

**INTELLECTUAL PROPERTY
RIGHTS PROTECTION
AND ITS IMPACT ON THE
ECONOMY OF UKRAINE**

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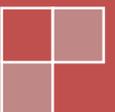
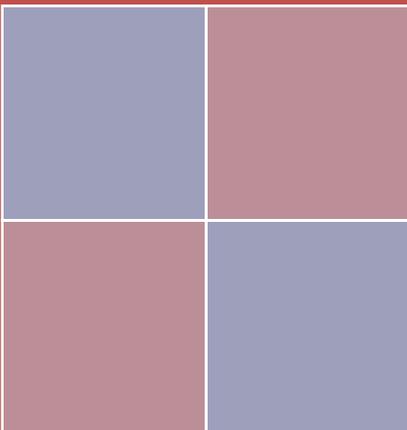
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I. HIGHLIGHTS

The effective system of intellectual property rights protection is a strong foundation for an innovative model of Ukraine's development, its modernization, competitiveness on the global level. The current intellectual property rights protection (IPRP) system in Ukraine is not nearly developed enough in all aspects. There are no patents for high-technology products in Ukraine, a fact that can be addressed as a good stimulus for the development of scientific and technological field. On the other hand, Ukraine has a high educational potential that underlies the development of high-tech industry. Its main problems are the innovation activities support and stimulation and legislative protection of intellectual property rights. In recent years, there is a trend for the increase in the number of trademarks and registered copyright materials, but there is a slight decrease in the number of patents (by 9%). Though, Ukraine has a strong potential in intellectual property sphere, it still has low positions in the ratings by the following indices: International Property Rights Index (118), Global Innovation Index (63), Knowledge Economy Index (56).

During the period from 1996 to 2010, Ukraine had enjoyed steady growth in the number of registered trademarks - 15 times more now, than in 1996 (1378 in 1996 and 21,290 in 2010) and the number of industrial designs had grown almost 7 times (241 in 1996 and 1,579 in 2010), while number of patents had diminished slightly by 17% (3,636 in 1996 and 3,036 in 2010). All the spheres, concerning intellectual property in Ukraine, are undervalued, and the amount of unregistered assets in Ukraine, according to experts' opinion, equals to 200-250 billion dollars.

The cluster research and economic and mathematic models showed, that in the case of the successful implementation of proposed measures in improving the IPRP, an economic effect roughly similar to the selected realistic scenario will take place, and Ukraine will move to the second cluster by 2017 with 500 bln US of GDP, by 2032 – to the third one with 1300 bln US of GDP.

II. FACTOR ANALYSIS

Our team has composed the questionnaire in order to value key restrictive factors affecting the IPRP in Ukraine. This research was conducted among the experts in the intellectual property sphere, on the basis of which we have distinguished the following factors as those, that have the most influence on the intellectual property development in Ukraine:

1. Innovation activities support and stimulation (including R&D expenditures both by the government and private sector, cooperation between research institutions and businesses, alternative taxation systems and access to financing) appeared to be the most important one.
2. The second place was taken by legislative protection of IP Rights (including legislation concerning IPR itself, simplicity of application procedure, and fines for theft).

The other factors are (in order of importance):

- Institutional back-up (which includes courts, centers for consultations, availability of relevant information and exchange techniques etc.). In fact, there is no patent court in Ukraine, and all the cases are reviewed in administrative, economic and regular courts, consequently the necessity of having more effective jurisdiction system appears.
- Availability of highly qualified and skilled experts in the sphere of IP Rights Protection (by this we mean competent judges, lawyers, as well as special training system for IPR experts' further education);
- Economic environment in the country- this factor takes into consideration the poorly developed IP market in Ukraine, low level of innovative activities, corruption, and lack of trust and confidence of the general population in their government.
- Innovative culture of the society (including such negative practices as high level of piracy in the country, lack of social ads aimed to creating awareness of importance of IP Rights Protection);
- Impact of globalization and macroeconomic environment (which includes such sub-factors as "brain drain", poor local conditions for researchers and inventors, better opportunities presented for them abroad).

The granting and protection of intellectual property rights is vital to promoting innovation and creativity. And innovation (as the process through which new ideas are generated and introduced in the marketplace) becomes the most important driver of economic growth and national competitiveness. SWOT analysis helps to evaluate the Strengths, Weaknesses, Opportunities, and Threats of the IPRP system in Ukraine, which are represented in the following table:

SWOT-ANALYSIS OF INTELLECTUAL PROPERTY RIGHTS SPHERE IN UKRAINE	
<p style="text-align: center;">STRENGTHS</p> <ul style="list-style-type: none"> -High level of education in the society, strong educational institutions; -High potential of scientists and researchers; -Large number of patent applications; -Developing infrastructure for innovation activities (including technology parks, business incubators, etc.); -Constant efforts aimed to improve IPR protection. 	<p style="text-align: center;">WEAKNESSES</p> <ul style="list-style-type: none"> -Weak law enforcement and protection of IP rights; - Imperfection of existing legislation; -Lack of appropriate institutional and informational support; -Weak supply and demand for innovations in the industry; -Unavailability of financial resources; -Administrative and financial barriers for small businesses; -Bureaucracy.
<p style="text-align: center;">OPPORTUNITIES</p> <ul style="list-style-type: none"> -Patent registrations in major patent families; -Perspectives for reduction of the number of counterfeit products on the market; -Growing innovation activity in the society; -Formation of innovation clusters; -Formation of better conditions for commercialization of IP objects. 	<p style="text-align: center;">THREATS</p> <ul style="list-style-type: none"> -"Brain drain"; -Highly triggered fixed assets; -Low motivational incentives for research activities; -Deterioration of macroeconomic situation in the country.

