

# Improvement of the course "Management of intellectual property" based on the mixed state contract in the field of scientific R&D

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**Abstract.** Intellectual property (IP) is one of the forms of storing knowledge – intangible assets of knowledge economy. The translation of IP knowledge to the young generation is one of the challenges of nuclear knowledge management. At the NRNU MEPhI (National Research Nuclear University MEPhI), the subject is studied within the framework of the academic course "Management of intellectual property". The aim of the course is to train qualified specialists, ready to use modern methods of strategic management of IP in commercial firms. The article is devoted to the strengthening and transfer of IP rights for scientific output application in industry and commerce. The state remains the main source that finances all the significant developments in the field of science and technology. Therefore, the primary task is to effectively utilize the R&D output created at the expense of the Federal budget, both within the state order and the estimated budget financing. Currently, there exist contradictions in the area of strengthening and transfer of rights for R&D in the field of science. The newly borne concept dealing with the strengthening of IP rights for the scientific R&D output, centers on the theory of a mixed state contract and is conveniently integrated with the academic course mentioned. Knowledge itself takes the form of IP, as soon as it becomes formalized. The academic course when supplemented with various approaches to strengthening and transfer of IP rights for the scientific R&D output certainly gives a better understanding of the commercialization process of the intellectual capital and structures relevance to intellectual property. The research material is integrated with the educational process, and the academic course "Management of intellectual property" is designed both for economic and engineering specialties.

## 1. Introduction

Intellectual property (IP) is one of the forms of storing knowledge – intangible assets of knowledge economy. The translation of IP knowledge to the young generation is one of the challenges of nuclear knowledge management. At the NRNU MEPhI (National Research Nuclear University MEPhI), the



subject is studied within the framework of the academic course "Management of intellectual property", which is delivered to will-be economists, physicists and engineers. The aim of the course is to train qualified specialists, ready to use modern methods of strategic management of IP in commercial firms.

In the result of acquiring the fundamentals of the discipline, undergraduates are supposed to:

- be aware of the legal, economic, organizational maintenance of IP management;
- understand the characteristics of strategic management of IP as a developing business resource;
- get an idea of the valuation, insurance, accounting and tax accounting of intangible assets, aimed for commercial use [1].
- be able to use methods of civil law regulation of relations arising in connection with the creation and use of IP objects.

The state remains the main source that finances all the significant developments in the field of science and technology. Therefore, the primary task is to effectively utilize the R&D output created at the expense of the Federal budget, both within the state order and the estimated budget financing [2]. Currently, there exist contradictions in the area of strengthening and transfer of rights for R&D in the field of science. In particular, these include the incompleteness of the Russian legislative base regulating the aspects of commercialization of the intellectual activity output.

The newly borne concept dealing with the strengthening of IP rights for the scientific R&D output, centers on the theory of a mixed state contract and is conveniently integrated with the academic course mentioned.

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There are a few major provisions in our new approach to be considered below.

## **2. Practical approaches to strengthening rights for using R&D outputs in the field of science**

In the XXI century intellectual capital is associated with the source of gaining competitive advantage – a value to be turned into productive force, contributing to the export of state-of-the-art technologies and products of innovative performance. Nevertheless, there are some contradictions in the way of Russia's economic advancement that stem from both nationwide and sectoral challenges affecting innovative activity of enterprises:

- underdevelopment of the Russian market of high technology products, as well as the lack of effective demand for high-tech products;
- complicated financial and economic condition of industrial enterprises, lack of internal working capital, funds for the implementation of innovative projects;
- incompleteness of the Russian legislative base regulating all the aspects of intellectual activity results commercialization [3,4];
- insufficient number of companies and specialized units in enterprises for technology commercialization, as well as highly qualified specialists in the IP management.

