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**On the issue of the formation and
functioning of a modern
intellectual property office**

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The book presents an article by Kamran Imanov, Chairman of the Board of the Intellectual Property Agency of the Republic of Azerbaijan, published in the journal "Intellectual Property. Industrial Property", No. 5, 2023 of the Russian Federation, which talks about the formation and functioning of a modern IP office.

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On the issue of the formation and functioning of a modern intellectual property office

INTRODUCTION

Management of the intellectual property (IP) system, carried out by certain authorized bodies, is of particular importance for enhancing creative and innovative activity and plays an important role in achieving the goals of socio-economic development. An IP management system is usually represented as an integrated system for preparing and providing various levels of information management for effective planning, control and management decisions regarding IP objects and, at the same time, as a tool for coordination, interaction and mutual consistency of individual management elements that ensure the achievement of the goals of the authorized body. Just like the management decisions made at all stages of IP management, the final products presented in the form of solutions of this system are informational in nature, and thus the essence of management comes down to the production of information that serves management efficiency, strengthening manageability to ensure sustainable development and strategic goals of the governing body.

The IP management system is usually presented in the form of some organizational structure that is responsible for the ordering of tasks and roles, powers and responsibilities. And within the framework of this hierarchy, decisions are made in the form of information through the lower, middle and higher levels of the organizational structure.

Organizational structures can change under the influence of both an updated organizational strategy or the influence of the current environment, and due to directive institutional changes aimed at the integration or disintegration of the IP management system.

We emphasize that designing an IP management structure is a labor-intensive and multifaceted task, since we are talking about a

complex and often large system that combines technological, economic, informational and administrative-organizational interactions.

As is commonly believed in systems analysis, the creation of a complex system requires covering it from different points of view, systematically linking its “multilingualism”, and therefore an interdisciplinary approach to review its functioning as a whole.

When designing a complex system within the framework of a systems approach, it relies on formalized and non-formalized methods and procedures, acting as a qualitative-quantitative multi-criteria problem.

Particularly noteworthy is the use of systems analysis in the study and creation of complex systems called organizational type systems (or organizational systems for short), or socio-technical systems in which people play a decisive role. It is to this type of complex systems that the “IP management system” belongs, which is characterized by insufficient structure, incomplete information, limited resources and “lack of time” and in the study of which heuristics based on knowledge and experience in the subject area play a crucial role. At the same time, system analysis, using its own tools developed over the years, allows us to move from insufficiently structured tasks expressed in natural language and solved by heuristic techniques, from using the cybernetic “black box” model to its more transparent analogues using, if not formalized, mathematical means, then at least specific procedures or technological techniques that are quite suitable in practice.

When creating an “IP management system,” it is necessary to consider the extensive practice developed over the years in this area [24].

The analysis suggests that the organizational structures governing IP (separate or joint patent and copyright authorities), particularly in post-independence CIS countries, were formed based on national priorities, historically and traditionally established distributions of powers and responsibilities, and haste and subjectivity were not excluded in their development. This seemed quite organic, since the

states that had become sovereign formed a system of public administration urgently and, as a rule, in the absence of time for a systematic approach and analysis. Thus, in Azerbaijan, spun off from the All-Union Copyright Agency (VAAP), which was transformed on the eve of the collapse of the USSR into the State Committee for Copyright and Inventory Rights, the Copyright Agency received the status of a central executive body in 1993, and has been part of the State Committee for Science and Technology since 1994, the Patent Department with the Center of Expertise began to function. Later, the Patent Department was transferred to the jurisdiction of the created State Agency for Standardization, Metrology and Patents, transformed into the State Committee for Standards, Metrology and Patents, with the status of a legal entity subordinate to it and not being a central executive body.

As part of a large-scale institutional reform carried out by the Head of State, aimed at increasing the efficiency of functioning and enhancing the inclusion of IP in an effective actor in the innovation process, the Intellectual Property Agency was created in 2018 by merging the Patent Service of the liquidated State Committee for Standards, Metrology and Patents with the Copyright Agency and transfer of functions for standardization and metrology to the Ministry of Economy. Thus, a single body was formed to manage both branches of intellectual property. The functioning of this body began in mid-2019, when the organizational work on the merger was completed and the Charters of the IP Agency and organizations under its subordination were approved, and the amount of state duties and regulated prices for the services provided was determined by the legislator in a regulatory manner.

The created IP Agency, by decree of the President of the Republic of Azerbaijan, received an independent status equal to the central executive authorities, and its staff - to civil servants.

We emphasize that the formation of the organizational structure of the newly created IP office was especially relevant in conditions when this issue remained outside the scope of attention not only in

special studies and institutional literature (textbooks, academic publications), but was not emphasized in individual articles. Familiarization with the experience of creating and functioning of IP offices, including individual patent offices, indicates the absence of uniform approaches to the formation of the structures of these organizations. At the same time, the structure of any organizational system plays a fundamental role both from the standpoint of organizational design, which implies fixation of the functions performed, responsibilities and duties of the divisions and subordinate institutions included in the structure with the powers assigned to them, and from the standpoint of interpersonal and intra- and intercorporate relationships that determine the style and management methods.

This study attempts to analyze and develop some recommendations related to the formation and functioning of a modern intellectual property office and based on the experience of the Republic of Azerbaijan in this area.

1. INSTITUTIONAL UNDERSTANDING OF THE IP CATEGORY: RIGHTS TO INTELLECTUAL PROPERTY OR INTELLECTUAL PROPERTY VESTED WITH RIGHTS?

The effectiveness of institutional reforms is associated with a systemic analysis of the area that is planned to be reformed. Suppose we are talking about the field of intellectual property. In that case, there is a primary need to clarify the category of IP itself, to evaluate this category not only from the standpoint of its traditional meaning but also from the point of view of those innovations and changes that are dictated by modern realities. Moreover, this category, being in contact with technological progress, is rapidly developing and often does not keep up with it.

In order for institutional reform to lead to the expected result and not become a dysfunctional entity, it is necessary to consider the relationships, complementarity, mutual influence, and complementarity with the surrounding institutional environment in the organizational structure that embodies it.

Indeed, the modern understanding of intellectual property and the functioning of this institution occur in a context significantly different from its traditional perception and is caused by significant technological changes in the life of society, which are now and will have an increasingly substantial impact on the existing IP **landscape** and **ecosystem**. This is critical from the standpoint of understanding the future evolution of IP and its international architecture. It is necessary that the IP does not interfere with this phenomenon but is adapted to it. At the same time, new realities resulting from socio-economic development based on innovation necessitate **institutional rethinking and consolidation of the category “intellectual property” itself**. In the context of the emergence of knowledge as a key production resource, a systematic understanding of the category “IP” seems to be a much more complex category, closely correlating with the economic

and socio-cultural sphere and requiring an interdisciplinary approach [1], [21].

Let's give an example. Most Patent Offices, as a rule, make decisions on the protection of industrial property objects (or extension of the period of protection) with the issuance of the protection documents themselves. The decisions made consist in transferring certain innovations received on applications to the category of intellectual property protected from the standpoint of law. Thus, IP management comes down to accepting applications, making decisions and issuing documents of protection. The issued protection documents (patents, certificates) are legal, and at the same time, the procedural issues of making decisions on protection, although to a certain extent of an engineering and technical nature, are carried out within the framework of legislative and regulatory documents in the field of IP.

Thus, the decisions made on the legal protection of an IP object from the standpoint of **the final product** of the Patent Office's activities are **legal**, cover only the legal aspect of IP, and interpret IP only as **a category of law**, while ignoring its essence as inventions and other innovations. It turns out that the Office, being the central link in IP management, is a service body that does not pay attention to the impact of issued patents, their impact on the innovation process in the economy, assessment of the impact of law enforcement documents on the competitiveness of the market, as well as the scope of analysis of the social component of the actions taken. .

In our opinion, the modern category of "IP" implies in its definition not only the exclusive rights of an individual or legal entity to RIA (results of intellectual activity), but, first of all, the RIA itself, endowed with protection rights, acting as objects of purchase and sale on the market, in transactions on which consider the scope and conditions for granting these rights. This is a systemic understanding of the emergence of the institution of IP, which requires awareness, along with law (jurisprudence), of the economic and socio-cultural significance of this institution [2].

Thus, the commercialization of intellectual property, i.e., **the economic effect and the socio-cultural effect, become mandatory components of the IP institution, and legal protection, i.e. law becomes their framing shell or system-forming element of this institution.**

It should be noted that in legislative and regulatory terms, this understanding of IP is enshrined in a number of documents. In the Republic of Azerbaijan, the Terminological Glossary published by the Agency provides the formulation of IP, according to which it is protected results of intellectual activity presented in any objective form and means of individualization equivalent to them [3]. Along with this, an addition is being made to the Law “On Ensuring IP Rights and Combating Piracy”, reflecting the modern understanding of IP.

As a follow-up on this, there has been a transition from the one-sided formulation of IP, denoting rights and stemming from paragraph VIII of Art. 2 of the Convention establishing WIPO of July 14, 1967, on the interpretation of IP following from the Worldwide Declaration on IP of 2000, according to which **IP is the subject matter of protection to which IP rights are assigned.**

This approach enables evaluation achieved results of the IP institution, to look for ways to improve its efficiency, including, first of all, the activities of departments for IP management, since these organizations created within the framework of the IP Institute are at the forefront of ensuring state policy in this area.

There is no doubt that both formulations of IP can be used, since the category “IP” has a dual nature, and this dualism is due to the fact that, on the one hand, an IP object is an intangible asset (right) or rights to intangible objects are protected, and on the other hand, legal protection for this object is provided only when it is objectified (materialized) (if the relevant requirements are met). The Diagram 1 illustrates the aforementioned

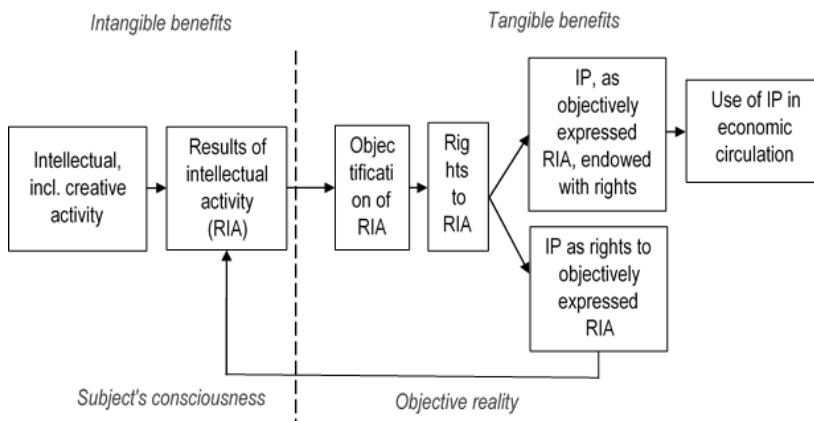


Diagram 1

According to the above Diagram 1, the dual nature of IP manifests itself in the fact that ownership (ownership) of RIA, which is an intangible asset, is carried out at the expense of vested **rights**, i.e. by providing IP rights to objectively expressed intellectual property. While the rights, as is commonly believed, are the fundamental normative rules that determine what is permitted or what belongs. IP has exclusive rights. In other words, **an IP object is interpreted as rights to intellectual property**. Along with this, **IP participates in economic circulation as objectively expressed RIA, endowed with rights (protected RIA)**.

