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Handbook for services in IPR and Innovation Management

Services in IPR and Innovation Management

Imprint

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Introduction

The current handbook has been developed within the project „FP7-INCO-2013-9 R2I-ENP/609531 - Knowledge Transfer Community to bridge the gap between research, innovation and business creation - acronym NoGAP” as a guide for potential stakeholders in the field of renewable energy and energy efficiency interested in cross-national collaborations between EU countries and Eastern Partnership countries. It addresses the need for qualified and timely advice for collaboration initiatives between academia and industry, which has been established as one of the obstacles that need to be removed in order to stimulate and capitalize upon Europe’s potential in the domain of the societal challenge „Secure, clean and efficient energy” proposed by the European Commission.

Without claiming to have exhausted the targeted subjects of Innovation management support services and IPR support services, the document tries to provide an overview of the most important topics from two perspectives: national and European. The handbook is structured in two main parts, dealing with their respective subjects, which can be used either separately or in conjunction. Due to their intrinsic nature, the innovation part is more focused on conceptual clarifications and models, while the IPR part, which is highly regulated, is more focused upon concrete tasks and appropriate guidance.

It is our hope that this handbook will contribute to better achieving solutions for businesses, research institutions, and ultimately citizens, in the European Union and beyond, across the whole European continent. Also, the authors wish to take this opportunity to thank all NoGAP project partners for their insights and help in developing this material.

Innovation support services

As of many years now, innovation has positioned itself as a buzz-word, a process and an objective for many success aspiring organizations, institutions and societies. Innovation manifests itself in today's economy from incremental improvements to radical inventions. It is considered to be both a strategy towards achieving a successful and healthy business and a means to create high value for customers, deliver quality and market leadership.

As described by the European Union: “Innovation is the ability of individuals, companies and entire nations to continuously create their desired future” – John Kao, “Innovation Nation” (2007) (European Commission, 2013). In brief, “innovation refers to the creation of new or significantly improved products, processes, marketing and organization that add value to markets, governments and society” (European Commission, 2013). It stands at the base of the pyramid of technological, social and economic advancement; it is a means to increase added value, improve existing products, processes and systems and creating new market segments, business models and exploiting new opportunities through “out of the box” thinking and “connecting the dots”.

Due to the ever increasing need to innovate, the European Union has adopted an Innovation Policy (European Commission, 2014) whose main focus is on:

- ✓ Actively **monitoring the innovation performance and of the uptake of innovation** of the EU and of the member states – by this, the EU openly admits that innovation performance an important catalyst of economic, industrial and social growth. Thus, innovation is considered a strategic element in the development of the union;
- ✓ Encouraging the **commercialization of innovation** through the development of specialized policies;
- ✓ Stimulating the **uptake of advanced manufacturing technologies** to the end of modernizing the EU infrastructure and also establishing premises for performance and productivity in the manufacturing industries.

For the scope of this handbook, we will revise the most important services and activities that are widely used to support innovation. Where needed, examples will be employed and further reading resources will be suggested.

Seven broad innovation areas were identified, according to their role in the innovation process, and will be detailed further on.

New product development

A new product development process (NPD) describes the whole process of bringing a new product or service to the market. Considering the existing NPD models, a general approach to the NPD process is detailed below:

1. Idea generation – it is, at the core, a creative process resting on objective information from the environment. Analyses which need to be undertaken for the idea generation process to be valid include:
 - a. Market analysis – understanding the context of the market in which the new product will be introduced. Through this the NPD process needs to have inputs such as: market and product trends, needs (both expressed and hidden) of customers, potential developments and market increases, competitors, existing products and their characteristics (why are they successful, market prices, production prices, target, needs addressed, failures) potential unexplored market niches and opportunities.
 - b. Political, legal and cultural analysis – the entire environment must be understood. Customs and religious practices must be understood so that all the constraints deriving from these areas are known and can be tackled. Legal obligations are also an important factor – a legal analysis must be thoroughly undertaken in order to be able to integrate all the legal requirements in the new product or service;
 - c. Technical documentation – the technical aspects regarding all processes that can be involved in the newly developed product must be known and understood. If possible, all relevant patents and inventions must be analyzed. Materials, technologies and manufacturing processes must be all studied and placed under scrutiny;
 - d. Business analysis – requires extensive gathering of information concerning the businesses internal and external environment and provides alignment between the organization’s objectives and strategies and its actions and perceived needs.

The result of the idea generation step is a set of guiding principles that aid in defining the new product. It should yield a product strategy, some product ideas, directions for the NPD process, desired characteristics, needs targeted, market niche, etc.

The last step of the idea generation is a final filter which critically evaluates all developed ideas for feasibility, potential to be produced and, of course, organizational strategy.

2. Design – the design phase includes all activities undertaken to model the new product. It goes beyond the purely aesthetic dimension and integrates many design areas such as:
 - a. Aesthetic design;
 - b. Functional design;
 - c. Design for quality – integrating the needs and desires of customers into the newly developed product, making sure the product will be fit for use;
 - d. Design for the environment – takes into consideration all the environmental aspects and mitigates environmental risks;
 - e. Design for ergonomics;
 - f. Design for cost;
 - g. Various tests done in a virtual environment (ex. CAD – computer aided design)

The result of this step is a limited set of alternatives from which just some will be chosen to be taken to the next phase.

3. Prototyping – this step presumes the physical production of the new product. Such can be done, according to the specificity of the product as a single product or in a small series or “zero” series. In this step the following elements will be defined:
 - a. Bill of materials – including all utilized materials and their specifications;
 - b. Technologies employed;
 - c. Technological process;
 - d. Production process;
 - e. Quality assurance and quality control plan;

The prototyping can be done on more than one instance to test various conditions (ex. Test different types of materials or technologies).

The result will be a prototyped new product with all the technological and production requirements established. The product will be now ready for production deployment.

4. Improvement / validation – many NPD models introduce this step after they have made a prototype of their new product. Some production constraints identified in the 3rd stage can take things back to the design phase or even to the idea generation phase. Such a filter is important as it collects data from all previous phases and make a realistic analysis of:
 - a. Cost structure;
 - b. Viability of the product on the market;
 - c. Validation in the market with a small series or focus group (or other validation methods);
 - d. Estimates production volumes and price on the market;
 - e. Testing the product in typical consumer environment;
 - f. Implement improvements before the production deployment;
 - g. Establish market and marketing strategies.
5. Mass production and marketing – typically deals with:
 - a. Materials and resources sourcing;
 - b. Production process;
 - c. Distribution process and supply chain;
 - d. Marketing and pricing strategies;

Project management

As of many years now, project management is a highly sought after and very useful management skill. This is partly due to the shift in companies operational practices and partly because of the change in market functioning and expectation.

Related to the shift in organizational operational practices, there are several issues to be considered. Starting from the definition of the project given by (Project Management Institute, 2008), which states that the project is a “temporary endeavor undertaken to

create a unique product, service or result”, we can identify a clear direction towards isolated company actions, aimed at specific goals, meant to accelerate the organizational processes and designed to yield quick and effective results. This means that, apart from day to day business inside companies, there is an ever increasing need to manage certain actions in a different way. The project management way implies more agility from companies and a higher responsiveness level towards market and customer demands. As a result of such a shift, the importance of the project management paradigm can also be demonstrated through the existence of project management based business models which are more and more frequent. One example can be the outsourcing industry which utilized the “business as usual” approach for the most basic operational processes but when it comes to customer and market interaction utilizes a strict project management based approach.

As innovation support goes, project management is an indispensable tool. This affirmation is based primarily on the fact that the processes are extremely similar but also that there are numerous innovation management models in the specialized literature which are generally based on a project management structure (M. Dragomir, 2014).

The similarities between project management and innovation management lie in the following considerations:

- ✓ The scope of the action must be clearly defined and formulated so as no deviations from the initial intentions exist. This allows for a clear and cost effective activity;
- ✓ The requirements must be especially addressed and clearly identified. These are the building blocks of the action and they are the ones who actually lead the planning and the end result;
- ✓ The planning must be made in such a way that it allows flexibility but in no way that it permits extensive deviations from the plan and a “sine die” putting off of the finalization;
- ✓ They are both clearly identified in time and results. They have a clear beginning and ending and their successful completion depends on achieving a clear set of predefined results;
- ✓ They all follow a certain iterative process structure;
- ✓ They both have at their disposal a limited amount of resources which have to be effectively managed in order to achieve the end result;
- ✓ From the strategic point of view, their scope and goals need to perfectly align with the company’s mission and goals in order to achieve long term success.

