Business Plan:

Centre for the Promotion of Invention in Thessaloniki

Vasileios Savvidis

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Student Name: Vasileios Savvidis

SID: 1102140017
Supervisor: Prof. Korina Katsaliaki
           Prof. Stavroula Laspita

Korina Katsaliaki

I hereby declare that the work submitted is mine and that where I have made use of another’s work, I have attributed the source(s) according to the Regulations set in the Student’s Handbook.

November 2015
Thessaloniki - Greece
Abstract

This dissertation was written as part of the MSc in Management at the International Hellenic University.

This dissertation uses the structure of a Business Plan in order to test an idea. The idea is for Hellenic Petroleum to take the initiative of funding and founding in Thessaloniki a Centre, operating on a non-profit basis and having a distinct Corporate Social Responsibility character. The Centre will work to promote inventive activity and assist practicing and potential inventors and patent-holders by providing a series of services that cover all phases of the inventive process. Most important, it will select after assessment by experts inventions, it will fund them to cover for patent filing expenses, also acquiring stakes in the patent rights, if so agreed with the inventor.

The Business Plan explores implementation challenges and the feasibility of certain aspects of this idea, the operational needs and the crucial factors that will define the short- and long-term sustainability of the undertaking. A strategy of differentiation is proposed, taking into consideration the focus on invention rather than on innovation which is the mainstream trend nowadays.

The author received guidance, good advice and support by many people who will be acknowledged separately at the end of the paper. At this point, the author expresses his gratitude to Nikos Zahariadis, Director Hellenic Petroleum Thessaloniki Installations, for sharing his vision and for inspiring this paper, and to the supervisors of the dissertation, Dr. Korina Katsaliaki and Dr. Stavroula Laspita, for their valuable guidance and unwavering support.

Keywords: Invention; Innovation; Patent; Intellectual Property; Non-Profit; Business Plan

Vasileios Savvidis

22/11/2015
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# Abbreviations

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<th>Acronym</th>
<th>In Greek</th>
<th>Meaning</th>
</tr>
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<tbody>
<tr>
<td>AC</td>
<td></td>
<td>Assessment Committee</td>
</tr>
<tr>
<td>AUTH</td>
<td>ΑΠΘ</td>
<td>Aristotle University of Thessaloniki</td>
</tr>
<tr>
<td>BoD</td>
<td></td>
<td>Board of Directors</td>
</tr>
<tr>
<td>CEO</td>
<td></td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>CFO</td>
<td></td>
<td>Chief Financial Officer</td>
</tr>
<tr>
<td>CSR</td>
<td></td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>EEN</td>
<td></td>
<td>European Enterprises Network</td>
</tr>
<tr>
<td>EKETA</td>
<td>ΕΚΕΤΑ</td>
<td>Centre for Research and Technology Hellas</td>
</tr>
<tr>
<td>EPAL</td>
<td>ΕΠΑΛ</td>
<td>Secondary Education Vocational School</td>
</tr>
<tr>
<td>EPO</td>
<td></td>
<td>European Patent Office</td>
</tr>
<tr>
<td>EQE</td>
<td></td>
<td>European Qualifying Examination</td>
</tr>
<tr>
<td>EU</td>
<td>ΕΕ</td>
<td>European Union</td>
</tr>
<tr>
<td>HELPE</td>
<td>ΕΛΠΕ</td>
<td>Hellenic Petroleum</td>
</tr>
<tr>
<td>IFIA</td>
<td></td>
<td>International Federation of Inventor’s Associations</td>
</tr>
<tr>
<td>IA</td>
<td></td>
<td>Intellectual Asset</td>
</tr>
<tr>
<td>IHU</td>
<td>ΔΙΠΑΕ</td>
<td>International Hellenic University</td>
</tr>
<tr>
<td>IP</td>
<td></td>
<td>Intellectual Property</td>
</tr>
<tr>
<td>JIII</td>
<td></td>
<td>Japan Invention and Innovation Institute</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>JPO</td>
<td>Japan Patent Office</td>
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<td>KIPO</td>
<td>Korean Intellectual Property Office</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>NPO</td>
<td>Non-Profit Organization</td>
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<tr>
<td>NSRF</td>
<td>National Strategic Reference Framework</td>
<td></td>
</tr>
<tr>
<td>OBI</td>
<td>OBI Hellenic Industrial Property Organization</td>
<td></td>
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<tr>
<td>OTA</td>
<td>OTA Local Authority Organization</td>
<td></td>
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<tr>
<td>PR</td>
<td>Public Relations</td>
<td></td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research &amp; Development</td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td>AE Société Anonyme</td>
<td></td>
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<tr>
<td>SBBE</td>
<td>ΣΒΒΕ Federation of Industries of Northern Greece (FING)</td>
<td></td>
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<tr>
<td>SEV</td>
<td>ΣΕΒ Hellenic Federation of Enterprises</td>
<td></td>
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<tr>
<td>SIPO</td>
<td>China’s State Intellectual Property Office</td>
<td></td>
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<tr>
<td>SME</td>
<td>Small and Medium Enterprise(s)</td>
<td></td>
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<tr>
<td>TANEIO</td>
<td>TANEIO New Economy Development Fund</td>
<td></td>
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<tr>
<td>UIA</td>
<td>United Inventors Association of America</td>
<td></td>
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<tr>
<td>USPTO</td>
<td>United States Patent &amp; Trademark Office</td>
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<tr>
<td>VCI</td>
<td>Venture Capital Investment</td>
<td></td>
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<tr>
<td>VETH</td>
<td>VETH Chamber of Small &amp; Medium Sized Industries of Thessaloniki</td>
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<tr>
<td>WIPO</td>
<td>World Intellectual Property Organisation</td>
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INTRODUCTION & THEORY

I. Introduction

1. Starting thoughts

Playwright Tom Stoppard is credited with this quote:

“If you took away everything in the world that had to be invented, there’d be nothing left except a lot of people getting rained on.”

Anyone can easily point out numerous examples of inventions that changed in a definitive manner the course of history, the means of production and the fate of nations across all fields of human activity.

Invention matters, and so does research, technology, innovation, entrepreneurship and excellence. The question is how processes like these can be further developed in a society, in a country or at the level of a local community.

Greece is undergoing its fifth year of depression. In this time Greek GDP has contracted by a quarter. Unemployment has soared over 25%, even higher among the young. There is broad consensus, at least on a declaratory level, that economic growth is the only reliable path to start addressing the crisis and create jobs. Growth, in turn, requires investments but domestic funds for investments –public and private- are either depleted or insufficient or under tight scrutiny and controls, exacerbating liquidity problems.

Against this backdrop, perhaps a new trend for Corporate Social Responsibility (CSR) programmes among those of the major Greek companies that are still profitable and financially robust, should be to steer their attention towards addressing some of the root problems of the economy, such as the endemic lag in competitiveness, innovation, inventiveness and patenting activity; a lag, alas, confirmed time and again by every metric available.
2. Highlighting the Main Idea

The idea is that a leading Greek corporation, namely Hellenic Petroleum S.A. (henceforth HELPE), with a vigorous, active and well-funded CSR programme, could undertake an initiative to support and promote on a local level a key productive activity or process, delivering a distinct, observable, and hopefully measurable, positive impact.¹

What should this key productive activity or process be?

Numerous efforts are made across the globe to boost innovation and entrepreneurship. Rightly so, because these are key to foster growth and create jobs. Sometimes these efforts are concerted and organized, other times less so. Some bear results, others not.

In Greece as well, the need to develop an innovative business culture has been correctly identified as a key target in the continuous effort to progress and catch up with other developed economies; more so nowadays battling to exit the crisis and to curb unemployment.

However, in this effort perhaps something goes amiss. It seems there is an overlook on strategic level, which begins from theoretical grounds. The notion of invention is usually ignored, sidelined, or demoted to being a concept subordinate to that of innovation or, an even graver mistake, is perceived as a mere synonym of innovation.

If this is misguided, and this paper finds it is, then an intervention in fixing or at least balancing this omission is a worthy cause, an economically and socially beneficial objective to pursue.

¹ According to HELPE Annual Reports, the CSR programme amounted to €3.5 million in 2013, supporting 100 actions, and €3 million in 2014.
Where should this effort take place?

HELPE operates in Thessaloniki with two major facilities at the Diavata and Kalochori area and it supports a series of CSR activities in the city. Deindustrialization and unemployment troubled local economy even before the advent of the crisis. Still, Thessaloniki remains a metropolitan center and an important hub of economic and industrial activity in Greece and in Southeastern Europe. It has the privilege of hosting a number of academic institutions, with a tradition in technical and engineering studies, which maintain in the city a youthful and dynamic community of highly-trained professionals.

How will this be organized?

The idea explored in this report is that the goals set earlier will be served through the establishment and operation of a Centre for the Promotion of Invention, as a separate legal entity. It will be funded initially by HELPE. Various other stakeholders, mainly municipal authorities will play a support role. This Centre will develop activities, offer services and take specific steps to promote the idea and the practice of inventive activity locally. The objective is to support in as many ways as reasonably achievable inventors and all those that could relate to this process to increase their output and success rates.

How does this report address this issue?

The dissertation at hand explores the various aspects, problems, possibilities and needs for realizing this idea. Several research questions are put forward. Then it tries to answer these questions by drafting a business plan.
II. Literature Review

1. Invention Definitions and practical issues

The World Intellectual Property Organization (WIPO) defines invention as “a new solution to a technical problem. To obtain patent rights, the invention must be novel, involve an inventive step and be industrially applicable, as judged by a person skilled in the art.”

A patent is essentially a legal document. This document creates rights for the holder named in it. It doesn’t bestow upon the holder a right to do something, but the right to exclude others from doing it without the holder’s permission. From an economic point of view though, a patent is also an asset, an intangible asset with some inherent value which can be valued and traded.

Not all inventions are patented. If one believes others will not be able to reconstruct their invention, they can opt to keep it a secret and retain monopoly for as long as it lasts. For instance, the Coca-Cola Company never patented the Coca-Cola formula, keeping it a well-guarded secret since 1880.

Patent issues are complex and tricky. Even the simplest function, identifying the patent holder, can present challenges. Sometimes it is difficult to identify the actual holder of the patent because A) databases aren’t always up to date and in some countries it’s not required to declare transfer of ownership; B) Mergers and acquisitions, blur the ownership status of companies and the respective patent portfolios;


and C) there’s a trend for founding ‘shell companies’ with the sole purpose of holding IP rights for liability and tax reasons.\(^6\)

On all the basics and fundamentals regarding patents information are available by international organizations that deal with the issue, such as the World Intellectual Property Organisation (WIPO) or the European Patent Office (EPO). A book widely referenced as a must-read that deals from a practitioner’s point of view with all the nitty-gritty of invention is the *Inventor’s Bible* by Ronald Docie.\(^7\)

### 2. Economic Theories on Invention and Innovation

One of the first to theorize on invention was French economic journalist Frédéric Bastiat in 1864. Bastiat spoke first of the three stages of invention (invention, imitation, ‘gratuitous’ state) depending on who had the power to build the object which starts as an invention when only one person, the inventor, knows how to produce it.\(^8\)

One of the classic philosophers-economists of the 20\(^{th}\) century, Joseph Alois Schumpeter acknowledged Bastiat’s contribution but proposed a new model which to this day defines theoretical orthodoxy on the subject. Schumpeter identified three distinct stages in economic creativity: invention, innovation and imitation. Of these, he said “as long as they are not carried into practice, inventions are economically irrelevant. And to carry any improvement into effect is a task entirely different from the inventing of it”.\(^9\)

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For instance, a Swedish research paper found that enterprises do 21% better when the original inventor is not also the entrepreneur. But they also found that it’s more efficient when inventors are still involved in the enterprise.\textsuperscript{10}

To this day many leading innovators discuss the differences between innovation and invention agreeing that innovation is more business and commerce oriented while invention is of a technical-intellectual nature.\textsuperscript{11} But more agree that invention follows its own pace, has its own philosophy, methods and requires a distinct state of mind. The invention process is recursive, meaning a \textit{repetitive} trial and error. Innovation also involves experimenting but it cannot afford it in such great frequency.\textsuperscript{12}

The importance of having a solid theoretical understanding of the differences between invention and innovation is paramount for an organization planning to differentiate its strategy based on focusing on the former rather than the latter as most do.

\section*{3. Economic Theories on the Patent system}

An issue widely discussed and analyzed for many decades now is the impact of the patent system to economy. The whole idea about the patent system is that it fosters creativity by striking a balance of interests. Society at large gains because in return the research that went into an invention and the blueprints become public knowledge, avoiding duplication of research and resources spent. As for inventors, they have an extra motive to invent because they can have some exclusive rights over the invention for a period of time.


\textsuperscript{11} B. Walker, 'Innovation vs. Invention: Make the Leap and Reap the Rewards', Wired.


Or, in the words of Abraham Lincoln: “The patent system added the fuel of interest to the fire of genius”  

But overtime as things got caught up between increased regulation and bureaucracy many started wondering whether the effect on economy was really positive and whether that could be measured. This trend among economists started with Machlup in 1958.  

The book Patent Failure by Bessen and Meurer explores the problems caused to invention by laws, court decisions and bureaucracy. In its starting pages it gives an overview of the entire spectrum of diverging views on the matter “Critics argue that changes in patent law have created ‘a legal frenzy that’s diverting scientists from doing science’. Some even believe that the patent system should be abolished. Others say that the patent system can be fixed with some modest reforms. Still others maintain that the patent system is not broken at all, and that current efforts to reform it are just an attempt to weaken the rights of small inventors”.  

These issues are heavily debated and colossal vested interests are at stake. It’s good to be aware of this discussion but they don’t affect the findings of this paper.

4. Clusters and agglomeration

Renowned theoreticians like Alfred Marshall and Michael Porter focused on the effects of clusters, agglomeration, knowledge and competency spillovers etc. Porter’s

13 A. Lincoln, Lecture on Discoveries and Inventions, 1859, Abraham Lincoln Online ALO. Lincoln practiced patent law as a lawyer. Also, to this day he remains the only U.S. President that had been a patent-holder. See Lincoln’s patent: http://www.abrahamlincolnonline.org/lincoln/education/patent.htm


article on clusters and how they boost creativity started, it seems, a new trend in academic research.\(^{16}\)

Many studies have been published since, usually featuring quantitative analysis, and found various types of correlation between the per capita invention rate, else known as invention intensity, and clustering and agglomeration phenomena. To mention some:

- A study finds correlation between population size and invention rate.\(^{17}\)

- Or with the population of neighbouring cities.\(^{18}\)

- A study finds that invention rate is boosted by higher job density in a city: 2,200 jobs per square mile are seen as the optimum figure.\(^{19}\)

These findings are very interesting and useful for planning and outreach purposes for an organization that aims at making an impact on an urban environment all while working together with municipal authorities.

[On these issues see in the Excel folder statistics on top EU metropolitan cities here and regions here ]

5. Patent Valuation

Valuation of intangible assets of all kinds is a demanding job and it’s defining many other activities that follow, like amortization of the intangible asset, commercialization-monetization, valorization (increasing the value). To engage in all that, either to


negotiate a licensing agreement or to fill in financial statements or tax forms one needs to know the value of the intangible.

The book that was primarily used for the research needs of this paper is considered the main textbook in many institutions and it’s by Richard Razgaitis.\textsuperscript{20} Doing a further research one sees that practically everyone agrees that there are four or five acceptable methods to conduct patent valuation.\textsuperscript{21}

\textit{Cost method} is the most simple and basic and the least sophisticated one. It assigns to the patent the nominal value of the costs incurred to obtain it, from R&D to legal and patenting fees.

The graph below from R. Pitkethly’s 1997 article lists in increasing sophistication order the other methods as well:

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{methods_of_valuation.png}
\caption{Methods of valuation in increasing order of sophistication (Source: Pitkethly, 1997)}
\end{figure}

\begin{itemize}
\item \textbf{Costs} Cost based methods
\item \textbf{Market conditions} Market based methods
\item \textbf{Income} Methods based on projected cashflows
\item \textbf{Time} DCF Methods allowing for the time value of money
\item \textbf{Uncertainty} DCF Methods allowing for the riskiness of cashflows
\item \textbf{Flexibility} DCF based Decision Tree Analysis (DTA) methods
\item \textbf{Changing Risk} Option Pricing Theory (OPT) based methods
  \begin{itemize}
  \item Discrete time
    \begin{itemize}
    \item Binomial Model (B-M) based methods
    \end{itemize}
  \item Continuous time
    \begin{itemize}
    \item Black-Scholes (B-S) option pricing model based methods.
    \end{itemize}
  \end{itemize}
\end{itemize}

\textsuperscript{20} Razgaitis, R. \textit{Valuation and Pricing of Technology-Based Intellectual Property}, 2003, Wiley, Hoboken


-22-
All other methods require additional information, and in any case to have an idea about the characteristics of the patent and the market.

For this report, it’s impossible to know what kind of inventions will be brought to the Centre for assessment and funding. It’s clear that only the cost method can be used to estimate the future accounting value of the stakes to be acquired by the Centre in the patents it will fund. The stakes will be given a nominal value equal to the amount paid to acquire them. And since that amount is fixed (€5,600, plus €21,100) what will be changing really is the percentage of participation, each time the result of negotiations with the inventor.

This is until a patent starts producing revenue. Then valuation can be revised to reflect the new potential of the patent. In general, one can re-value an intangible asset at any point if legal, procedural or commercial conditions have changed.

This second graph by R. Pikethly’s 1997 article shows how for the entire lifetime of a patent there are valuation-related choices, decisions and costs involved:

Figure 2 - Valuation decisions at different stages of the patenting process (Source: R. Pikethly, 1997)
6. Patent commercialization success rates

The finding in the literature that affected most the direction of this report has to do with the broad consensus among experts and practitioners that the rate of commercial success of patents is very low. These reports come mainly from the United States which is a developed patent market. This makes the issue of profitability crucial for the long term sustainability of the Centre.