In other words, **an IP object is treated as intellectual property endowed with rights**. The preference that we give to the formulation of IP objects as intellectual property endowed with rights is illustrated by Diagram 2 below, which reflects the differences in the conceptualization of an IP object [19], [20].

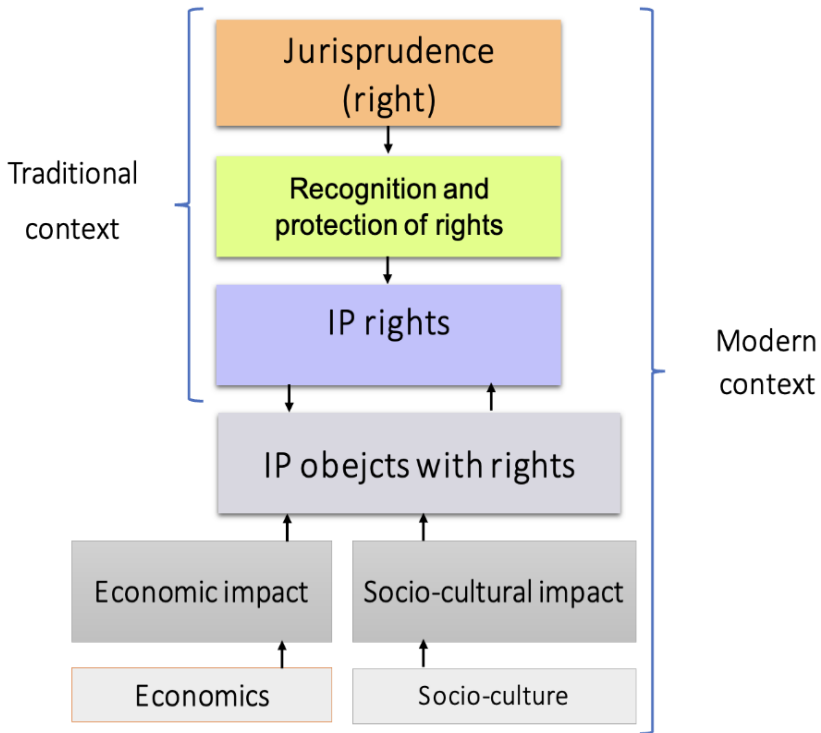


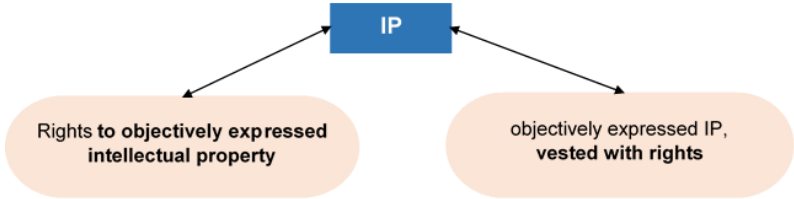
Diagram 2

Let's move further in the previously given example and assume that we are not talking about a Patent Office, but an IP office, which, along with industrial property objects, manages other types of IP and, first of all, Copyright rights.

In this case, the final product of the activity of the IP office still remains decisions on giving intellectual property the status of protected IP objects or extending the terms of their protection (industrial property), as well as decisions on supporting the protection of intellectual property vested with legal protection by law (copyright), with the issuance of the

corresponding legally significant law enforcement documents (with the voluntary registration of Copyright objects provided for by law.) At the same time, the possibilities for analyzing the economic and socio-cultural components associated with IP and the efficiency of the functioning of the national system as a whole increase significantly. In other words, prerequisites and a platform arise for IP management based on the category of IP not only as “rights to intellectual property”, but also as the category of “Intellectual Property endowed with rights”. Diagram 3 below with a list of decisions made by the IP Office, in the case of combining the functions of managing industrial property and copyright, illustrates this [4]:

IP is not only the exclusive rights of an individual or legal entity to RIA, but, first of all, the IP itself, endowed with the rights



Institutional understanding and consolidation of the category "intellectual property"

1. The IP Office adopts decisions in the field of law:

- on giving IP the status of protected IP objects and on extending the terms of protection of IP (rights: industrial property);
- support for the protection of intellectual property vested with legal protection by law (rights: copyright);
- on the issuance of documents of protection confirming rights (rights: industrial property and copyright);
- on ensuring the protection of IP rights (rights: industrial property and copyright).

2. Along with the legal decisions taken, the IP office has the ability to adopt decisions

a) in the field of economic component of IP:

- decisions and results on the commercialization of patents and protectable patent applications, the economic effect of innovation, the impact of issued protection documents in inventive and patent activity and other IP indicators;
- market competitiveness in the patent landscape, as well as the impact of the level of IP protection and enforcement on economic growth

b) in the field of socio-cultural component of IP:

- decisions and results of analysis of the cultural and social effect of Copyright, control and promotion of collective management, on the contribution of the creative industry to the country's GDP, as well as on social payments associated with the commercialization of industrial property.

Functioning of the IP office when managed from a legal perspective

Functioning of the IP office when managed from the perspective of law, economics and socio-culture

Rights over IP

IP vested with rights

Diagram 3
15

Based on the above considerations, **the need to have industrial property and copyright under a single “roof” clearly arises**. Judge for yourself: without commercialization there is no innovation, there is no innovation, however, this is a significant economic share of industrial property, but excluding copyright and related rights, we leave aside a significant part of the socio-cultural effect, as well as a significant economic component of the creative industry and collective management.

I would share an example that clearly demonstrates the possibilities of interaction and mutual enrichment of patent and copyright law, when their action is carried out within the framework of a single IP management office and when there are real ways to improve the norms of patent legislation. We are talking about parallels associated with the term of protection of patents and copyright objects [12].

It is well known that, whether in copyright law or in patent laws, the protection of personal, non-property rights is unlimited, while the protection of property rights has a term. The duration of protection of property rights related to inventions, according to a uniform approach in the world, is at least 20 years from the date of filing the application, with a possible extension of five years.

It is known that from the moment of filing an application for an invention until its publication, protection is not provided, and from the moment of publication of the application until the publication of information about the grant of a patent, **temporary protection** is in effect. But the legislation does not explain what this protection means. However, according to legal requirements, during the period of temporary protection, third parties must make payment (pay compensation) to the patent owner for the use of the claimed invention. But whether the payment made is the property right of the patent owner is not indicated, and this type of temporary protection creates certain questions.

So, if this use is carried out by the copyright holder himself, then it turns into absurdity (payment to himself), if this use was carried out

by other persons, then the patent that will be issued for the invention in the future is not new.

Finally, “**provisional protection**” takes effect after the patent is granted, that is, it relates to the past use of the invention. However, in most countries there is a constitutional provision stating that “the law has no retroactive effect” (except in cases of mitigation or invalidation of the liability of citizens), and if the case of such “retroactivity” conflicts with other rules of patent law, then it is included in a contradiction with the Constitutional principle.

Thus, as can be seen, “**provisional protection**” is essentially a **retroactive extension of property rights**, and the time interval for this extension is extended from the time the patent application is filed with the patent organization until the publication of information about the granted patent.

The principle of retroactivity is reflected in the Berne Convention, and is also confirmed in the TRIPS Agreement, in the WIPO Copyright and Performances and Phonograms Treaties (Internet Treaties), its essence lies in the fact that a country that has acceded to the Berne Convention, that is, has become a member of the Berne Union, protects works of other countries of this Union not only from the moment of accession, but in addition also those works whose protection period in these countries has not expired.

I believe that in order to eliminate the contradictions arising in connection with the rules of “temporary protection”, the principle of retroactivity should be clearly reflected in both international and national patent legislation, **its extension to the period of time from the moment of filing the application with the Patent Organization should be indicated before the publication of information about the grant of a patent and that it is an exception in the case of the right of “prior use” [12].**

What is the situation with the activities of IP Offices internationally?

Let us turn to international practice and consider the organizational and management models of the IP Offices of the WIPO member states.

The official WIPO website provides data on the organizational and management models of intellectual property offices of 204 states [5].

Of this total, in **106** countries, copyright and industrial property offices operate separately, independently, under other institutions or as independent organizations.

In 98 states, IP offices are under a single “roof”. Of this number, only 37 IP offices are managed by departments that are not subordinate to/part of other institutions with a higher status. Among them, in particular, **are the states that are part of the CIS:** Azerbaijan, Belarus and Kyrgyzstan.

In addition, the above 37 states in which IP offices are independent (not subordinated/not part of other institutions) include, in particular, such states as Moldova, Ukraine, Georgia, Canada, Great Britain, Switzerland, Singapore, Hungary, Serbia, Saudi Arabia, Pakistan, Malaysia.

In the remaining **61 states** from the list of **98** states in which IP offices are under a single “roof”, these offices are part of certain ministries or departments - see Figure 4.

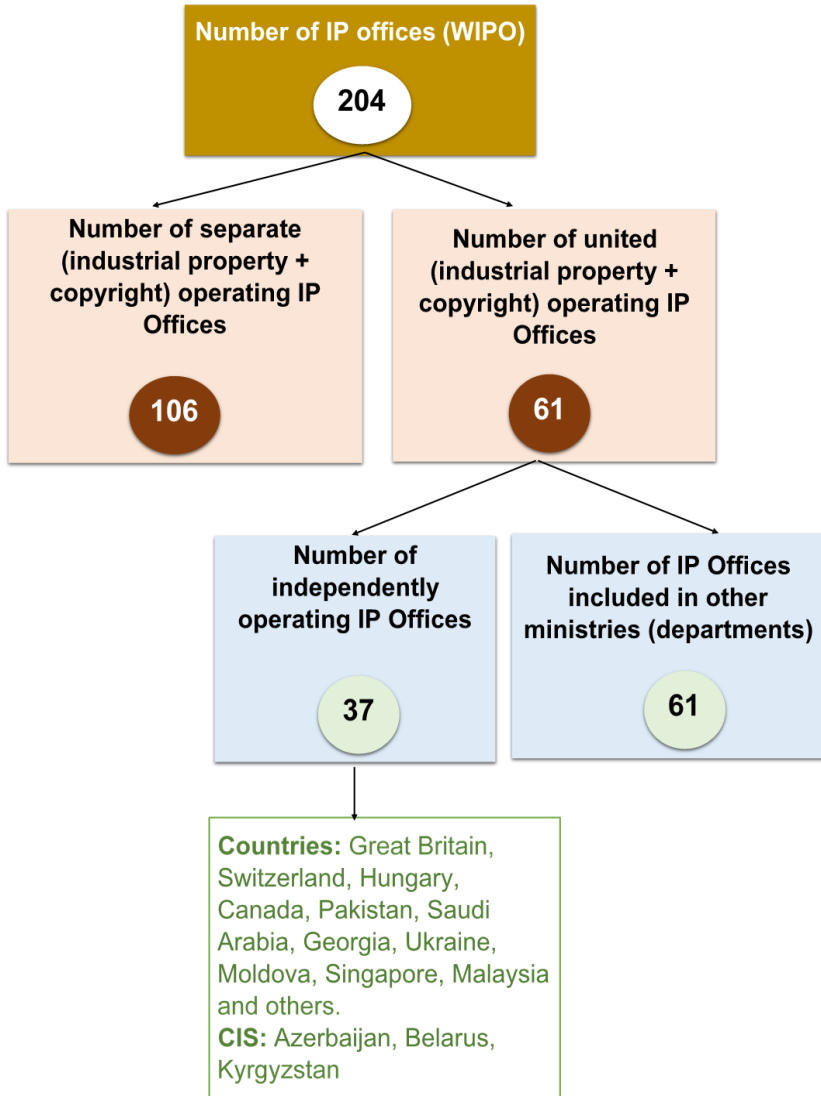


Diagram 4

The situation in the **rest of the CIS countries** is as follows: in **Kazakhstan**, the IP office is under the authority of the Ministry of Justice, in **Armenia** - the Ministry of Economy, in Russia - the Ministry of Economic Development, in **Tajikistan** the Agency for Copyright and Related Rights is under the authority of the Ministry of Culture, the National Patent Information Center is in under the Ministry of Economic Development and Trade, in **Turkmenistan** the State Intellectual Property Service is under the Ministry of Finance and Economy, in **Uzbekistan** – under the Ministry of Justice.