III. INTELLECTUAL PROPERTY INDICATORS

In the era of the knowledge-based economy key determinants of Ukraine's competitiveness are its innovation and intellectual property components of the national economy. Different respected international organizations evaluate the level of the innovation development showing how competitive a single economy is in the global environment. The main indices reflecting the IPRP are International Property Rights Index, Rule of Law Index, Knowledge Economy Index and Global Innovation Index (INSEAD), represented below in Table 1. Having analyzed Ukraine's position in International ratings concerning Intellectual Property Rights Protection, our team enables to draw the following conclusions:[21]

1) According to Intellectual property rights index (2012), Western Europe shows the best results. Top-10 spots are also taken by Singapore and Canada. Ukraine ranks on 118th position (among 130 countries), Intellectual Property Rights Index equals 4.0. IPRI in 2012 in Ukraine retained the same position, as in 2011, after three-year period of decline. Sub-index showing political and legal environment has slightly increased (by 0.1 point). Sub-index reflecting juridical independence and political stability has also increased, showing positive transformations. Negative performance in terms of "property registration" has caused a 0.1 point decrease in sub-index reflecting personal intellectual property rights. The weakest categories in the overall IPR Index are those of patent protection, piracy, access to credit and juridical independence.[15]

2) On the basis of Global Innovation Index, we are entitled to confirm that key restrictive factors of innovation's development in Ukraine are political and business environment, infrastructure of innovation's market and creative outputs.[28]

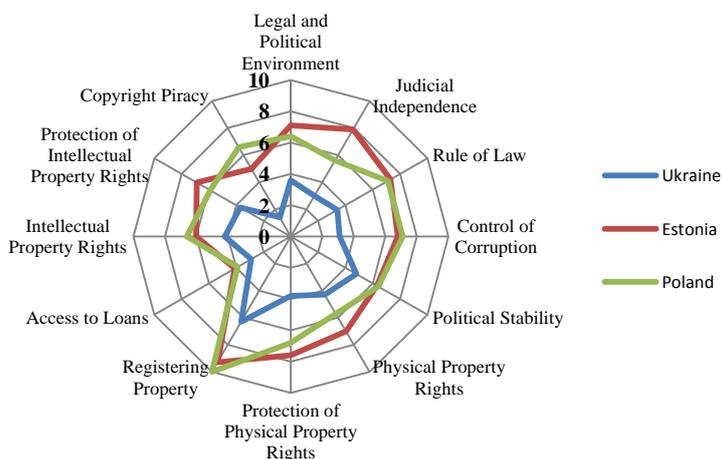
3) Ukraine has the average score of Knowledge Economy Index with 5,73 points. Sufficient differentiation exists in the sub-indices: worthy place in Education index (8,26 points), while Economic Incentive Regime and Internet and Communication Technology indices are extremely low (3,95 and 4,96 points respectively). The average volume of Rule of Law Index equals 0,48 (the low level of RLI).[26,27]

Table 1: Ukraine's position in selected international ratings, 2012

Table explanation: Ukraine's rating for the following indices: International Property Rights Index, Global Innovation Index, Knowledge Economy Index, Rule of Law Index [26, 27, 28]

Country's position by IPR Index	International Property Rights Index				Country's position by GII (INSEAD)	Global innovation index (INSEAD)				Country's position by KEI	Knowledge Economy Index (0-10)	Country's position by Rule of Law Index	Rule of Law Index (0-1)
	Overall* (1-10)	Legal	Physical	Intellectual		Input Sub-Index	Output Sub-Index	Efficiency Ratio	GI (0-100)				Average score (factors 1-8, 0,00-1,00 points)
Finland (1)	8,6	8,8	8,3	8,6	Switzerland (1)	68	68,5	1,01	68,2	Sweden (1)	9,43	Finland	0,87
Sweden (2)	8,5	8,7	8,4	8,4	Sweden (2)	68,8	60,5	0,88	64,8	Finland (2)	9,33	USA	0,735
Singapore (3)	8,3	8,3	8,4	8,3	Singapore (3)	74,9	52	0,69	63,5	Denmark (3)	9,16	Japan	0,806
Switzerland (4)	8,3	8,6	7,9	8,3	Finland (4)	67,5	56,1	0,83	61,8	Netherlands (4)	9,11	Germany	0,79
Norway (5)	8,3	8,7	8,4	7,8	UK (5)	68	49,1	0,80	61,2	Norway (5)	9,11	France	0,76
Japan (15)	7,7	7,7	7,1	8,3	USA (10)	66,3	54,5	0,74	57,7	USA (12)	8,77	Sweden	0,89
USA (18)	7,5	7,1	7,2	8,3	Estonia (19)	57,4	53,3	0,93	55,3	Estonia (19)	8,4	Ukraine	0,453
Estonia (28)	6,7	7,1	7	6	Japan (25)	61,3	42	0,69	51,7	Japan (22)	8,28	Estonia	0,76
Hungary (36)	6,4	6,1	6,3	6,9	Hungary (31)	51,2	41,9	0,82	46,5	Hungary (27)	8,02	Poland	0,715
Poland (40)	6,2	6,4	5,7	6,6	China (34)	42,7	48,1	1,13	45,4	Poland (38)	7,41	Hungary	0,65
China (57)	5,5	4,3	6,9	5,2	Poland (44)	47,1	33,6	0,71	40,4	Ukraine (56)	5,73	China	0,48
Ukraine (118)	4	3,6	4,3	4,2	Ukraine (63)	38	34,2	0,90	36,1	China (84)	4,37	Russia	0,43