As a consequence of the ever increasing importance of project management in the companies' daily operations, numerous models and standards were developed as to assist organizations and professionals in dealing with project management processes and structures, in all industries and all fields of activity. It can also be viewed as a collection of best practices, some of which are presented in (M. Dragomir, 2014). Further we will describe some of the more acknowledged project management best practices and standards available.

Project Management Body of Knowledge – PMBOK®

The PMBOK is a structured knowledge based aimed at understanding in a comprehensive manner the generalized approach of project management. It has currently reached its fifth edition published in 2013.

The author of this structured body of knowledge is the Project Management Institute. It is designed to act as a standard for project management (the previous version was also recognized as a standard by the American National Standards Institute – ANSI and by IEEE – Institute of Electrical and Electronics Engineers) akin to standards such as ISO 9001 for quality management or ISO 10006 for quality management principles in project management. Currently PMI is also involved in the ISO PC236 project management committee.

As a structure, the PMBOK (Project Management Institute, 2013) is both a source for standardized terminology and guidelines for implementation and management. The standardized methodology addresses the following elements:

- ✓ Process description in terms of:
 - Inputs (documents, plans, designs, etc.)
 - Tools and Techniques (mechanisms applied to inputs)
 - Outputs (documents, plans, designs, etc.)
- ✓ Process groups: Initiating, Planning, Executing, Monitoring and Controlling, Closing;
- ✓ Knowledge areas:
 - Project Integration Management;
 - Project Scope Management;
 - Project Time Management;
 - Project Cost Management;
 - Project Quality Management;

- Project Human Resource Management;
- Project Communications Management;
- Project Risk Management;
- Project Procurement Management;
- Project Stakeholders Management.

As far as certifications go, the PMBOK can be a guide for preparation towards the Project Management Institute certifications such as:

- ✓ Certified Associate in Project Management
- ✓ Project Management Professional

*ISO 10006:2003, for Quality management systems and guidelines for
quality management in projects*

ISO 10006:2003 is an international standard developed and issued by the International Standardization Organization. As an organization, ISO oversees the needs of the international environment and develops and publishes internationally acknowledged and accepted standards. These are meant to be either certified (as is ISO 9001:2008 which can certify that an organization adheres to, as a whole, to the quality management principles and paradigms) or can be utilized as guidelines or best practices. ISO 10006:2003 falls into the latter category, meaning that it cannot be certified (because it is utilized on a project-base time-frame) and it stands more as guidance and as body of knowledge of best practices in the field of quality management of the project management environment.

For the purpose of giving an overview of this international standard, these are the quality management principles which govern quality management in organizations, as well as in projects (International Standardization Organization, 2003):

- ✓ customer focus – a primary concern for an organization is a continuous focus on the customer, meaning understanding their requirements and focusing on their complete satisfaction;
- ✓ leadership – organizations need to establish a strong and efficient leadership structure that can unify the organization and direct it towards its goals;
- ✓ involvement of people – ISO recognizes the human resource as the most important one in the organization; people implement and maintain quality;

- ✓ process approach – an organization needs to manage its resources and activities as processes in order to achieve efficiency;
- ✓ system approach to management – building on the process approach, this principle requires for the organization to manage in an integrated way the interrelations of processes and to view the organization as a system which needs to be managed as a whole;
- ✓ continual improvement – an organization is never at its best, therefore an approach which constantly seeks opportunities for improvement is paramount to quality;
- ✓ factual approach to decision making – decision making in any context needs to be based on objective facts, information and data;
- ✓ mutually beneficial supplier relationships – the relationship with an organization’s suppliers and with all stakeholders along the value chain needs to be a win-win situation. There is no scenario in which there can be a long term success derived from an abusive supplier relationship.

The ISO 10006:2003 approach represents a structured way of integrating the quality function into the project management practices of any organization. The process is described in detail in the standard body and in addresses every level of the project management structure from strategy and leadership down to operational practices and efficient resource management.

Lean project management

This approach combines the lean management philosophy with the project management structure. It utilized the lean principles and concept, introducing them into a project management context. These are all related to the seven waste identified in lean as follows (presented form (J.P. Womack, 2003):

1. Transport – in production environments transportation is a necessary but not value adding activity. Therefore, it is desirable that the process be reorganized in such a way that added value processes succeed each other in a flow-type manner, without excessive “wandering”. Transposed to the project management environment, this waste addresses the need to steam-line the processes in such a way that the succession makes sense and is the shortest path to highest value delivery;
2. Defects – this waste occurs when there are time and resources invested in a product, service or action that is not fit for use or does not otherwise deliver expected results;
3. Inventory – it presumes that holding inventory can generate a serious waste, especially the hidden kind. When discussing about project management,

inventory can mean anything from holding and maintaining unnecessary information and clogging the processes to not having a procedure for discarding outdated or residue files, information and data;

4. Motion – when such a waste occurs in the production environment, it presumes a higher amount of resources is utilized to deliver an equal level of value. This happens frequently in project management where unnecessary and non-value adding steps are being introduced or supported in the process structure;
5. Over-processing – this warns about spending more time on an activity where less is needed. As much value as required must be delivered and no more;
6. Over-production – having more outputs than needed (in number or in typologies) does not help the overall performance of the project. On the contrary, it clogs and hinders the “leanness” of the processes;
7. Waiting – this process is actually dealing with time lost on poor organization of the process. In short, this is a defect of the system which is most likely not managed in an integrated way, and I does not consider the dependencies and the interconnections between processes.

Probably the most important dimension that lean project management addresses is the concept of “value”. It proposes that value be delivered with the least amount of resources involved. A project must implement only such actions and undertake such processes as to support value delivery and nothing more. Therefore, an organization needs to identify value and deliver it in an efficient an effective manner. This is where the seven waste intervene and for this purpose need to be diminished and, if possible, eliminated.

In a project management environment, these wastes need to be “translated” and diminished in order to set-up a lean project management approach. This can be done mostly through the help of specialized consultants. The body of knowledge related to lean management is quite vast and it addresses many other related fields such as Six Sigma, Total Quality Management or Organizational Management. Furthermore, it is also personalized to the need of the specific function it addresses – the most common is lean management destined to manufacturing environments. Therefore, specialized support can severely short-track the implementation and adaptation of lean to the specific needs of the project management environment, as well as to the organization to which it is addressed.

Agile project management

This approach to project management appeared in the software development industry and follows the principles of agile software development. This is primarily guided by the Agile Manifesto available at <http://agilemanifesto.org/>. This enumerates a number

of values and principles which aid the software development process towards fast and effective results. The twelve principles are as presented in (Kent Beck et. alt., 2001):

- ✓ Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
- ✓ Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
- ✓ Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
- ✓ Business people and developers must work together daily throughout the project.
- ✓ Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
- ✓ The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
- ✓ Working software is the primary measure of progress.
- ✓ Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
- ✓ Continuous attention to technical excellence and good design enhances agility.
- ✓ Simplicity--the art of maximizing the amount of work not done--is essential.
- ✓ The best architectures, requirements, and designs emerge from self-organizing teams.
- ✓ At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

The guiding values for any Agile endeavor are (Kent Beck, 2001):

- ✓ Individuals and interactions over processes and tools
- ✓ Working software over comprehensive documentation
- ✓ Customer collaboration over contract negotiation
- ✓ Responding to change over following a plan

When analyzed, these principles not only can be “translated” and adjusted to a project management framework but they yield high similarities to the quality management principles and the lean management philosophy.

The previously cited Agile Manifesto is considered the complete guideline to the Agile framework, but, when implementing it is advisable to retain specialized support such as consultants or practitioners.

PRINCE2, Projects IN Controlled Environments.

Probably even more related to the software development and IT sector, the PRINCE2 methodology is a structured approach to project management. It is surely the most structured approach to project management and it is mostly used in predictive and controlled environments such as the IT sector or others similar to it.

It can be attested through a personal certification, meaning that the project manager or the practitioner can be PRINCE2 certified and can therefore implement and manage project according to the methodology.

The methodology is guided by a general process model diagram and each step is clearly defined and explained throughout the learning process. A certification can be achieved through a standardized exam procedure and the knowledge base for the certification can be gained either from individual study with the support of dedicated manuals or through structured study with support from the PRINCE2 foundation. The foundation site, which can be accessed at the address www.prince2.com also provides a series of standardized documents and templates that aid the process of project management within the PRINCE2 framework.

Project management services

As the importance of project management in most companies operations increases, many companies offer customized tools and services in order to support business and organization practices. There are several tool based solutions that can be used to implement methodologies and support project management practices amongst which we can find:

- ✓ <http://www.mindtools.com/> is a comprehensive toolset oriented towards business solutions which covers a wide area of soft skills and organizational management related tools. Related to project management it covers a comprehensive set of issues such as: general project management understanding and theory, project management frameworks, scope management, change management and project improvement and review;
- ✓ <http://www.businessballs.com/> is a similarly complex web-based business resource center. It also addresses a number of various business and organizational issue and has a rich section related to project management.