In principle, a vigorous involvement of the R&D output in the economic turnover requires a clear regulation of the issues of exclusive rights for the intellectual product by law. For businesses to succeed in the dynamically changing economic environment it is important to use various forms of public-private partnership in the sphere of science and innovation. There are substantial benefits to be gained from different approaches in order to endorse IP rights for scientific outputs [5]:

- concluding a state contract;
- providing the condition of an agreement, according to which all the rights belong to the state, if the parties do not envisage otherwise;
- providing the condition of an agreement, according to which all the rights belong to the contractor, unless the parties envisage otherwise;
- the rights for commercial use belong to the state;
- the state retains the rights to support consumers receiving new products at a reduced price:

- the rights belong to the state, which may transfer them to economic management by the state unitary enterprise;
- the rights should belong to the contractor: it can stimulate them to identify the scientific R&D output, allow them to exercise these rights better than the state does, since it has adequate capacity; increase tax revenues and expand employment.

Note, that the latter option is reflected in the Government Resolution No. 685 "On the procedure of using rights for R&D output obtained at the expense of the Federal budget". It implies that the state customer unilaterally exercises the option of acquiring rights, provided that:

- the R&D output is essential to perform public functions related to ensuring defense and security of the country;
- the introduction of the R&D output into economic turnover with the state participation is beneficial to the state;
- the given output is withdrawn by virtue of the law or may be limited in circulation. In other cases, rights can be assigned to the organization or to the Russian Federation and the performing organization in conjunction [4].

Central to the theoretical concepts of endorsing rights for R&D outputs is the concept of a mixed state contract.

In accordance with article 421 (item 3) of the RF Civil Code, "Parties may enter into a contract containing elements of various contracts provided for by law or other legal acts (mixed contract)" [6]. In fact, the state customer, ordering R&D works, is primarily interested in the public use of the obtained results (for example, in the field of defense, healthcare, environmental protection, social assistance, etc.). Simultaneously, the output can have a commercial application that attracts the contractor – a commercial organization.

Thus, in case of a mixed agreement including elements of the agreement on joint activities, its participants acquire rights to use common result in exchange for their deposits [7].

### **3. The use of a new type of a contract for the transfer of Federal technology from state scientific organizations to the sphere of business**

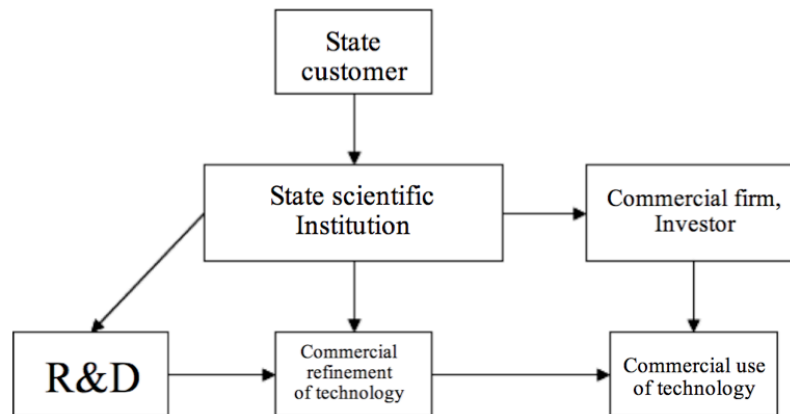
The evidence points to the importance of regulating by law the use of a new type of a contract. Necessarily, the contract must be well documented and signed by the head of the scientific institution with the commercial organization on behalf of the Russian Federation. Such a contract is of a mixed character and includes a number of elements:

- contracting out, the first phase of which is the transfer of a pre-commercialized unfinished technology;
- contract on the RF joint activities, including both the institution and the commercial firm acting on behalf of the state;
- license agreement (a contract that provides a given commercial firm with the full state commercial license for the use of Federal technology).

Still there is a certain inaccuracy, which needs clarification with regard to the widespread treatment of this agreement abroad – "agreement on the joint R&D". The interpretation seems to reflect only one element of the given mixed agreement, along with the Agency and license elements.