Let us reveal the essence of the main functions, presented in the form of appropriate decisions carried out by the IP Office from the standpoint of law (jurisprudence) and reflected schematically in block 1 of the diagram given earlier.

In this case, the IP Office makes the following decisions:

Decisions on giving IPR the status of protected IP objects or extending the terms of their protection include:

- examination of applications for industrial property objects applying for protection and issuing an opinion on them.

Solutions to support the protection of legally protected IPR include:

- preliminary examination of applications for Copyright objects and preparation of conclusions on violations of IP rights to suppress violations, transfer of conclusions to the violating party;
- registration of pre-trial proceedings on violations of rights.

Decisions on the issuance of protection documents confirming rights include:

- entering information on the protection of IP objects into state registers and issuing documents of the established form (patents, certificates) indicating the protected IP object and the copyright holder (author).

IP enforcement decisions include:

- expert opinions on violation of industrial property rights and Copyright;

- conclusions of the Appeal Boards in case of disagreement with decisions made on the protection of IPR in the field of industrial property and Copyright;

- participation in litigation regarding infringement of industrial property rights and Copyright as a third party or in cases of claims of infringement of IP rights.

We emphasize that the listed decisions as functions carried out by the IP Office (industrial property + Copyright) include only those most important ones that acquire the traditional activities of such offices and are interpreted from the legal perspective.

The IP office in this case operates within a single-product model, i.e., the end product of its activities are decisions aimed at issuing protection documents (maintaining them in force) and, within the framework of authority, ensuring their protection. In brief: we are talking about the legal protection and enforcement of IP rights, which are a system-forming component of the IP category.

Note that the IP Offices that manage both branches of IP (industrial property + copyright), along with the decisions listed above, also have the ability to make decisions in the field of the economic component of IP, as well as in the field of its socio-cultural component, which are listed in block 2 of the above diagrams [14], [16].

2. CHALLENGES FACING THE IP MANAGEMENT SYSTEM OF AZERBAIJAN

Azerbaijan is a country of active economic and institutional reforms that ensure its continuous development. The decisions of the Head of State set the tasks facing the intellectual property system and the goal of its due service to the policy of economic reforms pursued at the initiative of the President of the country - a policy aimed at innovative development. In the Development Concept “Azerbaijan 2020: Vision to the Future”, adopted back in 2012 by the Decree of the President of the Republic of Azerbaijan Mr. Ilham Aliyev and successfully implemented, intellectual property was pinned as one of the priority areas for the country’s development [6], [7]. Today, at the time of qualitatively new stage of the strategic development of Azerbaijan 2022–2030, specific importance is also attached to intellectual property as an essential factor contributing to the implementation of the modern development ideology based on a new model of socio-economic growth. The program documents “Azerbaijan-2030: national development priorities”, “Strategy for socio-economic development for 2022–2026” stipulate that the new model of socio-economic development provides the ideology of critical reforms planned for implementation in all areas of the country until 2030, and **based on creative entrepreneurship, fruitful investments, intellectual property development that supports innovation and competitive markets.** The documents highlight the need **to broaden the popularization of IP, supporting innovation and creativity in future areas of the economy** and point that **the promotion of intellectual activity, innovation and creativity** plays a pivotal role in continuous growth of the value chain of intangible capital based on IP, as well as in the form of technology, design and brand. **In this regard, the need to support and develop the creative economy, which is dominated by IP, strengthening cooperation between creative specialists and modern digital technologies, as well as improving**

the quality of professional training is also pointed in the said programs [8].

The above tasks faced the newly created IP Agency and necessitated building of the Agency as an effective actor in innovative development. To successfully implement the assigned tasks, as said earlier, the previously separate Copyright Agency and the Center for Patents and Trademarks of the liquidated State Committee for Standardization, Metrology and Patents were united by merging into the single IP Agency. It is quite obvious that, along with their traditional functions, the tasks of the new institution's participation in socio-economic development were on the top of agenda, including an analysis of the current situation and adoption of measures to encourage intellectual activity, innovation and creativity, strengthening their role in the economy, creating the value of intangible capital, based on IP, as well as the development of the creative economy.

In this regard, when establishing an IP office, it was necessary to follow a model that conceptualizes and consolidates IP from the standpoint of not only legal requirements, but also its economic and socio-cultural impact.

The diagram presented earlier briefly indicates that the IP office in this case, along with the legal decisions adopted, from an economic point of view, evaluates the impact of the level of protection and enforcement of IP rights on economic growth, analyzes the impact of adopted law enforcement documents on inventive and patent activity, and other IP indicators, on market competitiveness, and also correlates the status, commercialization and economic impact of innovations with the adoption of appropriate measures.

The IP office, from a socio-cultural perspective, analyzes the socio-cultural effect of copyright, monitors and promotes collective rights management, evaluates the contribution of the creative industry and takes appropriate measures, and analyzes the status of social benefits associated with the commercialization of industrial property.

Based on the aforementioned, the IP office functions not as a structure whose decisions are mono-product (single-product), but as a

multi-product organization, the end products of which are, along with decisions on the protection of rights with the issuance of protection documents (industrial property + copyright), decisions on securing protection of IP rights, as well as:

– **decisions and results in the field of the economic dimension of IP**, including the commercialization of patents and protectable patent applications, the economic effect of innovation, the impact of issued protection documents in inventive and patent activity and other IP indicators, market competitiveness and the patent landscape, as well as the impact of the level of protection and IP protection on economic growth, etc.

– **decisions and results in the field of the socio-cultural dimension of IP**, including analysis of the social and cultural effect of Copyright, control and promotion of collective management on the contribution of the creative industry to the country's GDP, as well as social payments related to the commercialization of objects and industrial property, etc.

Thus, considering the modern tasks and requirements noted above, it would be appropriate to form the IP office that leads the IP management system on the basis of both branches of IP (industrial property and Copyright) and operating with a four-product final output in the form of solutions, and namely in short form:

- 1) In the field of law: decisions to grant RIA the status of protected objects or extend the period of protection and support for the protection of RIA vested with legal protection by law with the issuance of law enforcement documents;
- 2) in the field of law: decisions on ensuring the protection of IP rights;
- 3) decisions in the field of economic dimension of IP;
- 4) solutions in the field of socio-cultural dimension of IP.

It should be noted that when establishing the new Intellectual Property Agency, the authorities proceeded from a clear understanding of the fact that such an agency cannot be solely a service body providing legal protection of RIA, but shall become one of the actors in innovative processes actively carried out in the country on the basis of institutional and economic reforms [35]. Based on this, the newly established IP management structure was based on an understanding of the IP category from the standpoint of law, economic and socio-cultural dimensions, which was reflected in the tasks, functions and powers of this body. In this case, the experience gained as a result of the joint project of then Copyright Agency, the Ministry of Education and WIPO “IP Policy in Universities” was used [21]. The project served the purposes of commercializing the results of scientific research, improving the mechanisms of practical application, creating favorable conditions for the use of high technologies in the economy and increasing economic efficiency.

A number of exhibitions were held with the goal of supporting startups and spinouts. Since 2015, through the joint efforts of WIPO and the Copyright Agency, five international conferences dedicated to this topic have been organized, and a startup exhibition was held in Azerbaijan for the first time. Methodological documents and brochures were prepared and distributed to scientific institutions, commercialization roadmaps were demonstrated and communicated to them [36], [37].

As a result, commercialization centers, startups and incubators were created in leading higher educational and scientific institutions, startup competitions and festivals were organized, for example, a startup exhibition was organized by the Intellectual Property Agency with the participation of WIPO Director General Dr. F. Garry at the international conference “Supporting intellectual property for the knowledge economy and innovation”, which was held in the capital of Azerbaijan in June 2018, and by the end of the same year, the Intellectual Property Agency and the Ministry of Transport, Communications and High Technologies of Azerbaijan, together with

WIPO and ITU, organized another exhibition in Geneva , dedicated to Azerbaijani startups and spinouts.

At the forefront of innovative development, due to the practical application of innovations, is the economic impact. Thus, at present, the priority for the development of innovation is the commercialization of technologies, that is, the introduction of innovative products to the consumer market. This refers to any activity that generates research income, including royalties based on the use of IP, start-ups based on advanced technologies, research contracts with private clients, etc.

Once again, it should be especially noted that innovative development requires a consistent, joint and systematic solution to issues of intellectual property, commercialization of technologies and support for innovation.

The tasks facing the created IP Agency were discussed in October 2018 within the framework of an international round table organized by the Heydar Aliyev Center, the Agency, the Ministry of Communications and High Technologies, the National Academy of Sciences and UNESCO as a part of the Innovation Week. The focus was on reinforcing the new understanding of the IP category, the ability to successfully implement the changed role of IP as reflected in the structure of the new office, and the participation of stakeholders in the development of the IP ecosystem. In April 2019, at the special invitation of Rospatent, the Chairman of the Board of the IP Agency of the Republic of Azerbaijan joined the II International Conference “Digital Transformation: Focus on IP” with a report on “IP in the Digital Age: Experience of Azerbaijan”, and also took part in a wide-ranging discussing the problem of changing the approach to IP [1].

Let us note that the problem of changing approaches to IP was also touched upon in the works of a number of Russian specialists, among whom I would like to highlight the articles of Prof. V.E. Mukhopad. In his works the scientist initially focused on the absence within the framework of the IP institution of such important elements of the “life cycle” of protected intellectual property, such as production and commercialization, which led to an exclusively legal perception and

development of this category. The consequence of this one-sided approach was that the overwhelming majority of IP objects turned out to be non-innovative, leading to technological lag [22]. Moreover, the author, in our opinion, quite rightly noted that the current situation led to a lack of data that would allow an objective assessment of the use of the potential of RIAs that had received legal protection.

In his later works, Prof. Mukhopad, assessing IP as a complex developing system and relying on significant statistical material, emphasized that there are disproportions in the management of such IP institutions as economics and sociology, in comparison with the development of the legal institution, which fail to enable full use synergetic potential of IP [23]. In this regard, it was proposed, along with other measures, to support the proposal of Rospatent to create and use a single regulator for IP management within the Ministry of Economic Development on the basis of Rospatent [24].

What additional requirements were placed on the structure that manages the IP and what tasks were faced in creating a new type of Agency?

Firstly, as noted above, the structure of IP management should have been based on the modern understanding of the category “IP”, including the economic and social components given the system-forming nature of law.

Secondly, the management structure had to ensure a reduction in transformation costs (the costs of directly obtaining the product) and be effective in terms of transaction costs (the costs that accompany the receipt of the product-solution, but not aimed at its direct receipt) and imply digital access.