Many estimates appear in literature estimating the success rate to be below 5%:

- Only 5% of patents by unaffiliated inventors make it to the market.\(^{22}\)

- Only 3% of patents create revenue.\(^{23}\)

- The odds for successful launch, meaning instant profitability, are even lower, at 1 out of 5000.\(^{24}\)

- Former head of the USPTO Richard Maulsby is quoted saying "There are around 1.5 million patents in effect and in force in this country, and of those, maybe 3,000 are commercially viable". This means a rate of 0.2%.\(^{25}\)

- An article quotes Brian Miller, the director of a firm that makes plastic molds and prototypes, that only few inventors succeed to create a prototype, and of those only 10% ever makes money out of that invention.\(^{26}\)


\(^{26}\) Thuy-Doan Le, “Entrepreneurial spirit starts to pay off for Sacramento, Calif.-area inventor,” The Sacramento Bee, 12 December 2004
III. Challenges and Scope

Preparing a business plan entails several challenges of its own. Even more so when this business plan is at the same time an academic dissertation, which ought to serve theoretical pursuits next to the practical orientation of a business plan.

Also, when the venture in focus is a non-profit entity, many assumptions and features that normally apply to commercial ventures are simply not applicable, or simply strike as odd. It is important to keep that in mind.

However, there is an even greater challenge concerning this particular dissertation/business plan. It’s that it takes the reverse route to that of an actual business plan. Usually, a market research is conducted and other observations have been ascertained and certain conclusions have been reached. Based on these findings the specific plans are laid out in the business plan.

Here the original idea is taken as being a hypothesis, and then the business plan serves as an exercise, as an exploratory vehicle set to pit this idea against the observable facts and data.

To be more specific here are some examples of how all these affects this work, pointing out interesting and important research topics that couldn’t be included in this report and which merit further research and attention:

1. At the point when a typical business plan is prepared the issue of legal personality has been usually decided already. Here, as it will be demonstrated, this issue warrants at least two professional written opinions, by a legal and a tax expert specializing in corporate law and taxes. Still, a preferred option, that is establishing a non-profit entity, is stated in the report.

2. A market survey should be undertaken to identify who the practicing, potential or inactive inventors and patent-holders are in Thessaloniki, and after reaching them,
conduct a survey focusing on their immediate problems and needs, completed by analyzing the data gathered.

3. Another interesting report would be mapping out the full range of possibilities in the prospects of the Centre obtaining EU funding and an overview of the existing programs, the amounts expected to be directed towards Greece and towards the broader sector of innovation, which for EU and Greek government purposes includes invention. The issue of legal personality and how this affects participation in such programmes should be looked into thoroughly.

4. If this was a typical financial investment, one of the classic methods such as NPV or IRR would be employed to evaluate its prospects. But this investment is in the CSR field. It’s by all indications a negative-NPV project by design, at least for the first few years. It’s bound not to create profits for HELPE, which a propos, like all major Greek companies saw their WACC increase significantly during the crisis reaching 17.5% in 2012, meaning that funds retained and reinvested in the company is a lucrative option. 27

Each of these issues merits its own dissertation paper.

So it’s important to place the scope of this report into perspective and make clear that this is not the final business plan, neither a final plan. It’s an original idea put to the test, for strategy formulation purposes, using the structure of a business plan to draw useful conclusions.

27 A. Giannakouras, ‘How the economic crisis affected the Weighted Average Cost, of Capital (WACC) of Greek business sector’, University of Piraeus, Piraeus, October 2014, p. 74.
IV. Methodology

For the research needs of this study the following means were utilized:

A) Academic, legislation and open source information research was conducted. Books, articles, reports (many referenced in footnotes and the Bibliography section), as well as general public information sites, often appearing only in the footnotes.

B) A series of interviews were conducted and even more informal discussions, mainly with officials from institutions in Athens (OBI, Ministry of Development) and in Thessaloniki. Their names and full titles can be found in the ‘Special Thanks’ section at the end of the paper and before the Bibliography. In text when a reference is made to a Mr/Ms X of Y organization this means that an interview was conducted and there is an exchange of emails confirming from their part that they are in agreement with the content of these references which are not reproduced here as verbatim quotes.

C) No field study was undertaken. This is balanced by the use in the Market Analysis section of the findings of a 2007 Doctoral Thesis by Dr. Iraklis Goniadis of the Democritus University of Thrace.

The study (obtained for the needs of this report through OBI) was conducted with the support of OBI. Questionnaires were sent to practically all 2,890 individuals and 422 legal persons in Greece that held Greek patents in 1995-2005. The sample was created by receiving replies from 434 natural and 55 legal persons.  

The questions were about their motives, views, the problems they encountered in the process of securing the patents, and how they intended to utilize them. This

covered to a great extent the needs of this dissertation, a limitation being that the study was conducted prior to the economic crisis.

D) Statistical data were used to draw conclusions mainly in the Market Analysis section. These data were acquired by authoritative sources on patents. The following organizations keep statistical records and databases that were used in this report as indicated by the appropriate citations.

- The World Intellectual Property Organisation (WIPO) maintains an online free-of-charge statistical database.\textsuperscript{29}
- The European Patent Office (EPO) provides statistics in its annual reports.
- Eurostat’s website was a valuable source of information on invention and innovation data, mainly demographics.\textsuperscript{30}
- The Hellenic Industrial Property Organization (OBI) maintains statistical records internally. The data from OBI in this report were acquired via email upon request.

Some are included in Appendices V-VIII.

Most of these data though are in the accompanying Excel folder. At some instances there are in text hyperlinks provided that take the reader to the relevant worksheet, i.e. the country profile of Greece from WIPO is \text{here}.

For a guide to all the worksheets of the accompanying Excel folder see Appendix IV.

\text{__________________________}

\text{\textsuperscript{29} WIPO initial page on statistical data on patents: <http://www.wipo.int/ipstats/en/statistics/patents/>}

V. Main Research Questions

The paper seeks to answer the following, practical rather than theoretical, research questions:

• **Is there a genuine need for supporting invention and inventors in Greece and, in particular, in Thessaloniki?**
  - This will be addressed mainly in the Industry and Market Analysis sections.

• **Can an organization that aspires to play this role, in the ways described hereafter, make a significant contribution and have a meaningful impact to this end? How can this be achieved? How can this be evaluated?**
  - This is covered throughout the business plan and mainly by the sections about Industry analysis and also by the Service Description, the Organizational Plan and the Service Plan. On how to measure, the sections on Market analysis provides the basis and the Performance Evaluation section makes a specific reference.

• **What are the prospects of such an undertaking reaching out to targeted audiences? Will this produce sufficient traction for the sponsor (HELPE) in terms of building Public Relations and demonstrating Corporate Social Responsibility?**
  - This will be addressed by the Industry and Market analysis and the Marketing plan sections.

• **Can this venture become financially sustainable within a period of 5 years? Under what assumptions and circumstances?**
  - The Financial analysis part addresses this.

• **How can this undertaking progress and evolve in the future?**
  - The section on Performance and Strategy Evaluation is dedicated on this.

• **What should be the next steps to realize this idea? Are there any alternative courses of action?**
  - This is covered in the final recommendations.
BUSINESS PLAN:

Centre for the Promotion of Invention in Thessaloniki

I. Executive Summary

This dissertation uses the structure of a Business Plan in order to test an idea originating from Hellenic Petroleum S.A. senior management.

The idea is for Hellenic Petroleum to take the initiative of funding and founding in Thessaloniki a ‘Centre’, operating on a non-profit basis and having a distinct Corporate Social Responsibility character. The Centre will work to promote inventive activity and assist inventors, both practicing and aspiring ones, and patent-holders by providing a range of services covering all phases of the inventive process. Most important, it will directly fund 10 inventors on an annual basis, selected after assessment by experts, also acquiring a stake in the invention if so agreed.

The Business Plan explores implementation challenges and the feasibility of certain aspects of this idea, the operational needs and the crucial factors that will define the short- and long-term sustainability of the undertaking. A strategy of differentiation is proposed, taking into consideration the focus on invention rather than on innovation which is the mainstream trend nowadays.

The report finds that Greek invention activity suffers from much structural inefficiency which keeps it in low intensity compared with that of other developed economies. It also finds that the intention of the Centre to fund up to 10 inventors annually will constitute a significant contribution given local standards.
Operating and other costs are estimated at an annual budget of €310,300 which should be guaranteed in advance for a period of 5 years after which the whole project will be evaluated. The report strongly suggests participation in development programmes for additional funding. This is because, as literature indicates, patent commercialization and monetization is a venture entailing uncertainties. A model for the evaluation at the 5-year mark is then proposed followed by a forecast considering four scenarios regarding the fate of the venture beyond the 5th year milestone.

Finally, conclusions are reached and recommendations are made concerning possible next steps and alternative courses of action.
II. Venture Description, Services, Legal Form

1. Venture and Business Model Description

For the most part the Centre operates based on the business model of a typical Non-Profit Organisation (NPO). It organizes activities and offers services usually free of charge. This stems directly from the CSR dimension of the undertaking. It is also important for building up the reputation of the Centre as an organization that helps inventors; an organization that also serves a broader social cause.

The venture will be launched only if there is a prior official decision and commitment from the part of the shareholders, basically of HELPE S.A., that, in case of zero other earnings, the estimated overall annual costs of €310,300 will be guaranteed for every year for a period of 5 years. On the 5th year an evaluation will be performed to decide the fate of the venture thereafter. Bank loans and other liabilities will not be an option.

In the meantime, the Centre will seek additional sources of financing through 1) participation in government and EU funding programmes or 2) by trying to generate own income through investing in patent rights. Finally, 3) the prospect of charging certain fees for some of its services will be explored at a later stage of its operation.

The last two points mean that there are in this venture elements of two other distinct business models manifesting in certain activities of the Centre:

A) The Centre will fund patent applicants in exchange for a stake in the IP rights to be acquired. The Centre will continue working with the primary patent-holder to find ways to exploit the patent. Upon successful monetization the Centre will get part of the revenue generated depending on the percentage of its stake. This is clearly an investment activity. It bears some similarities with the Angel Investor and the Venture Capital Investing (VCI) business models, particularly with the early stages of these business models, known as “Seed Investing”, a limited early funding to keep alive future prospects. The basic difference though remains: VCI funds invest for good only after profitability prospects are well in sight. Modest as it may be, the in-
vestment part of the Centre’s activities aims at generating income for the Centre. Still, the non-profit character of the venture prevails since any earnings will not be distributed to shareholders as profits. Instead it will be reinvested into the venture aiming at covering the needs of the broader inventor community.

B) In the future, provided that funding is secured and special market research is conducted, the Centre can offer services that fall under the business model of consultancy, agency or brokerage bringing together inventors with other patent-related service providers, or inventors with enterprises (technological brokering) and charging a commission fee to the contracting parties upon completion of a deal.

The location of the Centre will be in the Western side of Thessaloniki where the HELPE installations are located. Its offices will be hosted, free of rent, either at the premises of the secondary vocational school (EPAL) of Sindos (first option) or at premises provided by HELPE or by a local Municipality.
2. Vision & Mission Statements

These statements serve as a powerful and condensed message to communicate to outsiders. Ideally, for those involved in the enterprise the statements serve as a point of reference to avert confusion, clarify direction and also for the team to rally around and develop their unique corporate culture.

First of all, in need for a simple and concise Vision Statement this sentence can sum it up well enough:

“We support inventors and foster inventive creativity.”

But this is perhaps too general and vague. To communicate the means, mindset and ultimate goals of how and why this is to be achieved, it could read:

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<th>Thessaloniki Invention Centre - Vision statement</th>
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<tr>
<td><strong>We support inventors and foster inventive creativity.</strong></td>
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<tr>
<td><strong>We see ourselves as partners and companions of inventors from the early stages of the invention process all the way to securing a patent and profiting from it. We shall reinvest all experience and gains accumulated to support even stronger all subsequent partnerships.</strong></td>
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<td><strong>Our ultimate goal is to make a distinct and meaningful contribution to the development of an invention-driven culture, tradition and industry in Thessaloniki thus helping boost economic growth and the creation of new businesses, jobs and career opportunities in Greece.</strong></td>
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As for the Mission Statement, it needs to be more precise on the activities:

**Thessaloniki Invention Centre - Mission statement**

*Our mission is to assist both practicing and prospective inventors, either individuals or enterprises, and help them become networked, better informed and trained on the various aspects of the inventive process.*

*To achieve that we undertake to:*

1) Encourage, guide and assist them through the invention and patenting process;

2) Facilitate their access to information, facilities, equipment, funding, prospective markets, professional services and partnerships both domestically and internationally;

3) Cover certain expenses regarding prototype development and patent filing fees and invest in selected patents;

4) Foster cooperation and partnerships between more organizations with missions relevant to invention and industrial property and create a pool of available resources;

5) Bring closer the industry and inventors for the mutual benefit of developing solutions for industrial applications;

6) Help educate the public and offer motivations to students and young professionals to consider studies, specialization and careers in this field;

7) Reinvest the know-how, skills acquired as well as the greater part of proceeds back into the invention community.

*We will also promote and advertise the contributions made by the sponsors of the Centre and assist them in implementing acquired knowledge, skills and capacity on industrial property in their main line-of-business.*
3. Services Description

The services to be offered by the Centre can be grouped in three categories, or cycles, depending on the target audience and the purpose of the services.

1. The first cycle is about directly **Assisting Inventors** who are actually already engaged in some kind of inventive activity.

2. The second cycle is about **Connecting Inventors** to each other and to the market. It includes services addressed to the same audience as above, practicing inventors, but taken collectively or in relation to the industry.

3. The third cycle is about **“Inventing” Inventors**. It doesn’t address practicing inventors but potential ones, plus the broader public. Its aim is to induce, educate, train and motivate people, mainly scientists, engineers and students, as well as enterprises, mainly SMEs, with the aim of getting them involved in one way or the other in the inventive process or interested in careers and activities related with invention and industrial property.

The specific services of each cycle are the following:

**ASSIST INVENTORS**

a. **Fund and reimburse expenses for patent filing for a set number of patents selected after a technical and economic assessment, in exchange for a negotiated stake in revenues from future patent exploitation:**

- Reimburse expenses for preliminary research (Proerevna-Προέρευνα) performed by the Hellenic Industrial Property Organization (OBI), which gives a first impression of what is already patented and what is potentially patentable. The cost is low, starting from €60 per research. A budgeted amount of €5,000 could cover 60-80 applications. In 2015 the number of these applications to OBI was 66 nationwide. This allows for the Centre to cover this expense for almost all requests in Greece. This is important also for advertising purposes. Imagine if the Centre can claim it covers or it increased by a significant part this category.
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- Cover patent filing expenses for 10 patents filed in Greece through OBI up to €5,600 per patent.

- Cover patent filing expenses for 3 patents (out of the 10 mentioned previously) filed most probably at the European-level through the European Patent Office (EPO), unless a good case is made that other markets are more lucrative and therefore should be filed in another major IP office (i.e. USPTO-U.S., SIPO-China, JPO-Japan, KIPO-Korea etc.). These patents will receive up to €21,100 which includes expenses for patent attorney and patent lawyer fees.

**Note:** The amounts made available for patent filing in Greece and internationally also cover expenses required for patent renewal up to the sixth year, as well as for expenses made for prototype development and testing, up to €2,000.

- In the course of the assessment process and after negotiating and signing the agreement on funding-investing and acquiring a stake in the patent, the Centre will systematically ask from inventors to make plans and bring forward proposals on the monetization and commercialization of the patent. It will also make itself suggestions and assume a proactive role to support and promote such efforts in order to increase both the chances and the expected rate of returns from the investment in each patent.

The value added by investing cash, with no collateral required, at a time of money shortage, bank liquidity problems and capital-controls in the Greek economy is evident. To our knowledge there are no similar initiatives active in Greece at this point, other than some innovation contests like “Greece Innovates!” held by the Hellenic Federation of En-
terprises (SEV) and Eurobank which offers two first-place awards of €15,000 and two second-place awards of €8,000 in two respective categories.\(^\text{31}\)

b. **Offer access to laboratories and equipment for developing and testing prototypes.**

With almost 90% of patent holders in Greece being physical persons and not companies, access to laboratories and equipment could be an issue. Also the average SME would probably lack the proper facilities. Even large corporations could not own and would not pay for expensive equipment to be used just once.

In the beginning this will be arranged through an agreement with the secondary education vocational school (Epaggelmatiko Lykeio - EPAL) of the Delta Municipality in Sindos. Part of the operational expenses of the School would be covered by the Centre or directly from HELPE and new equipment such as 3D-printers could also be bought for the school labs. In exchange, access to the labs will be allowed to inventors cooperating with the Centre during afternoon hours when schools are still open but there are no classes in session. A careful screening and coordinating process will be required and inventors will need to sign a Responsible-Use agreement. Other schools could join at later stages to create a network.

Later on, a more ambitious undertaking would involve mapping the existing facilities and equipment of public and private entities available in Thessaloniki. This service would save time and effort for inventors in their search and more importantly it would open up to them necessary resources. Then they could approach those controlling these resources and make arrangements privately or the Centre could have in place MoUs with some of them on providing such access.

There are many entities with such capabilities in Thessaloniki as pointed out as well during the interview with Mr Frysalakis of the Ministry of Development, who also mentioned the possibility of access to former facilities of now defaulted companies at the Thessaloniki Industrial Zone, with the necessary arrangements of course.

\(^\text{31}\) See page explaining prizes at the “Greece Innovates!” site: 
The Aristotle University has a database with existing equipment in various labs. On top of material support researchers and students can also offer a more thorough technical evaluation.