Source: Team calculations based on on 2012 Report: IPRI, GII, KEI, Rule of Law Index



Picture 1. Competitiveness polygon of Intellectual Property

Source: Team calculations based on 2012 IPRI Report [15]

The competitiveness polygon, built on the basis of Intellectual Property Rights Index shows the weak competitive field of Ukraine comparing with the other countries of Eastern Europe — Estonia and Poland (see Picture 1).

In order to present the key players on the intellectual property market, it is necessary to review basic science and technology indicators, represented in Table 2. The analysis of the comparative grade of indicators enables us to draw the following conclusions:

1) The number of patent applications by residents in the United States is significantly outperformed in comparison with other countries and amounts to about 248 thousand. Japan is the leading country considering the number of residents wishing to patent their inventions (290 thousand), on the other hand, China shows significant rise in patent activity, with about 5 times growth (236 thousand) in applications over 2000-2010.

2) Japan, Finland and USA are leading countries for such indicator as R&D expenditure as % of GDP, which equals about 3 per cent. In Ukraine, percent of GDP spent on R&D remained consistently low over the last ten years and amounts to less than 1%.

3) In 2011, EU paid royalties and license payments in the amount of \$ 103 billion, that is 2 times higher than in the year of 2003 (\$ 50 billion). The other countries are characterized with moderate growth. The US is the leader on the receipt of royalties and license payments: between 2003 and 2011 the amount increased from \$ 55 billion to almost \$ 123 billion. Ukraine's share in the total amount of royalty and license fees payment/receipts is highly insignificant, and equals 0,746 and 0,107 mln respectively.

4) By 2003, the highest number of applications for registration of trademarks by non-residents was in the EU, but for the period of 2003-2011, China became the leader with total amount of trademarks applications of 973,460. Considering the number of applications for registration of trademarks by residents, China ranks first in 2008, and sharp growth is traced. Over the period of two years the number of those wishing to register their brand (trademark) increased by 400 thousand. Ukraine holds a good position on the trademark applications' market because of the steady demand for brand applications from non-residents. Among the countries being under analysis of high-technology exports indicator, the share of high-tech goods in exports is the highest in China (28%), slightly less than that of Triadic countries. In Ukraine, this figure varies within 4% (\$1,441 bn.), indicating a low level of

development of the national innovation sphere. Furthermore, Ukraine is poorly provided with researchers and technicians in R&D sphere (per million), comparing with Triadic countries and Central and Eastern Europe.[7-8, 10, 35-36].

Table 2: Science and technology Indicators by the country [12-14, 16, 29]
Table explanation: The value of basic indicators during the period of 2008-2011

Country	Patent application, pcs (2010)		Research and development expenditure (% of GDP) 2009	Royalty and license fees, USD million, 2011		Trademark applications, pcs (2010)		High-technology exports (2010)		Researchers in R&D (per million people), 2009	Technicians in R&D (per million people), 2009	Scientific and technical journal articles (2009)
	non-residents	residents		payments	receipts	direct non-resident	direct non-resident	Current mln \$US	% of manufactured exports			
EU-27	22,347	98,894	2,0	103,9	71,460	46,296	312,104	574,317	15,3	2,999	1,060.3 (2008)	248,655.5
Finland	102	1,731	3,84 (2010)	939	2,997	429	3,335	4,949	11	7,647	X	4,949
Estonia	13	84	1,44	74	22	319	1,067	518	9	3,210	627	518
Poland	227	3,203	0,68	2,483	273	918	14,064	7,355	7	1,598	189	7,355
Hungary	47	649	1,15	1,380	1,025	446	3,477	2,397	24	2,006	553	2,397
USA	248,249	241,977	2,79 (2008)	36,580	120,619	30,742	236,826	208,601	20	4,673 (2007)	X	208,601
Japan	54,517	290,081	3,45 (2008)	19,172	28,989	21,356	92,163	49,627	18	5,189 (2008)	597 (2008)	49,627
China	98,111	293,066	1,47 (2008)	14,706	743	67,838	973,460	74,019	28	1,199 (2008)	X	74,019
Ukraine	2,756	2,556	0,86	0,746	0,107	3,892	16,711	1,639	4	1,353	288	1,639