Thirdly, mandatory management is necessary on the principles of corporate governance and in the presence of a corporate management structure, combining corporate functions and functions of state administration (corporatism plus centralized management).

Fourthly, an effective structure was required, considering the minimization of intracorporate transaction costs and the use of synergistic management efficiency.

Fifthly, during integration it was critical to consider that a corporation is a complex socio-economic system in the form of an association of independent legal entities, the interaction of which generates the cumulative effect of the activities of the corporate structure (it, for its part, must exceed the sum of the effects from each of the areas separately). Moreover, in the spotlight, from the perspective of the internal sphere of activity of the created structure, transaction costs seem to be decreasing, but during the functioning of the corporation, new transaction costs (internal) arise, which should be eliminated as much as possible.

Next, we will focus on the key points of designing an IP control system.

3. STAGES OF SYSTEMIC MANAGEMENT

DESIGN OF IP

Any object under research, if its actual state does not correspond to the desired one, serves as a source of a problem, the solution of which comes down to the search for alternatives or ways to bring the object to the desired state.

In a systems approach and subsequent system analysis (synthesis), the concept of “system” is used for this purpose, which is understood as “the simplicity of the complex.”

The “system” is aggregately structured through the fundamental elements “problem”, “goal”, “function” and “structure” as shown in Diagram 5.

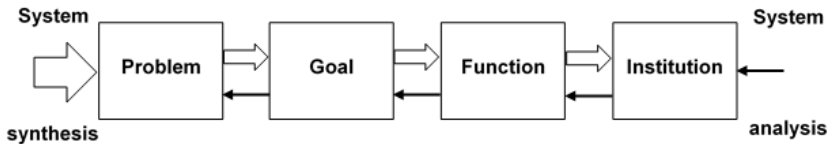


Diagram 5

In the case of systems design, according to this diagram, movement proceeds from left to right, and in the case of systems analysis, from right to left, and the “goal” does not indicate the desired state, but answers the question “what needs to be done?”, while the “function” and “structure” – “how should it be done?” [26].

In system design “IS management”, importance is attached to the correct presentation of target requirements for the system under development. For this purpose, **retrospective models** are used that reflect the history of the functioning of the national IP institution or its individual branches (Copyright + Industrial Property), the most significant milestones of this development and international trends and

tendencies related to IP, as well as expert search forecasts based on national and international strategic tasks.

As a result of the research on the retrospective model, three target requirements are as follows:

I. Providing, through the potential of IP, favorable conditions for cultural and innovative development, as well as social incentives for the creators of intellectual property – innovators;

II. Transforming IP into an effective factor and tool for economic development;

III. Ensuring the potential of IP in the formation and development of the information-digital society and its use in the IP management system [17].

Target requirement: Item I. is aimed at ensuring the socio-cultural and innovative potential of IP in the socio-economic development of the country in the medium term, and is also focused on social incentives for the creators of intellectual property and innovators who bring RIA to their application in the market. Correlates with a corresponding rethinking and understanding of the socio-cultural significance of the category “IP”, and from the position of “culture”, understood in a broad sense as the totality of everything that is created by the human mind, reflects the triune goal – “preservation”, “dissemination” and “replenishment” objects of cultural heritage (TVCs, technical knowledge, works, inventions, etc.).

Target Requirement: Item II. is aimed at active and wider use of the economic potential of IP and is associated with innovative models of commercialization and technology transfer, increasing the contribution of knowledge-intensive industries and industry based on IP to the country's GDP, increasing the involvement of investments in IP-related areas, expanding the share of intangible assets among economic entities and so on. This target requirement correlates with a

corresponding rethinking of the understanding of the economic significance of the IP category as a driver of economic development.

Target requirement: Item III. is aimed at promoting the actively ongoing digitalization of all aspects of our lives and is based on the well-known IT-IP link, according to which the vast majority of digital technology objects are IP objects, and IP rights, in turn, create the opportunity for their development.

It is important to make a few remarks here:

First of all, the protection of IP rights in the modern digital era is intensively developing in line with the development of high-tech industries, global networks and scientific and technological progress, the scope of protection of objects is expanding, their new protected categories are being formed, and the scope of protected rights and the established legal protection regimes are differentiated not only on the types of objects, but also in accordance with the methods of their use, thereby, along with the traditional, the share of special protection of non-traditional objects (traditional cultural expressions (folklore), traditional knowledge, topologies of integrated circuits, databases, including non-creative ones, “digital” rights of broadcasting organizations, etc.) is growing. It is expected that this trend in the protection of IP rights will continue in the future.

Secondly, the modern digital age puts forward demands for the development of new ways of realizing or exercising rights. IP, which is not based on a restriction, but provides copyright holders with remuneration and does not interfere with the wide dissemination of intellectual values, creates convenient and cheap access to them, considering the development of modern ICT (the widest possible access to intellectual values, which does not weaken guarantees in the interests of all market participants IS). It is expected that the identified trend in the management of IP rights will continue in the future.

Thirdly, the qualitative and quantitative growth in the use of IP objects due to the development of information technologies of digital

networks, e-commerce, deep interpenetration of IT-IP and, in parallel with this, the increase in the number of offenses and the scale of counterfeit products steadily require strengthening mechanisms for the protection of IP rights, implying both judicial and law enforcement measures, regular monitoring analysis of the level of offenses and their classification, as well as the formation in society of an IP culture, respect and unconditional recognition of protected rights.

It is expected that this trend in the field of ensuring the protection of rights will continue in the future [9], [18].

Fourthly, in a modern knowledge-based economy, the potential of IP has turned it into a powerful tool for economic development; at the micro level of the economy, intangible IP assets are replacing the tangible assets of economic entities, leading to new practices for managing intellectual archives, and at the macroeconomic level, the share in GDP of industries based on copyright and related rights are growing steadily and thus IP is now becoming a generally accepted indicator of the level of economic development and will continue to exist. This trend is expected to continue in the future.

Fifthly, there is an established direct positive relationship between the provided level of protection and enforcement of IP rights and direct, incl. foreign investment and imports, IP is viewed as an important factor in a positive investment climate, and in global trade there is an increasingly stronger intentional link between trade and IP policy (TRIPS, US Trade Law Amendment 301, European Directives, IP obligations in bilateral treaties) lead to their special consideration in the country's trade and economic policy. This dimension requires constant attention in the future.

Sixthly, in the modern information society of organic interaction, the IT-IP link is increasingly established, which boils down to the fact that IT refers to IP objects, and IP rights, in turn, create the opportunity for their development, and at the same time, thanks to e-commerce, the Internet has turned into a virtual market for IP objects (more than 50% of goods sold or the main component of value in e-commerce goods sold), which requires new approaches to managing rights in the digital

environment and deepening their legislative and regulatory interaction, as well as systemic linking the sequence “information society – knowledge-based economy – information technology and IP rights.

This trend requires increased attention in the future [9], [10], [11].

Along with the listed trends, there are a number of other problems that require attention in the activities of a modern IP office and the IP management system as a whole, including:

1. The problem of interaction and mutual enrichment of patent and copyright law. We are talking about the fundamental modernization of patent legislation and the elimination of unacceptable violations of copyright when publishing application materials for the acquisition of a patent. Current problems to tackle include the elimination of inaccuracies regarding the terms of the so-called temporary protection of patents and the removal of its contradiction with the concept of “prior use” through the introduction of retroactive protection from copyright legislation, etc. [12].

2. The transformation of the IP field today and in the future boosts interdisciplinary challenges caused by technology. At the same time, the traditional legal foundations of IP are being undermined. For example, modern Internet services and platforms integrate the information space, there is a legal degeneration of digitized IP objects turned into content, and this gives rise to a fundamental contradiction between the territorial nature of IP rights, the trans-border, global nature of the Internet and the information nature of digital content.

In the digital environment, law turns out to be a rather rigid and, moreover, a limited tool. The culture of the Internet is now such that the platforms it offers influence behavior as much, if not more, than the law. The law is forced to make room for platforms and the Internet culture they generate. It is also necessary to bring legal diagrams for rights management and online trading into line with the expectations of Internet users, i.e. It is necessary to simplify and bring licensing to the level of illegal use.

3. At the same time, we are witnessing the emergence of new IP objects, new ways of using them and areas of application.

This includes the application of IT in the field of life sciences and artificial intelligence. For example, huge amounts of data are generated in the biological sciences that do not fit into traditional measures of IP objects. Or commercial musical works or inventions created by AI with or without human participation, where we do not yet know what we will understand by the terms “composer”, “author” and “inventor”.

This controversy affects many issues of private international law, raising questions regarding the ownership (in the traditional sense) of these data repositories, as well as regarding the rights holders. And we agree with the experts that “some redefinition of property rights in classes of data outside the classical categories of IP rights seems inevitable.”

In the case of AI, is it possible to provide legal protection for intellectual property created with human participation, relying on traditional doctrines such as work-for-hire, and is it possible to assign rights to the created results to a person, regardless of the degree and nature of his creative contribution in the process of producing the result?

As for the legal protection of objects created without human participation, there is a heated debate about the possibility of recognizing them as an object of IP, especially in matters of the subject of law, including the admissibility of accepting non-subjectivity.

4. Sometimes the result of intellectual activity is achieved through the interaction and cooperation of the inventor and natural forces, for example, in genetic engineering, immunity or anthropology, and the merit of the researcher is, first of all, the identification of a property inherent in nature and the pattern of its occurrence. Such inventions turn out to be akin to discoveries that, as is known, are not protected internationally.

5. Technological issues are also in the spotlight, since technology leads to a transformation of the IP field, giving rise to new IP objects, new ways of using them and areas of application. Therefore, the previously mentioned conceptual and interdisciplinary problems - IT

in the field of life sciences, artificial intelligence, huge amounts of data in the biological sciences - are also technological problems.

6. The development of IP is associated with the expansion of the subject composition of authors and copyright holders. In the modern world, thanks to the global digital network, a wide range of people have access to the creation of RIA. However, IP law was largely formulated in an era when professional and amateur creativity was not widespread. In both cases, the scope of powers, terms of protection, consequences of violation of rights and free use are the same. That is, **current IP law is not yet ready to take these differences into account. And if the question of separating the legal regime of amateur and professional content arises, it will entail the difficulty of identifying objective different criteria for both types of protection, as well as mechanisms for transition from one category to another.**

The shortcomings of the existing unified strategy for the IP regulation system are becoming more and more apparent, and therefore there is a growing understanding that in different areas, not only depending on the IP object, but also depending on the characteristics of a particular type of technology, exclusive rights should be regulated differently. In other words, **“one-size-fits-all”** is becoming less and less satisfactory. Thus, **the ICT industry** (due to the negative impact on it of patent trolls and patent pools or attempts to block the use of technical standards for the release of new products through patents) **advocates reducing the terms of protection and simplifying the procedure for obtaining legal protection.** This is obvious, since the “lifetime” of new products is on average no more than three years. Quite the contrary, pharmaceutical companies are seeking to extend the life of their patents.

7. It should be noted the increasingly important role of the creative sector, which is directly related to digitalization.

No coincidence, since the creative economy is a business focused on the creation of cultural, design and other art products that are in increasing demand.

Design is an important link between creativity and branding. And this is remarkable, because... creative competencies and creativity are becoming the most important feature of those employed in this field, and the role of brands and trademarks and services based on creative potential is playing an increasingly important role.

Thus, new technologies have generated and are generating a new class of IP objects.

Many experts agree that patent protection is insufficient for inventors of microorganism strains and microprocess architectures and believe that more adequate forms of protection are needed.

