed in 2002 to assume the lead role in national efforts to build the research & innovation capability. The SARIMA is supported by the Government, participating academic institutions, and U.S. and European philanthropic donors.

United Kingdom (UK)

Following the UK Government's "White Paper on the UK's Competitiveness" in 1998, many policy initiatives and Government funding streams to stimulate the links between the science base in universities and UK industry were established, significantly changing the way in which UK universities organise their technology transfer activities. While in the past many of the large universities created separate business units to manage and commercialise IP (University Companies or "UNICOs") the majority now have integrated offices within the university. A common model emerging is one where the technology transfer office and the sponsored research office are combined. The growth and development of such offices has been stimulated by direct Government funding to universities for this "third stream" activity, through the Higher Education Innovation Fund in England and the Knowledge Transfer Grant in Scotland. While these development funds have been subject to competitive bids in the past, they are now distributed through "formula funding" primarily based upon research capacity and earnings.

United States of America (U.S.)

No Government funding for TTOs is provided in the U.S., and there are no national universities. However, the Bayh-Dole Act of 1980 provides the legal basis for TTO funding The Act states that income recorded from commercialization of Government-funded research results can be utilized for *only* three purposes: (1) to fund the administration of the technology transfer function (TTO); (2) to provide a share of income to the inventor as an incentive to participate in technology transfer; and (3) to support education and further R&D in the institution.

The Act did not specify the percentages to be allocated for these three purposes; each university can determine how to allocate its commercialization income. In implementing the Act, most institutions set aside a percentage of the income stream to fund a TTO; in general, allocations for TTO operations range from 10% to 25% in U.S. universities.

Typically, after adopting a university policy to allocate a percentage of commercialization income to support the TTO, the university directly subsidizes the TTO from its internal sources during the first years of operation. Then, as income is realized from license agreements, the subsidy required from the university for TTO operations is reduced over time. Eventually, the institution expects that the allocation of income to the TTO will eliminate the need for direct university subsidy. It is often stated in the U.S. that 8-10 years are required for a TTO to become self-supportive from the allocated income. In a few rare cases, a TTO became self-sufficient early in its history from a project that immediately generated a large stream of income.

These examples demonstrate that TTO funding models vary from country to country, and are developed to fit the cultural, political and financial situation in each country. One theme is present in all models: the funding scheme is targeted to provide support to TTOs at the level of the individual research institute. Two additional themes occur in most but not all of these examples: (1) the TTO is allocated some portion of the income stream from commercialization of the university IPR for its operations, and (2) eventually, the TTO is expected to become self-supportive from this allocation of income and/or from other related income-generating services.

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