At EKETA there are high-tech research installations at their Centre but these are not available for outside researchers unless they join one of EKETA’s ongoing projects. For that to change, a decision by the governing bodies of EKETA would be required first.

c. **Offer general information on legal, financial, procedural and technical issues, indicate recourse to relevant organizations and suggest patent professionals in Greece and abroad.**

The Centre can serve as a general information hub for inventors pointing out or providing:
- simple information readily available online,
- print and online info material from the official authorized organizations (OBI, EPO) in cooperation with these organizations,
- advice on who and how can assist them with their search for patents or for prospective markets, education or funding,
- hints about market opportunities and pitfalls by sharing success- as well as caution-stories from previous experience.

d. **Facilitate search and access to related knowledge** - Locate and catalogue invention related resources available in hard copy in Thessaloniki (i.e. available in University libraries, EKETA library etc.) or collect useful links and material and make them available online.

**CONNECT INVENTORS**

a. **Bring together people involved with invention in Thessaloniki** – Help create a circle/community of inventors and invention-related professionals in Thessaloniki, in Northern Greece or on national level. Motivate them to collaborate with inventor associations
in other countries and join the International Federation of Inventors’ Associations (IFIA) where there’s no representation from Greece.\textsuperscript{32} It’s important to bring together not only inventors of the same field but of different sectors too. Cross-sectional invention and innovation is becoming the norm in an increasingly complicated, interconnected, dynamic technological environment.\textsuperscript{33}

b. \textbf{Introduce and bring in contact inventors with patent professionals and practitioners} -
Assist and train inventors in using databases and trusted, official websites for finding reliable patent attorneys, patent agents, patent lawyers abroad, accountants with experience in IP valuation etc. Also help find out who among these are certified, specialized in certain fields of technology, or simply left good impressions from previous dealings with the Centre or its partners. Perform research and contact ‘watchdog’ organizations which recommend reliable and flag unreliable IP promotion agencies.\textsuperscript{34}

c. \textbf{Bring inventors in contact with investors} or help them identify and apply for funds, grants, subsidies or contests.

d. Explore the prospects of launching in Greece for the first time \textbf{Technological Brokering} services and/or an \textbf{open innovation and crowdsourcing platform}. However, this demands strong IT expertise and a sizeable investment.\textsuperscript{35}

e. Identify, engage, coordinate and collaborate with potential institutional partners in Thessaloniki to co-sponsor and co-organize \textbf{events, activities, services} (i.e. fairs, round-table discussions, seminars, contests, dissemination of informative/educative material)

\textsuperscript{32} See IFIA global membership map at \url{http://www.ifia.com/en/ifia-member/world-wide-sphere}.

\textsuperscript{33} This was stressed enough by Mr Frysalakis of the Ministry of Development.

\textsuperscript{34} I.e. in the U.S., the National Inventor Fraud Center \url{http://www.inventorfraud.com/} lists trusted entities, whereas InventorEd (Inc.) lists companies to be cautious of \url{http://www.inventored.org/caution/extreme/}.

\textsuperscript{35} See Appendix I, point 4 for more background.
“INVENT” INVENTORS (educate & motivate)

a. Support and run **education programs** for kids, young people and students. Find and share relevant print and online material. Motivate young people to take part in seminars and contests, domestic and international. (Perhaps associate this with existing youth programmes by HELPE, participating municipal authorities and vocational schools). Some successful inventions were made by kids.\(^{36}\) Today many in the toy and gaming industry invite teenagers to invent new gaming features. In the U.S. there is even a firm, ‘By Kids For Kids’ specializing in promoting youth inventiveness.\(^{37}\)

b. Organize contests with monetary or in-kind prizes (i.e. offer internships to top-performers). Support and motivate promising ideas to file for patent and/or commercialize the invention

c. **Raise internal capacity awareness in enterprises**, in particular SMEs, to look for ways and opportunities to secure and exploit patents for novelties and designs they may have already developed.

d. Invite inventors to create solutions to actual problems and needs of municipal authorities or corporations, or perform research on existing patented or “state of prior art” solutions.

e. **Inform and motivate about Invention-related & Patent-related professions and career prospects** - Motivate young engineers, scientists and lawyers to train and obtain invention-related professional and competence certifications, offered by European and international institutions, such as the EQE, offered by EPO. Inform them about internships and vacancies in such institutions or in the private sector and encourage them to apply.


\(^{37}\) By Kids For Kids (BKFK) website <http://www.bkfk.com/>.
Invention Process Value Chain - The importance of offering a broad range of services

The graph below demonstrates how the services described above *add value to all the links of the inventive process value chain*:

*Figure 3 – Phases and Steps of the Invention Process and how the Centre addresses them*

As mentioned earlier one of the problems for invention is that its early stages are cost-ridden and many investors are not interested until inventors make it to the later stages on their own effort, time and money. In a climate of intense financial uncertainty and funding restrictions, as today’s Greece is, the probabilities of someone making it through the early “barren” stages of invention are being minimized unless they receive meaningful support early on.

It is important for the Centre’s to build a distinct, recognizable profile and to brand itself as an invention-specialized organization that genuinely helps inventors. One of the strengths of the Centre therefore, as well as an element of differentiation, is that its services, as described above, cover in one way or another the entire range of
steps and phases in the invention process. It also ventures into parts of the innovation process to the extent required to enhance the chances of profitability.

4. Synergies with CSR and other HELPE activities

Over time the Centre will accumulate networking, connections, know-how in the IP affairs. Hints and information will be coming through and obtaining and evaluating them will come easier with experience. In-house expertise on IP management and human capital in this field will be created. The Centre could offer its services and put to use its capacity, where applicable and meaningful, to assist HELPE in the more efficient management of their own IP portfolio; or simply bring to the attention of those managing this portfolio certain opportunities. 38

Second, some of the activities of the Centre are related and can create synergies with running and future CRS actions of the HELPE and with similar initiatives by the cooperating municipalities.

One such potential area for synergy involves actions for youth and education. For example HELPE CSR sponsors a series of seminars on youth and entrepreneurship in cooperation with the Economic University of Athens. 39 There can be similar initiatives focusing on invention as well as other activities for kids and teenagers bringing them closer to the invention process.

Also HELPE CSR supports actions in other countries in the Balkans where HELPE has a presence such as in Bulgaria. If the Centre is to apply for participation in the ‘Interreg Greece-Bulgaria’ programme, initiatives with a trans-boundary dimension will need to be proposed, which could then be combined with CSR activities of a trans-boundary character.

38 I.e. in 2012 there were 889 EPO patent applications in the energy sector. See details here (Excel)

5. Legal personality

Selecting the right type of legal personality that better serves the purposes of the enterprise and safeguards the interests and rights of those involved is of crucial importance. This should be the subject of legal advice in the form of a special written report by a legal professional, perhaps also accompanied by a report by an accountant-tax specialist.

Criteria for selecting the type of legal personality include:

A) Best serve the purpose of the entity and facilitate the services to be provided.

B) Allow the ownership, control, and involvement and participation in its governing bodies of Hellenic Petroleum S.A. and representatives of local city authorities. (i.e. local authorities (OTA) and public law entities (NPDD) are excluded from participation in Social Cooperative Enterprises).

C) Taxation of the Centre and of its sponsors.

D) Costs of incorporation, required time and initial capital required by law (i.e. €24,000 capital at minimum for an SA).

E) Allow participation in funding projects (i.e. NSRF, Interreg, Horizon2020 – In general, commercial law entities are eligible for these programmes).

F) Prepare to address confidentiality and liability issues.

In this report we will not attempt such analysis. Some options will be mentioned followed by the basic criteria that should define the final choice.

The more likely choices, each with its pros and cons, is either a typical legal form of a Non-Profit Organization (Foundation; Non-profit Civil Partnership-AMKE; Non-Governmental Organization-MKO) or one of the classic types of commercial companies such as the Société Anonyme (S.A.) [Anonymos_Etairia-A.E.] or the Limited Liability Company (E.P.E.).

The two novel types of Greek commercial companies the Private Company (PC), introduced by Law 4072/2012, and the Social Cooperative Enterprise (SCE), introduced by Law 4019/2011 are alternative
Without precluding any options, it should be noted that the venture, as mentioned already, will operate for the most part as a Non-Profit. This is a powerful reason to start off as a Non-Profit. If in the future the venture reaches a point where it sustains profits, then it can:

i) Either itself morph into becoming a commercial company, or even into a venture fund, or

ii) Establish a commercial company, or a fund, as a parallel structure to take care of the profitable side of the business, particularly if this entails tax and other benefits.

options but have strict regulations about management and auditing. For general info and quick facts on how to establish these types of companies see Ministry of Development sponsored info page at the Start-Up-Greece network site <http://www.startupgreece.gov.gr/procedures-regulations-laws?page=1>.
III. Business Strategy identification

1. Intensity of competition

Strategy is about establishing a sustained advantage over competition. The mainstream model to assess the intensity of competition is Michael Porter’s ‘Five Forces’ model. Starting from analyzing the power of buyers and suppliers, the threat of substitutes and new entrants, one reaches a conclusion on the intensity of competition. 41

Power of buyers and suppliers

Are inventors buyers ‘consuming’ free-of-charge services or when they receive funding? Or maybe they are suppliers, selling a stake in their (soon to be) intangible asset? In theory, for services received for free the bargaining power of the recipient is almost non-existent. If they are suppliers, in a cash-strapped economy with banks almost out of the lending business and with few, if any, angel investors operating in Thessaloniki, a safe assumption can be made that the Centre will be holding some leverage.

Threat of entry and substitutes

Again it’s difficult to apply these notions among non-profits. Also, the core problem that in first place called for the coming of the Centre into existence is the lack of supporting infrastructure and services for inventors on all levels. So, in a sense, it is a substitute itself standing in for an immature, lacking industry.

In any case, intensity of rivalry in competition is low because of:
- the nature of the enterprise, which operates more as a Non-Profit Organization (NPO), within in the framework of a company’s CSR activities;

- the originality of the venture. There are no other entities in Greece following this model;

- the immature stage and contracted business cycle of the domestic and local invention- and patent-related market, compared to those abroad;

- the fact that any similar informative, consultative services or educative activities about invention and patents are offered in Greece free-of-charge by other non-profit entities (i.e. OBI, the European Enterprises Network);

- the type of offered services and the type of relationship and transactions with the ‘customers’ who will not be paying fees to the Centre;

- on the contrary they will receive free services, reimbursements and funding with no collaterals required and in the end they have the potential of becoming partners;

- the inventors freedom to look for and receive funding from other sources as well.

Even if banks and private funds in Greece enter the business of investing in inventions and IP assets, competition will not be intense.

But competition lies somewhere else. It’s indirect and has to do not with the main line of services and ventures of the Centre, but with its intent to apply for government or EU funding programmes. The competing entities are the many other non-profit organizations involved in innovation and entrepreneurship activities.

2. Pursuing a Strategy of Focused Differentiation

As mentioned already, the Centre was designed to be different. At a time when everyone focuses on innovation, it’s different by focusing on invention. This will help set it apart from other funding-seeking NPOs.

Other non-profits focus on the early stages of the invention process but avoid the funding phase. Investors on the other hand avoid the early cost-incurring phases.
The Centre is different by covering the whole range. This is what helps establish relations of partnership and companionship with the inventors.

But in both cases it also tries to compete and excel by becoming specialized in this specific segment of the market, which is narrow.

Therefore, as seen in the graph below capturing Michael Porter’s Business-level identification theory, the Centre will follow a business strategy of focused differentiation.

*Figure 4 – Business-level Strategy identification matrix according to Michael Porter*
3. Managing Duality

Duality occurs when two opposing principles, priorities or tendencies coexist in the same environment or function, thus creating an internal tension. This can be solved by one prevailing over the other, the two combining into a new third reality, or simply the two continuing to coexist in tension resulting into a paradox. In this third case, paradoxical management sets out to anticipate and prepare for such conditions.\(^{42}\)

A tension that may arise in this case is between the non-profit character on the one side and the investment activity on the other. This is more likely to manifest in two instances, the invention assessment phase and then during negotiations with the selected inventors to agree on stakes and terms. The latter is perhaps inescapable; it’s the very nature of doing business. The former though requires attention.

An assessment committee comprised entirely by academicians and technical experts is expected to lean heavily on the technical originality of the invention and overlook its commercialization prospects. To balance this, entrepreneurs and perhaps even professional investors should be included in the committee.

Most important, the assessment should not be only about the inventions, but also about the inventors. In case they plan to commercialize the product through an enterprise of their own, they should be judged then as potential entrepreneurs.

It is then important to keep in mind the words of Schumpeter: “Although entrepreneurs of course may (emphasis in the original) be inventors just as they may be capitalists, they are not inventors by nature of their function but by coincidence and vice versa”.\(^{43}\)


\(^{43}\) J.A. Schumpeter, The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle, 1934, Harvard University Press, Cambridge, Massachusetts, p. 89
4. SWOT Analysis

The SWOT analysis below focuses more on the immediate line of business of the Centre, not on its broader socio-economic pursuits.

Strengths

- S1 – HELPE endows Centre with clout and reliability.
- S2 – Idea to focus on invention and differentiate original & bold.
- S3 - Location in metropolitan center with 4 universities.
- S4 - Proximity to industrial zone.
- S5 - Flexibility of a small team. *(But small team also weakness).*
- S6 - Use existing infrastructure for offices, equipment and facilities.
- S7 – Offers funding and reimbursements in times of crisis.
- S8 - Involvement of municipalities.

Weaknesses

- W1 - Lack of prior experience in such endeavors. Start from scratch.
- W2 – Tight budget & few employees.
- W3 - Uncertainty regarding continuity in the long term.
- W4 - Lack of guaranteed continuous funding in the long run.
- W5 - Big Board of Directors could prove cumbersome.
- W6 – Reliance to outside support & services for many needs.
- W7 – Focus on invention may downplay money-making needs.
Opportunities

- O1 - Opportunity to fill in the gap, rally partners and take initiatives.
- O2 - Chance to (unofficially) represent Greece in invention-related fora.
- O3 – Focus of EU funding on SMEs and patent valorization.
- O4 – Educational dimension: Involvement of EPAL, universities in Thessaloniki.
- O5 – Opportunity to create synergies through clustering and agglomeration.
- O6 – Slow but steady realization in Greece to focus on development & growth.
- O7 – Give a transboundary dimension and participate in Interreg programme.

Threats

- T1 - Inventive culture and IP industry backwardness in Greece.
- T2 - Small pool of professional inventors and patent professionals.
- T3 - Greek crisis => scarcity of resources, lack of funds.
- T4 - Bureaucratic inflexibility and delays on all levels.
- T5 - Be perceived as a threat or as “trespasser” by other institutions or individual actors in the inventor community, difficult then to develop partnerships.
- T6 – Same as O5 (marked as opportunity above) BUT could also lead to fragmentation and sidelining.
- T7 – Low commercialization success rate for patents makes profitability uncertain.
### SWOT Strategy matrix

#### S-O Strategies

1. **S1 & O1, O2, O3**: Include sponsors in branding and advertising the Centre. Active involvement of sponsors on high level, a plus.
2. **S1 & O1**: Explore the possibility of bringing in, from the start or later on, more partners/sponsors (firms or local authorities). Leave option open.
3. **S2 & O3**: Keep the primary focus on invention BUT make a clear, convincing case of why and how this is a prerequisite for innovation and growth.
4. **S1, S3, S4, S8 & O4**: Good ground for building broader networks with a wide array of partners and on many levels (city, business, education, youth communities).

#### W-O Strategies

1. **W7 & O3**: Include aspects of innovation and commercialization in assessment and investment strategy, look for profitability prospects too.
2. **W1, W5, W6 & O1, O4**: Keep the administrative team small AND have other bodies to bring together the different expertise needed (Assessment Committee).

#### S-T Strategies

1. **S3, S4 & T1, T2**: Need to branch out and expand services and activities.
2. **S6 & T3**: Keep costs down. Make use of existing services and functions of the sponsors to the greatest extent.
3. **S5 & T2**: Need to develop and maintain good working relations with key inventors and professionals in Thessaloniki.
4. **S7 & T3, T4**: Fund quickly with no red tape.
5. **S7 & T3**: Get better deals, but don’t exploit inventors in need or it will damage branding.

#### W-T Strategies

1. **W2, W3, W4 & T3**: Need to look for additional, external, stable funding (Horizon2020, COSME, NSRF, Interreg).
2. **W6 & T3, T4**: At first avoid overambitious, complex projects and undertakings. Set easily achievable, modest goals. Keep costs down.
3. **W2 & T3, T5**: Develop partnerships to share costs and pool resources...
4. **W6 & T4, T5, T6**: ...but don’t over-rely on partners and keep ownership of core competencies.
IV. Organizational Plan

1. Organizational Structure

This image depicts the proposed organizational structure and main interactions among different organs of the Centre, and how they interact with outside entities.

*Figure 5 – Diagram of the Organizational Structure and interactions*

For each type of legal personality the law provides for a minimum internal organizational structure usually with a General Assembly and a Board of Directors, as well as some administrative functions required at minimum. Building on that, the statute and bylaws of each organization can add layers of hierarchy, auxiliary committees and other functions.
General Assembly (GA)

The supreme administrative body representing the shareholders, in this case Hellenic Petroleum S.A. as founder and perhaps other co-sponsors of the Centre if it is so decided. The main tasks, depending also on the statute, include electing the members of the Board and approving the annual reports.

Board of Directors (BoD)

As the main executive body of almost all organizations it oversees the main course of operations. Among other functions it has the authority to elect the CEO - unless the statute saves that for the General Assembly- establish subordinate special committees and appoint members thereof, decide over matters of import such as hiring and firing employees or applying disciplinary measures. These powers can also be delegated.

The majority of the Board members, including the CEO, would have some kind of affiliation with HELPE (i.e. employees) while others would be representing local municipalities or other institutions. The number of board-members may vary. A small Board is more flexible and would allow for convening more frequently, adding to administrative flexibility and resulting to a smooth and swift interaction with the small team of employees.

On the other hand, an enlarged Board allows for engaging and involving more stakeholders by securing more seats for their respective representatives. But this makes things more cumbersome and potentially raises costs if there is a compensation involved for board-members.