8. We cannot ignore the problems arising from the tendencies and tendencies of modern IP development. In this regard, let us recall that the history of the development of property rights shows that it proceeded in the direction of increasing restrictions on the powers of the owner and the socialization of property rights.

By analogy, the exclusive right has developed from a privilege rather limited in terms of validity and powers into a long-lasting and wide-ranging subjective right. **At the same time, the center of the problem shifted, firstly, from the protection and protection of IP to the protection and protection of investments, and secondly, the sign of creating RIA went out of focus to a secondary plan. It is believed that over time, the key tool for regulating IP will be not only and not so much the exclusive rights themselves, but the definition of their boundaries and limits [13], [14].**

9. Research shows that the impact of IP on economic development is a complex phenomenon and depends on the characteristics of the economy of a particular country, including the structure of production, scientific and technological infrastructure, the degree of development of venture capital, market size, etc. **In general, exclusive rights can be used both to stimulate innovation and to protect other interests.** According to the unanimous opinion of economists, the importance of IP varies significantly in individual industries and areas of activity.

The strictness of protection and enforcement or a high level of protection and enforcement of IP rights (PEIPR) is generally considered a measure of civilizational behavior. That is, economists usually do not disagree on the importance of IP rights in economic development. However, the subject of discussion, despite the widespread belief about the positive impact of IP on economic growth, economists are not unanimous in their desire to attach PEIPR to intellectual products. At the same time, **the development of an adequate model of the level of intellectual property rights plays a fundamental role in the activities of IP offices as the leading link in the IP ecosystem.** In this regard, the Agency's review of all available statistical studies carried out by economists over the past 20 years on the impact of the level of PEIPR on economic development for countries with different levels of per capita income (highly developed, moderately developed and underdeveloped economies) demonstrates:

a) A high level of PEIPR does not negatively affect economic growth and, in particular, has a significant positive effect for high- and low-income countries and is considered to be neither detrimental nor negative for middle-income countries. At the same time, in middle-income countries, methods of implementing IP rights are considered more important;

b) A high level of PEIPR has an ambiguous effect on economic growth, since economic growth is a multifactorial function. The positive effect of a high level of PEIPR is achieved only if indicators of institutional potential (efficiency of public administration, control of corruption) are not among the independent variables. When included, they eliminate the influence of the PEIPR index, since they are strongly correlated with it. Therefore, it is unlikely to be able to separate the effect of a high level of PEIPR from the effect of the overall strength of institutions;

c) The relationship between the level of PEIPR and economic growth is positive but of small significance, with the effect of a strong PEIPR for open economies being greater than for countries with weak

economies, and for some countries there is no relationship between PEIPR and GDP growth;

d) Growth (increase in the number) of patent applications contributes to economic growth, although due to the multifactor nature of economic growth, it is possible without growth (increase in the number) of patent applications. For this reason, a “soft” conclusion is given: “a lack of growth or a fall (decrease) in the number of patent applications does not contribute to economic growth” [15].

In this regard, **it is recommended to analyze the impact of IP rights on economic growth using a two-stage procedure**, namely: at the first stage, **the impact of IP rights on innovation**, and at the second stage, **the impact of innovation on economic growth** [16].

The given considerations with the problems of IP development urgently require a formation **that relates directly to the IP management system and is formulated as follows:**

“Improving the normative-theoretical and functional-managerial bases of the IP management system, aimed at achieving goals.”

Taking this requirement into account is due to the fact that the “formation of IP management” requires its improvement in such a way that, along with the tasks arising from rights (jurisprudence), it is possible to successfully solve the problems put forward by socio-culture, economics and the information society. Essentially, this is the IV target requirement.

This target requirement correlates with a corresponding rethinking of the category “IP” from the standpoint of law (jurisprudence) as a system-forming factor.

An important step in the framework of the systems approach is the use of a hierarchical model that allows for decomposition of the system of goals.

In this regard, the system (“IP control”) is represented as a cybernetic “black box” with corresponding inputs and outputs, shown in Diagram 6.

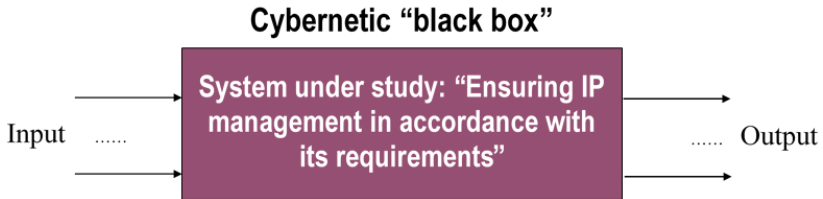


Diagram 6

As we look into individual inputs, includes the system under study (the sphere of IP management), an upper system (national government bodies of the state), lower systems (applicants for rights protection, right holders, their associations, users, etc.), as well as the current environment (interested national government agencies, firms, corporations and public institutions, as well as interested international structures and instruments).

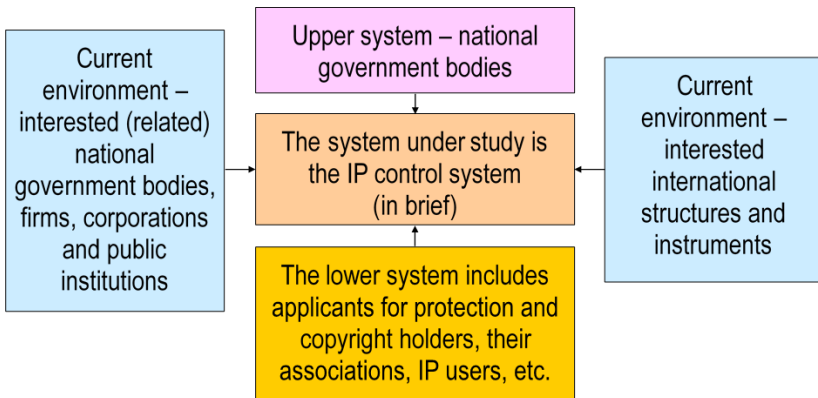


Diagram 7

This Diagram 7, from the standpoint of a systems approach, essentially reflects the identification of impacts on the system under study, namely, what are the incoming impacts and where do they come from, which must be considered when analyzing the system under study. At the same time, the “upper system” forms the main requirements for the functioning of the system under study, “lower systems” are characterized by the fact that certain of their properties act as restrictions, “systems of the actual environment” are related to the system under study as consumers or as adjacent ones, and the system under study itself may have its own needs.

Accounting for decomposition by inputs is shown in Diagram 8:

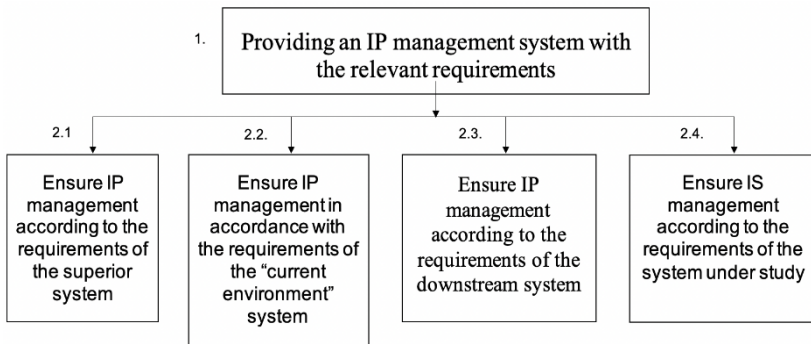


Diagram 8

The decomposition results for each of the first three target requirements are summarized in Table 1 below:

Goal / input	I	II	III
	Providing, through the potential of IP, favorable conditions for	Transforming IP into an effective factor and tool for economic development	Ensuring the potential of IP in the formation and development

	cultural and innovative development, as well as social incentives for creators of intellectual property and innovators		of the information-digital society and its use in the IP management system
Upper system	I.1 Using the potential of IP, creating conditions for the preservation and development of cultural heritage objects and their replenishment, as well as enhancing innovation activities	II.1 Increasing the contribution of knowledge-intensive industries and the creative industry to the country's GDP and increasing the share of intangible assets among economic entities, and primarily among SMEs	III.1 Preservation and development through the IP potential of information technology objects as IP objects
System "current environment"	I.2 Promoting the dissemination of cultural values and innovations	II.2 Involvement of targeted investments, incl. foreign, in areas related to IP	III.1 Promoting the dissemination of information technology objects as IP objects
Lower systems	I.3 Promoting the conditions for	II.3 Supporting innovation by	III.3 Promoting conditions for

	the creation of new RIAs and the activity of innovators, as well as social incentives for RIAs and innovators	promoting commercialization and technology transfer related to IP	the creation of new RIA in the form of information technology objects, as IP objects and the activity of innovators, as well as their social stimulation
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The results of the decomposition by inputs from the standpoint of the system under study are summarized in a separate table (see Table 2) (the repetition of the topmost line in 3 copies was removed and divided, as it was, into 3 columns) and the reason for this will be stated below:

System under study	IV Improving the normative-theoretical and functional-managerial basis of the IP management system from different positions		
	1. providing conditions for cultural and innovative development, as well as social incentives for creators of RIA and innovators	2. turning IP into an effective factor and tool for economic development	3. formation and development of the information-digital society and its use in the IP management system

Following the method of system analysis, the resulting 12 goals, or rather subgoals, are subject to decomposition into the outputs of the “black box”. The outputs of the system under study - “providing an IP management system ...” can be both detailed final products and aggregated ones.

The IP management system is a social system that influences its social infrastructure, and has specificity in the formation of “internal” subsystems.

First, the system operates in an environment governed by protected IP rights, some of which are protected by law, while others are decided within the system itself (subject to meeting the relevant regulatory requirements) and are limited to certain impacts on this environment. , called the “Protection of IP Rights” subsystem. These impacts are caused by the need to dispose or exercise IP rights within the “Disposition of IP Rights” subsystem. Along with this, there are certain impacts caused by the need to ensure the protection of IP rights, since IP rights may be violated or challenged. This subsystem is conventionally called “IP Rights Protection”.

These subsystems are in close interaction; their goals and mutual requirements may differ and even contradict, which leads to the need for their coordination from the point of view of the subsystem conventionally called “Management (coordination) of IP rights.”

Thus, the IP system as a system of social activity has the above interacting social subsystems “Protection of IP rights”, “Disposition (exercise) of IP rights”, “Protection of IP rights” and “Management (coordination) of IP rights”. Let us consider that from a management standpoint, the IS system is a managed system, the management of which is carried out through a specially authorized state body and considering the current environment [17].