In terms of project management related services, the most widespread are consultancy related ones covering a wide array of needs such as:

- ✓ Project Management Office (PMO) services – help improve PMO performance, assist in establishing PMO, strategies, procedures, implement good practices in PMO management and operation;
- ✓ Project Management Consulting – specialized support in areas such as: general project and program management, risk management, strategy development and alignment, change management, resource management, planning and controlling, software implementation;
- ✓ Loan project managers – project-based hires of project managers;
- ✓ Training – general or specialized trainings in the field of project management. Depending on the size and scope of the beneficiary organization, they can be open-trainings (pre-established subjects and generalized scope_ or custom made trainings (adapted to an organizational needs on an needs analysis basis).

For project support needs also a number of software tools exist, with different levels of complexity. Just to name a few:

- ✓ *Primavera Systems* – issued and maintained by Oracle, is a software suit from the enterprise project portfolio management family (EPPM). It is a highly complex software system that can address a large number of project management and organizational needs: capital projects and program management, IT projects, new product development or process improvement;
- ✓ *Microsoft Project* – a project management software tool developed and supported by Microsoft. It offers advanced functionalities in areas related to planning, resource allocation, time management, project controlling, budget and financial management and workload balancing. It is also a part of an enterprise project management (EPM) product that includes also Microsoft Project Server.

There are several elements to pay attention to when choosing a project management software. Depending on the company's needs and resources, the knowledge and technology savviness of the employees who will be using it, the project types, scopes and complexity and the investment availability there are a number of general features that are supported by these types of software:

- ✓ Collaborative software;
- ✓ Issue tracking system;
- ✓ Scheduling;
- ✓ Project portfolio management;

- ✓ Resource management;
- ✓ Document management;
- ✓ Workflow system;
- ✓ Reporting and different types of analyses.

There are also different types of basing the software: web-based or located on premises (on localized servers) and also the licensing type needs to be considered: license acquisition or subscription-based.

As far as software based tools go, the project management needs can also be addressed individually, in different, smaller apps and software solutions. The general areas mostly served by such IT solutions are:

- ✓ Task, team and goal management;
- ✓ Wiki based project management – a type of solution that allows the open-source structuring of a vast amount of information, integration of relevant information and data with task assignment, project planning and milestones;
- ✓ Collaboration software and communication facilitation;
- ✓ Invoicing and financial management;
- ✓ Time tracking and project controlling;

Technology transfer

Technology transfer is the process of transferring knowledge, skills, technology or solutions generally between public or research intensive entities and the industrial environment.

A critical point to the technology transfer success is the market and commercial validity of the object of transfer. To this purpose, it is true that universities and research entities hold an impressive number of patents, technologies and know-how but the ultimate decision of transferability is of the company based on market information.

The general purpose of technology transfer is to commercially exploit research results and to market innovations. There are several ways through which such a process can occur:

- ✓ Spin-offs – there are several ways in which research results can be transposed into a research spin-off:

- A company that has financial investment from a university;
 - A company that has licensing agreements from public research institutes and universities for technologies, know-how or other type of research output from that specific public entity;
 - Companies which have been founded by or with the support of the university of public research institute;
- ✓ Specialized consulting – there are several business models in which specialized consulting can be viewed as technology transfer. It is actually know-how and knowledge transfer, where the specialist provides specialized support for solving highly technical and personalized problems through know-how acquisition and innovative solutions. Such a service can be provided through a university, Technology Transfer Office or by individually contracting the desired specialist (which is the hardest). Some of the most common types of contracts (Technische Universitat Munchen, 2011) utilized are as follows:
- Contracts for Work and Services – has a very specific and identifiable goal and reflects the client’s interests. It does not involve any protection clauses, meaning that in general the results’ IPR pertain to the provider;
 - Research and Development Agreements – address research projects developed in common with an outside (generally from the industrial environment) organization. It formulates a research program but does not specify definitive results. It is written both on the behalf of the scientist (publication potential and IPR authorship – for scientific credentials) and the beneficiary (right of use and sometimes even ownership of the IPR);
 - EU Consortium Agreements – cover the rights and obligation of all partners when deploying and EU collaborative project – where the main financier is the EU;
 - Exploitation or Licensing Agreements – where utilization of the license is attributed to a certain entity. It covers license fees, geographical coverage, exclusivity, further development, usage, marketing or other license transfer possibilities.
- ✓ Technology transfer offices – these are generally set-up inside universities or research centers. They are responsible for gathering all research related information, basically centralizing all the research results from all research centers and identify their market and commercial potential. Their role is to act as a bridge between research entities and industry players. There are

several operational models which are utilized by technology transfer offices some of which include:

- Scouting for potential fits for the existing technologies where technology transfer offices strive to find commercial applications for existing research results, patents or innovation;
- Organizing brokerage events with the presence of both researchers and industry players in order to pair the needs from the industry with the offer from the researchers.
- Offering consultancy and database services for companies and other types of potential beneficiaries;

Technology transfer process and models

There are a number of models developed to support the technology transfer process. Some of the most structured and comprehensive are:

- ✓ The MIT Technology Licensing Office offers through its “Inventor’s Guide to Tech Transfer” (Massachusetts Institute of Technology, 2005) a model which contains the following steps: Research, Pre-Disclosure, Invention Disclosure (Technology Disclosure), Assessment, Protection, Marketing to Find or Form a Licensee, Existing business relationship or Forming a Start-up, Licensing, Commercialization, Revenue.
- ✓ As presented in (Bereuter, 2011) there can be a number of views on technology transfer process, depending on the target and the optics employed. These can be:
 - The technology transfer value chain;



Figure 1 Technology Transfer Value Chain

(Bereuter, 2011)

- Business focused Technology Transfer – follows the same process as mentioned above with specific emphasis on commercialization, thus on the most value adding steps of the process (scouting, evaluation, strategy, search for partners and coaching and monitoring);

- There is also an Innovation Focused Technology Transfer which, again follows the same process structure, but the focus here is on the partnership because the target is to escalate the innovation.

Technology transfer services

There are several technology transfer services provided in order to facilitate the process. These are generally performed by Technology Transfer Offices and Technology Licensing Offices. Some of the most common are:

- ✓ Technology transfer process support and consulting;
- ✓ Supporting collaborative research between academia and industry;
- ✓ Templates and other predefined documents to ease the process;
- ✓ Registering patents and IPRs and related consultancy;
- ✓ Maintaining patent portfolios;
- ✓ Generating and supporting spin-offs;
- ✓ Supporting and attracting funding for newly developed companies based on a technology transfer model

IPR support services

In connection with innovation practices, Intellectual Property issues present themselves as a convergent tools to maintain competitive advantages and to protect organizational assets that cannot be quantified in physical form – results of literary and artistic, creative work. As such, all nations have created specialized laws and governmental bodies which enforce, control and support IPR. On an international level there are several organizations that regulate IPR issues on the large scale and also offer directions for national organizations and national laws to adhere to.

A very important issue in this context is to establish the scope of the IPR and to understand the environment and regulations, both national and international, in order to be able to make a correct and informed decision when appealing to IPR practices.

Objectives of IPR

According to the economic literature, there are two main ways patent rights promote the progress of technology, innovation and social welfare.²⁰ The first reflects the private reward granted for innovation in the form of the inventor's exclusive right to use or sell the patented invention ("reward theory"). The need to introduce some ex ante incentive mechanism follows from the acknowledgement that the ultimate result of the innovation process is the production of new knowledge which rival firms could exploit, at little or no cost, and ultimately reduce the innovator's rewards to a point at which it is no longer worthwhile to conduct innovative activity at all. Exclusive legal rights to inventions in the form of patents help limit this risk by providing adequate incentives to engage in innovative activity.

The "contract theory" describes the second main way in which patents can promote innovation, namely by giving exclusive rights to the inventor in exchange for the disclosure of information about the underlying technical solution. The public availability of patent documents in national and international patent offices facilitates the dissemination of technical information that can then be used by others to develop other novel solutions, creating additional gains for society

An issued IPR also has the attribute of becoming public knowledge. Albeit the owner retains exclusive rights, it stands as a building block for new technological and societal

advancements through the publishing of new innovations and a summarized set of their characteristics.