Executive Committee (EC)

To balance an enlarged BoD (above seven members) a smaller, more flexible, Executive Committee could be established, presided by the CEO with the participation
of the CFO and one more member. Powers that have to do with directing, overseeing, approving the day-to-day tasks, jobs, expenditures and decisions made by the employees will be delegated to this committee.

**Chief Executive Officer (CEO)**

A central role is seen for the CEO who will be linking the Board A) with the Executive and the Assessment Committees, participating in all three, B) with the employees who will be under the direction and supervision of the CEO, and C) with third parties towards which the CEO will be the official representative of the Centre and its principal spokesperson.

**Assessment Committee (AC)**

At the very core of the operation of the Centre -probably the most crucial function defining its long-term success and sustainability- is the assessment and selection of those inventions that will receive the support and funding of the Centre subsequently becoming part of its IP portfolio, the main asset and potential source of revenue that the Centre may produce.

Assessing at an early stage the technical aspects of an invention and the prospects of its successful economic exploitation is not an easy task as explained in a previous part of this report. Highly-specialized skills, knowledge and experience are required. For that, the task of making this assessment should fall on a committee of experts and practitioners: professors, engineers, researchers, entrepreneurs, inventors and investors. As mentioned earlier under ‘Managing Duality’ it is important to have in the mix also practitioners and commerce-oriented people to focus on prospects of profitability of each patent evaluated.

Especially if the Centre is open to proposals from many different technical fields, the need for more diverse composition of the AC means increased membership and therefore increased compensation and administrative costs.
An example of a similar in scope and mission group is the 12-member Scientific Council of the “Greece Innovates!” Competition co-sponsored by the Hellenic Federation of Enterprises (SEV) and Eurobank, held annually in the last three years.44

As the proposals start rolling in they can be assigned to members of the AC, according to their expertise, to act as preliminary evaluators and rapporteurs ahead of the final evaluation and selection by the AC plenary convening at least twice in a year. In the future, the AC can pronounce on other technical-economic issues related to Intellectual Property (IP) and Intellectual Asset (IA) Management, expected to arise more frequently as the Centre builds up its IP portfolio, business partnerships and knowledge of the international IP market.

2. Personnel and external services

Personnel

The personnel of the Centre, under the direction of the CEO, will provide support services to the administrative organs and most importantly it will be the contact point and will interact with inventors, service providers, other organizations and the broader public.

Two necessary functions however need to be covered by staff members. First, a ‘Managing Coordinator’ with a tertiary education degree in engineering, science, law, economics, or business administration should play a general multitasking role, managing everyday affairs like payments, setting appointments, outreach activities, communication, correspondence, reporting to the CEO etc. Then a ‘Coordinator’ would provide secretarial support and ensure a steady presence in the afternoons at the Centre’s premises to interact with the public and to facilitate access of inventors to cooperating

labs. These two employees could be hired from outside or be seconded by the sponsors.

In the long run and provided funding can be obtained, the Centre ideally should possess a pool of expertise on all aspects of the invention process (legal, technical, economic). At the start this is not feasible due to funding restrictions. But this can be mitigated by the functions of the Assessment Committee members and by establishing Strategic and Institutional Partnerships with other organizations undertaking similar activities such OBI, or the Praxi-Help Forward desk and the European Enterprise Network desk in Thessaloniki, or by partnering with other entities in a form of a cluster or inno-hub or incubator making use of their pooled expertise and services.

**External service providers**

Legal and accounting-tax services will be required during the founding and incorporation process and on a permanent basis thereafter, particularly in the first couple of years when actions, contracts and filings of various sorts will need to be drafted and worked out for the first time.

Regarding legal services and in particular the conclusion of legally binding agreements, we can foresee the following types which will need to include besides remuneration and working status also clauses about confidentiality and liability signed between the Centre and 1) members of the Board of Directors and the Assessment Committee; 2) its employees; 3) external providers of services to the Centre, including provisions; 4) the inventors and those making use of the Centre’s services; 5) MoUs with Strategic & Institutional Partners; and last but most important, 6) negotiate and sign agreements with inventors on the intellectual, revenue and other rights on the patents and the products of their economic exploitation and 7) co-sign licensing and other IPR contracts, if required, which produce revenue.

Accounting and tax-filing services will be required. Printing, graphic design and IT-technology services will also be required at various stages. At some instances small storage areas might be required as well as transportation of items and people. Banking services will be indispensable.
Professional advertising and marketing services will be required at some point. Also, some form of Human Resource Management related services and know-how will be required.

All these needs, depending on circumstances and trade-offs can:

A) Be outsourced to outside service providers at current market charges;

B) Be outsourced through HELPE or supporting Municipalities by being included in special discount deals they may have with service providers;

C) Be covered by HELPE or other sponsors’ parallel functions further lowering cost and making use of experience and in-house knowhow (i.e. certain HR services).
V. Industry Analysis

1. PESTEL Analysis

PESTEL analysis captures the main trends and realities of the external environment in which an enterprise operates, at the same time allotting them in categories such as Political, Economic, Social, Technical, Environmental, Legal (hence PESTEL). However, for the needs of this report, and since we do not anticipate much to fall under the category ‘Environmental’, we will exchange this E for the E of Educational. Educational issues normally are seen as part of the Social category or even perhaps the Technical one. But here we’d have more to say about the role of education so we have decided to treat it as a separate category.

Political

- Increased coordination and homogenization of filing systems, databases and translation capabilities.\(^{45}\)

- Steady surge in patent applications and grants. Rise in developing countries, surge in China.

- International authorities WIPO, OECD. Association of inventors IFIA but no Greek chapter.

• EU policy: Europe 2020 strategy => Innovation Union (I3S) => 34 points Action Plan, of which #14 & #22 about invention.

• EU policies mark turn from research to innovation. Invention seen as part of it.

• Greece - Political consensus, a least declaratory, starts forming on need for development and growth through innovation.

• Greece - Local authorities involved more in innovation & entrepreneurship initiatives. But invention remains still ‘below radar’.

Economic

• Greece - Continued economic crisis. Banks reluctant to issue loans. Illiquidity. A slump is observable in patent application from Greece.

• Greece - Low investment in R&D and skewed model with 50% undertaken by universities and only 28% by private sector.\(^{46}\)

• Not many large companies in Greece. Not investing enough on R&D. Not operating or using open innovation platforms. While SMEs are in dire straits.

• Interaction of enterprises with inventors could improve. In Goniadis’ thesis, 15% of inventors in Greece reported they invent for the needs of clients.

\(^{46}\) R&D is fundamental: More details and statistics on this subject in Appendix II
Social

- Social attitudes towards inventors. Seen as goofy, half-genius, half-eccentric. The so-called “psychological barrier to entry”.  

- Gender concepts: Inventor, just like engineer, is considered a ‘male’ occupation. Although the trend for female inventors is steadily increasing, there still is a significant gender imbalance. Women represent less than 10% of patent-holders.

- The average age of inventors demonstrates a decreasing trend.

- Becoming an inventor is not seen by parents and students as a career path. Same for ‘para-inventive’ jobs and specializations. Lack of awareness on their existence and career prospects.

- High unemployment especially among the young and those with degrees could, in theory, change attitudes towards invention as a career.

Technical

- Increasing technical complexity of inventions requires interdisciplinary approach to invention. Also raises costs. As a result large corporations dominate field.

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47 Farag Mousa, President of the International Federation of Inventors’ Associations, said: “Inventors in all countries face a psychological difficulty related to their image in the society. They live in a paradox. On one hand, they are proudly considered as the symbol of the genius and creativity of the nation. And on the other hand, being non-conformists, they are seen as marginal by this very society. Most people still today see the inventor as an absent-minded person, an eccentric or even as a crackpot!” F. Mousa, ‘Policies of Promoting Inventiveness and Technological Innovation’, Opening speech at the International Seminar on Innovation “From Concept to Market”, Porto Alegre, Brazil, December 1 - 2, 1997.


49 Ibid. T. Jung, O. Ejermo

50 I.e. see top-50 patent applicants at EPO in accompanying Excel folder [here](#).
• Trend to create Clusters, Incubators, pursue Industrial Symbiosis conditions and Cross-Sectional Innovation.51

• Key for patent application success in large markets to have trained, specialized patent attorneys (highly specialized engineers/scientists, trained in IP law and jurisprudence, certified in Europe by EPO through EQE exams. Less than 10 Greeks, some working abroad, have this certification.

Figure 6 - All Greek nationals ever certified to represent applicants in EPO proceedings (Source: EPO)

<table>
<thead>
<tr>
<th>Name</th>
<th>Nationality</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIAKOUNAKOS, Konstantinos</td>
<td>Greece</td>
<td>2013</td>
</tr>
<tr>
<td>GAGIDIS, Andreas</td>
<td>Greece</td>
<td>2009</td>
</tr>
<tr>
<td>GEORGELLIS, Georgios</td>
<td>Greece</td>
<td>2015</td>
</tr>
<tr>
<td>LIQUIMBIS, Alexandros</td>
<td>Greece</td>
<td>2013</td>
</tr>
<tr>
<td>MINAS, Nikolaos</td>
<td>Greece</td>
<td>2015</td>
</tr>
<tr>
<td>ROUKOUNAS, Dimitrios</td>
<td>Greece</td>
<td>2006</td>
</tr>
<tr>
<td>SAMUELEDIS, Emmanuel</td>
<td>Greece</td>
<td>1999</td>
</tr>
</tbody>
</table>

• Every field has its own characteristics. In Greece patent production is low but spreads across many fields. See Excel here.

Educational (instead of Environmental)

- Europe 2020 => Education & Training 2020 (ET2020) focuses on innovation, doesn’t mention invention.\(^{52}\)

- In most Universities and educational systems invention is not seen as a discipline, as a skill that can be taught. In some Engineering schools there are courses dedicated to the inventing process.\(^{53}\) Moreover, there are theories-schools of invention such as the Systematic Invention Theory (SIT), mainly taught in Israel, and the Soviet/Russian TRIZ theory.\(^{54}\)

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• Greek universities curricula don’t include inventiveness as a discipline/course in itself and there is not much taught about invention and patenting in connection with innovation & entrepreneurship. I.e. in AUTH there is an Innovation & Entrepreneurship class offered interdepartmentally for 19 School Departments by the AUTH I&E Unit (MoKE), but invention and patent issues are not part of the syllabus, neither offered as a separate course.\(^55\)

• Educational material for inventors is provided by private companies for a fee or for free by Inventor Associations, i.e. UIA.

• Greece has one of the highest ratios of students in disciplines considered key fields for invention an innovation - namely science, mathematics, computing, engineering, manufacturing and construction – at 31% of the overall student body in tertiary education, ranking second in Europe behind Finland (35.1%) and on par with Germany, way above the EU-27 mean of 24%.\(^56\)

• In Greece, around 50% of expenses on R&D come from tertiary education institutes.\(^57\)

Legal

• Patent litigation can affect the commercial prospects of a patent.\(^58\)

• Legal disputes, even the prospect of, can stave off inventors from innovating.\(^59\)

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\(^55\) Discussed at the Round Table Discussion: The Next Day of the University Innovation & Entrepreneurship Unit, organized by the International Hellenic University, 29 September 2009 <http://www.innovationdays.gr/index.php/day2-15>.


\(^57\) See Appendix II.

• EU Unitary Patent is expected to enter in force in the next 2-4 years. This will change the process at the EPO. European patents will immediately be in force in 25 countries. Many issues still open or unknown. 60

• EPO has internal process for resolving disputes, but later recourse to courts cannot be excluded. Stats by EPO indicate that 4.7% of all applications go through this process of which 1.5% is sustained and the patent recalled.

• On a national level, as indicated by a table compiled by EPI - the Institute of Professional Representatives before the European Patent Office - almost in all European countries, with the exception of Greece, Malta, Cyprus and San Marino, there is a system in place that certifies ‘patent professionals’ mainly among lawyers and engineers. This system, which usually requires a certifying authority, a method for listing and making known to the public those certified, a set of prerequisites, and a written and oral exam of some sorts, ensures higher quality of services and a minimum of tested knowledge and experience in the very technical, demanding and idiosyncratic field of patent law and practice. 61

Figure 8 – Snippet comparing Greek and Croatian standards for certifying patent professionals. (Source: See footnote on previous bullet point)

<table>
<thead>
<tr>
<th>Country</th>
<th>Professional Representation</th>
<th>Associations</th>
<th>Basic Requirements</th>
<th>Practice Required</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>GR</td>
<td>Only lawyers may practice</td>
<td>Presently no association, Unitary profession</td>
<td></td>
<td></td>
<td>No examination</td>
</tr>
<tr>
<td>HR</td>
<td>Patent Attorney on register maintained by the NPO</td>
<td>Hrvatska komora patentnih zastupnika i zastupnika za žigove [Croatian Chamber of Patent and Trademark Attorneys], Ullica gospa Vukovara 78 10000 Zagreb</td>
<td>- HR resident and Minimum university degree (Master) from natural or technical science, or Attorney-at-Law + examination passed before the NPO</td>
<td>Only if academic degree is different from technical or natural science; with minimum duration of 5 year practice in IP field, except in case of already chartered Attorney-at-Law</td>
<td>- The examination comprises a written and an oral part. The examination is organised and prepared by the NPO</td>
</tr>
</tbody>
</table>

59 This is the main thesis of the book by J. Bessen and M. Meurer, Patent Failure, 2008


2. Industry overview and potential partners

Industry analysis addresses the supply side of business. The ‘industry’ here includes people and organizations offering services to inventors and patent-holders in relation to A) the creative process of invention, B) the assetization of the products of invention through patenting, and C) the monetization/commercialization of this intangible asset, the patent.

Merely for practical reasons, a lengthier overview of all the types of organizations that deal with this industry on an international level has been moved to Appendix I. That overview pinpoints the main types of players in this industry starting from simpler activities and business models, identical or similar to the ones planned to be offered by the Centre, and moves to more complex ones that can be supported only in large and mature IP markets and only operate abroad. It’s useful to read that part, not only to make the comparison with the Greek IP scene but also because for the future operation of the Centre, knowing the international industry helps fulfil these goals:

- To understand the various ways value is added in the value chain of services to inventors and patent holders.
- To be aware of existing services and business models that could inspire ideas for the Centre in the future.
- To look for opportunities for partnerships and ‘mentorships’ for the new Centre.
- To be in a position to better guide inventors in making use of material, resources, and services offered abroad when the time comes to take their patented inventions there.

Focusing on the ‘industry’, as defined above, in Greece and Thessaloniki we see there are many missing links in a small and underdeveloped market. The PESTEL analysis already made clear how the Greek invention scene, in particular outside the region of Attica, lags far behind that of other developed, even developing, countries. In terms of existing human capital in supporting professions (certified patent attorneys, lawyers, searchers, IP managers etc.) there is a general and almost complete lack of.
It’s positive that the central and most crucial organization in the industry, OBI, by all indications is operating on international standards. They have highly-trained personnel, but OBI has limitations in supporting inventors, since these are also the Patent Examiners and there would be conflict of interest.

A good working relationship between the Centre and OBI is an absolute imperative. There is no reason why that shouldn’t be so. OBI only stands to gain from the operation of the Centre, both directly (€50,000 to €60,000 are budgeted for paying OBI fees), occasionally (Centre could support events) and in general (Centre promotes invention).

As for the other organizations it’s positive that, as identified in the section about Strategy, rivalry is expected to be low and actually creating partnerships and cooperation is very likely. The chart below captures how:

Figure 9 – Table of potential partners and co-operation fields in Thessaloniki

<table>
<thead>
<tr>
<th>Entity</th>
<th>Mission</th>
<th>Potential for co-operation with the Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBI Hellenic Industrial Property Organization</td>
<td>Exclusive authority on granting patents in Greece. Outreach.</td>
<td>1. Events, Seminars – reach out to inventors 2. Exchange knowledge, information 3. Provide material to Centre for dissemination 4. Info and outreach hub</td>
</tr>
<tr>
<td>Universities AUTH TEITH PA.MAK. IHU</td>
<td>Education &amp; Research - Research Committee - Technology Transfer office - I&amp;E units (MoKEL)</td>
<td>1. Events, Seminars – reach out to students &amp; researchers 2. Exchange knowledge 3. Include invention as course 4. Access to labs &amp; equipment 5. Access to libraries 6. Info and outreach hub 7. Students for internships and projects</td>
</tr>
<tr>
<td>Technological Park Thessaloniki</td>
<td></td>
<td>1. Events, Seminars – reach out to students &amp; kids 2. Exchange knowledge 3. Info and outreach hub</td>
</tr>
<tr>
<td>EEN European Enterprises Network</td>
<td>Supports SMEs (free-of-charge, EU funded) through a network in 50 countries</td>
<td>1. Events, Seminars – reach out to SMEs 2. Help inventors at pre-assessment phase with reports on potential markets/clients 3. Help inventors &amp; Centre at post-assessment phase with reports on potential markets/clients</td>
</tr>
<tr>
<td>Proxi Help Forward!</td>
<td>Focal point for HORIZON 2020</td>
<td>1. Events, Seminars, Outreach 2. Assist inventors with funding from EU programs 3. Assist Centre with funding from EU programs</td>
</tr>
<tr>
<td>VETH SMEs business association</td>
<td></td>
<td>1. Events, Seminars – reach out to SMEs 2. Help inventors at pre-assessment phase with reports on potential markets/clients 3. Help inventors &amp; Centre at post-assessment phase with reports on potential markets/clients</td>
</tr>
<tr>
<td>TEE Engineers' professional association</td>
<td></td>
<td>1. Events, Seminars – reach out to engineers &amp; professionals 2. Exchange knowledge 3. Access to libraries 4. Info and outreach hub 5. Locate</td>
</tr>
</tbody>
</table>
VI. Market Analysis

1. National and local patent generation in perspective

Market analysis focuses on the demand side. In this case demand has to do with the number of people/inventors that would need the services of the Centre. The main questions to be answered here are:

a) How is Greece doing in terms of patent generation in comparison with other countries or regions? Is there a need to catch up? If yes, that adds to the need to take initiatives like this one.

b) Did the crisis cause a slump in patent applications? If it did that’s an additional reason to establish the Centre

c) How many inventions or patent applications approximately come from Thessaloniki or Central Macedonia each year? This will help estimate whether the amounts budgeted and the number of patents that will be funded can make a difference and have a meaningful impact.