Source: Team calculations based on World Bank Data

One way to measure technological innovation is by tracking a number of patents. Nowadays not all patents are being truly innovations, that's why it is necessary to take into consideration Patent Quality Index. Patent quality has not improved over the last ten years and declined by 20 % per cent in all Triadic countries. Concerning patent quality in particular technologic fields, we should admit the following leaders: United Kingdom produces patents with sectors such as semiconductors and environment technologies and South Korea has a competitive advantage in ICT related innovations. During the period of 1996-2000 70 per cent of the most valuable patents were performed in the United States, Germany and Japan, but five years later Nordic countries, China, Korea have gained a significant importance and raised their share by 60 per cent of the world's most valuable patents.[24]

Our research concerns primarily Ukraine, and the effect's assesment of the implemented measures on Ukraine's GDP must be done only after analyzing our domestic market of the intellectual property (see Table 3).

Table 3: Intellectual property indicators of Ukraine during the period of 2007-2011 [5, 6, 11, 22]

Table explanation: Intellectual property's indicators (patents, trademarks and copyright of Ukraine during the period of 2007-2011)

YEAR	PATENTS				Registrations/Applications Ratio, %		PATENT GRANTS			TOTAL	PATENTS IN FORCE	TRADEMARKS		Registrations/Applications Ratio, %	COPY-RIGHT		Registrations/Applications Ratio, %	International Applications via WIPO Administered Treaties		
	Applications		Registrations		Inventions	Utility Models	resident	non-resident	abroad			Applications	Registrations		Applications	Registrations		PCT SYSTEM	MADRID SYSTEM	HAGUE SYSTEM
	Inventions	Utility Models	Inventions	Utility Models																
2007	6163	8870	4060	9215	65,8	103,9			308	308	X	23746	15375	64,74	4186	4361	104,2	90	195	1
2008	5697	9600	3832	9282	67,26	96,7	2399	1433	327	4159	26928	22371	15357	68,65	4185	3748	89,6	94	217	6
2009	4815	9203	4002	8391	83,11	91,18	2394	1608	512	4514	24654	17866	15137	84,73	4286	4458	104,0	79	188	3
2010	5311	10678	3874	9405	72,94	88,08	2034	1840	350	4224	24622	20603	16686	81	4948	4744	95,9	109	287	6
2011	5256	10427	4061	10291	77,26	98,70					X	21091	16677	79,07	5392	5240	97,2	141	365	7

Source: Team calculations based on Statistics Data of World Intellectual Property Organization and State Department of Intellectual Property

Quantitative assessment of intellectual property market in Ukraine during the period of 2007-2011

- 1) The number of inventions' registrations has decreased by 15 per cent, whereas the number of applications for utility models showed a steady growth and equals 18 per cent.
- 2) Registrations/Applications ratio enables to affirm that substantial percent of patent applications is realized.
- 3) Patent grants are mostly provided by residents, their percent share varies between 48-58 %. It should be noted that the number of patents in force has slightly decreased by 9 %
- 4) The number of trademark applications is constantly fluctuating over the period of the last five years, however registration percent keeps growing (about 8 per cent).
- 5) The stable growth was observed in the copyright market equaling 30 percent during the period of 2007-2010.
- 6) Ukraine has made the largest number of international applications under Madrid system with the share of approximately 70 % of the total amount. But comparing with the other countries from Central and Eastern Europe, such volume of patents under PCT, Madrid and Hague systems is extremely low.

Apart from the registration of Ukraine's patents on the basis of international procedures, the analysis of patents' number in the selected patent families is vital for understanding the level of countries' innovation activity and its intellectual property market development. On the basis of the close examination of the number of registered Ukraine's patents in the patent families of Triadic countries over the period of 1998-2011, we were enabled to draw such a conclusion: intellectual property market in Ukraine exists only in its development stage, confirmed by extremely small amount of our patents abroad (for example in the United States the number of patents varied from 14 to 25 during the last 15 years, comparing with the other countries of Central and Eastern Europe). [9, 18- 20]

The economic role of intellectual property reveals due to the assessment of the intellectual property market size, the number of employees and furthermore structure of Ukraine's external trade, especially high-technology goods share in total export/import. Such indicators disclose the type of national economy, especially the innovation's development level and its competitive position on the global market. IP-Intensity Industries' research is represented below in the Table 4:

Table 4: IP-Intensive Industries in the Ukraine's economy [5, 6]

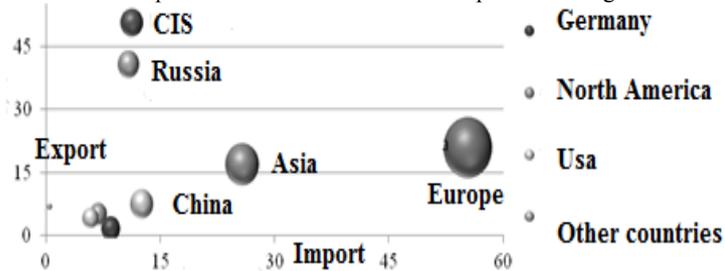
Table explanation: Intellectual property's intensity, employment in IP-industries