Legislation and institutions

As for any successful business endeavor, the legal and regulatory environment of IPR must be understood. The context is multi-layered and, according to the scope can be basically viewed from three perspectives:

- National – where the sovereign country has a complete legislative power over defining and enforcing the scope and application of the IPR law. All IPR issued with a national coverage must, exclusively respect the national rules enforced;
- Regional – for the scope of this handbook, the targeted region will be the European Union with its regulatory body, the European Patent Office (EPO). Other regional regulatory bodies are Eurasian Patent Organization (EAPO) which grants Eurasian patents, the Gulf Cooperation Council Patent Office (GCCPO) and African Regional Intellectual Property Organization (ARIPO);
- International – the widely recognized World Intellectual Property Organization is currently the leading authority regarding standardization, recommendations and support concerning international IPR issues.

Basic international guiding principles

PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY
(1883)

It was one of the first intellectual property treaties. It established a Union for the protection of industrial property comprised of all countries (currently 176) which signed the treaty and therefore committed to its specifications. It is administered by WIPO and is still in force.

The principal rules of the convention are (Bodenhausen, 2007):

1. Provisions of international public law for the rights and obligations of all member states of the Union:
 - a. Some exclusions with general character such as some signs and emblems;
 - b. Requires the establishment of national industrial property service;

- c. Regulates the financial contributions of all member states;
 - d. Allows special treaties between states, without intervening with the provisions of the convention;
2. Requirements and permissions for the member states legislate within the field of industrial property;
 3. Rights and obligations of private parties.

The Convention introduces two important provisions:

- ✓ National treatment – all applicants pertaining to the Union are treated equally, no matter of the country in which the patent application is being filed;
- ✓ The priority right – an applicant from a Union state is able to use the first filing date as the effective filing date in another Union state, provided that an application is subsequently filed within 6 months (for industrial designs and trademarks) or 12 months (for patents and utility models) from the first filing;
- ✓ Common rules for patents, trademarks, unfair competition.

BERNE CONVENTION FOR THE PROTECTION OF LITERARY AND ARTISTIC
WORKS (1886)

It is an international convention which governs copyright, which was then firstly accepted. It requires for all its signatories to recognize copyrights from all other signatories.

National frameworks

Due to the previously mentioned conventions and because of the fact that all countries which are subject to this handbook are signatories of all conventions, the national frameworks in discussions are very similar.

BELARUS

Starting with 1991, the Belarusian state established the National System of Intellectual Property, a unitary framework for protection, management and international alignment in the field of intellectual property. The managing authority is the State Patent Office of the Republic of Belarus under the Council of Ministers of the Republic of Belarus (Belgopatent) whose purpose is to develop and implement economic, legal and technical policies.

For the purpose of alignment with international policies and practices, Belarus is a part of the Paris Convention for the Protection of Industrial Property (1883), Patent Cooperation Treaty (1970), Madrid Agreement concerning the International

Registration of Marks (1891). Since 1995, it has also ratified the Eurasian Patent Convention. Through signing a cooperation agreement with World Intellectual Property Organization (WIPO) in 2000, Belarus has furthered its efforts to align to international best practices. As such, the National Patent Office staff is trained by WIPO and important technical support is being offered through other means. Currently, as Belgospatent describes it, “the cooperation with international and regional organizations (WIPO, the European Patent Office, the Eurasian Patent Office) and other foreign Patent Offices is actively developing” (National Center of Intellectual Property).

The National Center of Intellectual Property is therefore bound to offer support in the following functional areas:

- ✓ intellectual property protection, evaluation and registration of intellectual property, management of rights (licensing, etc.), monitoring of the use of intellectual property and compliance with legislation;
- ✓ formation and maintenance of the State Fund of Patent Documents,
- ✓ patent information services;
- ✓ additional adult education in the sphere of intellectual property

GEORGIA

The National Intellectual Property Center of Georgia Sakpatenti is a governmental agency – a legal entity of public law. In accordance with the Georgian legislation, Sakpatenti determines the policy in the field of intellectual property. The current legislation is in full harmony with international standards, namely, it is in line with the requirements of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) administered by the World Trade Organization and is also compatible with the European Union legislation.

Sakpatenti has always accorded special attention to the protection of geographical indications of strategic products of Georgia, namely, wines and mineral waters, in foreign countries. For this purpose Georgia acceded to the Lisbon Agreement for the Protection of Appellations of Origin and their International Registration, started bilateral negotiations on mutual recognition of geographical indications with the CIS countries and the European Union. At present an agreement is already enforced between Georgia and the EU. Moreover, Georgian GIs are already registered and protected in number of CIS countries.

On the basis of international cooperation, Sakpatenti undertakes educational activities, and provides trainings to its staff and other stakeholders in the area of intellectual property, in partnership with the World Intellectual Property Organization, the European Patent Office and foreign patent offices. Over the past years Sakpatenti has developed into the patent information center of the country; its

library includes a rich collection of IP documentation of different countries and international organizations. In this regard, close cooperation of Sakpatenti with international partners in patent information exchange is of high importance.

UKRAINE

In Ukraine, the managing authority for intellectual property rights is the State Enterprise "Ukrainian Institute of Industrial Property" or Ukrainian Patent Office (Ukrpatent or SE "UIPV"). Its main activities are:

- ✓ receiving the applications for IPR granting;
- ✓ conformity with the legal protection requirements evaluation;
- ✓ official publication of the correspondent information.

From the normative point of view, Ukraine abides by:

- ✓ National standards which came into force in 1998:
 - DSTU 3574-97 Patent Card. Basic Provisions. Drawing up and Execution Procedure – establishes the basic provisions, procedure of drawing up and execution of a patent card – an official information document attesting the state of a business activity object as well as concerning infringement of the rights of owners of effective documents of title and applicants for industrial property rights.
 - DSTU 3575-97 Patent Research. Basic Provisions and Conducting Procedure – establishes the basic provisions, conducting procedure and form of a patent research report

These are compliant with the Ukraine legislation in the field of intellectual property and whose requirements are “mandatory for any business activity subjects acting on the territory of Ukraine, whose activities are fully or partially funded from the State budget. The requirements of the standards are of recommendatory character for all other subjects of business activity”. (Ukrainian Institute of Industrial Property, 2010)

- ✓ International standards provided by WIPO.

European Union framework

The European Union developed and Intellectual Property policy available for consultation at http://ec.europa.eu/internal_market/intellectual-property/index_en.htm. “On May 2011 the European Commission adopted a wide-

ranging strategy on IPR. This strategy set out a blueprint for a number of initiatives the Commission intended to take in various areas, including patents, trademarks, geographical indications, copyright licensing and digital libraries” (European Commission , 2011).

The EU has already set into place legal and administrative instruments in order to enforce an ensure uniformity throughout its territories and in partnership countries. Some of which are:

- ✓ The Directive on the enforcement of intellectual property rights – “requires all Member States to apply effective, dissuasive and proportionate remedies and penalties against those engaged in counterfeiting and piracy and so creates a level playing field for right holders in the EU. It means that all Member States will have a similar set of measures, procedures and remedies available for rightholders to defend their intellectual property rights (be they copyright or related rights, trademarks, patents, designs, etc) if they are infringed” (European Commission , 2014);
- ✓ EU trade policy and intellectual property – supports one of the EU’s objectives to improve IPR in third countries (i.e. any country of the world that is NOT one of the 28 EU (European Union) member States and EEA-EFTA (European Economic Area - European Free Trade Association) states (Iceland, Liechtenstein, Norway));
- ✓ The European Patent Convention – a multilateral treaty instituting the European Patent Organisation and providing an autonomous legal system according to which European patents are granted.

IPR requirements for protection and rights conferred

Patents

As defined by (Thomson Reuters, 2014) a patent is “an exclusive right given by law to inventors to make use of, and exploit, their inventions for a limited period of time”. Furthermore, “once the owner of an invention has been granted a patent in any particular country, they then have the legal authority to exclude others from making, using, or selling the claimed invention in that country without their consent, for a fixed period of time” (Thomson Reuters, 2014). Provisions include that, “in return for these ownership rights, the applicant must make public the complete details of the patented invention” (Thomson Reuters, 2014).

REQUIREMENTS FOR PROTECTION

In order to be patentable, a new invention must comply with all of the three requirements issued by EPO and OHIM (Office for Harmonization in the International Market) presented in (EPO and OHIM, 2013):

- ✓ They must be new – the invention, at the moment of the request for patenting, must not be known to the public in any form (published, prototyped in a public manner, made public in any form);
- ✓ They must be non-obvious – valid under the US law (meaning that they have to include at least one inventive step – valid under the EU law). This means that the inventive step must not be obvious for an individual with basic knowledge and experience in the applicable field;
- ✓ They must be industrially applicable.

The object of a patent can either be a product or a process.

In order for a patent to be active and enforceable, it must pass through all the validation and approval processes from an organization or office authorized to grant and enforce patents.