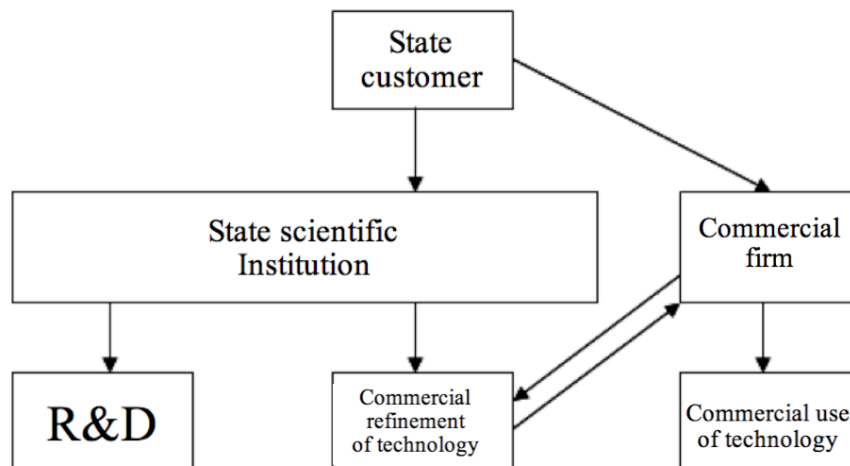
Upon the whole, Figures 1-5 present options for transferring public technologies to the two segments: state contract and estimate-budgetary (administrative) segments. We will examine three possible ways of technology transfer in the state contract segment, depending on the distribution of functions between the parties.

Under the first option, the R&D contractor is the only participant in the commercial refinement of the technology (CRT). This option was reflected in the Federal Draft Law "About technology transfer". The evidence points to a deficiency that speaks for itself: the factor of considerable transaction and transfer costs (costs of developing the technology) is practically ignored in this scheme (See Fig 1).



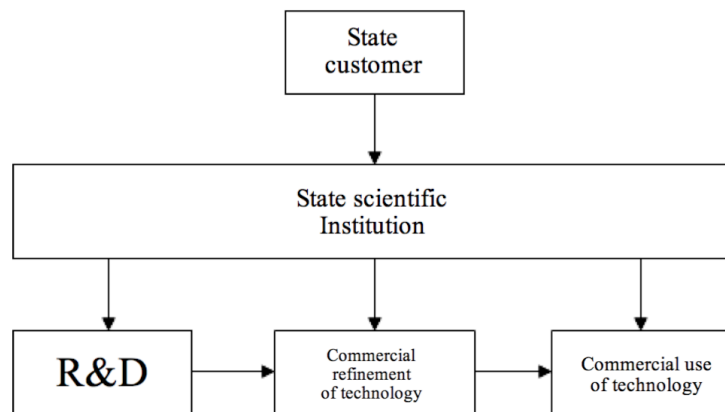
**Figure 1.** The first option of technology transfer in the state control segment.

Under the second option, the commercial firm is a further user of technology. Even though the contractor is involved in its commercial refinement, this procedure is unlikely to fully solve the problem (See Fig. 2).



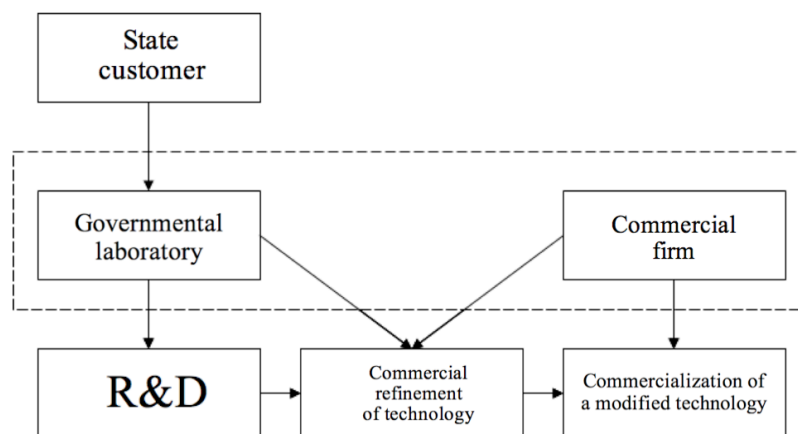
**Figure 2.** The second option of technology transfer in the state contract segment.