The results of decomposition by outputs are reflected in Diagram 9:

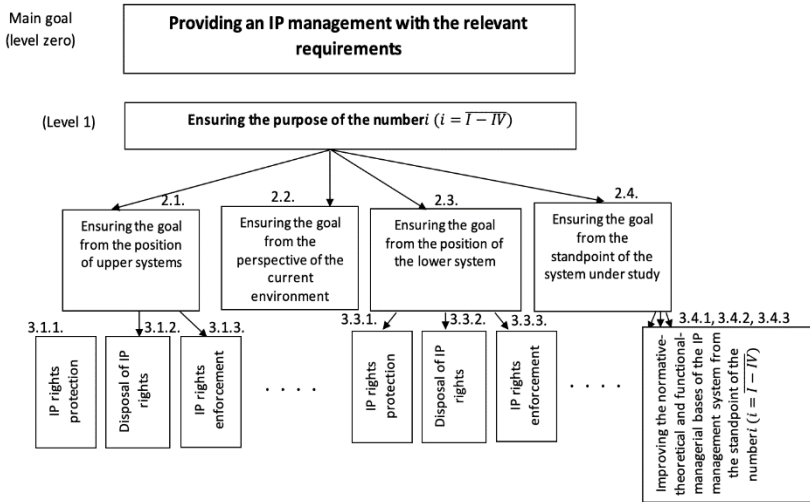


Diagram 9

Let us make comments regarding the goals that arise as a result of decomposition from the perspective of the system under study itself. The peculiarity is that the goals of the IP management system, considered from its own positions, are illogical and in the context of its final products (outputs of the “black box”) or social subsystems “Protection of Rights”, “Disposition (Exercise) of Rights” and “Preservation of rights”, since the only final product (output) of the IP system under study from its own positions is the system under study itself. Moreover, since in this case we are talking about the own needs of the IP system under study, the formulated three expert forecasts do not play a fundamental role for it, which together mean that the IP institution should serve the development of culture,

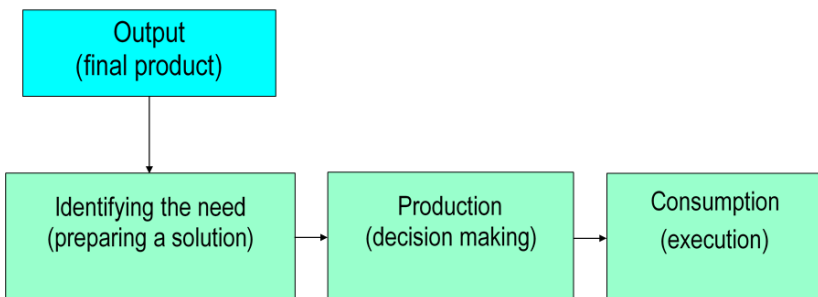
strengthening of economic potential and the formation of the information society.

The latter means that the IP institution must be improved in such a way as to be able to solve the problems put forward to it by culture, economics and the information society. Therefore, these goals are combined and presented together in the form of “Improving the conceptual and managerial bases of the IP institution, contributing to solving the problems of culture, economics and the information society.”

Decomposition of this goal is carried out at the level of the “product life cycle model”. All other goals of the second level are decomposed, as noted above, at the level of “final products” or social subsystems.

In order to shorten the exposition, these decompositions are not described, but by applying the “functioning model at the goal level”, all resulting goals are translated into functions. This transformation is carried out by replacing each level goal that answers the question “what needs to be done” with a corresponding function that explains “how to do it.”

Decomposition by outputs in the case of the “product life cycle” model is as follows:



4. FORMATION OF THE STRUCTURE OF THE IP MANAGEMENT SYSTEM AND TRANSACTION COSTS

Similar to the framework of systems analysis, any product has a life cycle (need identification stage, production stage and need satisfaction stage), a solution as a product consists of stages:

- defining the goal (preparing a solution);
- development (production) and decision making;
- monitoring the implementation (execution) of the decision.

Diversity of decisions made, i.e. final products in a modern IP Office, dictated by the interdisciplinarity of the “intellectual property” category itself, can undoubtedly lead to increased costs in the functioning of the IP management system. The more complex the economic system, the more economic entities are involved in it, the more significant and relevant the problem of researching cost optimization.

All costs aimed at obtaining a solution as an end product are **transformational**. They are opposed by those resulting from the interaction of economic entities, including infrastructural and external **transaction** costs or interaction costs, which are not directly aimed at producing final decisions, although they ensure the successful implementation of this process, and their significance in neo-institutional economics is not zero (unlike neoclassics).

It is important to analyze the impact of institutional changes on transaction costs, the source of which is **inconsistencies between:**

- affiliated institutions;
- game rules and control rules;
- separate institutional conditions,

as well as

- discrepancy between the degree of complexity of the new institution and the general state of the institutional environment when carrying out institutional reforms.

As a result, so-called institutional “traps” or institutional “gaps” may arise.

According to the figurative expression of economists (K. Arrow and others), transaction costs are similar to the costs of overcoming the friction of parts of an operating mechanism. The reason for the emergence of “economic friction”, which is fraught with additional costs, according to D. North, is the non-zero cost of obtaining information and this cost of information consists of the costs of assessing the useful properties of the object of interaction or exchange and the costs of ensuring rights and enforcement of their observance [30].

Where do transaction costs come from?

According to Coase's 1st theorem, if property rights are clearly defined and transaction costs are zero, then the final distribution of resources does not depend on the initial distribution of property.

However, according to the 2nd Coase theorem, in a world of non-zero transaction costs, the initial distribution of legal rights affects the efficiency of the economic system.

Since neoclassical economic theory uses a model according to which transactions are concluded instantly and without costs, all obligations on them are fulfilled on time, it is based on an **ideal** market, which is characterized by other assumptions, namely, the absolute rationality of the behavior of market participants and the stability of their preferences, homogeneity of goods, certainty of the external environment, completeness and symmetry of information, accessibility to economic agents, etc.

The listed assumptions do not reflect reality; departure from them is what develops **neo-institutionalism**, according to which any transaction between economic agents is accompanied by **transaction costs** associated with the emergence of property rights, their protection and termination [32].

Therefore, within the framework of the neo-institutional theory of North-Coase, in contrast to neoclassics, reality is considered, namely the uncertainty of the future, the limited rationality of agents, the incompleteness and asymmetry of information among the parties, the

likelihood of opportunistic behavior and not always precisely defined and protected property rights. Back in 1980, North and Douglas calculated transaction costs in the US economy and found that over 45% of US national income comes from transactions, although 100 years ago this figure was only 25%. Thus, transaction costs tend to increase and currently, according to economists' calculations, they account for 50–70% of total costs [31].

We also emphasize that according to neo-institutionalism, saving transaction costs contributes to the efficiency of the economic system, and in this regard, the decision to enter into a transaction or to refuse it determines the choice of the form and terms of the contract.

Along with this, **a firm is interpreted as a network of contracts between resource owners**, and its creation and scale of activity (as a certain structure) are appropriate **as long as the transaction costs of concluding transactions on the market exceed the sum of the costs of its own production [33]**.

In this case, the sum of the costs of the company itself consists of **transformational** (directly related to the transformation - *author's note*) production resources into the final product or service of the company, as well as **intra-company transaction** costs emanating from the process of managing the company. Note that empirical studies indicate a constant increase in transaction costs in the cost of goods, and also that transaction costs act as one of the most significant factors in the **IP development market**.

Let us take a closer look at transaction costs from the perspective of an inseparable part of economic costs.

It is necessary to especially emphasize the inseparability of transaction costs from the process of management and organization. Of course, the organization and structure can and do reduce these costs and believe that reducing transaction costs is an important condition for successful transformation, but with a limitation that limits a significant increase in transformation costs. To this end, as North notes, it is necessary to consider that information has a price, and its distribution between the parties to the exchange is asymmetric. And

this leads to continued incentives to deviate from accepted market rules, to deceive, in other words, to ignore the requirements laid down by institutions.

Moreover, transaction costs represent only a part of total economic costs.

Measures that eliminate transaction costs are **organizations created as a form of adaptation to existing transaction costs. The firm is one of the organizational forms, and therefore its existence is explainable from these positions**, of course, provided that intra-company costs are less than the costs of market exchange transactions. Similar to the market, the firm represents an institution, the need for which is related to the reduction of transaction costs.

In this case, production costs may also increase, but they can be recouped from the service that generates income. If this does not happen, then the company must go bankrupt.

Returning to transaction costs, we will highlight transaction costs of an external nature or **external ones**, generated by interaction with external economic agents, as well as **internal ones**, resulting from the interaction of agents within a certain structure. Sometimes the external ones are called **market**, meaning that they are a consequence of the use of the market mechanism, and the internal ones are called **managerial**, meaning that they are the costs of exercising the right and ability to give orders within the organization (firm).

While emphasizing that in many cases IP offices operate on hierarchical or corporate principles, let's look at **management costs**. Obviously, to reduce these costs, a high degree of consistency between the elements of the structure is necessary, especially since, according to economists, the share of transaction costs in the total costs of an organization for stationary economies is up to 15%, and for transitional economies it is much higher.

From Coase's perspective, a firm is an organization that minimizes transaction costs of exchange. Organization theory operates with a number of different models of the firm, ranging from systemic, managerial or cybernetic "input-output" types to economic ones based

on the nature of the firm in the Coasean sense. Understanding the patterns of development of a socio-economic system requires identifying the details of the functioning of organizations, analyzing the diversity of organizational forms and the causes that give rise to them. In particular, for a firm, it should be not just about the demand curve and the supply curve, but about what happens inside the “black box” - what decisions are made and what costs are incurred.

A company as an economic agent carries out its activities in accordance with an established behavior model, which can change at certain intervals. Transaction cost theory represents the firm as an instrument for specifying property rights, searching for information, concluding contracts, etc. Without going into a description of various models of a company considered as an organization, we note that various approaches to its theoretical description are aimed at explaining its behavior and finding answers to the questions - how to increase the efficiency of its functioning? how to explain decision-making mechanisms? How to create models that can predict the actions taken by an organization?

Let us also note that the formation of a perfect model of a company is an unattainable problem, and therefore in the economic world the main feature of a company's behavior is accepted - reactivity as the basis of the model. In other words, the management of the organization works in the mode of receiving a response or reacting to external signals.

In addition, according to economists, a company does not make absolutely rational decisions, makes mistakes and does not always make the maximum possible profit.

Meanwhile, in the market and in economic life, along with firms, there are also other organizational structures in the form of corporate organizations.

Why do corporations arise, what is the effect of hierarchies and, in general, what is the influence of the structure of corporations on the level of its transaction costs, what costs do such organizations incur in contrast to the costs of firms, what

type of them is appropriate from the point of view of the tasks facing the system, etc. – these questions also need answers.

The stated considerations were considered when forming the IP management system.

When creating an IP management system, we proceeded from considerations of the presence of a HQ in charge of making decisions - the formation and issuance of final products, and the presence of centers subordinate to the parent organization involved in the preparation of decisions made [25].

The Charters of the Agency and the three Centers subordinate to it, approved respectively by the President and the Cabinet of Ministers, indicate that these management entities use advanced standards of **corporate governance**.

An international legal instrument approved in April 1999 by the Economic Cooperation Organization formulates a definition of corporate governance and states that “the corporate governance refers to the internal means of ensuring the activities of **corporations** and control over them...”.

In this regard, in practice they are guided by the understanding of corporate governance as a system of leadership and control that determines how the executive body (sole or collegial) manages and controls the company, i.e., in the form of a management system tied to effective interaction between shareholders and the Company’s management.

In accordance with the above, when forming and analyzing the activities of IP Offices focused on corporate governance, it is advisable to rely on an assessment of transaction costs in the corporate sector of the economy.

In practice, there are a wide variety of forms of corporate business organization, including unitary (U-form), holding (X-form), multidivisional (M-form), network (V-form) and their numerous modifications. If the unitary form is essentially a traditional organization of a company along functional lines, then it deprives its management of the opportunity to directly monitor and measure the contribution of

functional units to corporate profit, and also provokes department heads to opportunistic behavior. The latter is manifested in a direct connection between the status of the head of the department and the size of the unit with its capabilities, and therefore, managers strive to maximize their share of corporate resources and ignore efficiency considerations, “covering” them with activity [29].