RIGHTS CONFERRED

Under a patent grant the following rights are conferred to the patent holder (which can, under all laws, be a person or an organization):

- ✓ The right to prevent any other legal entity from commercially exploiting the object of the patent;
- ✓ The right to exclusivity for 20 years (under EU law);
- ✓ The geographical space of the protection is also regulated – it depends on the jurisdiction under which the patent request operates (for example if filed under EPO, patent rights are being conferred in more European countries, whereas if filed in OSIM it will only be recognized in the Romanian territory);

Trade marks

The World Intellectual Property Organization describes that “a trademark is a distinctive sign which identifies certain goods or services as those produced or provided by a specific person or enterprise. Its origin dates back to ancient times, when craftsmen reproduced their signatures, or "marks" on their artistic or utilitarian products. Over the years these marks evolved into today's system of trademark registration and protection.” (World Intellectual Property Organization, 2014).

Article 2, Directive 2008/95/EC of the European Parliament and of the Council states that “A trade mark may consist of any signs capable of being represented graphically, particularly words, including personal names, designs, letters, numerals, the shape of goods or of their packaging, provided that such signs are capable of distinguishing the goods or services of one undertaking from those of other undertakings.”

Trademarks regulations fall under the Madrid System for the international registration of marks. In Europe, the governing authority for trademarks is the Office for Harmonization in the Internal Market (OHIM), found at <https://oami.europa.eu/ohimportal/en/trade-marks>.

REQUIREMENTS FOR PROTECTION

OHIM states that the only requirement for registering a trademark is that it should be “clearly defined” (Office for Harmonization in the Internal Market). Therefore any of the following, or a combination, can be registered:

- ✓ Word mark – represented through the use of words, letters, numbers or any other type of alpha-numeric characters;
- ✓ Figurative mark – a representation using pictures, graphics or images;
- ✓ A combination of figurative marks with letters;
- ✓ 3D mark – through the utilization of a three-dimensional shape;
- ✓ Color per se mark – used to register a color that is used to distinguish a certain product;
- ✓ Sound mark – needs to be represented graphically, through musical notation or other type of formalized symbols.

Generally, a trademark protection lasts as long as it is used in commercial activities and protected against infringement.

There are certain types of trademarks which cannot be registered. According to WIPO (World Intellectual Property Organization, 2014), these are:

- ✓ “marks that describe value, quantity, quality, or intended purpose of the goods or services;
- ✓ marks that are deceptive;
- ✓ marks that are contrary to public order or morality;

- ✓ marks that consist of armorial bearings, flags and other emblems or official signs of States or international intergovernmental organizations;
- ✓ marks of such a nature as to infringe rights acquired by third parties in the country where protection is claimed (for example: marks that are identical or similar to earlier marks for identical or similar goods or services; or marks that are identical or similar to well-known marks).”

RIGHTS CONFERRED

Trademarks protection is territorial, meaning that the protection is being conferred only in specific countries. When export or an international business is being targeted, a consideration for an international protection route is highly advisable – this should be done through the Madrid system in order to benefit from one time trademark application for all desired countries.

When applying for a trademark, the list of products or services for which protection is sought needs to be provided. The trademark protection will therefore apply only to those specific products and services.

Registered designs (Industrial designs)

In Europe, the registered designs also fall under the OHIM jurisdiction. It is defined as “The appearance of the whole or a part of a product resulting from the features of, in particular, the lines, contours, colors, shape, texture and/or materials of the product itself and/or its ornamentation” by the Article 3 of the Design Regulation.

REQUIREMENTS FOR PROTECTION

In order to be protectable, a design needs to fit into the following requirements:

- ✓ **Design criteria** – it needs to be applied on a product. Also parts of products can be protected. It cannot also fall under the trademarks specifications. The design needs also to respect public policy and moral standards;
- ✓ **Novelty**;
- ✓ **Graphic representation** – it needs to represent all the features of the designed that the protection requests. It needs also to follow the representation standards (line types, background, shading and blurring or other types of separators).

RIGHTS CONFERRED

The office recognizes two types of rights:

- ✓ registered Community design (RCD) – defines a design protected before it is commercialized;
- ✓ unregistered Community design (UCD).

Both of these, under the OHIM rules (Office for Harmonization in the Internal Market), offer the following protection:

- ✓ “Manufacturing a product incorporating a protected design (or to which the design is applied) without the consent of its proprietor would be considered illegal
- ✓ Putting a product on the market incorporating the protected design (or to which the design is applied) without the consent of its proprietor would be considered illegal
- ✓ Offering a product for sale incorporating a protected design without the consent of its proprietor would be considered illegal
- ✓ Marketing a product incorporating the protected design without the consent of its proprietor would be considered illegal
- ✓ Importing/exporting a product incorporating the protected design without the consent of its proprietor would be considered illegal”.

The differences lie in:

- ✓ the duration of protection (renewal every 5 years for a total period of 25 years for RCD and 3 years from the first date when it was firstly made available for UCD);
- ✓ the scope where:
 - RCD are protected against every similar design, even if it was developed in good faith;
 - UCD are protected only against similar use of similar designs if such designs are demonstrated to be made in bad faith (intentionally copying a design).

IPR use

As previously acknowledged, the generation of innovation and inventions is a leading factor in economic success both locally, nationally, and on an international level. However, without properly translating them into profitable products and services on the market, the chain is broken at its most important point: the added value. Employing IPR tools is designed to service that same issue: it enables enterprises to valorize their intellectual capital through transforming it in an organizational asset. As such, it gains the attributes of:

- ✓ Being attributed under national and international law;
- ✓ Being protected and enforced under national and international law;
- ✓ Can be traded, licensed or leased under national and international law;
- ✓ Secures return on investment on R&D thus incentivizing R&D practices;
- ✓ It ensures exclusivity and a competitive advantage.

As such, IPR has extensive use, both in research and development and also in a business and economic environment.

Acquiring IPR – procedures and processes

The general IPR acquisition process is described below:



Figure 2 IPR acquisition process

This process should be kept secret until a patent request is being filed. If any history of the invention exists when the search report is being done (see granting process below) there is a high possibility of grant refusal.

EUROPEAN PATENT OFFICE

The European Patent Office offers a step-by-step guide to the patenting process (European Patent Office, 2014):

1. **Before applying** for an EPO patent there are some things that need to be taken into consideration:
 - a. In order to be patentable, an invention needs to be new, industrially applicable and needs to involve an inventive step;
 - b. Depending on the protection needs, patents can be filed in national patent offices or in regional patent offices (EPO)
2. The application process filed at EPO allows filing for protection under the European Patent Convention (for European countries) and under the Patent Cooperation Treaty (with international span). Filing for any regional or international protection can be done in any of the approved national offices or directly to the international offices. For the former case, the application, once completed, will be transmitted to the targeted patent office which will perform the evaluation and protection process. The **patent application** requires the following elements:
 - a. A request for grant – this can be submitted in any of the agreed national offices or directly to the European Patent Office;
 - b. A description of the invention;
 - c. Claims – describe the elements that are requested for protection and the places for which the protection is required;
 - d. Drawings – if necessary;
 - e. An abstract.
3. **The filing process** – includes several steps until the granting procedure is finalized. On first filing the application is first analyzed for integrity. It is checked whether all the necessary information and documents exist (an indication that a European patent is requested, the identifiers of the applicant and a description of the invention or a reference to a previously filed application). There is no need to file claims on first filing but such should be filed within two months of the **first filing date**. If all conditions are met, a filing date is given. Afterwards, another formal examination takes place, making sure that certain aspects of the filing process – necessary for the evaluation process – exist in the correct form (form and content of the request for grant, drawings and abstract, the designation of the inventor, the appointment of a professional representative, translations if necessary and the fees).

There is also the case where the “priority date” principle comes into force. This means that if a patent request was filed in national office, it can be filed in another office under the first filing date, but no later than 12 months after the first filing date.

4. While the formal examination takes place, a European **search report** is being compiled, containing all relevant documents (available to the office) needed for the evaluation of the patent application. This will be sent to the applicant together with an initial opinion of whether the claim meets the requirements for grant of the European Patent Convention;
5. **Publication** of the application – will be published 18 months after the date of filing. This grants applicants a six month period to decide whether to pursue the grant process or not. It also confers a provisional protection in the states previously named inside the claim. In some cases, depending on national law, it may be required to submit for publishing certain translated variants;
6. **In depth examination** – if the granting process is pursued, a detailed examination of the patent will be undergone in order to ensure that the application meets the requirements of the European Patent Convention. The examining committee consists of three members in order to ensure maximum objectivity;
7. **The grant of the patent** – if, after the examination, it is decided that the patent can be granted, a granting decision is being issued. The decision is in effect starting from its publication date in the European Patent Bulletin. Even though the procedure for filing requires only one patent request, the grant will be given in the form of a number of individual national patents (from the countries mentioned in the claim);
8. There is also a process of **validation** which takes place in every country where a claim has been filed. This may involve additional steps from the applicant such as submitting translation or even paying a certain fee (depending on national law);
9. An **opposition** claim can be filed within nine months of publication inside the European Patent Bulletin;
10. There is also a possibility of **appeal** if the patent is not granted;
11. After grant the patent is **valid** for 20 years, under international law.