CODE	INTELLECTUAL PROPERTY INTENSITY, % of Applications	AVERAGE SCORE (2007-2011)	YEAR	HIGH-TECHNOLOGY EXPORTS' INDICATORS							
				High-tech export/import share in total exports/imports of Ukraine, %		Share in world exports of high-tech goods, %	Participation rate in ILD on high-tech goods	Coverage ratio (high technology exports/ imports)	Terms of high-tech goods' trade index	Price for high-tech goods, thousand dollars per ton	
				Export	Import					Export	Import
IPC CODE	PATENTS (key industries)		2002	2,3	3,58	0,06	0,45	0,68	X	73,7	26,1
C07	Medical or veterinary science; hygiene	11,7	2003	3,50	3,63	0,09	0,70	0,97	1,82	130,7	25,4
A61	Organic chemistry	11,7	2004	3,48	4,77	0,11	0,68	0,82	0,90	169,9	36,6
A01	Agriculture	5,1	2005	1,37	4,74	0,06	0,31	0,27	0,38	49,6	27,8
NCL	TRADEMARKS (key industries)										
Class 35	Advertising; business management; business administration; office functions	17,5	2006	1,77	5,89	0,05	0,25	0,32	1,57	81,1	28,9
Class 05	Pharmaceutical and veterinary preparations; sanitary preparations for medical purposes...	5,7	2007	2,01	3,65	0,07	0,29	0,45	1,23	123,5	35,8
Class 41	Education; providing of training; entertainment; sporting and cultural act.	6,5	2008	1,67	2,88	0,09	0,29	0,45	1,04	133,3	37,1
Class 33	Alcoholic beverages	4,9	2009	2,36	4,21	0,10	0,3	0,49	0,49	126,1	71,9
	COPYRIGHT		2010	1,99	4,22	X	X	0,40	1,07	116,5	61,9
1	Literacy writings	47,2	2011	2,0	4,2	X	X	0,42	X	X	X
2	Musical works with or without text	20,4									
3	Compound works	20,3									

Source: Team calculations based on Statistics Data of State Department of Intellectual Property (Ukraine), State Statistics Service of Ukraine

On the basis of the IP-Intensive industries analysis, we are able to confirm that key industries are low-technological in the context of patent applications (medical, organic chemistry and agriculture spheres). The weight of high-technology export/import in external trade turnover is absolutely insignificant and ranges from 1,4 to 5,9 per cent during the estimated period (2002-2011). Moreover, Ukraine's share in world exports of high-tech goods remains almost on Zero-level with 0,1 per cent. Taking into account the coverage ratio (high-tech exports/imports), it is necessary to emphasize the country's dependence on high-technology imports. Terms of high-tech goods' trade index shows how much the foreign trade is favorable for Ukraine: the index value fluctuated very strongly over the last 10 years, it means the constant alternation from the improvement of the trade terms and nation's welfare to its reduction indicating worsening of the trade terms and welfare's decrease. On the subject of number of employees in high-tech industries in Ukraine, it should be noted the extremely low share of such employees in the total employment structure (a little more than 1 per cent). According to the salary's exceeding ratio in high-tech industry ranging within 0,96-1,05, we can conclude that specialists in IP-intensive industries receive the salary on the average-market level.

In order to present the main Ukraine's trade partners in high-tech industries, we have designed a geographical structure represented in Picture 2.



In the geographical structure of high-technology exports/imports for CIS countries accounts about 50 % (Russia – 40 %), EU – 21 % and Asia 17 % (China – 7 %). Taking into account the dynamics of countries' share, we are able to confirm that the consolidation process of Ukraine's traditional export markets occurs due to the exports' reduction to the other countries. Such a constriction of the external sales channels indicates the strengthening of the geographical dependence on the economic conditions of the major developed importing countries: Russia, the Netherlands, Germany, Switzerland, India, China and USA.

Picture 2: Geographical structure of high-technology goods' trade of Ukraine [5]

Source: Team calculations based on Statistics Data of State Statistics Service of Ukraine/ T.M. Melnyk, O.V. Zubko Innovative regression in the foreign trade commodity structure of Ukraine

IV. RECOMMENDATIONS

The International Intellectual Property Alliance is a private sector coalition of trade associations representing U.S. copyright-based industries in bilateral and multilateral efforts, that works to improve international protection and enforcement of copyrighted materials and open up foreign markets closed by piracy and other market access barriers. In February 2012 IIPA filed its Special 301 Recommendations Ukraine's next year. This is how the IIPA evaluates the situation in Ukraine: "Piracy rates in Ukraine are among the highest in Europe, including for both hard copy and digital copyright piracy. Ukraine is often considered as a key country in the region for the enforcement of intellectual property rights (IPR) because it exports piracy, especially digital piracy, into both European Union markets and other countries in the Commonwealth of Independent States (CIS)."