Since the Y-structure uses centralized information processing technology, it is not the best for large corporations, since it is based on mandatory preconditions and the assumption of the absence of opportunism. And in the presence of opportunistic behavior, transaction costs also increase. **The best results come from using decentralized technology, which includes holding, multidivisional and network corporate forms.** However, the X-form is not protected from the risk of opportunism, as a result of which the advantages provided by decentralized technologies will not be realized.

However, we do not dwell on it, since the IP management organization was not created in the form of a holding based on the ownership of controlling stakes or shares in shares of other companies. The M-structure is characterized by the redistribution of strategic and tactical functions of corporations and provides a certain amount of independence to divisions.

The M-structure is characterized by the use of effective information processing technology, as well as protection from the risks of opportunistic behavior of transaction participants. However, the M-structure faces a large cost burden to maintain the internal infrastructure of the corporation. These costs can be avoided in a network structure, which is due to the lack of legally established ownership rights of the parent company to its divisions. It was not planned to focus on such a corporate structure when creating the IP Office, and therefore we are not considering it either.

It should be noted that Y-shape (unitary) corporations primarily bear the burden of external transaction costs, while X-, M-, and V-shape corporations face increased internal transaction costs in an attempt to avoid external transactions.

We also do not stop at the network structure (V-form), when the parent organization coordinates the supply, production and distribution of an intermediate product in a network consisting of contractually related and relatively independent firms, with optional vertical integration, since the formation of an IP management organization was not planned within this model. Therefore, the subject of our attention is corporate forms of the U-form and M-form, information on internal and external transaction costs and effectiveness of which are summarized in Table 3 [29]:

*Comparison of internal and external transaction costs
for U-form and M-form of corporate governance*

Table 3

Form of corporate structure	Internal costs	External costs	Efficiency
Unitary	High, including the costs of opportunism due to the assessment of the contribution of functional units	High, including the costs of finding partners, concluding and executing contracts	Negative impact of high internal and external costs on efficiency
Multidivisional	Reducing management costs with a possible increase in the costs of	Minimum for a vertically integrated corporation	Autonomous profit centers lead to increased discipline of departments,

	interaction between departments		increasing initiative and thereby the efficiency of the corporation as a whole.
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Thus, corporations, using integration processes, reduce transaction costs and replace the system of market relations with a mechanism of centralized administrative management. In other words, by producing a product or service themselves, rather than buying them on the market, they reduce the costs of searching for information about suppliers and consumers, reduce the costs of negotiating and concluding contracts, and the costs of opportunistic behavior of counterparties.

In conclusion of this part, considering that there are different types of transaction costs and their corresponding classifications, we present another classification (see Diagram 9). It focuses on those costs that are important from the point of view of IP offices, i.e., on internal transaction costs [27], [28].

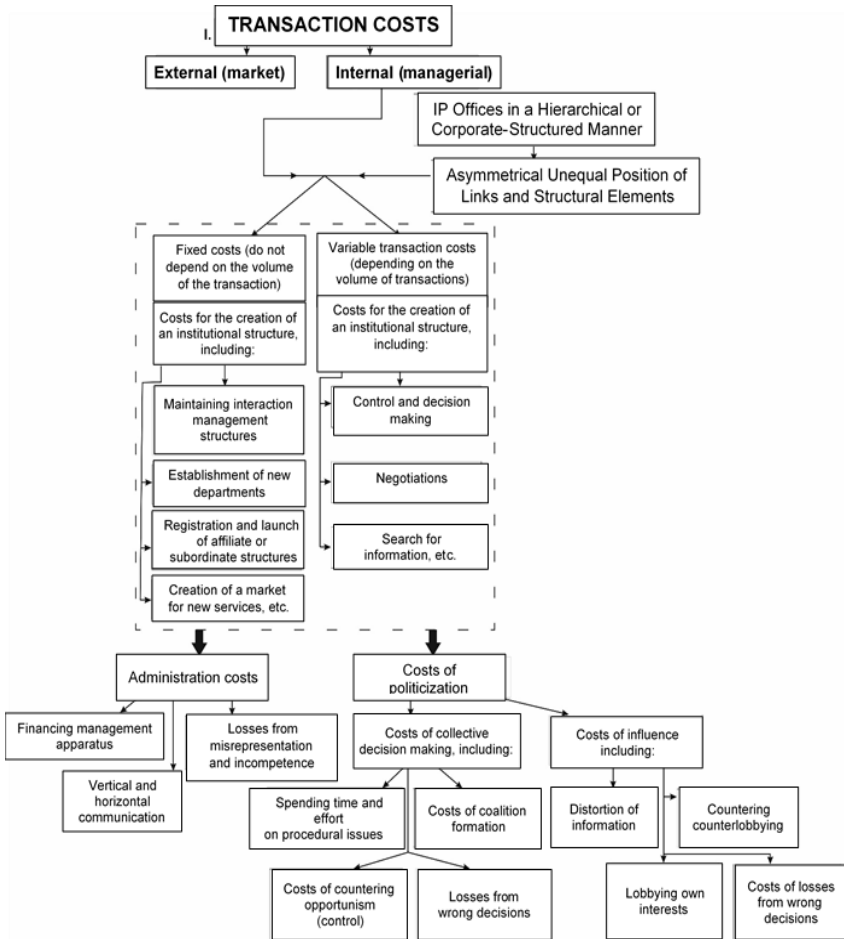


Diagram 9. Classification of transaction costs

5. REDUCING TRANSACTION COSTS IN THE IP OFFICE

IP offices operate either on the principles of unity of command or on corporate principles, i.e. are structures headed by the Chairman, General Director, or the Management Board or Board of Directors.

In other words, the structures are hierarchically built, and the interactions of participants (agents) are not equal. In hierarchical systems, transaction costs are manifested in the exercise of the right and opportunity to give orders within the organization, i.e. These are management transaction costs. Here, in contrast to market transaction costs, interaction is carried out not with third-party partners, but with employees of the same organization, interaction is not voluntary, and the parties have an asymmetrical, unequal position. In these cases, the right of decision belongs either to only one participant in the transaction, and voluntary exchange (interaction) gives way to a relationship of subordination - unity of command, or, as in corporate cases, an empowered collegial body makes fundamental decisions, and the management carries them out. Often these costs are divided: in the first case as **administrative**, and in the second as **rationing** costs.

A hierarchically organized structure is essentially an intra-company transaction. Costs here arise not only, as noted above, due to the status of the hierarchy, but also due to the relationship between the owners of the company and its management, between the state and the executive authority or the state and a legal entity under public law, as a result of the interaction between senior managers and managers lower levels, between department managers and ordinary employees.

Transactions are generated due to interactions in connection with the formation of the mission and strategy of the organization, with strategic forecasting and planning, regarding the formation and management of working groups, commissions and innovation teams. Finally, interactions on the distribution of risks and responsibilities in the process of project implementation, on monitoring the effectiveness of

activities, as well as interaction on material and moral incentives for active employees also play a role.

In cases of rationing with a corporately organized structure, although there is no direct subordination of one side of the transaction, the essence of the transaction comes down to the distribution of goods and resources between individual economic entities, and they exist both within the company and on a macroeconomic scale (intra-firm - distribution between competing projects or routine and innovative activities, and at the macro level - direct financing of entities and/or allocation of grants, subsidies, tax, customs and other preferences).

In a number of cases, when a centralized management body is formed on a collective basis or a corporate structure is given the powers of a body of a centralized structure, the decisions of the Management Board (Board of Directors, etc.) will be collegial in relation to its members, but centralized in relation to the managers and employees of the corporation .

However, the costs of collective decision-making and the costs of centralized decision-making differ significantly.

Transaction costs are **permanent** in nature and are investments made in creating an institutional arrangement. Along with this, costs can also be **variable** or transaction costs.

Fixed transaction costs do not depend on the volume of transactions and, in short, consist of the costs of creating and maintaining interaction management structures, costs of organizing new departments, registering and launching subsidiaries or subordinate structures or creating a market for a new product (service), etc.

Variable transaction costs increase with the number of transactions; these include the costs of control, decision making, negotiation costs and information search, etc.

What internal or managerial transaction costs do we encounter in IP departments?

These include:

- **administration costs** (maintenance of the management apparatus, vertical and horizontal communication, losses from distortion of information and incompetence);
- **politicization costs** that accompany the decision-making process in an organization and consist of:
 - **costs of collective decision-making** (time and effort spent on procedural issues, on forming coalitions, countering opportunism (control), losses from wrong decisions);
 - **costs of influence** (distortion of information, lobbying of one's interests, counter-lobbying, losses from wrong decisions).

As can be seen from the above list of transactions, internal (managerial) costs are a consequence of coordination of activities and coordination of interests within organizations. It is clear that **reducing variable transaction costs requires reducing the number of transactions.**

Another recommended method for minimizing transaction costs is integration with cooperation.

Integration is the process of merging parts into one whole or incorporating an existing whole into something larger.

Cost reduction is achieved through the complete or partial integration of functional and service departments, namely the creation of:

- a unified financial department (possibly partially);
- a single legal department (possibly partially);
- a single IT department (possibly partially);
- a single PR department, etc.

Moreover, these services may be present in the parent organization, and their representatives in subordinate structures. At the same time, a reorganization of the business and service personnel may be carried out.

The following Scheme 10 illustrates the above.

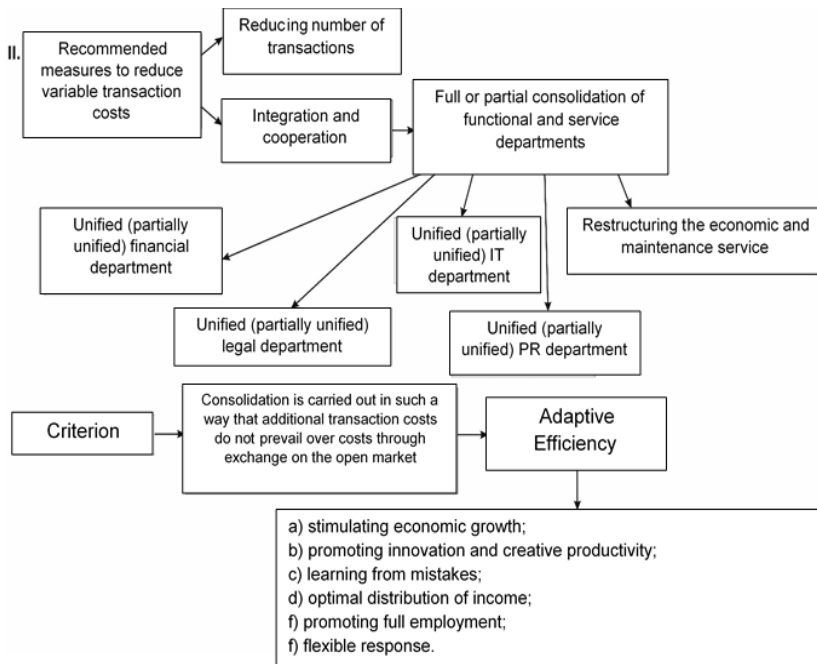


Diagram 10. Measures to reduce transaction costs

However, it should be taken into account that with consolidation, the risk of increasing internal transaction costs increases. Therefore, it is recommended to carry out consolidation in such a way that the internal costs of additional transactions do not prevail over the costs of similar transactions through exchange on the open market, i.e. before conversion. Along with this, the choice of the organizational form of the integrated structure plays an important role.