This process means that within 6 to 18 months of first request a provisional protection is being issued which will last, depending on the outcome, until the grant is being awarded or denied. If awarded, a non-provisional right is awarded and will be in force as long as the law permits (for patents this is 20 years).

NATIONAL

In all countries in discussion, the process of filing a grant application is similar to the European Patent Office procedure due to the signing of the European Patent Convention. Also, if European Patent Office requirements are not met, there is also the possibility to file the request in national offices, in the desired countries. The disadvantage would be that, different from EPO procedures which offer an integrated process, there are multiple requests that need to be filed in the respective countries following the national procedures.

The IPR market

In general terms, we refer to the IPR market as the general context in which IPR is generated, traded and has economic value. Strictly in economic terms, IPR is exclusively utilized for the value it ensues. This can derive from many types of use:

- ✓ Retaining the sole right to make economic and financial use of the IPR subject;
- ✓ Licensing which in turn can yield important economic benefits;
- ✓ Joint ventures;
- ✓ Selling IPR.

All the transactions and processes supported under the IPR market are directly related to the national and international legislation. As the European Commission states, there is a lot of potential for wealth generation from intellectual property and creative activities. The key here is simplification in procedures and facilitating access to services and information regarding IPR. There is, of course, a need to harmonize and standardize processes and procedures both for application and grant.

The issue here is that there is a market both for selling or acquiring intellectual property rights. There is a great opportunity in protecting certain inventions and innovation through retaining of an important competitive advantage on a market or market niche.

IPR strategy and Intellectual Asset Management

As IPR is increasingly being viewed as a business asset – an intangible asset – there raises the question also of strategy and management.

As an asset, IPR comes with value and risks attached. The valuation of IPR derives from the economic value and the legal attribution of property. The capacity of such an asset to generate value comes from its exploitation (which needs to generate return)

and in turn increases risks. When attributing value to an intangible, in this case to IPR, this can be done through a number of ways (World Intellectual Property Organization, 2003):

1. **Capitalizing on historic profit** – assigning value through the profits generated to date by that IPR;
2. **Gross profit differential methods** – tries to attribute a value (generally to a brand or trademark) through differentiating between the absolute value of the product or service and an unbranded, generic one;
3. **The excess profit method** – uses the current value of the assets and tries to estimate an increase in return from investment. Whatever excess registered is considered to be generated by the existence of IPR;
4. **Relief from royalty** – tries to estimate what a purchaser could or would pay and then adjusts that amount with risk.

There are asset management strategies where a company is established for the sole purpose of gathering equity through its IPR possession by issuing shares.

An IP strategy is a very important part of the IPR management process and needs to be treated accordingly. Elements of an IP strategy can be, but are not limited to:

- ✓ **Protection** – as stated before, all protection initiatives (IPR applications) hold a certain cost. Also issuing a protection is a time demanding activity and involves a great deal of specialized know-how. There is always an issue of whether to protect or not, how much and where. The principle in most industries is “register it or lose it” but this is highly dependent on the specific industry. The dynamics of the industry, the importance of the patent to the overall industry or to the operations of the company and the market advantage it confers to the owner are serious points to consider. Once a patent is approved it offers legal protection but it is also made public – such may only hinder some companies. Another issue to consider is where protection claims are requested. This derives from the product or service strategy (deals with export, technology transfer and other international types of IPR utilization) and also from the general national law in force;
- ✓ **Enforcement** – enforcement of a patent is done at the initiative and expense of the owner. It is its job and right to prevent others from making use of rights to which he has retained exclusivity. However, it is a lengthy process and many times it is a cost some companies cannot afford. It is therefore an issue to pursue enforcement and how: through the administrative, civil or criminal route;

In order to formulate a clear IPR strategy a thorough understanding of the business need be performed. In order to establish such a strategy some things need to be considered:

- ✓ The business model and those IPR and know-how that contribute to that business model and which hold the most important role in the process of value creation;
- ✓ What are the most important IPR in the industry and what is the state of the art related to your type of activity. Is there and R&D intensive industry;
- ✓ What type of IPR does the organization need to acquire or create in order to support its vision and strategy;
- ✓ How can you protect and sustain your key competencies;
- ✓ Are you free to operate and what would it take to allow you to be;
- ✓ What needs of differentiation do you have and what can add an increased value to your product or service;

One strategy utilized especially in R&D and innovation intensive industries is the “patent pool” strategy. It represents the formal cooperation of at least two companies which agree to cross-license (grant patent rights between each other) patents related to a certain type of technology. This can happen for many reasons:

- ✓ Faster time to market for innovations;
- ✓ Access to a larger numbers or rights and therefore more capacity to deliver innovation;
- ✓ There can be such cases where an certain innovation or patent cannot be filed without having the rights to others that have the basis of the technological innovation; The same is valid for needing a patent right in order to create a very valuable new patent;
- ✓ It is a risk mitigation method through which there is a smaller possibility of a newly filed patent or a new product can be attacked on IPR grounds;
- ✓ There is a higher protection conferred in high infringement risk industries or countries through the acquiring of complementary patents – such patents try to “cover” the most important patent

IP PORTFOLIOS

Maintaining an IP portfolio is a highly utilized strategy, especially in industries whose most added value resides in innovation and intensive research. Through an IP portfolio an organization can even hold monopoly on a certain niche on the market.

IP portfolio maintenance means buying, selling and filing for patents, the latter being done rarely. Retaining a rich and strategically built IP portfolio can mean, apart from monetary benefits, also important non-financial advantages such as first-mover advantages and building trust for future investment strategies.

There are several both large and small companies dealing with services in IP management and IP portfolios. As the company Baldwins suggests, there are several issues to consider when enhancing IP portfolios (Baldwins, 2014):

- ✓ “Will a development enhance or add to the overall commercial objectives of the business?”
- ✓ Are the benefits of the development likely to outweigh the cost of securing intellectual property protection?
- ✓ Will filing for intellectual property protection create barriers for entry to the market or make it more difficult for competitors to operate?
- ✓ Will filing for intellectual property protection enhance the likelihood of securing collaborations, further funding or provide commercial leverage, for example by providing licensing opportunities?
- ✓ Will subsequent intellectual property assets provide back-up should a part of the existing intellectual property be challenged by a third party?”

IPR and SMEs

In the context of IPR, as in most business related contexts, SMEs differentiate themselves from large companies. The IPR issue is especially sensitive because on the one hand can become highly relevant in an SME’s business model but can also be construed as burdensome.

Certain characteristics of SMEs drive towards systematic IPR practices:

- ✓ The size of the SME predisposes it to be a fertile environment for innovation. Therefore, relevant and valuable innovations must be protected;
- ✓ Securing revenues from practices such as licensing and patent selling;
- ✓ Increasing the company’s value;
- ✓ Their proximity to the market allows for better identification of associated issues which therefore can be resolved in an innovative manner (by bringing to the market innovative products or services);

- ✓ It is not uncommon, especially in some very dynamic and research intensive industries, for larger companies to acquire startups and SMEs solely for their IP assets.

On the other hand SMEs also identify some hindrances in dealing with IPR, as found in (PRO INNO EUROPE, 2007):

- ✓ The process of IPR attribution is usually long, very complex and incurs high costs. It requires special attention and specialized personnel;
- ✓ Many research intensive SMEs rely on knowledge non-disclosure principles. In such a case, they most likely prefer not issuing an IPR on certain intellectual assets for the sole purpose of not making it public;
- ✓ SMEs come also with a lack in legal and economical potency, compared to large companies. They might find it very difficult to enforce IPRs when dealing with infringement, piracy or other violations;
- ✓ The lifecycle of products and services is on a decreasing trend. This means that the lifecycles are contracting therefore the need of issuing IPRs on such products diminishes. The process of granting an IPR is long and it might not be worth having once it is finalized. Also, certain product and service strategies rely on the immediate novelty and disruption on the market – in a short period of time they will be easily multiplied and an IPR investment is not justified;
- ✓ Most SMEs are “suffering” from a lack of knowledge in IPR. The domain is getting increasingly more complex and specialized personnel is a must. Where larger companies rely on their own IP department and structures, SMEs are forced to resort to specialized consultancy and law practices and to governmental and institutional guidance.