In 2010, the governments of the U.S. and Ukraine developed an IPR "Action Plan" intended to target digital piracy. Not only has the plan never been implemented, but some actions have been undertaken by Ukrainian officials that are contrary to the proposed plan, and would weaken, not strengthen enforcement. A list of priorities that are recommended to implement in Ukraine as soon as possible, are given, in accordance with benchmarking our practices with those of Estonia, which had many of the same problems just 10-15 year ago, where they were effectively solved:

1. Criminal Enforcement. Criminal enforcement is a key IIPA-member priority because it can, if undertaken correctly, address many piracy problems. To be effective, criminal enforcement needs:

- 1.1. coordination by key agencies – including, the Ministry of Internal Affairs and General Prosecutors Office;
- 1.2. a significant increase in the number of raids and prosecutions;
- 1.3. increase in the number of workers, especially for IPR police enforcement personnel (bringing the force up to a minimum of 260 officers).

2. Administrative and Customs Enforcement, End-User Piracy, and Software Legalization

There are several administrative and customs law enforcement efforts that can be recommend as priorities, including:

- 2.1 An emphasis on corporate end-user piracy enforcement targeting large-scale infringers (when nowadays, current targets are small companies and individuals).

- 2.2. Allocation in each ministry (in 2012) of funds dedicated to full software legalization and the creation of an effective software asset management policy and practice (including audits).
- 2.3. the development of (and public statements about) an action plan for software legalization; (b) identification of steps needed to be made to successfully realize the resolution of the Cabinet of Ministers (designating the individuals responsible in the process); and (c) placing the plan's implementation under the Prime Minister's supervision.
- 2.4. Using the ex officio authority (in place since 2007) to improve border controls, especially along the Russian border, focused on railroad traffic.

3. Legal Reforms

Here is the list of the key legal reforms that are recommended:

- 3.1. Full implementation of the WIPO digital treaties – in the Copyright, Industrial Property, Criminal and Criminal Procedural Codes. Ukraine acceded to the WIPO Copyright Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT) in 2002.
- 3.2. Adopting amendments to the Law on Telecommunications, that will include: legal incentives for ISPs to cooperate with rights holders to effectively deal with Internet piracy; rules that clarify the illegality of providing services that are intended to promote the infringement of copyright and related rights; and injunctive relief and a duty on Internet service providers (ISPs) to provide information to law enforcement agencies and rights holders.
- 3.3. Copyright Law amendments must be enacted to ensure that an unauthorized online distribution, communication or making available is considered an act of infringement, regardless of whether it is undertaken for profit-making purposes or other commercial benefit or advantage.
- 3.4. Amendments to Article 176 of the Criminal Code (and separately, in the Civil Code) to ensure the availability of criminal remedies against online piracy of all works and sound recordings; and, to establish in the Criminal Procedure Code, clear rules for prosecuting infringers.
- 3.5. Amendments the Copyright Act and Criminal Code to make camcording illegal by excluding camcording from any "private use" exception, and criminalizing this activity.
- 3.6. Implementing the 2003 resolution of the Cabinet of Ministers regarding legalization of software in state agencies.
- 3.7. Amending the Copyright Law and the Civil Code to ensure that all relevant right holders are entitled (in law and practice) to operate effectively through the collecting bodies of their choice in the licensing of broadcasting, public performance and other communications to the public.
- 3.8. Abolishing the "hologram stickers system" (or, at the very least, fixing it so that it cannot be used by infringers to make pirate product appear legitimate).[32-34]

4. Simplifying bureaucratic practices

- 4.1. It is not a secret that one of the reasons both domestic and foreign companies don't want to file for their patents in Ukraine is because not only they are not sure, that their research will have adequate protection here, but also because all the processes are so complicated and expensive. After we have carefully studied the leading countries' practices, we think that Ukraine will benefit greatly, if it adopts some system, similar to US provisional application option. Under United States patent law, a provisional application is a legal document filed in the United States Patent and Trademark Office (USPTO), that establishes an early filing date, but which does not mature into an issued patent unless the applicant files a regular non-provisional patent application within one year. One popular use of a provisional application is to document and "lock in" potential patent rights while attempting to obtain sponsors for further development (and for more expensive patent applications). The provisional application were introduced to U.S. patent law with a 1994 amendment of the [Patent Act of 1952](#).¹
- 4.2. It is common knowledge that out of 100 000 patents, filed in Ukraine in the last 15 years, only 20 were actually realized here. And if there existed a cheap way to protect one's discovery, while searching for investors, much more patents will be commercialized in Ukraine, which will greatly boost our economy. [23]

5. Collaboration between private entities R&D institutions

To overcome the lack of commercialization, a special organization should be created, that will create ties between R&D institutions, inventors and businesses and will be set up to assist in matching the industry's needs with the innovative products produced by the various research institutions to ensure optimum commercialization. Market should be the driver for inventors' research-companies always need new products and technologies and if they can't find what they need here, then they will look for necessary things in other markets.