In 2013 there were 9,450,000 patents in force worldwide, and 2,567,900 patent applications were submitted globally. Of those 352,184 (13.7%) were filed in Europe.

Figure 10 – Shares by region of the 2,567,900 patent applications globally in 2013 (Source: WIPO)
Since much of the interest is to see how Greece is faring comparing to other countries we will use EPO data and focus on the number of patents submitted to the EPO. The entire set of data with patent applications by number, per million of population etc. can be found at the accompanying Excel folder, [here](#).

The table below includes the number of patent applications to the EPO per million of population of Greece and a selection of countries with similar population. It’s obvious immediately that Greek patent productivity is very, very low compared to most other countries. In fact in this table only Bulgaria has lower numbers. This observation is interesting to keep and use if a proposal is ever made for participation in an Interreg Greece + Bulgaria project.

Table: number of patent applications to the EPO per million of population of Greece and a selected group of countries with similar population

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EU-28</td>
<td>107.9</td>
<td>112.5</td>
<td>115.4</td>
<td>117.3</td>
<td>117.1</td>
<td>113.4</td>
<td>112.4</td>
<td>111.7</td>
<td>112.7</td>
<td>112.6</td>
</tr>
<tr>
<td>Belgium</td>
<td>131.6</td>
<td>145.9</td>
<td>144.8</td>
<td>146.4</td>
<td>147.7</td>
<td>139.7</td>
<td>130.3</td>
<td>138.5</td>
<td>136.5</td>
<td>135.7</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>2.7</td>
<td>2.3</td>
<td>3.0</td>
<td>3.5</td>
<td>1.6</td>
<td>2.5</td>
<td>2.1</td>
<td>2.3</td>
<td>3.6</td>
<td>4.0</td>
</tr>
<tr>
<td>Czech Rep.</td>
<td>10.9</td>
<td>11.0</td>
<td>10.6</td>
<td>14.9</td>
<td>18.4</td>
<td>20.1</td>
<td>16.8</td>
<td>18.3</td>
<td>21.0</td>
<td>21.3</td>
</tr>
<tr>
<td>Denmark</td>
<td>206.3</td>
<td>205.7</td>
<td>219.9</td>
<td>209.8</td>
<td>238.1</td>
<td>236.1</td>
<td>215.8</td>
<td>229.2</td>
<td>261.1</td>
<td>269.6</td>
</tr>
<tr>
<td>Ireland</td>
<td>57.2</td>
<td>67.6</td>
<td>67.0</td>
<td>69.6</td>
<td>75.4</td>
<td>73.4</td>
<td>75.5</td>
<td>68.8</td>
<td>80.4</td>
<td>83.2</td>
</tr>
<tr>
<td>Greece</td>
<td>7.7</td>
<td>5.9</td>
<td>10.0</td>
<td>9.6</td>
<td>9.3</td>
<td>8.4</td>
<td>8.3</td>
<td>5.8</td>
<td>7.6</td>
<td>7.3</td>
</tr>
<tr>
<td>Hungary</td>
<td>13.1</td>
<td>15.2</td>
<td>13.4</td>
<td>16.3</td>
<td>19.0</td>
<td>17.9</td>
<td>18.4</td>
<td>19.3</td>
<td>21.8</td>
<td>23.2</td>
</tr>
<tr>
<td>Austria</td>
<td>171.6</td>
<td>177.7</td>
<td>185.7</td>
<td>211.5</td>
<td>207.3</td>
<td>195.2</td>
<td>203.5</td>
<td>209.4</td>
<td>213.2</td>
<td>218.8</td>
</tr>
<tr>
<td>Portugal</td>
<td>6.4</td>
<td>5.6</td>
<td>11.7</td>
<td>10.1</td>
<td>11.7</td>
<td>10.8</td>
<td>8.7</td>
<td>9.0</td>
<td>11.0</td>
<td>11.1</td>
</tr>
<tr>
<td>Finland</td>
<td>248.5</td>
<td>269.2</td>
<td>255.0</td>
<td>256.1</td>
<td>240.9</td>
<td>237.4</td>
<td>246.0</td>
<td>257.5</td>
<td>262.9</td>
<td>271.2</td>
</tr>
<tr>
<td>Sweden</td>
<td>229.9</td>
<td>249.9</td>
<td>270.3</td>
<td>290.6</td>
<td>306.4</td>
<td>300.9</td>
<td>280.5</td>
<td>297.3</td>
<td>297.3</td>
<td>296.5</td>
</tr>
<tr>
<td>Switzerland</td>
<td>382.0</td>
<td>417.1</td>
<td>433.4</td>
<td>431.4</td>
<td>434.2</td>
<td>414.2</td>
<td>404.3</td>
<td>425.3</td>
<td>422.9</td>
<td>426.1</td>
</tr>
<tr>
<td>Israel</td>
<td>160.6</td>
<td>181.0</td>
<td>206.0</td>
<td>188.5</td>
<td>175.1</td>
<td>169.7</td>
<td>153.5</td>
<td>149.7</td>
<td>142.0</td>
<td>133.6</td>
</tr>
<tr>
<td>N. Zealand</td>
<td>54.5</td>
<td>47.0</td>
<td>40.8</td>
<td>43.7</td>
<td>40.2</td>
<td>37.6</td>
<td>35.1</td>
<td>36.1</td>
<td>38.2</td>
<td>38.5</td>
</tr>
</tbody>
</table>

Going to the second question, on the impact of the economic crisis, the graph below shows that the trend is definitely decreasing after the crisis hit, though not in a dramatic manner.
Figure 12 – Graph shows number of applications from Greece to the EPO in 2003-2012 by number and per million of population & active population (Source: EPO)

As for how many patent applications before the EPO come from the region of Central Macedonia the numbers for the period 2004-2011 are given by the table below. For the full table with all the regions of Europe, starting from 2001, see accompanying Excel folder here.

Figure 13 – Patent applicants to the EPO with addresses in regions of Greece (Source: EPO database) – Decimals apply because one application can be filed by many inventors

In other words, the average for Central Macedonia region is 8.34 applicants per year to the EPO. By setting out to cover 3 patent application process costs, the Centre covers the equivalent of approximately 36% of inventors from the Central Macedonia region who submit patent applications to the EPO in a year. This is by all means a sig-
nificant contribution to the local community of inventors. Furthermore, it means that it will likely have an impact in the local ‘market’ therefore it’s also prone for PR promotion by the Centre and its main sponsor.

Also, coming patents granted in Greece, the doctoral thesis of I. Goniadis states that from the 2890 individual and 422 legal persons that held a patent in Greece in the period 1995-2005, 373 and 55 respectively or approximately 13% for both categories were based in the Thessaloniki prefecture.⁶²

According to the OBI 2014 Annual Report (see snippet in Appendix VIII) in 2014 there were 651 patent applications to OBI from Greece. If approximately 10%-13% comes from Thessaloniki (65-70) this means that with the 10 patent applications that the Centre funds, it will cover almost 15% of the inventions coming from Thessaloniki and submitted to OBI annually.

2. Addressing the needs of local inventors and patent holders

The Centre and its services are designed having in mind the typical Greek inventor who in 90% of cases is a natural person as pointed out also by Dr. Dimakos of OBI. First the characteristics of this group will be highlighted and then another distinct target group will be discussed, the Small- and Medium-sized Enterprise (SME) which opens up prospects for tapping into EU funding sources.

The thesis by Goniadis highlights the profile of Greek patent-holders.

It finds that 34.10% used the patent in their own business or to start a new one. Then 11.29% transferred (sold or licensed) the patent, a third of which did so to fund new patents, another third to pursue research and another third they needed the money. Then 54.61% neither commercialized nor monetized their patents. This group

---

⁶² This 13% is higher than the 9.74% that population of the Thessaloniki prefecture constitutes in relation to the national population. This is probably the result of the phenomenon of agglomeration of activity in metropolitan areas.
had the option to identify more than one reasons for that, and the answers are telling (% rounded to integers):

92% said that existing infrastructure doesn’t make it easy for patent holders to utilize their patent;

75% identified the lack of supporting mechanisms as main reason for not utilizing their patent;

70% the lack of funding;

51% felt that entrepreneurship was not recognized;

50% found the market immature;

47% felt that legal protection of patents wasn’t adequate enough;

39% said that technology transfer was challenging;

35% gave answers on the lack of tax and other motives to start a business.

16% -interestingly enough- claimed that they are content with just being granted the patent.

These results, particularly the three highest rating answers, tend to confirm one of the main premises of the whole idea of establishing a Centre covering the entire range of inventive activities, including funding.

Regarding the sources and motives of their inventive inspiration and activity (one answer allowed) 42% identified personal study and research; 15% the needs of clients; 10% entrepreneurial activity; 9% by studying completion and 7% academic research.  

Among enterprises, when asked whether they had potentially patentable solutions which never filed and why, 48% answered positively and among those 30% said they didn’t do so because they cannot be commercialized; 26% because they can use it

---

better with their own technology; 23% keeps them as trade secret and 15% to avoid legal disputes.\textsuperscript{64}

This brings the discussion to Small- and Medium-sized Enterprises. According to Commission Recommendation 2003/361/EC an SME is engaged in an economic activity and has fewer than 250 employees and an annual turnover of no more than €50 million and/or an annual balance sheet of no more than €43 million.

Still SMEs are considered the backbone not only of Greek but of the European economy. A Report for the European Commission, from where the following table is taken, is citing Eurostat data that find that 99.8% of all enterprises in Europe are SMEs, they employ 2/3 of workforce, and account for 57.6% of the value added.\textsuperscript{65}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{enterprises-employment.png}
\caption{Enterprises, Employment & Gross Value-Added in the EU in 2012 (Source: Eurostat)}
\end{figure}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|c|}
\hline
 & Micro & Small & Medium & SMEs & Large & Total \\
\hline
\textbf{Number of Enterprises} & & & & & & \\
\textbf{Number} & 18,782,480 & 1,349,730 & 222,628 & \textbf{20,355,839} & 43,454 & 20,399,291 \\
\textbf{\%} & 92.1\% & 5.6\% & 1.1\% & \textbf{99.8\%} & 0.2\% & 100\% \\
\hline
\textbf{Employment} & & & & & & \\
\textbf{Number} & 37,494,456 & 26,704,352 & 22,615,906 & \textbf{86,814,717} & 43,787,013 & 130,601,730 \\
\textbf{\%} & 28.7\% & 20.5\% & 17.3\% & \textbf{66.5\%} & 33.5\% & 100\% \\
\hline
\textbf{Value Added at Factor Costs} & & & & & & \\
\textbf{Million Euros} & 1.242,724 & 1.075,383 & 1.076,270 & \textbf{3,395,383} & 2,495,926, & 5,891,309 \\
\textbf{\%} & 21.1\% & 18.3\% & 18.3\% & \textbf{57.6\%} & 42.4\% & 100\% \\
\hline
\textbf{Source: Eurostat, National Statistical Offices, DIW, DIW econ, London Economics}
\end{tabular}
\end{table}

As mentioned in the literary review, SMEs are found to be more productive than large corporations in terms of value for money spent in R&D.\textsuperscript{66} An SME that for its own needs develops a novel solution which has industrial application can in theory patent this and perhaps profit. They may of course not do so for other reasons some of which may be rational business choices. But often this is because they don’t have the

\textsuperscript{64} Ibid., p. 163-167

\textsuperscript{65} D. Gagliardi et al., A Recovery on the Horizon? Final Report, Annual Report on SMEs for the European Commission, October 2013, p. 10

resources or the vision to file for patents or they may be holding a patent but take no action to put it to work, to pursue its valorization. For that, even though they represent 99.8% of all companies, patent applications filed by SMEs at the EPO represent only 30%, and that count together with individual inventors.

Figure 15 – Shares in patent applications at the EPO (Source: EPO)

A special report by the Commission’s Intellectual Property Rights Helpdesk describes these problems and proposes a strategy for ‘patent aggregation’ focusing on new funding schemes for patents and the creation of patent pools.67

It’s important for the Centre to work with SMEs in Thessaloniki and provide directly to SMEs services where possible. In Thessaloniki SMEs are going through some very difficult times. They run their business on the absolutely necessary personnel, and have neither the time, nor the expertise, nor the capital to engage in other activities and undertakings at this point as confirmed also by Mr Delichatsios of VETH.

The emphasis that the EU places on SMEs, in the context of how to fund development, and the fact that this is now set as priority in programmes such as COSME and Horizon2020 opens an opportunity for the Centre to receive some funding, provided it puts forward a well-founded proposal.

VII. Service Plan

Most types of services are rather simple and straightforward to implement, i.e. organizing events/seminars, facilitating access to books and material. Offering technological brokering services on a local level, probably through the development of an online platform, is a more demanding process. But it is not a priority and it will be undertaken only upon obtaining external funding and after conducting a focused market research.

The service plan mapped out in the table below is about the core services of: covering expenses for preliminary patent search, providing access to lab facilities and equipment, providing funding to inventors for a share in future earnings and working with inventors to commercialize or monetize their patents. These are bundled together into a single service process with many steps and layers of tasks and responsibilities.

The service plan for these core services and functions of the Centre is captured in the Service Plan table:

The columns from left to right show: A) The order of the steps in the process; B) what each step is about; C) who initiates it; D) who handles it (who needs to act) from the part of the Centre; E) what kind of actions need to be taken; F) what the Centre has to dispense or expend; G) the time required; H) prerequisite for this step to take place; I) if this step is a prerequisite for others.
<table>
<thead>
<tr>
<th>#</th>
<th>Service, Activity</th>
<th>Initiator</th>
<th>Handlers</th>
<th>Tasks</th>
<th>Provide or Fund</th>
<th>Time Est.</th>
<th>Requires</th>
<th>Enables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Public Information</td>
<td>Public or Centre</td>
<td>C, MC</td>
<td>Provide info &amp; material</td>
<td>Print material</td>
<td>1-2 D</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Apply for initial support</td>
<td>Public (=&gt;applicant - hence ApI)</td>
<td>C, MC</td>
<td>Receive/File applications</td>
<td>Form (print or online)</td>
<td>1-2 D</td>
<td>Fill in form. State intention to patent, general field, credentials</td>
<td>4+5 or 3 (if insufficient credentials or doubts)</td>
</tr>
<tr>
<td>3</td>
<td>Optional Screening Process</td>
<td>MC invites ApI to meet MC/ACM/(CEO)</td>
<td>Interview applicants to assess credibility</td>
<td>-</td>
<td>1-3 W</td>
<td>4+5 or rejected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Conduct Preliminary Search at OBI</td>
<td>ApI</td>
<td>MC (CEO)</td>
<td>ApI deals w OBI, pays fee. =&gt; Centre reimburses.</td>
<td>€60-120 (up to $240 w CEO approval)</td>
<td>1-2 W</td>
<td>Apl initiates</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Use lab facilities (EPAL or others)</td>
<td>ApI</td>
<td>C, MC, EPAL, (CEO/AC)</td>
<td>Coordinate &amp; Supervise use of labs</td>
<td>Access to Facility, Equipment.</td>
<td>&lt; 3M (extend-CEO/AC approval)</td>
<td>Apl - 1) signs agreement of responsible lab use - 2) covers material expenses.</td>
<td>Material expenses, Api reimbursed up to €2000 upon selection OR earlier with CEO approval</td>
</tr>
<tr>
<td>6</td>
<td>Apply to participate in assessment process to receive funding</td>
<td>ApI</td>
<td>C, MC</td>
<td>Receive/File applications then send to AC</td>
<td>Form (print or online)</td>
<td>1-2 D</td>
<td>Preliminary Search &amp; prototype shows promise, intent to file patent</td>
<td>7 &amp; 8</td>
</tr>
</tbody>
</table>

(6+7 simultaneous if patent application been filed @ OBI)
<table>
<thead>
<tr>
<th>#</th>
<th>Service, Activity</th>
<th>Initiator</th>
<th>Handlers</th>
<th>Tasks</th>
<th>Provide or Fund</th>
<th>Time Est.</th>
<th>Requires</th>
<th>Enables</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Sign Participation &amp; Confidentiality Agreement</td>
<td>Apl</td>
<td>Centre Reps</td>
<td>Sign and file agreement</td>
<td></td>
<td>1W</td>
<td>Proof of filing for patent w OBI &amp; dis. close technical info (patent-claims) upon signature</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>Prepare Assessment Process</td>
<td>C, MC</td>
<td>AC</td>
<td>Send folder AC to assign Rapporteurs</td>
<td>Mail hard copy</td>
<td>1 W</td>
<td>Completion of step #6 at least</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Improve application folder</td>
<td>Apl</td>
<td>C, MC</td>
<td>Send folder to ACM-Rapporteur</td>
<td>Mail hard copy</td>
<td></td>
<td>i.e. provide EEN reports on market opportunities abroad</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Technical and Economic Assessment</td>
<td>ACM Rapporteur</td>
<td>AC</td>
<td>Assess patents, 10 picks &amp; 10 runner-ups</td>
<td>Compensation to AC members</td>
<td>Every 6 months</td>
<td>Receive Rapporteur Report/Opinion</td>
<td>11</td>
</tr>
<tr>
<td>11</td>
<td>Negotiate contracts on % on IP rights &amp; partnership</td>
<td>Apl picked</td>
<td>Centre Reps</td>
<td></td>
<td></td>
<td>1-3 M</td>
<td>If no deal, call runner-ups</td>
<td>12</td>
</tr>
<tr>
<td>12</td>
<td>Approve selection process &amp; contracts</td>
<td>CEO</td>
<td>BoD</td>
<td>Convene BoD</td>
<td>Compensation to BoD members</td>
<td>1-2 D</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>13</td>
<td>Sign contracts on % on IP rights &amp; partnership</td>
<td>Apl</td>
<td>Centre Reps</td>
<td>Lawyer fees (covering negotiations too)</td>
<td></td>
<td>~1 M</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>14</td>
<td>Make payments and reimbursements</td>
<td>Apl</td>
<td>CFO, EC</td>
<td>Clear reimbursements &amp; other payments</td>
<td>Up to €5,600/patent+ Transaction fees</td>
<td>~1 M</td>
<td>13 agreement signed &amp; approved by BoD</td>
<td></td>
</tr>
</tbody>
</table>
Notes on aspects of the Service Plan Table

Confidentiality and liability issues - Steps 6&7 are designed to address confidentiality and liability issues. In essence the Centre should be cautious when asking and receiving information on the patent idea and specifics at the early phases, when the main idea and characteristics of the invention have not been made public and a patent filing priority date has not been secured yet.
These issues deserve special attention and were pointed out by Professor Kaissis of IHU and Ms Gaganatsou of OBI in discussions held with the author. If the Centre is to offer consulting and other services, liability could become an issue with serious repercussions. The Centre would be adversely affected by the expenses and workload incurred by a legal dispute, be it a trial or an extra judicial settlement process, even when the conclusion in the end was to be a positive one.