The IPR issue tends therefore to be very delicate, with many issues to be considered:

- ✓ The feasibility of gaining an IPR – the general trend is towards patenting. However, in an SME, the decision tends to be a more strategic one compared to other contexts. There needs to be a real economic benefit at stake;
- ✓ Intellectual portfolio management is a great strategic tool for SMEs in relation to IPR decision making. The stronger the portfolio, the more valuable the company and the more subject to success it can become;
- ✓ Turning towards specialized assistance in the IPR filed also needs to be a strategic decision. Many such services are not customized and many of the involved human resources are not business savvy. Some prior knowledge and a previous strategy in that regard is highly recommended;

- ✓ Research intensive and innovative SMEs should also develop a key skill when dealing with IPR: the knowledge and ability to search for patent in international databases and to understand such patents. They can become a lead in understanding industry trends, figuring out gaps and preventing from infringing or working in vain for an already patented solution.

Protection of IP

Apart from the legal and administrative route, IP protection is also an economic decision. There are certain fees that need to be paid (which increase with the number of countries and claims of the application). Also there is an economic involvement when maintain and reacquiring the IPRs.

Generally, the fees related to IPR processes are established in a centralized manner and do not fluctuate over time, unless the governing authority decides otherwise. In the case of EPO the deciding authority is THE ADMINISTRATIVE COUNCIL OF THE EUROPEAN PATENT ORGANISATION, who adopts rules relating to fees. These are the following:

- ✓ Filing fee – whose value differs if the application is filed online or not;
- ✓ Additional fee – for applications having more than 35 pages;
- ✓ Search fee – for European and international patent searches (which are part of the application process);
- ✓ Designation fee – for one or more contracting states;
- ✓ Renewal fee – calculating for every year after the filing date
- ✓ Additional fee – for the belated payment of a renewal fee;
- ✓ Examination fee;
- ✓ Fee for grant;
- ✓ Fee for publishing;
- ✓ Opposition fee – required if an opposition to the patent application is being filed;

The process allow for the applicant to decide whether or not to continue, so they can renounce the application at any time with no more costs involved. The current minimum cost for an European patent is roughly around 6000 EUR. There are discussions taking place at the European level that the cost of patenting be lowered as

to be competitive with the United States of America system where a patent can cost up to 2000 USD.

Vouchers and incentives

At the European Union level, the costs incurred by IPR acquiring are eligible under certain financings given by the EU, which can also benefit also Eastern Partnership Countries.

There are also the so called “Innovation voucher” which offer to SMEs small financial help (up to 10 000 EUR) to aid the organizations in their innovation practices. The same voucher system is also adopted by the Organization of Economic Development (OECD).

Some countries offer also significant discounts in their national patent systems for SMEs in order to increase IPR incidence for SMEs.

The European Commission also supports some tools to increase patenting free of charge. Such are:

- ✓ The Innovation Platform – patenting information assistance, different modalities and procedures to be followed, and assist the project participants with the writing and the filling of patent, and with the legal follow-up of applications;
- ✓ IPR HelpDesk – offers services such as a live website, newsletter, various publication, bulletin, training, awareness raising activities and a helpline, all of which are offered free of charge. <http://www.iprhelpdesk.eu/news>

Resolving IP disputes

In order to protect any organization from patent disputes or patent infringement, there are a number of ensuring steps to perform:

- ✓ Showing publicly that you are in possession of that specific IPR. The expression “patent pending” or “patent applied” can be used to demonstrate ownership or provisional ownership;
- ✓ Whenever entering in international economic relations, a patent search needs to be performed in order to make sure that no patent right was or will be unwillingly infringed;

- ✓ Being aware of the rights that your IPR confers and regularly updating the status of your IPR;

In order to settle IP disputes, if such occur there are a number of paths that can be taken:

- ✓ Getting legal advice – specialized legal help needs to be consulted to evaluate the severity of the infringement and the validity of the claim;
- ✓ Negotiations – it is possible to solve such issues without taking immediate legal action which can be costly and time consuming. Mediation can often prove to be a much cheaper and easier solution;
- ✓ Licensing – when a IPR was infringed there is also the possibility to offer licensing possibilities – beneficial for both parties;
- ✓ Courts – if all else fails, legal action needs to follow.

Infringement claims can also be filed in order to stop a competitor from gaining market share or to prevent a product or a service from being commercialized. A famous case in this regard is the Apple vs Google which Google partially solved by acquiring another company (namely Motorola) in order to solidify its IP portfolio.

Patent infringement generally happens when a product or a service has violated the right afforded to another product or service. This can be done through: making, selling, using or importing all or just parts of a protected product without explicit permission. Infringement claims are settled by analyzing the patent claims.

Piracy and counterfeiting are severe forms of IPR infringement and deal with mislabeling or producing and distributing without the IPR owner's permission.

General types of services in IPR

Patent services and data bases

PATENT INFORMATION PRESENTED IN PATENT DOCUMENTS

According to the information presented by (European IPR Helpdesk, 2011), the patent documentation is structured in 3 parts:

- ✓ The first (front) page presenting the general information such as:
 - Title;
 - Summary of the invention;

- Names of the inventors;
 - Name of the patent owner;
 - Identification dates and numbers (such as publication date, number etc.);
 - The legal status (application, granted patent);
 - Geographic area for which the protection was issued;
 - Drawings – if applicable.
- ✓ The second page offers a detailed technical description – describes the technical problem that the invention deals with, state of the art and a detailed technical description of the solution;
- ✓ The third part includes

INTERNATIONAL PATENT CLASSIFICATION (IPC)

Through the Strasbourg Agreement which entered into force in October 1975, an International Patent Classification was established. Its purpose is to achieve a uniform, international classification of all types of patents in use. Its most important uses, as presented in (WIPO, 2014) are:

- ✓ “an instrument for the orderly arrangement of patent documents in order to facilitate access to the technological and legal information contained therein;
- ✓ a basis for selective dissemination of information to all users of patent information;
- ✓ a basis for investigating the state of the art in given fields of technology;
- ✓ a basis for the preparation of industrial property statistics which in turn permit the assessment of technological development in various areas.”

The classification is provided on the WIPO web-site at <http://web2.wipo.int/ipcpub/#>.

The classification represents the whole body of knowledge related to the existing IPR and is structured in eight sections, each identified with a section symbol from A through H. Further, each section has predefined subsections:

- A. human necessities
- B. performing operations; transporting

- C. chemistry; metallurgy
- D. textiles; paper
- E. fixed constructions
- F. mechanical engineering; lighting; heating; weapons; blasting
- G. physics
- H. electricity

EUROPEAN PATENT REGISTER

Contains all the publicly available information on European patent applications in all stages of their lifecycle. It can be accessed at

<http://www.epo.org/searching/free/register.html>

STATE INTELLECTUAL PROPERTY OFFICE OF THE PEOPLE'S REPUBLIC OF
CHINA (SIPO)

As up to June 2014, People's Republic of China has released for public consultation all its databases related to patent applications and grants. It contains all patents filed after February 2010 and is also available in an English translation at

http://211.157.104.77:8080/sipo_EN/search/tabSearch.do?method=init

and

<http://english.sipo.gov.cn/>.

GPI - GLOBAL PATENT INDEX

It is a worldwide patent information resource made available through most international and regional patent offices such as EPO (available at <https://data.epo.org/access-control/gpissubscription.jsp>) or WIPO. It gathers data from more than 75 patent offices and is updated on a weekly basis, every Friday at 12:00 CET.

In order to facilitate search operations, it employs more than 100 search criteria which cover indexed bibliographic data, citations, classifications, legal status and other. According to (European Patent Office, 2014), the GPI features include:

- ✓ “Display the legal status, patent family (simple and extended) and representative image

- ✓ Access the full original patent documents, mosaics and CPC codes via hyperlinks to Espacenet
- ✓ Machine-translate the titles and abstracts of the retrieved documents to and from English and many other languages using the Patent Translate feature
- ✓ Save your search queries for later use (e.g. for patent watches)
- ✓ Customize your result lists and document content in different display and reporting formats
- ✓ Carry out basic statistical analyses”

Financial & legal assistance

In the IPR field there are a number of types of companies which can provide specific and specialized services. There are the legal issues to be considered and also financial and strategic ones. Some types of specialized services in the field of IPR include:

- ✓ Training;
- ✓ Coaching;
- ✓ Patent search – this service’s most important benefit is to decrease R&D and innovation process risk. By understanding the innovation environment and R&D trends regarding the concerned service, product or market niche the state of the art can be understood and any of the undertake processes can be directed accordingly.