But a government structure should be created as part of State Institute of Intellectual Property of Ukraine, that will serve the function of a bridge, that will bring together inventors, who need to commercialize their products and eager companies, searching for new technologies.²

6. Training of competent in IPR judges

It's very important to remember, that we do not strive to create simply more patents, we need to create patents, that will not only meet the world demands and expectations, but will also be in tune with identification of our future world. The sixth stage of technological evolution concentrates on biotechnology, nanotechnology, the design of the living organisms, a new medicine, robotics, design and management of future. Ukrainian government and firms need to collaborate on investing in those high-profile projects, that will be a good investment due to their practical value

7. Creation of sufficient database

A platform, that could be used as a database for all registered patents and their electronic version needs to be created in Ukraine. It's very important for transparency and adequate protection of IPR and also makes it so much easier for investors to look up the materials already in existence. Similar steps were taken in Estonia, when their "government has also undertaken a commendable effort to integrate all national legal databases within a single publicly accessible internet portal."³ The government made sure, that all stages of the legislative process are conducted on publicly accessible internet portals. Such processes are also subject to comment via internet prior to implementation. Domestic standards are developed in working groups.

8. Emphasis on the sixth stage of technological evolution

It's very important to remember, that we do not strive to create simply more patents, we need to create patents, that will not only meet the world demands and expectations, but will also be in tune with identification of our future world. The sixth stage of technological evolution concentrates on biotechnology, nanotechnology, the design of the living organisms, a new medicine, robotics, design and management of future. Ukrainian government and firms need to collaborate on investing in those high-profile projects, that will be a good investment due to their practical value.

9. Social propaganda through seminars, ads and other mass media opportunities

The need to create higher social awareness and IPR protection culture through various propaganda measures can't be overlooked. They should include:

- 9.1. Programs featuring our talented researches and scientists should be created, that will enable the young ones aspire to their success and also raise the level of patriotism within the nation.

¹ Eugene R. Quinn, Jr., Patent Applications [Internet] August 17, 2007. Available at http://web.archive.org/web/20070817122116/http://www.ipwatchdog.com/provisional_patents.html

² Measuring the Economic Impact of IP Systems, WIPO - UNU Joint Research Project [Internet] 2007 Available at http://www.wipo.int/portal/en/news/2007/article_0032.html

³ Enhancing market openness, intellectual property rights, and compliance through regulatory reform in Estonia Available at <http://www.oecd.org/estonia/48262981.pdf>

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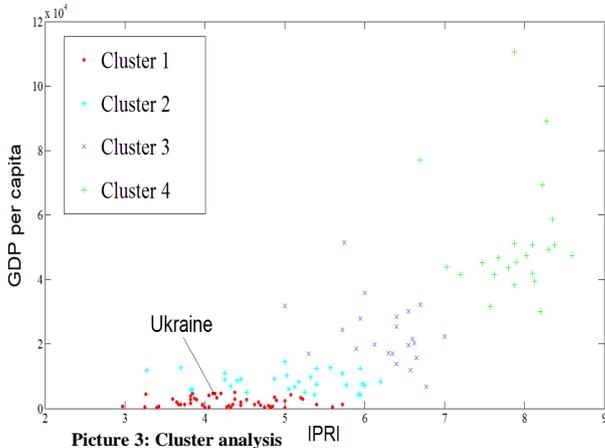
9.2. More government-sponsored contests for innovations, that bare practical value, should be created, also tenders, financed by private entities could boost the commercialization of Ukrainian patents.

9.3. The implementation of such mandatory course as IPP in all universities, whose graduates will deal with this important aspect of today's globalized world as IPRP, should be made.

10. Larger government funds for innovation

Government spending, targeted on R&D, should be increased. A separate budget item, concerning the R&D and innovations needs to be created. As our study indicated, Ukraine doesn't spend a large enough portion, out of its expenses budget on R&D, in comparison with other countries.

V. ECONOMIC MODEL SHOWING IMPACT OF INTELLECUAL PROPERTY RIGHTS PROTECTION ON GDP



Picture 3: Cluster analysis IPRI
Source: Team calculations based on 2011 IPRI Report

Cluster analysis

The set of countries was divided in terms of International Property Rights Index (IPRI) and GDP per capita. Indicators' value was chosen as an arithmetic average for the period of 2008-2011. The results of division into 4 clusters are shown on the following picture 3.