Eventually, the third option may be recognized as the most adequate one, because it is based on the diversification of the participants' activities and in addition to performing R&D assumes commercial refinement of the technology as well as its commercial use. Regrettably, this option was not reflected in the bill (see Fig. 3).

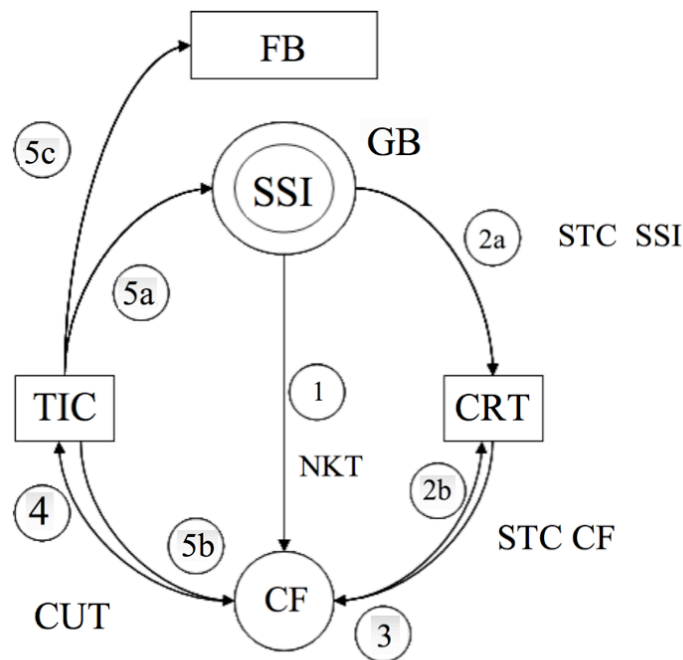


**Figure 3.** The third option of technology transfer in the state contract segment.

As for the estimate-budgetary segment, it would be beneficial to make use of the US experience, based on the partnership between public research institutions and commercial firms for commercial refinement of technology. The advantages also suggest a subsequent transfer of modified technologies to commercial firms to be used in the framework of a licensing agreement (see Fig.4 and 5).



**Figure 4.** Commercialization of technologies developed in the US government research laboratories.

**Designations:**

GB – government body;

SSI – state scientific institution;

STC SSI – scientific and technical contribution of the SSI to the commercial development of technology;

STC CF – scientific and technical contribution of a firm to the commercial refining of technology;

CRT – commercial refinement of technology;

CF – commercial firm;

TIC – the total income from the commercialization of technology;

NKT – commercially non-modified technology;

CUT – commercial use of the technology;

FB – Federal budget. 1 2a 2b 3 4 5a 5b 5c

**The sequence of actions:**

1 – provision of commercial firms with NMT;

2A, 2B – scientific and technical contributions of CF and SSI to the commercial refining of technology;

3 – transfer of NMT to a commercial firm;

4 – commercial use of the technology;

5a, 5b, 5c – distribution of the earned income between CF, GB, SSI and the Federal budget.

**Figure 5.** The proposed model of the commercialization of technologies developed in public research institutions.

Summarizing the importance of theoretical concepts of strengthening IP rights for the R&D output, the study investigated the features of a mixed state contract, where scientific and commercial interests are met.

We chose to support these theories with a sound practical base as applied to technological innovations. As was shown, there are different ways to transfer a technology from a public research institution to the sphere of business. The most appropriate option, in our opinion, is based on the diversification of activities: transfer of commercially non-modified technologies to a firm, commercial

refinement of the technology and its commercial use. Thereby, it is logical to suggest that this procedure needs a further regulation by law.

The development of these ideas in an academic module aims at teaching graduates to use operational interdisciplinary knowledge in science-intensive branches of industry and business.

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