When faced with patent litigation, relevant patent information can be uncovered as it can be relevant before the patenting process. International service providers also offer patent searches in foreign languages which can be relevant when discussing about international operations.

It must be understood that if a product or service is protected in one state by a national patent does not mean that it cannot infringe another patent in the case of internationalization or export. For this reason, patent search is also important for infringement protection.

The patent watch and alert is equally important but it is a costly and repetitive activity – this is however performed by certain service providers;

- ✓ IP management – in the form of a consulting service, it enables organizations to make the most out of their IPR assets. It can set into place collaboration processes inside or between organizations that allow for fast time-to-market.

Such service providers can also assess the “overall health” of the organization’s IPR – infringement status, reach, degree of coverage of market sectors, needs of acquiring new patents to allow for faster or further innovation.

It can also deal with data integrity and data management related to IPR assets. As any organizational assets, IPR also needs to be maintained and followed-up through data and other types of validation and verification. The issue here, as is everywhere when data is concerned, is data integrity and accuracy.

Also business processes need to be streamlined, realigned and refined in order to yield best results in what concerns IPR output, utilization and needs identification. IPR know-how, as any relevant information for an organization, needs to be made available and to circulate across the organization.

Another issue in IP management is IPR valuation and return on investment.

- ✓ Patent analytics – deals with patent portfolio assessment, infringement detection, uncovering intelligence that fits the needs of the organization and reduces the research time related to patent search and R&D strategy and operations.
- ✓ IP administration – IP management involves certain administrative and maintenance tasks, which are legislation-dependent. These are both related to the acquisition process and to the post-acquisition period.
- ✓ IP preparation – deals with all the steps of acquiring IPR, covering administration, legal issues, communication, solving and filing claims, resolving disputes, ensuring timely delivery of needed documentation and clarification, international and specialized support. This is many times outsourced to a law firm specialized in IPR issues.
- ✓ Patent translation – when discussing about international patent applications, in order to validate the patent claims in all countries of request, certain translations might be needed;
- ✓ Patent protection – Continuous or occasional market monitoring, uncovering counterfeit goods; Harmonizing and sorting information in order to effectively enforce the law; Representation and taking legal actions in IPR protection issues; Monitoring patent request and filing oppositions if and when necessary.

Most of these services are provided by both local and international companies, as well as by national and international patent offices. When choosing a service and a service provider, the scope of the final result needs to be taken into account. International companies have a broad international experience and can provide support with regional and international procedures and processes. They are specialized in dealing with international organizations and international environments and can result in serious time and money expense reductions. National companies and offices can

provide valuable assistance when we are dealing with a type of national legislation that can be more complex or less aligned with international standards.

There are also several countries in which without specialized assistance there is virtually no way of dealing with procedures and systems. Language barriers can also present a problem.

Moreover, we need to consider the know-how and the specialized personnel that those service providers retain. In some situations it may be a good idea to pay a more upfront in assurance that the issue will be solved in a specialized way and through the shortest path possible, without the inherent mistakes of non-specialized people. The process of issuing and protecting IPR is laborious and most often lengthy, with soft and hard deadlines to meet and constant communication to be kept with the national and international patent offices.

The information resources available to the service provider need also be considered. They have preferential access to patents specialized and non-specialized databases and experience with patent search which can become of real help when performing patent search services for example.

Further resources

INTERNATIONAL FEDERATION OF INVENTORS' ASSOCIATION

IFIA (<http://www.invention-ifa.ch/knowning.htm>) – International Federation of Inventors' Association. It is a non-profit, non-governmental organization with membership form over 80 countries. Its purpose is to group inventor associations worldwide and to act as a spokesman on their behalf. It enjoys observer status at WIPO as well as at the United Nations Conference on Trade and Development (UNCTAD). It is also a member of the Standing Advisory Committee before the European Patent Office (SACEPO).

Its main activities are:

- ✓ publication of reference books, guides, surveys, studies
- ✓ conferences, seminars, workshops, expert group meetings, lectures
- ✓ competitions and awards for inventions
- ✓ illustrative exhibits related to inventors & inventions
- ✓ assistance in the creation of inventor associations
- ✓ consultative services

- ✓ creation of international networking among inventors
- ✓ promotion of inventions through the Internet

BUSINESS SOFTWARE ALLIANCE

Business Software Alliance www.bsa.org (BSA) is a non-profit organization created for the purpose of promoting the software industry's interests and those of their hardware industry's partners. It is active in more than 80 countries. It treats issues such as software piracy and protection of intellectual rights in the IT sector.

CATALOGUE OF ONLINE TOOLS FOR BUSINESS ABOUT IPR

Available at

http://ec.europa.eu/enterprise/policies/industrial-competitiveness/industrial-policy/intellectual-property-rights/catalogue-online-tools/index_en.htm

the catalogue is the result of the joint effort of the European Union and the United States of America in the EU-US IPR Working Group. It provides support on a number of issues related to IPR issues such as:

- ✓ basic info on Intellectual property rights;
- ✓ advanced info on IPR;
- ✓ direct advice on IPR;
- ✓ SME cases studies;
- ✓ e-learning resources;
- ✓ course, training, seminar on IPR;
- ✓ a search engine for existing registered IPRs (Patents, Trademarks and Designs);
- ✓ institutions registering IPR;
- ✓ legislation on IPR;
- ✓ how to report an infringement to Customs in Europe;
- ✓ how to report 'Red Alert' or 'New Trends' to Customs in Europe;
- ✓ access to IPR or innovation support;
- ✓ articles about IPR;

- ✓ info on policies at European Union level;

INTERNATIONAL STANDARDS

Further resources concerning intellectual property rights is available at <http://www.wipo.int/standards/en/> by WIPO Handbook on Industrial Property Information and Documentation. As WIPO states “The WIPO Handbook is the authoritative source of the WIPO Standards, Recommendations and Guidelines in the field of industrial property information and documentation. It also provides other information related to patents, trademarks and industrial designs such as practices by industrial property offices and examples of documents” (World Intellectual Property Organization). It provides information regarding:

- ✓ international cooperation;
- ✓ WIPO standards – recommendations made for state offices and international organizations regarding industrial property documentation;
- ✓ PCT Documentation – rules regarding the documentation under the Patent Cooperation Treaty (to which all the countries in discussion in this material are part of);
- ✓ International classification;
- ✓ Access to Industrial Property Information
- ✓ Examples.

HANDBOOK OF QUALITY PROCEDURES

BEFORE THE EPO

Available at

[http://documents.epo.org/projects/babylon/eponet.nsf/0/45c8bcf3d8593a00c12579a50052bd6a/\\$FILE/Handbook_of_quality_procedures_en.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/45c8bcf3d8593a00c12579a50052bd6a/$FILE/Handbook_of_quality_procedures_en.pdf)

the Handbook addresses the following topics:

- ✓ the practice of applicants and representatives
- ✓ the practice of examiners, in particular how the examiner should best carry out examination so as to reach a decision in a reasonable time while dealing openly with parties to the proceedings;
- ✓ the practice of formalities officers, particularly focusing on interaction between formalities officers and applicants; and
- ✓ how complaints are dealt with at the EPO.

Glossary

Copyright – “deals with the rights of intellectual creators in their creation. Most works, for example books, paintings or drawings, exist only once they are embodied in a physical object. But some of them exist without embodiment in a physical object. For example music or poems are works even if they are not, or even before they are, written down by a musical notation or words” – collected from (World Intellectual Property Organization, p. 41).

Geographical indication – “identifies a geographical area in which one or several enterprises are located which produce the kind of product for which the geographical indication is used” – collected from (World Intellectual Property Organization, p. 121).

Patent – a document, issued, upon application, by a government office (or a regional office acting for several countries), which describes an invention and creates a legal situation in which the patented invention can normally only be exploited (manufactured, used, sold, imported) with the authorization of the owner of the patent. – collected from (World Intellectual Property Organization, p. 17)

Registered design - Design protection does not apply to articles or products in such a way as to grant the proprietor of the design exclusive rights over the commercial exploitation of those articles or products. Rather, design protection only applies to such articles or products as embody or reproduce the protected design. Protection does not, therefore, prevent other manufacturers from producing or dealing in similar articles fulfilling the same utilitarian function, provided that such substitute articles do not embody or reproduce the protected design – collected from (World Intellectual Property Organization, pp. 113 - 114)

Trade mark – “Any sign that individualizes the goods of a given enterprise and distinguishes them from the goods of its competitors”. This definition comprises two aspects, which are sometimes referred to as the different functions of the trademark, but which are, however, interdependent and for all practical purposes should always be looked at together – collected from (World Intellectual Property Organization, p. 68)

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