For that, it is important to shield to the extent possible the Centre, the members of the Board and the employees from future legal action against them. This can be achieved by choosing the right type of legal personality, by designing services in a manner that minimizes chances for misunderstandings and complications i.e. by refraining from asking for too many details on the invention at the early stages. Also, contracts will be drafted with the inclusion of clauses that address these issues.

Assessment -- Steps 8-10 are the very heart of the whole process. It is the assessment of inventions, performed by the Assessment Committee. There are many parameters that must be evaluated. Specialized formats and techniques to evaluate the commercialization prospects of an invention exist. A widely acknowledged evaluation format is the one developed by Gerald Udell and used by the Innovation Institute (I²), for a considerable fee. The format’s 8th edition (PIES-VIII) uses 41 criteria grouped in five categories (social, business risk, demand analysis, market acceptance, competitive, experience & science). Also, as mentioned under ‘Managing Duality’, it’s not only the inventions that should be evaluated but the inventors too in terms of reliability and on whether they possess traits and show promise for becoming entrepreneurs.

68 Innovation Institute’s website: http://www.wini2.com/
VIII. Marketing Plan

1. Target audiences & Messages to communicate

As mentioned under ‘Service Description’, there are three main circles of target audiences. They can be visualized as concentric cycles with the Thessaloniki Invention Centre in the center.

The first circle consists of practicing inventors and patent professionals. The message to them is that they can work with the Centre, making use of its services, to achieve their goals of obtaining a patent title and then building a business around it or monetizing it by selling or licensing their IP rights.

The second circle includes people and companies with the potential to become inventors and patent-holders, but who are not considering this prospect as a career or as a business move or they are hesitant for any reason at all to go through the patenting process. The message to them is that it is worth looking into this prospect and the Centre will be there along the way to support them.

The third circle is the broader audience, the public. They can be informed and educated about invention, and be encouraged to keep it in mind as a possible future career or business choice.

In other words the marketing message strategy adopts the cognitive approach appealing to the rational thinking of the audience. The objective is to raise awareness on business, education and career prospects in invention and on the types of services offered by the Centre, so as to attract these audiences closer to do actual work on invention, thus increasing the overall inventive activity and output in Thessaloniki. As more people get more interested and more widely involved with inventive activities, chances are they will be demanding more of the services of the Centre creating a pull effect regarding demand of services.\(^{70}\)

2. Communication Strategy & Communication Channels

The communication strategy aims at reaching out to these different target audiences. A challenge to overcome is that the prime audience of active inventors in and around Thessaloniki is probably a loosely connected group. There is no official register or professional association. They will have to be sought out perhaps one by one looking into patent registers.

This realization defines to a great extent the types of communication channels and the marketing communication mix. Personal communication channels will be employed such as PR marketing, based primarily on organizing events and seminars and by approaching key people. Once a year, a ceremony will be held to present and honour the inventions selected by the Assessment Committee. Emphasis should be placed in direct marketing whereby identified individuals will be approached and informed directly by the Managing Coordinator in person.
The above activities will hopefully induce a robust and indispensable marketing tool to come into play: word-of-mouth. The main marketing asset of the Centre will be its reputation among members of the technical, inventive and innovative scene. Reputation is built over time. The fact that the Centre is there to cover expenses, like the preliminary search fees, can become an effective tool to establish quickly and more broadly early partnerships.

Non-personal communications channels to be employed include advertising in local print media and publications of business and professional associations. A website will be maintained. Presence on social media such as Facebook, Twitter and LinkedIn engaging in active interaction with accounts from the international invention scene is strongly advised. Supporting organizations can include relevant webpages and links to these accounts of the Centre. Google Ads which target internet users based on location and online-search-history will be employed. Oral announcements should be made and leaflets disseminated at key points such as technical schools and universities or relevant business associations.

Another option to consider is sponsorships for teams of students participating in national or international contests related to invention. Access to nation-wide print, broadcast and online media could be achieved through a form of buzz-marketing, for example if there was an interesting and outstanding story to promote such as an international distinction by young inventors.\(^7\)

For some of these activities, such as running the Google Ads campaign, the services of a PR and Marketing office may be required.

3. Branding & Budget

Brand positioning will be about underlining benefit for the client. The brand should evoke notions associated with invention: technical novelty, functionality, cutting-edge technology, knowledge. These concepts are compatible with the HELPE established brand. The Centre stands only to gain in recognition and clout from including elements of the HELPE brand in its own branding, starting with including that the Centre is supported by HELPE in all mentions of its official name, logo, letterheads and print material. However, this will not be a brand extension for HELPE.\(^\text{72}\)

The promotion and communication budget is €20,000 annually. It will be administered according to the ‘affordable method’ which requires conservative spending.\(^\text{73}\) Half of this budget will be administered by PR professionals, including their fee.

<table>
<thead>
<tr>
<th>Marketing budget breakdown</th>
<th>Budget (in €)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td></td>
</tr>
<tr>
<td>Open amount</td>
<td>3,000</td>
</tr>
<tr>
<td>Ads in local print media</td>
<td>4,000</td>
</tr>
<tr>
<td>Leaflets</td>
<td>3,000</td>
</tr>
<tr>
<td>PR office fee (outside services)</td>
<td>2,000</td>
</tr>
<tr>
<td>Google Ads (managed by PR office)</td>
<td>4,000</td>
</tr>
<tr>
<td>Amount for PR office to optimize use</td>
<td>4,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>20,000</strong></td>
</tr>
</tbody>
</table>

---


\(^\text{73}\) The opposite take here would be the objective-and-task method that sets goals first and estimates budget accordingly to meet these standards. The other two main methods of communication budgeting (percentage-of-sales and competitive-parity) are by design not applicable in this case.
IX. Financial Plan

1. Sources of financing

Potential sources of finance for the Centre include:

A) Funding from HELPE

This will be the initial and the main source of funding. At the start of the venture this will be the only source of finance too. It is up to HELPE management to decide whether and to what extent other sponsors could join as shareholders.

B) Subsidies, grants and funds from EU & domestic programmes

This is a potential and auxiliary source of funding. First, the Centre being itself an SME directly involved with services and activities that foster economic development, innovation and entrepreneurship, it could apply for funding from this kind of sources. Such funds will to cover for specific events, such as the ones with educational character, or for more ambitious and demanding projects, such as launching an open innovation platform to connect industry and inventors allowing for the first time in Greece the introduction of technology brokering activities.

Second, the Centre can conduct and assist partnering patent-holders and institutional partners to apply for funding to these programmes for the needs of their patent commercialization efforts from which the Centre, holding a stake, stands also to gain. Innovative SMEs can get a €50,000 grant for proof-of-concept research and from 0.5 to 2.5 million Euros for ready made products and services.\(^74\)

\(^{74}\) EU Commission, Research & Innovation, SME Participation page


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Such EU programmes include NSRF (ESPA); Horizon 2020 (research oriented) of which focal point in Thessaloniki is the ‘Praxis-Help Forward!’ desk; COSME (SME support) etc.\textsuperscript{75}

Also there are the Interreg Greece-Bulgaria programmes, in particular the education oriented ‘Enter+BG’ and the competitiveness oriented ‘Smart Specialization’ programmes.\textsuperscript{76} The Evosmos-Kordelio Municipality which will be involved in the work of the Centre participates in the latter program playing also a coordinating role among other local municipalities.

C) \textit{Retained Earnings}

The great challenge of creating revenue from patents has been addressed earlier and it will be elaborated further shortly. For all ventures, for-profit and non-profit alike, this is considered as the preferred and most secure source of finance, when it can be attained.

D) \textit{Bank loans} (only as an exception)

The Centre, being in essence an NPO with no steady stream of own revenue, in principle will not draw capital through loans. After all, since there will be no assets of value to offer as collateral, other than the stakes in the IP rights of the patented inventions, the only way to do that would be with HELPE acting as guarantor.

Therefore the statute should impose restrictions on raising capital through debt. Borrowing could be allowed only in the exceptional case when a patent has been generating a significant and steady flow of revenue and the principal patent holder (the inventor) seeks additional funding to expand the exploitation of the patent and offers the option for the Centre to increase its stake in the patent. Even then a decision from the BoD will be required as well as the approval by HELPE management.

\textsuperscript{75} See website dedicated to COSME at the EU Commission’s info-portal ‘Europa’

\textsuperscript{76} Overview of the Entre+BG program here <http://www.greece-bulgaria.eu/index.php?option=com_projects&view=item&id=25&Itemid=8>
2. Cost Estimates

Before presenting the cost estimates, some cost-reduction best practices are listed here:

- Make use, when feasible, of services and functions of the HELPE-Group and of other supporting organizations such as Municipal authorities.

- Also explore the possibility of making use of special deals and offers they may have in place with service providers such as phone & internet providers, banking services, advertising firms, graphic designers, hotels, airlines etc.

- Develop overtime steady business relationships with patent professionals abroad and secure better service fees for patent applicants and holders cooperating with the Centre.

- Cost-sharing and resource-pooling with strategic-institutional partners (i.e. OBI, EEN, Universities etc.) in co-organizing events, activities, seminars and other actions.

- Find other sponsors for organizing such activities for direct (cash) or functional sponsorships (i.e. communications sponsors).

In the Profit and Loss (PnL) and Balance Sheet financial statements, laid out in the accompanying Excel document, the scenario is that during the first 1-2 years there will only losses, in year 3 some income will start flowing in through a timid patent revenue and some funding from an outside programme, and by year 5 the Centre will manage for the first time to balance expenditure with income, a half covered by outside sources and another half by patent revenue.\(^{77}\)

Below are the tables with the cost breakdown for the Centre. In the first couple of years, and in the worst case scenario in all five years, this will also be the PnL statement. [For the full table of fees at EPO see here, and for OBI here ]

\(^{77}\) See the 5 year Profit and Loss (PnL) financial statement in the accompanying Excel Folder here.

See the 5 year Balance Sheet in the accompanying Excel Folder here.
### A. Expenses per patent application at the European Patent Office (EPO)

<table>
<thead>
<tr>
<th>Expense Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment Committee folder handling costs</td>
<td>500</td>
</tr>
<tr>
<td>Reimbursement for development material &amp; testing costs</td>
<td>2,000</td>
</tr>
<tr>
<td>Patent application filing fee</td>
<td>120</td>
</tr>
<tr>
<td>Examination fee</td>
<td>1,620</td>
</tr>
<tr>
<td>International search fee</td>
<td>1,875</td>
</tr>
<tr>
<td>Renewal fees for 3(^{rd}) through 6(^{th}) year</td>
<td>2,895</td>
</tr>
<tr>
<td>Various other fees (print, certification, copies etc. + contingency)((+\text{round up}))</td>
<td>2,090</td>
</tr>
<tr>
<td>Patent attorney and Patent Lawyer expenses (up to)</td>
<td>10,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>21,100</strong></td>
</tr>
</tbody>
</table>

### B. Expenses per patent filed at the Hellenic Industrial Property Organization (O.B.I.)

<table>
<thead>
<tr>
<th>Expense Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary search (Proerevna)(\text{(early on)})</td>
<td>100</td>
</tr>
<tr>
<td>Assessment Committee folder handling costs</td>
<td>500</td>
</tr>
<tr>
<td>Reimbursement for development material &amp; testing costs</td>
<td>2,500</td>
</tr>
<tr>
<td>Patent filing fee</td>
<td>150</td>
</tr>
<tr>
<td>Fee for Search Report with Written Opinion</td>
<td>800</td>
</tr>
<tr>
<td>Various other fees and expenses</td>
<td>1,310</td>
</tr>
<tr>
<td>Renewal fees for 3(^{rd}) through 6(^{th}) year</td>
<td>240</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>5,600</strong></td>
</tr>
</tbody>
</table>
C. Base Planning

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 patents filed at EPO-level</td>
<td>€63,300</td>
</tr>
<tr>
<td>10 patents filed in Greece (OBI)</td>
<td>€56,000</td>
</tr>
<tr>
<td><strong>Expenses for patent funding</strong></td>
<td><strong>€119,300</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal Entity Incorporation (First year)</td>
<td>€30,000</td>
</tr>
<tr>
<td>Cost Contingency in reserve (thereafter)</td>
<td></td>
</tr>
<tr>
<td>Personnel Expenses</td>
<td>€45,000</td>
</tr>
<tr>
<td>School &amp; Lab maintenance expenses</td>
<td>€20,000</td>
</tr>
<tr>
<td>Lab coordinator’s expenses</td>
<td>€10,000</td>
</tr>
<tr>
<td>External Services (Lawyer, Accountant, Banking fees etc.)</td>
<td>€25,000</td>
</tr>
<tr>
<td>Board &amp; Committee compensation &amp; expenses</td>
<td>€15,000</td>
</tr>
<tr>
<td>Communication &amp; Marketing Budget</td>
<td>€20,000</td>
</tr>
<tr>
<td>Organize Events, Seminars &amp; Actions</td>
<td>€20,000</td>
</tr>
<tr>
<td>Preliminary Research budget</td>
<td>€6,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>€191,000</strong></td>
</tr>
</tbody>
</table>

**Annual Fixed Operational Costs**                                           **€ 191,000**

**Annual Costs for patent funding**                                          **€ 119,300**

**TOTAL Annual Budget**                                                       **€ 310,300**
3. Revenue Prospects

In the literature review it was explained why forecasting revenues in advance for yet unknown patents, with yet unknown characteristics and with unknown still the percentages of stakes held in these patent-rights is by all means a futile exercise and the only applicable valuation method is the cost method.

Moreover, it is reminded that average commercial success rate, as explained in literature review, is reported to be very low; most agree below 5% in a mature market like the United States. Still, attempting an approximation is useful to give a sense of the challenges ahead.

Here is a case where an organization:

A) is running on a stable annual budget every year;

B) has only this one possible source of revenue (initially), where it is actually not selling anything, but instead it invests, it ‘buys’ stakes in IP rights;

C) Even if we consider funded patents to be a form of “sales”, the number of “units” sold is fixed and at fixed amounts. The budgeted amount for funding patents will be used in any case. If for some reason there are less than 10 selectees the funds are redistributed to the rest;

D) otherwise its operation incurs only costs;

The formula for the break-even point is:

\[ x = \frac{FC}{p - VC} \]

where FC=fixed cost, p=price and VC=variable cost.
Even by assuming that funded patents constitute ‘sales’ (whereby one buys the expectation of future revenues?) until these intangible assets start bringing in cash, they can only be valuated at cost, that is the amount paid to establish these intangible rights. This is the same number: Price (p) equals variable cost (VC). That being the case the break-even formula cannot be used because this means a value of zero in the denominator.

The break-even point could be calculated only from the point when these stakes in patents start bringing in revenue.

Therefore the task is now to calculate on a theoretical basis, the future revenue each funded patent would need to produce on average for the Centre to achieve this ‘break-even point’, to basically cover the amounts invested into the venture.

Spread evenly among all ten patents funded per year, to cover for the annual costs of €310,300, each of these should produce for the Centre, throughout their lifetime, earnings of €31,030. That’s without calculating opportunity costs, inflation and taxation.

However, funding is not spread equally among the selected patents, so expected earnings per patent should also be distributed proportionally. Each of the three EPO-level patents being funded with €21,100 will have also received €5,600 for the OBI-level patent for a total of €26,700. This represents €26,700/€119,300= 22.38% of the annual funding budget for a total of 67.14% for all three patents of this type.

Each of the other seven patents receives €5600/€119,300, or 4.69% of the funding. Calculating now for the entire annual budget, to reach the ‘break-even point’, each EPO-level patent should produce for the Centre €310,300*0.2238= €69,445.14 of revenue. Every OBI-level patent should produce for the Centre €310,300*0.0469= €14,553.07.

To produce these amounts ‘for the Centre’ means that these are the amounts the Centre earns from its stakes in each patent. But what these stakes are cannot be known in advance. It will vary according to each agreement with the patent-holder. Assuming a 10% stake, then the abovementioned amounts multiplied by 10 give the
total revenue the patent should produce in its lifetime, which can span to 20 years maximum. This means, assuming always a 10% stake, that each EPO-level patent should produce during its lifetime total revenue of €694,451 and each OBI-level patent similarly €145,531, of which then the Centre is entitled to that 10%, again without taking under consideration taxation, inflation and opportunity costs.

However all the above calculations are based on the highly improbable assumption that all of these patents will produce revenue, which is hardly ever the case, since less than 5% of patents succeeds and even less are considered commercially viable. Therefore, even with an optimistic and with a very optimistic assumption -that a 5% or a 10% of the patents will succeed- the numbers above should then be multiplied by 20 or 10 respectively. The two tables below capture this whole line of reasoning.