The search for an optimal structure (with minimal costs) with non-zero transaction costs changes fundamentally, since no system can achieve a Pareto-optimal state in conditions of insufficient and uncertain information with emerging transactions, and the choice is made from existing achievable alternatives.

As economists note, a new definition of the concept of “efficiency” is required; according to D. North, “an economic system can be considered effective if it is capable of eliminating expensive procedures and creating institutional and other conditions for economic growth.”

In this regard, to select a structure, the concept of “adaptability of efficiency” is used, the main features of which include the following:

- stimulation of economic growth;
- encouragement of innovation and creative productive activities;
- learning from mistakes, accumulation of knowledge and experience;
- promoting optimal income distribution;
- promoting full employment;
- flexible response to changing conditions.

Naturally, the brief information we provide from North-Coase neo-institutionalism has a very specific goal: **how to create an effective IP management system in the department?**

In this case, it is advisable to follow some methodology or algorithmic rules that allow assessing the effectiveness of structural transformations.

As noted above, business cooperation within firms (organizations) that have a hierarchical structure, as noted earlier, **is also not free from friction and losses** (transaction costs).

A transaction, according to J. Commons, is “not an exchange of goods, but the alienation and appropriation of property rights and freedoms created by society.”

This definition makes sense because institutions ensure that the will of an individual extends beyond the area within which he can influence the environment directly through his actions, i.e. beyond control, and therefore turns out to be transactions as opposed to individual behavior as such or the exchange of goods.

In other words, transaction costs are any losses arising from the ineffectiveness of joint decisions, plans, concluded

agreements and created structures that limit the possibilities of mutually beneficial cooperation.

In the final part of this study, we will dwell on the formed structure of the IP Office of Azerbaijan, officially called, in accordance with the decrees and orders of the head of state, the Intellectual Property Agency of the Republic of Azerbaijan, we will dwell on the hierarchical subordination of its units and the functions they perform, the corporate principle of managing the IP system of the Agency, We will also provide examples of analysis aimed at reducing transaction costs associated with management.

6. ON THE STRUCTURE OF MANAGEMENT AND FINANCING OF THE IP AGENCY

The IP Agency is a legal entity under public law, established by the President of the country and operating in accordance with corporate principles. From the perspective of a corporation, the Agency is a complex vertically integrated structure, with a multi-level management structure subordinate to associations of independent legal entities, three of which (the Center for Examination of Patents and Trademarks, the Center for Ensuring IP Rights and the Center for Commercialization and Technology Transfer - entities of public law, established by the Cabinet of Ministers, one - (Republican Scientific and Technical Library) - a state body approved by a decision of the Government and one National IP Training Center with the status of an LLC (limited liability company) - jointly established by the Center for the Examination of Patents and Trademarks and the Center for Ensuring IP Rights.

The IP Agency, as a body that ensures policy in the field of IP, also has a legally equivalent status to a body of the central executive power, its staff are equal to civil servants, and the Chairman of the Board and members of the Board are equivalent to ministers and their deputies, respectively.

From a financial point of view, the state, on the basis of an order, provides from the budget the Agency's apparatus with salaries corresponding to the salaries of central executive authorities, and also budgetarily finances the salaries of employees of the Republican Scientific and Technical Library, in accordance with the tariff rates of libraries of republican significance. Three centers (Patent and Trademark Examination Center, IP Rights Enforcement Center and Technology Commercialization and Transfer Center) are financed from funds received from the provision of Agency services (all prices are fixed and approved by the government), and the National IP Training Center is self-financed.

This is the current structure of financing and management of the IP Agency.

Let us make a few additional comments.

Firstly, the IP Agency with its subordinate structures is essentially an integrated structure with state participation with the legal status of a person of public law established by the head of state. The parent organization (directly the IP Agency) operates on the basis of **state orders** and corresponding guarantees, is equated to central executive authorities, and the personnel are considered civil servants. Budgetary financing represents the salary of employees of the parent organization with a guarantee of its increase in cases of salary increase by the central executive authority.

Secondly, the subsidiaries of the IP Agency (under its jurisdiction), with the exception of the Republican Scientific and Technical Library, for the maintenance of which budget funds are also allocated, namely the Center for the Examination of Patents and Trademarks, the Center for Ensuring IP Rights and the Center for Commercialization and Technology Transfer are contained at the expense of funds earned by the IP Agency. The National IP Training Center with the status of an LLC (limited liability company) operates on the basis of the principle of self-sufficiency.

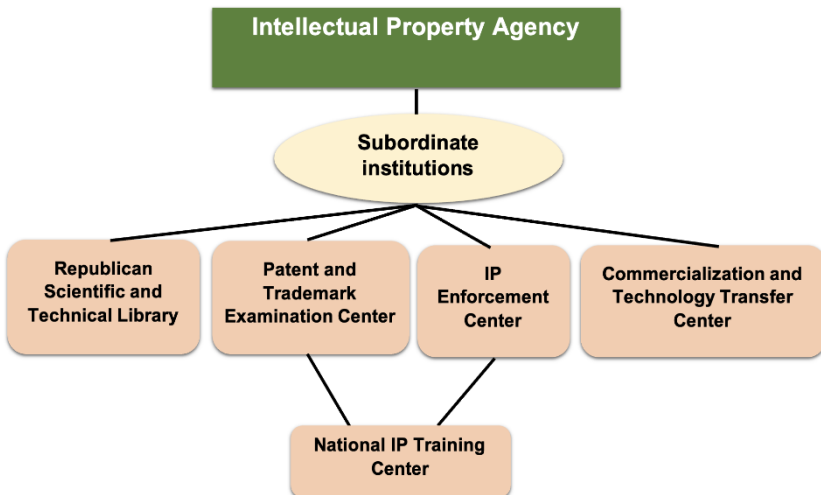
Thirdly, considering the above, it is extremely important for the analysis of transaction costs to correctly determine the subjects of transactions and the composition of the transaction sector.

In our case, the subjects of transactions within the organization are:

- strategic level management;
- subsidiary (dependent) structures;
- business structural units;
- structural units.

The composition of the transaction sector is characterized by typical transaction functions performed by employees or subjects of transactions. This includes:

- Management (organization, planning, control, coordination, quality assurance of work performed, management, etc.). Since the integrated structure includes the state, all components of management acquire qualitatively different characteristics - state ones. Therefore, high-quality control factors are used: government orders, government funding, government regulation, government guarantees.
- Commerce (materials and technical support, marketing, sales). State participation allows us to eliminate this element of the transaction sector, which implies additional costs for advertising, searching for consumers, logistics, and marketing research.
- Some of the costs may remain, but overall significant savings in transaction costs are possible.
- Infrastructure (security, transport, special equipment, finance, legal services, social programs).
- Development (technical and technological management innovations, implementation of the synergetic development strategy).



Let's consider an example of a comparative Transactional analysis before the creation of an IP Agency and after its creation (using the example of the Center for Patent and Trademark Examination).

Currently, in accordance with the reform carried out under the leadership of the President of the Republic of Azerbaijan Ilham Aliyev, the Patent and Trademark Center has been merged with the Copyright Agency of the Republic of Azerbaijan. Part of the Center became part of the Agency's Office, while the main part functions as an independent (legal) entity of public law.

As a result of the reform, the total costs of maintaining the center, with higher salary positions, and employees were reduced by 38%.

In general, the number of employees at the Agency decreased by dozens of units, which made it possible to reduce the costs of the agency as a whole by 17%.

In conclusion, we will focus on improving the efficiency and effectiveness of the services provided by the IP office.

1. Since these services are heterogeneous, and along with decisions on the protectability of an IP object (legal), decisions are also made on the economic and sociological components of IP, we consider it appropriate to consider the concepts of "efficiency" and "effectiveness" in at least three aspects of the decisions made. However, there are common principles that unite all types of services.

Firstly, an analysis of the service provided from the standpoint of reducing transaction costs and the so-called adaptive efficiency according to North Coase.

What does this mean in practice, during administration? The system evolves, responding to the challenges of the environment, which means that even with minor changes associated with the introduction of new or redistribution of existing functions in departments, up to the introduction of a new staff unit or its change, emerging transactions are analyzed and developed ones are applied to improve the efficiency of management decisions methodological rules and algorithms.

Secondly, ensuring transparency of work and eliminating subjectivity.

This purpose is served by the developed digital platform with services “PƏNAH” (Patent və Əmtəə Nişanlarına Açıq Hədəf), which literally means “Patronage”. This digital system allows not only contactless communication between customers (applicants) of patents and trademarks based on the “single window” principle, but also the possibility of unlimited access to the system from any starting location. These measures apply to all three types of Agency solutions (services).

2. When it comes to the service of examining applications and giving them the status of protected IP objects, the effectiveness and efficiency of the service is measured:

a) strengthening the inventive and patent activity of applicants;
b) reducing the time for consideration of applications;
c) simplifying the application submission procedure, eliminating bureaucratic obstacles and providing methodological assistance in their preparation.

These purposes are served by:

a) **in matters of enhancing inventive activity** - the functioning of the Agency’s Training Center, the system of active awareness of applicants (website, press, methodological publications, special TV spots, established connections with universities, scientific institutions, business unions), etc.

Preferences play a special role.

- Thus, micro and small businesses have the opportunity to obtain a start-up certificate, after which they are exempt from income tax for three years;
- For those applying under the PCT, the state, through the Agency, pays an additional 50% of the cost of the procedure.

Facts:

- In 2022, the growth in patent applications was $\approx 25\%$ (271 applications, which is 83 applications more than in 2021);

- In 2022, the number of trademark applications increased to 4457, which is 1189 more than in 2021), i.e., growth $\approx 27\%$.

b) consideration of applications in matters of reducing time

- using a digital platform for accepting 3D applications and improving the professional culture of experts based on trainings, incl. in the Agency's SMART classes with the participation of the most experienced specialists and the WIPO Academy.

Facts:

- In 2022, the average time for consideration of a trademark application was three months (with a standard time for examination of six months), and accelerated examination - 15-20 days (with a standard of 30 days);
- In 2022, the average patent application processing time was 8-9 months, with the standard being up to 12 months.

c) in matters of simplifying the procedure for filing applications and providing methodological assistance to applicants, a special Call Center and Public Legal Advice have been created and operate.

Facts:

- In 2022, the Call Center responded to 31,700 requests from applicants;
- In 2022, the Public Legal Advice aided more than 20 applicants.

3. What are the goals for the near future?

3.1. Ensure the transformation of all administrative procedures so that, from the receipt of an application to the issuance of an electronic document, the applicant and the patent office would operate in a single digital space. To do this, develop the "PƏNAH" system with the condition that the Agency operates 24/7. At the same time, by expanding services, bring the consideration and issuance of a patent within six months.

3.2. For all categories of users (innovators, entrepreneurs, industry representatives and undergraduates), create a free opportunity to access the databases of the patent office so that, in conditions of fair

competition, inventors can identify new free niches for activities and expert assessment of products and technologies.

3.3. Work on the regulatory side and offer self-employed citizens the opportunity to register trademarks in their name.

3.4. Expand patent analytics (technological profile of Azerbaijan and leading countries of the world) and continue the practice of recommendations sent to interested authorities in this area.

Strengthen the promotion of copyright registration, targeting up to 1000 objects within a year.

3.5. Continue the work of creating an IP culture in small and medium-sized businesses.

3.6. In order to create a comfortable environment for innovation incubators, prepare proposals for their tax preferences.

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