Ukraine is situated in the first cluster, whose representatives are characterized by the lowest values of IPRI and GDP per capita. There are also in the first cluster such countries as Algeria, Iran, Georgia, Armenia, Albania, Macedonia. The second cluster includes Russia, Poland, Turkey, Romania, Bulgaria, Brazil. The third class includes countries such as Estonia, the Czech Republic, Hungary, Israel, Puerto Rico and others. Germany, USA, Japan, Norway, Finland represent the fourth cluster (detailed characteristics of every cluster are represented below):

Clusters' indicators

Cluster	1		2		3		4	
Indicator	IPRI	GDP per capita						
Minimum	3,0	234,8	3,3	4215,0	5,0	6673,3	6,7	30142,7
Maximum	5,7	4682,5	6,2	14588,0	7,0	51491,5	8,6	110530,8
Average	4,3	1952,9	5,0	8380,0	6,3	23163,7	7,9	51771,6

Impact model of implementation of intellectual property rights protection program on Ukraine's GDP

In order to create the economic model, which shows the impact of implemented measures resulting in complete protection for intellectual property rights on Ukraine's GDP over five, ten and twenty years we have made such calculations:

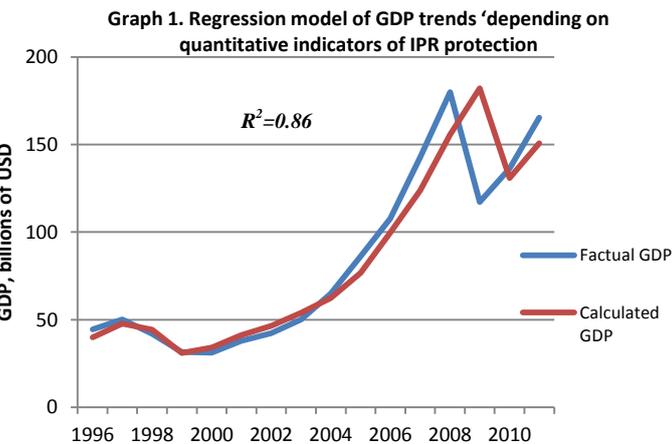
1) The quantitative indicators (number of registered trademarks, patents and copyrights) of IPR sphere in Ukraine are necessary to be predicted. This forecast is likely to be made by experts as intellectual property rights protection is hardly measured (a single quantitative indicator not fully reflecting the current situation is International Property Rights Index, but it does not cover statistics data over a long period.

2) Based on the statistic database of quantitative indicators of IPR and GDP, it is necessary to build the regression model of GDP trends depending on quantitative indicators of IPR protection.

To reflect the impact of intellectual property rights protection on GDP the multiplicative autoregressive model is often used [31]. We have adapted this model to the Ukrainian economy with the limited statistical base and domestic realities.

On the basis of the statistical data over the period of 1996-2011 the regression model depending on quantitative indicators of IPR protection was built (See Graph 1): $y_t = 0,108 \cdot x_1^{0,294} \cdot x_2^{0,045} \cdot y_{t-1}^{0,806}$, y_t , y_{t-1} - GDP size in the current and previous periods; x_1 - the number of registered patents in the current year; x_2 - the number of registered trademarks in the current year.

The coefficient of determination ($R^2=0.86$) shows a high prediction accuracy. The model is adequate by Fisher's criterion at 1%-level. All the parameters except of x_2 are significant by Student's test at 5%-level. It means that trademarks make the least impact on GDP.



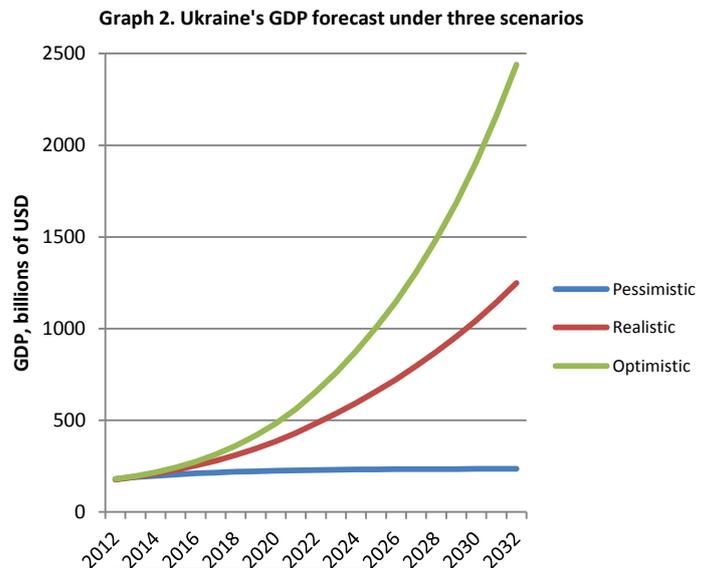
Graph 1. Regression model of GDP trends depending on quantitative indicators of IPR protection

Source: Team calculations based on data of State Statistic Service of Ukraine

Thus, if the implementation of the proposed action would have consequences, roughly similar to the selected realistic scenario, then by 2017 Ukraine will move to the second cluster with 500 bln US of GDP, by 2032 - to the third cluster with 1300 bln US of GDP.

To forecast the impact of the proposed activities on Ukraine's GDP we have made three scenarios, which are represented in Graph 2:

1. Pessimistic - number of patents and registered trade marks will not change until 2032.
2. Realistic - number of issued patents and registered trademarks in the period of 2012-2022 will grow annually by 7%, and during the 2022-2032 by 5%.
3. Optimistic - number of issued patents and registered trademarks in the period of 2012-2022 will grow annually by 10%, and during the 2022-2032 by 7%.



Graph 2. Ukraine's GDP forecast under three scenarios

Source: Team calculations based on statistic data of SSU of Ukraine

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