Moreover, all the above also assume a normal partnership relation between the Centre and the patent-holder, especially at the crucial time when earnings are about to be distributed.

| Economic output per patent funded to reach €310,300 annual Break-even point |
|--------------------|-----------------|-----------------|
| (at 100% commercial success rate: unrealistic, depiction for theoretical purposes) |
| Method used | Revenue for the Centre | Patent overall lifetime profit at 10% avg. stake | Patent overall lifetime profit at 15% avg. stake |
| Method I - Even spread - 10% each | €31,030 | €310,300 | €206,867 |
| Method II - Proportional spread | | | |
| 22.38% per EPO-level patent | €69,445 | €694,451 | €462,968 |
| 4.69% per patent (only OBI fees funded) | €14,553 | €145,531 | €97,020 |
Economic output per patent-funded to reach Break-even point within 5-year horizon
(at 2%, 3%, 5%, 10% commercial success rates)

<table>
<thead>
<tr>
<th>Probability to monetize (commercial success rate)</th>
<th>2%</th>
<th>3%</th>
<th>5%</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chance to appear in 5 years</td>
<td>1/5years</td>
<td>1.5/5years</td>
<td>2.5/5years</td>
<td>5/5years</td>
</tr>
<tr>
<td>Patent overall lifetime profit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at 10% stake to achieve break-even</td>
<td>€15,515,000</td>
<td>€10,343,333</td>
<td>€6,206,000</td>
<td>€3,103,000</td>
</tr>
<tr>
<td>at 15% stake to achieve break-even</td>
<td>€10,343,350</td>
<td>€6,895,567</td>
<td>€4,137,340</td>
<td>€2,068,670</td>
</tr>
</tbody>
</table>

Basic Assumptions & Caveats: 1. Patent Lifetime can be up to 20 years; 2. Within this time, cash-flow pattern is unknown; 3. Not adjusted for inflation; 4. Revenue from all other patents funded is assumed to be zero; 5. Funding and revenue from any sources other than the shareholders is assumed to be zero; 6. In case of dissolution, this assumes IP rights are transferred to shareholders, retained and exercised by them.

This exercise, captured in the tables above, serves mainly to demonstrate that very few patents, 1-5 in five years would have to produce large streams of revenue over a decade or more. To balance the Centre’s costs with revenue from the Centre’s stakes in IP rights alone does not constitute a very promising prospect. In fact it’s highly improbable, unless there are one or two patents exceptionally successful in global markets that could balance all the sunk costs accumulated overtime.

Notably, this isn’t something entirely odd in this field. It’s in line with the business model of Venture Capital Investment (VCI), where 1 or 2 in every 10 investments are profitable and enough to cover for the losses caused by all the rest. The problem is of course that these Funds spend enormous amounts to acquire stakes in many ven-
tures, or in this case IP rights, and they perform their final assessment at a point when positive signs start to show.

For Invention-focused Capital Markets the rate of profitability by patent can be even lower than with the classic VCI, but still it can work. According to Nathan Myhrvold, CEO of the leading invention capital market firm ‘Intellectual Ventures’, "Even if only one patent in a portfolio of, say, 2,000 patents is really successful, it could generate $1 billion in revenues, returning many times the cost of the entire portfolio." 78

This would be most welcome of course! But those funding the Centre, i.e. HELPE management, should be prepared for the likely scenario where spending on the Centre will create mainly good or even excellent PR and CSR opportunities, if not just that.

In the short run profits only from IP stakes monetization are highly unlikely. In the long run, this could be achieved with investment in one or two patents that will prove themselves big commercial successes, most probably penetrating big international markets.

On the other hand and on an optimistic note, all the above are based on the hypothesis that the Centre will have no other proceeds or funding, which most probably will not be the case. The Centre’s mission offers a good basis for many kinds of well justified and well documented proposals for EU funding programs. That could sustain the Centre, its core functions and mission. If half of the expenses of the Centre are covered this way then all the figures in the break-even point tables above may as well be halved.

Furthermore, there are some proactive business moves that in theory can increase the chances for generating more revenue from more patents. The idea is to move the business model closer to the money-making innovation process; make it more akin to VC investment or banking business models:

1. Fund, at least in the first years, patents at a more advanced level in their commercialization process. But then the participation percentage the patent-holder may agree to concede will likely be lower.

2. Cooperate and sell directly to large international IP investment funds as a means to achieve immediate and more likely to occur revenues. This requires though the agreement of the patent-holders who usually feel attached to the product of their intellect and labor. To address that, a clause could be negotiated and included in agreements with inventors that the Centre can freely sell its stakes to others.

3. Consider the prospect of changing the entire business model and offer the same funding but in the form of low-interest loans of some sort. This of course would create many other complications in implementing.
IX. Performance Evaluation at the 5-year milestone

1. Basis for the 5-year milestone evaluation

Any initiative that sets out to cover partly structural deficiencies of decades, starting in a difficult environment, should be given ample time to test its effectiveness and justify any expectations. On the other hand money isn’t for free and those willing to support a cause at least deserve to know the impact and the results of their commitment.

For that, a thorough audit and evaluation is required, performed at the end of a reasonable period that will allow the project to mature. Setting a 5-year milestone is a reasonable time. This is a fairly reasonable time for patents to mature as literature indicates and as Mr Dimakos of OBI also agreed from experience. A special Evaluation Committee will be appointed by the shareholders (HELPE management) at the beginning of the 5th year to start the process.

First, Key Performance Indicators (KPI) need to be identified, then quantified to the extent possible and be assigned values (from 1-10) and a special weight. These KPIs could also be used for internal evaluation purposes on an annual basis.

Important for all KPIs is the establishment of a baseline to serve as measure for the evaluation. This can be agreed upon in advance or more realistically should be set by measuring the rate of change over the years. Given the original and, in a sense, experimental nature of the venture it’s difficult to set qualitative benchmarks in advance.

Below is a table with KPIs seen as relevant for evaluation purposes, along with who evaluates what. There are two broader categories, a Financial/Economic one, with KPIs that are easier to quantify, and a Social Impact and Publicity category which focuses on the CSR and PR side of the Centre’s purposes. It’s important for those conducting the evaluation to have a clear idea and mandate on whether emphasis should be placed on the economic side. If yes, a higher weight value will be assigned to economic KPIs, say 65-35. If no, there is a 50-50 allotment of weight quotients for both types of KPIs.
<table>
<thead>
<tr>
<th>KPI</th>
<th>Main Evaluator</th>
<th>Evaluated Items &amp; Method</th>
<th>1-10 Mark allocation</th>
<th>Weight (65-35)</th>
<th>Weight (50-50)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial &amp; Economic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall financial performance</td>
<td>Evaluation Committee</td>
<td>Revenue from services + Funds from third sources, as % of funding from HELPE/sponsors</td>
<td>4=50% loss; 8=balanced; 9=profit&lt;50%; 10=profit&gt;50%</td>
<td>0.25</td>
<td>0.18</td>
</tr>
<tr>
<td>Last 2 years financial performance</td>
<td>Evaluation Committee</td>
<td>Same as above</td>
<td>4=50% loss; 8=balanced; 9=profit&lt;50%; 10=profit&gt;50%</td>
<td>0.10</td>
<td>0.08</td>
</tr>
<tr>
<td>Patent selection economic success rate</td>
<td>Evaluation Committee</td>
<td>% of funded patents that generated any earnings, combined with % of patents that covered their funded expenses</td>
<td></td>
<td>0.10</td>
<td>0.08</td>
</tr>
<tr>
<td>Benefit for HELPE IP management</td>
<td>HELPE IP-managers</td>
<td>Assess contribution by and benefits from the operation of the Centre for the HELPE-Group IP management</td>
<td></td>
<td>0.10</td>
<td>0.08</td>
</tr>
<tr>
<td>Future Market Prospects</td>
<td>Evaluation Committee</td>
<td>Prospects for the: 1-Economy; 2-HHELPE group; 3-the Centre obtaining outside funding &amp; subsidies</td>
<td></td>
<td>0.10</td>
<td>0.08</td>
</tr>
<tr>
<td><strong>Social Impact &amp; Publicity</strong></td>
<td></td>
<td></td>
<td></td>
<td>(35%)</td>
<td>(50%)</td>
</tr>
<tr>
<td>CSR impact</td>
<td>HELPE CSR Team</td>
<td>Stats &amp; Survey: Municipalities &amp; Institutional Partners</td>
<td></td>
<td>0.15</td>
<td>0.20</td>
</tr>
<tr>
<td>Impact for Inventors</td>
<td>Evaluation Committee</td>
<td>Stats &amp; Survey: Inventors, OBI, EPO</td>
<td></td>
<td>0.12</td>
<td>0.17</td>
</tr>
<tr>
<td>PR Impact – Media Coverage</td>
<td>HELPE PR Team</td>
<td>Assess quantity, quality, followership and resonance in media &amp; social media</td>
<td></td>
<td>0.08</td>
<td>0.13</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Notes on certain KPIs:** Financial performance of years 4-5 is evaluated twice to add weight. This is when earnings from earlier investments are expected to start rolling in.

It might strike as odd that the KPI on the rate of success marks with the highest mark a 10% success rate. This is actually a strict marking measure, taking into account that less than 5% of all patents are profitable.

Impact for Inventors can be assessed also in a quantitative manner. If the number of patents in Thessaloniki rises in these years, and this is found to be statistically significant compared to the rate of change in the rest of the Country, this would be an indication of positive impact.
2. Strategy Reformulation and Future prospects: 4 scenarios

Based on the findings of the 5th-year evaluation, decisions will have to be made on the future of the project and a strategy reformulation should take place for that. As mentioned above, performance evaluation will be focusing on the interests of the sponsors of the Centre. The various KPIs will move on two main directions, economic and social (impact and benefits for the sponsors from PR, CSR, networking and outreach activities). By assessing the prospects on these two axes, a classic 2x2-Matrix forms, which resembles the ‘Grand Strategy Matrix’ although the competitive axis is replaced here by the ‘social’ one (PR&CSR prospects). Using this Matrix as shown in the graph below, four scenarios are forecasted (actually 5 scenarios: 2x2, +1 in the middle where both indicators are moderate-neutral. But this middle one is seen as equivalent in effect with the scenario termed “Business-as-Usual”).

*Figure 17 – Matrix for the Reformulation of Strategy following 5th year evaluation*
"Pessimistic scenario: “Pull the Plug”"

If the Centre manages to accrue only meagre revenue and no profits in the course of its operational life, or if its operation is deemed as too expensive to continue, and at the same time there are no visible Public Relations or social benefits, the reasonable choice is to stop funding the Centre and liquidate the investment. In this case, the company that is the Centre will be dissolved and the legal entity terminated. The IP portfolio can either be liquidated or abandoned or transferred to the shareholders. All other material and property will come under the possession of the shareholders or be donated to local municipalities, other partners or educational institutions.

"Moderate scenario: “Give a Second Chance”"

The choice is harder to make and less straightforward in case that the Centre on the one hand has moderate revenue that doesn’t cover expenses and there is no indication of that changing in the foreseeable future, all while at the same time the PR and social aspects of the project are deemed as successful. Here, defensive strategies would be applied that involve the following (applied separately or combined):

a) Sell shares and decrease the stake on the enterprise. Invite and let in more sponsors to share the burden.

b) Divest and reduce funding or expenditures.

c) Retrench by lessening the scope of the Centre’s mission and maintain only some of its services and activities, i.e. focus only on funding, fund less patents with more and abandon other activities OR maintain only the educational and outreach part as a pure and classic CSR activity.

d) Continue funding under stricter terms and repeat evaluation on a more frequent basis.
iii) Good to Optimistic scenario: “Business as Usual”

A fairly balanced sheet and a moderate success of the PR and social output could lead to the continuation of the operations on the same pace and mode, perhaps for another three to five years. Concentrated changes can be made, perhaps hiring a new employee.

If the economic performance and prospects look positive but the PR&CSR-related results are less promising, the center could hire a PR-coordinator to implement changes and reevaluate this aspect in 1-2 years.

iv) Very optimistic scenario: “Evolve and Expand”

This scenario entails net profitability for the Centre in its 5th year and in its overall lifetime. This will be a strong indication that the whole venture has good prospects, taking also under consideration that, at least in theory, knowledge of the business increases overtime thus improving the quality of business and investment decisions. It’s not a very likely scenario.

Other ways for the Centre to expand through horizontal or forward integration is to invest in technological brokering or consultancy services in the IP and IA management field to be offered to larger companies.

Another option is to implement the cooperative strategy of the joint venture or of the non-equity strategic alliance, by joining clusters of innovation. The Centre would maintain its operational independence but it would also operate as the IP & IA management arm of these clusters. Finally it could assume a leading role in starting a new cluster dedicated to invention, though this is perhaps overly ambitious.

In case of exceptional earnings an option would be to turn the enterprise into a proper Venture Capital Investment fund or create such an entity as a parallel structure that manages the earnings side of the business.
Under Greek law such entities can be either the Greek Venture Capital Company (Etairia-Kefalaiou-Epicheirimatikon-Symmetochon–ΕΚΕΣ) of Law-2367/1995, and the Société Anonyme for Portfolio Investments of Law-3371/2005.⁷⁹

These entities allow the creation and management of risk capital funds (venture capital fund). They enjoy a privileged taxation status.⁸⁰ Moreover, they are eligible for funding by the specialized Greek development fund TANEO S.A.⁸¹ When funding SMEs, TANEO follows the guidelines of EU Directive 2006/c194/02.⁸²

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⁸⁰ Γ. Γουλιάς, Κ. Γαλλή, Ν. Κασίδου, "ΑΚΕΣ, ΑΕΕΧ και ΕΚΕΣ: Εργαλεία συλλογικών επενδύσεων στην Ελλάδα με σημαντικά φορολογικά κίνητρα", Accountancy Greece, 2 August 2015.


CONCLUSIONS

I. Findings to the Research Questions

- Is there a genuine need for supporting invention and inventors in Greece and, in particular, in Thessaloniki?

The industry overview, and Appendices I & II, showed how Greek infrastructure and availability of expertise, services and funding opportunities is underdeveloped and inefficient.

Market overview showed the lag in production of patents from Greece compared to that of other developed countries, even when compared with countries with similar characteristics such as population, degree of geographic isolation etc. The perceptions of inventors and entrepreneurs as captured by the survey in the Doctoral thesis of Dr. Goniadis confirm that inventors’ attitudes reflect similar views.

- Can an organization that undertakes to play this role, as conceived here, make a significant contribution and have a meaningful impact to this end? How can this be achieved? How can this be evaluated?

In the Service description and then in the Service Plan it was shown that the services offered by the Centre add value to the entire value chain of the invention process. Most important, the Centre facilitates needs (i.e. access to labs) and covers costs incurred since very early in the invention process, at a stage that other financing actors like banks and private investors, as a rule, try to avoid.

Moreover, it was shown that the plan to support annually three patent filings at the EPO-level covers almost 40% of the existing activity in the Central Macedonia region. Finally, the availability of a fund of €6,000 for preliminary patent search can cover almost the entire number of such searches performed last year in Greece.

In the milestone 5th year the Centre, or HELPE, should commission an independent research on assessing the socio-economic impact of the Centre’s activities,
especially in measuring whether there was an increase in patents filed from Thessaloniki and in the number of preliminary searches as well. This will be part of the greater evaluation process, based on all KPIs, for which an *ad hoc* Evaluation Committee will be established.

What are the prospects of successfully reaching out to targeted audiences? Will this produce sufficient traction for the sponsor (HELPE) in terms of building Public Relations and demonstrating Corporate Social Responsibility?

Elements supporting that the prospects are positive are the following (in parenthesis, some challenges):

1. Contribution to industry and market is expected to be significant and with an observable impact (but needs to be measured and communicated).
2. Many potential partners exist who could carry forward the message.
3. A proactive marketing plan (if well executed).
4. The inventors’ community is not that big, (but there is the challenge of identifying them first).
5. The Center offers many services for free and also funds expenses (in exchange for a stake in the patent rights, which might put some inventors off).
6. The crisis is changing previous attitudes and people are more willing to explore new career paths (in principle).

Addressing whether this will produce traction for HELPE, the important element is that the scientific, technical and engineering communities and official associations of Thessaloniki will be engaged often and systematically. Also the subject can be linked to youth activities, education, be given a local but also a transboundary dimension for the Balkan region. Commitment by HELPE Communications and CSR team in advertising the positive impact will be required.
Can this venture become financially sustainable within a period of 5 years? Under which assumptions and circumstances?

This point was specifically looked into. Literature strongly indicates that patent commercial success rates are very low, below 5%. This is the ‘Achilles' Heel’ of the venture since its main economic activity will be to invest in building an IP portfolio over time, by acquiring stakes in IP rights.

In the Financial analysis part, when discussing the complexities and challenges of calculating a break-even point, it was demonstrated that for the Centre to break-even it will need to “strike gold” with one or two of the inventions it will fund. Even then, these earnings might roll in over a period of many years and not in a steady pace either. This is why it was often advocated that the Centre should also look for other sources of funding such as EU development funds and other programmes.

In the scenario panned out in the PnL statement draft (in the Excel folder) the prospect is to reach sustainability and a meagre surplus in the 5th year by covering almost half of the budget through outside funds and the rest from very few (3 out of 40 in that scenario) revenue-bringing patents.

All in all, the strongest asset of the Centre will be the commitment by HELPE management to support the project, being also fully aware of the challenges ahead as far as profitability from the IP portfolio is concerned.

How can this venture progress and evolve in the future?

This was covered in detail and not in length by the four scenarios that could play out in the wake of the 5th year evaluation process.

What should be the next steps to realize this idea? Are there any alternative courses of action?

This last question is covered by the recommendations that follow.
II. Recommendations for the near future

1. Recommendations on next steps

- The advisable course of action is to follow an incremental approach within the next year.

  This is because:

  A) Investing in IP rights involves high risks and uncertainties;

  B) Even if making profit is not the main purpose, the amounts involved are substantial as they should be to increase chances of investment success;

  C) In any case, the planned budget for FY 2016 is well underway, if not already approved;

  D) There are some important aspects that need to be further examined, through research and be subjected to the scrutiny of experts.

- Take action to assign to the experts mentioned above or to other professionals or postgraduate students the four special reports and surveys mentioned in the methodology section: 1. On legal personality selection; 2. Market research on identity and needs of inventors in Thessaloniki; 3. On the terms and prospects of getting funds from EU programmes; 4. On detailed reports on financial and accounting aspects.

- In the meantime consider engaging in the following alternative courses of action aiming at laying the foundations and preparing the ground for the realization of this idea.
2. Recommendations on alternative courses of action

In 2016 and/or 2017 HELPE could consider embarking in any of the following alternatives, provided that either A) the realization of the Centre still remains a goal in sight; or B) that even if this idea is abandoned the interest to support invention remains.

- Introduce CSR actions supporting and focusing on invention such as seminars for students or sponsoring student teams participating in invention contests.

- Introduce an invention contest held in Thessaloniki with prizes for winners. This will help draw out local inventors and establish contacts.

- Participate in existing innovation contests such as ‘Greece Innovates!’ held by SEV and Eurobank for the third year now. HELPE could offer a special award on patentable inventions and ask for a seat on the organizing committee and/or in the jury. This will help the assigned members to become familiar with assessing inventive and innovative projects, and also for networking purposes.

- For both options above consider the prospect of conditioning the award on acquiring a stake in the invention. This will serve as a ‘pilot’ experience for the future. The process of negotiating a deal and then putting it down in writing will again generate experience valuable for any future efforts of undertaking the venture described in this report.

- Hire or partner with an IT company to design, test and launch an open innovation platform, perhaps focused on energy and fuel related technologies. Major foreign corporations operating in similar fields have been involved in such projects. Once such an online platform is created then it can be expanded or used as a model for similar projects in the future.

- Establish a legal entity to be the scaled-down model of the Centre. Focus on activities such as organizing events, facilitating access to school labs, cover some R&D expenses or preliminary patent search costs and organize events (relevant costs estimated earlier add up to approximately €60,000-80,000). This can be combined with the contest/award proposal above. A definite plus is that this entity can apply for EU funding, thus ensuring a better start for the fully-fledged version of the Centre when this is launched at a later stage.

-
III. Closing Remarks

The idea of focusing and working on invention rather than on innovation, like most others do these days, is a bold and visionary move. If this or similar ideas materialize at some point, they will be towards a positive direction.

Economic results for such an enterprise may struggle to add up as we found. For the many the initiative and its underpinnings may go unnoticed. But for those close and around the innovation, entrepreneurship, engineering, science and technical fields, even for policymakers, it will not go unnoticed that one of the leading Greek corporations is placing emphasis and trying to bring back from oblivion the forsaken and severely underperforming in Greece, but so important at a fundamental level, creative process of invention.

This is not to say that people need to change focus from innovation to invention. No, innovation is more important because it is the process that directly creates growth and development. For that it should remain the main objective in strategic economic planning at all levels. But everyone involved in innovation stresses the importance of operating within the right economic, entrepreneurial and technological environment, within the right “biosphere”.

You can invent without innovating and innovate without inventing. But in many cases the one causes the other, or depends on it, or a symbiosis between these two processes benefits both and in the end boosts innovation, with no negative side-effects ever having been reported.

For innovation to thrive, invention needs at least to be functioning adequately. This is not the case in Greece. To increase the chances of innovation efforts succeeding, then at some point, some part of the domestic, active, productive forces needs to focus on invention in a systematic, serious, concerted way and stand by all those practicing it. With the starting point being set near ‘starting from scratch’, any such effort is reasonably expected to have an observable, positive impact.
Special Thanks and Acknowledgements

The author owes to Nikos Zahariadis, Director, Hellenic Petroleum Thessaloniki Installations, immense gratitude and respect for sharing his ideas and views and for giving valuable initial information and a general direction to this study.

Ms Pelagia Atzemi, Director’s Assistant, HELPE, was helpful to the author making arrangements for meetings and ensuring hospitality in every visit.

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For the interviews given to the author and also for allowing to make reference to their name in this report the author’s sincere and deeply felt gratitude, goes to:

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Appendix I: International IP Industry Overview

1) Patent authorities - In every country exists one authority with exclusive oversight and administration of the patenting process and the right to grant patents. Usually it is charging fees for patent applications, renewals, searches etc. At the heart of the work of these authorities are the Patent Examiners. Besides that, they operate as hubs for information, education and outreach activities regarding patenting. But they cannot coach, consult or assist inventors in most other ways as this would constitute conflict of interest. Very often, for these kinds of activities they operate networks of regional offices.\(^{83}\)

In Greece this authority is OBI. In Thessaloniki (also in Patras and Herakleion) OBI operated between 1996 and 2006 technical information libraries that assisted locally with preliminary search and organized events. The intention for the future is to reopen them as confirmed by OBI officials.

2) Universities & Research Institutes – First of all, where there is research performed, invention will happen. These institutions have IP units or desks that assist own researchers through the patenting process and later with IP management, i.e. Technology Transfer offices. They are also involved with founding spin-off ventures. Another important service that universities are in a unique position to help inventors with is to use their labs and expertise to technically assess and test prototypes and make precise measurements. Even the economic prospects of an innovative start-up based on a patented invention can be evaluated by the faculties of Economics and Business Administration.\(^{84}\)

3) Technological parks & Business Incubators – It’s usual for such enterprises to have an IP desk that offers services related to patentability assessment, IP protection and IP management. In a survey of a sample of 111 incubators in the United States, 92.9% of incubator managers found that IP related services were important to the success of their ventures.\(^{85}\) In an environment with an abundance of floating ideas and proposed projects, taking the time to assess whether an invention can be patented as well as its technical and economic prospects is crucial to the success of the entire enterprise.\(^{86}\)

4) Technology (or knowledge) brokers – Highly specialized and experienced professionals who offer their services as go-betweens linking companies with inventors and patent-holders. Com-

\(^{83}\) Read about the recently established network in Morocco with 40 members and 50 focal points including 19 universities, 8 R&D centers, 3 innovation clusters, 2 Corporate Associations, an innovation support fund, an IP Centre and the Ministry. N. Boukharouaa, ‘Morocco’s network of technological information centres’, Issue 3/2014, September 2014, p. 8.


panies either hire them to perform a technology audit report, which pinpoints technologies required to innovate their business or to undertake new projects, or simply inform them of their needs. Confidentiality and trust are of paramount importance. The broker then looks for existing technology by searching in patent databases or informs inventors on the existing needs for them to invent anew. If a match is made the broker gets a commission from the clients upon conclusion of the transaction. Such services are offered also through Open Innovation Platforms, online forums and databases often launched by large companies or by Technological and Science parks. This is a typical case of crowdsourcing innovation and R&D which is nowadays a major trend among leading corporations.

5) Invention-dedicated Government entities – Usually institutes that offer a broad range of services -mainly informative, educational and networking- that support inventors and promote invention. For example the Japanese Institute for Invention and Innovation (JIII) was established in 1904 and today has branches in all 47 prefectures of Japan and 11,000 members.

6) Inventors’ Associations – Apart from education, information, exchange of views and experiences these Associations also exercise political advocacy. Their global representation is by the International Federation of Inventors’ Associations (IFIA), where there is no representation from Greece.

7) Patent attorneys – Free-lancers or working in specialized agencies or syndicated. They are engineers and scientists with high specialization and also receive training in legal aspects and jurisprudence. Their role is to help prepare a strong folder for patent applications and take care of the wording to safeguard in the best way the interests of their clients in the future. Their role is crucial for rightly securing a patent, though they can charge high fees. On European level they can be certified by the European Qualifications Exam (EQE) organized by EPO.

In Greece, there are less than 7 EQE qualified patent attorneys and in Thessaloniki probably none.

7a) Patent License Negotiators – Some patent attorneys also play the role of the consultant during negotiations phases concerning licensing and buying/selling of patent rights.

8) Patent lawyers - On a national level, as indicated by a table compiled by EPI - the Institute of Professional Representatives before the European Patent Office - almost in all European countries, with the exception of Greece, Malta, Cyprus and San Marino, there is a system in place that certifies

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88 List of open innovation platforms compiled by leading technology and innovation consultants ‘Board of Innovation’<http://www.boardofinnovation.com/list-open-innovation-crowdsourcing-examples/>.


90 See official website of the Japanese Institute for Invention and Innovation (JIII): http://www.jiii.or.jp/english/e.htm

91 See EPO main page on EQE: https://www.epo.org/learning-events/eqe.html
‘patent professionals’ or ‘patent attorneys’ mainly among lawyers and engineers. This system, which usually requires a certifying authority, a method for listing and making known to the public those certified, a set of prerequisites, and a written and oral exam of some sorts, ensures higher quality of services and a minimum of tested knowledge and experience in the very technical, demanding and idiosyncratic field of patent law and practice.\(^\text{92}\)

In Greece, all lawyers from day one of their career are considered ‘patent professionals’. If a prospective client wants some assurances of prior knowledge and experience they would have to do their own research and, to put it bluntly, “ask around”. Even if we consider that this lack of specialization and certification plays out on a level field domestically, what does it say about the not-so-unusual case of a transboundary dispute, whereby an (uncertified) Greek lawyer will confront a (certified) colleague from abroad? In other words, what is the –impossible to quantify and measure but existent nonetheless- aggregate mean of domestic legal services quality on patent law compared to the European mean? Shouldn’t we safely assume that it is impaired due in part to the lack of a system of certification?

8a) The ‘patent trolls’ phenomenon – Some so called Non-Practicing Entities (NPE) acquire patents with broad descriptions and try to exploit them by suing others in order to intimidate them and then negotiate and extract from them settlement money. According to the Munich Innovation firm: “A 2013 report by the National Economic Council and Council of Economic Advisers at the White House found significant harm to the US economy from “patent trolls”. The report also found that suits brought by NPEs have tripled in the last two years, rising from 29% to 62% of all infringement suits in the US. New legislation (“America Invents”) has recently been passed but it unfortunately does not address the fundamental issues of the patent system. It just shows that market-driven solutions are more important than ever to determine the value of intellectual property.”\(^\text{93}\)

9) Patent Information professionals (Patent searchers) – People specialized in looking into patent databases and extracting relevant information. Many work for national patent offices, some for big corporations and there are freelancers too. Their international association PIUG makes effort to establish an international system of certification for their profession.\(^\text{94}\)

10) Patent promotion agencies – Firms that promote patents in the market of IP rights sales or for licensing it to third parties who intend to commercialize the patent as such or by incorporating it in their own technology, products or industrial production lines. These agencies charge a fee up front for taking up the case and then get commissions for any deal made. A leading firm in this field is InventRight.\(^\text{95}\)

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\(^\text{93}\) See Munich Innovation website: \(<\text{http://www.munich-innovation.com/patent-troll/}\>

\(^\text{94}\) See some pilot exams PIUG organized on patent searcher professional certification: \(<\text{http://wiki.piug.org/download/attachments/34443023/Background+and+summary+of+QPIP+Rules+and+Articles.pdf?version=1&modificationDate=1435062980762}\>

\(^\text{95}\) See website of Invent Right \(<\text{http://www.inventright.com/}\)>
Attention is required when approached by such agencies because some charge and collect the initial fee promising rapid monetization and increased returns but failing to deliver completely and repeatedly. This type of patent scam has been particularly widespread in the United States. 

11) **Intellectual Property Consulting and Services firms** – Big corporations that specialize or have large departments that deal with various aspects of IP rights and IP asset management. They buy/sell, secure, collateralize, consult, valuate all things IP, with portfolios that can reach up to billions of worth. Some leaders in the fields from Europe are: Intellectual Property Bewertungs AG (IPB); and Thomson Reuters. Perhaps the leading company, and considered the model for this business, is Swiss reinsurance giant Swiss Re.

12) **Invention Capital Market** (styled after Venture Capital Investment but investing only on patents) – This fairly new business model, pioneered by former Microsoft executive Nathan Myhrvold who co-founded leading firm in this field called Intellectual Ventures. It is applying the venture capital investment model solely to IP rights. There are 650 in-house inventors and a network of thousands of others. The idea is to buy many patents and stakes in patents and increase their value by selling them in bundles. Some accuse this business model as another type of ‘patent trolling’ or profiteering. For that, Myrhvold explains and defends this model in an article in HBR.

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96 I.e. from 1981 to 1996, patent promotion agency AIC scammed $58 million from 34,000 inventors without ever succeeding to secure a single patent license. This prompted new legislation in the U.S. See B. Stirr, ‘Caveat Inventor’, Spectrum-IEEE, Vol.40, Issue-11, 3 November 2003, p. 49.


Appendix II: Supplementary note on the state of R&D in Greece

The Greek economic model was traditionally based on imitation and imports of high-tech products. Innovation efforts, R&D spending, invention and patenting activity have been consistently lower than in most other developed countries. As a result, the Greek market for inventions and invention-related services has never matured and suffer serious lags and gaps to this day.

Greece is underinvesting in R&D. Only 0.6% of Greek GDP was invested in R&D in 2012. This goes half way to meet the national target of 1.21% set out in the National Reform Programme of April 2014 for Greece in implementation of the Europe 2020 agenda. By comparison EU-27 average was 2.03% of the GDP, itself lower than the 3% mark of GDP for R&D on average in the EU. Comparing to some major economies: South Korea 4%; Japan 3.36%; U.S. 2.87%; China 1.7%; Russia 1.11%.

Also, the Greek private sector is underinvesting in R&D. It’s characteristic that almost 50% of the Greek expenditures for R&D come from higher education institutions, 20% from government expenditure and slightly less than 30%, from the business and services sector. This type of distribution, is characteristic for countries with less than 1% of their GDP invested in R&D. By comparison the distribution on average for EU-27 in 2012 is approximately 25% for higher education institutions, 10% for government expenditures and 62% for business and services. Or, private sector contribution is more than double of that of the Greek private sector mean, while academia and government spending for the EU-27 mean is almost half the Greek mean. In S. Korea, Japan, China, United States and Switzerland private sector spending accounts for over 70% of the total national spending on R&D.

\[100\]
\[101\]
\[102\]


\[102\] Ibid.
Figure 2.5: R&D expenditure by sector of performance as a percentage of total, ranked by R&D intensity, 2011 (*) 

(%) 

KR 4.00  
FI 3.78  
SE (**) 3.57  
JP 3.36  
IS 3.11  
DK (*) 3.09  
US (*) 2.87  
CH (*) 2.64  
DE (*) 2.75  
AT (*) 2.47  
SI (*) 2.38  
EE (*) 2.25  
FR (*) 2.04  
NL (*) 2.04  
BE (*) 2.03  
EU-27 (*) 1.84  
CZ 1.77  
UK (*) 1.73  
IE (*) 1.70  
NO (*) 1.70  
CN 1.50  
PT (*) 1.43  
LU (*) 1.33  
ES 1.25  
IT (*) 1.21  
HU (*) 1.11  
RU 0.92  
LT (*) 0.84  
TR 0.77  
PL 0.75  
HR 0.73  
MT (*) 0.70  
LV (*) 0.68  
SK 0.60  
EL (*) 0.57  
BG (*) 0.48  
CY (*) 0.48  

(**) Break in series.  
(*) National estimate.  
(1) Provisional data.  
(2) Eurostat estimate.  
(*) GOV sector includes federal or central government only.  
(2) Excludes R&D or all capital expenditure.  
(3) GOV sector includes public sector.  
(4) Incomplete breakdown of R&D expenditure by sector of performance.
Appendix III: Advisable steps from invention to commercialization

Source: Ronald Louis Docie “The Inventor’s Bible” p. 274-276

1. Describe the invention
2. Make rough sketch
3. Do a patent search
4. Consult with patent attorney
5. Do your in-field market research – first level
6. Interview distributors and second-level contacts
7. Identify manufacturers/potential licensees
8. Order catalogs and reports from manufacturers
9. Investigate alternative markets and applications
10. Interview manufacturers – third level
11. Recheck all research information
12. File a patent application, if appropriate
13. Contact manufacturer’s references
14. Submit invention to manufacturer(s)
15. Follow up with manufacturer(s) to whom you have submitted
16. Document manufacturer(s) response
17. Seek professional assistance, if needed, to help with negotiations
18. Contact a Certified Public Accountant (CPA) for tax considerations
19. Contact a patent attorney specializing in negotiating licenses
20. Decide on license/commercialization/patent strategy
21. Negotiate license or follow alternative strategy
22. Follow up on project with at least one contact per month
## Appendix IV: Guide to the EXCEL folder

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<td>Balance sheet for years 1-5 based on scenario above</td>
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Appendix V: OBI – Statistics on Events and Visits

The following stats (up to 30/09/2015) and charts were provided by OBI for the needs of this report.

Table 1 – Total number of events (year, number, category

![Table 1 - Total number of events](image1)

Table 2 – Total number of visits

![Table 2 - Total number of visits](image2)
Appendix VI: OBI – Statistics on Preliminary Patent Searches in Greece

The following stats on Preliminary Patent Searches in Greece were provided by OBI for the needs of this report.

Table 1 – Number of Preliminary Patent Searches in Greece by year (up to 30/09/2015)

Table 2 - Preliminary Patent Searches per year by IPC coding (category)
Table 3 – Preliminary Patent Searches per year by applicant category

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<td>3</td>
</tr>
<tr>
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<td>8</td>
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<td>22</td>
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</tr>
</tbody>
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Note: Ms Gaganatsou of OBI pointed out that there are researchers from academic or research institutes who, in an effort to bypass internal red tape, file their Preliminary Research requests on their own expenses, counted thus by statistics as private individuals.

ΔΕ = Δίπλωμα Ευρεσιτεχνίας (Patent)

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Appendix VIII: World Patent statistics by WIPO

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Source: WIPO
Link: [http://ipstats.wipo.int/ipstatv2/editKeyForm.htm](http://ipstats.wipo.int/ipstatv2/editKeyForm.htm)