

Figure 3 Loss in revenue and additional expenses as a result of product piracy.

Forth Photonics: A high tech Greek health service company

Hellenic Industrial Property Organisation (OBI)

Forth Photonics was established in 2002 by the Foundation for Research and Technology (FRT), Professor Konstantinos Balas and the NBGI Ventures investment funds company to ensure the business continuity of a successful FRT research work group on the use of photons in medical diagnostic technology. First and foremost, the application of this technology is DySIS system (Dynamic Spectral Imaging System), which enhances the diagnostic accuracy of colposcopy by 63% in the diagnosis of pre-cancer and cervical cancer compared to the conventional detection technologies.

The initial invention on which the DySIS device was based was originally protected through the Hellenic Industrial Property Organisation (OBI) in Greece (GR appl.20000100102 – 28.03.2000 and GRpat. 1004180 – 11.03.2003) and also received the 2001 First Invention Award from OBI for the "Method and system of designation and mapping of tissues" (inventors: K. Balas, D. Peleoudas). It was subsequently protected in other European countries, as well as in the U.S., Asia, Australia and Africa.

Right after the publication of the first results for the diagnostic potential of DySIS, great interest was shown by American high tech companies for the assignment of licenses for this technology. The combination of the convincing research/clinical results and the scientific and corporate interest expressed was often the main catalyst to attract investment funds and create Forth Photonics in 2002. Forth Photonics has completed the in-

dustrialisation of these systems, which have become commercial products after the certification of their potential in international, multi-center studies.

The spin-off company, which is now headquartered in Edinburgh to create an international sales network, and which has its research department in Athens, managed to increase its capital stock by 7.6 million euros in January 2009. The new investors that came to further promote dynamically Forth Photonics technology in the market with the new round of financing are the Close Ventures and Scottish Venture Fund, whereas NBGI Private Equity (a company affiliated with the National Bank of Greece) remains a permanent fund company that is also a co-founder of the company.

Forth Photonics aims to use the new funding for the complete commercialisation of the DySIS device so the method can be adopted globally as the main method of diagnosing cervical cancer. The immediate aim is to further develop its sales in Europe, as well as to expand in the U.S. market once it obtains certification from the U.S. Food and Drug Administration.

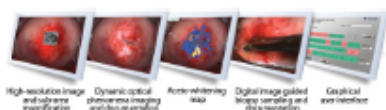
DySIS has been marketed since 2008, when the clinical tests were completed with the impressive results of supremacy of the new method for the timely diagnosis of cervical cancer. From the start, it had a great trade success, and a lot of hospitals and private doctors in many European countries already have it.

DySIS allows non-invasive detection and mapping of cervical cancer that permits a bloodless, painless and quick examination that essentially supersedes the current methods, such as the Pap test. This is achieved through the recording and analysis of light and tissue interaction through the innovative technology developed by Forth Photonics is based on the use of photons. This method displays not only healthy and non-healthy cells in the area but also the extent of the cancer in the non-healthy cells, which contributes to the timely diagnosis and prevention of cervical cancer.

According to Dr K. Balas (professor in the department of electronic and computer engineering at the Technical University of Crete and former researcher at the Institute of Electronic Structure and Laser of FRT), the DySIS device detects and identifies precancerous alterations at an early, curable stage. This is achieved through the recording and analysis of light and tissue interaction, even though the examining procedure does not require contact with the tissue. It is bloodless, painless and lasts just a few minutes.

The clearest advantage of the device, as compared to conventional methods, has been proven in a great multi-center study in which the London Imperial College (Hammersmith Hospital and St. Mary's Hospital) and the department of medicine of the University of Athens (Alexandra Hospital, a gynecologic clinic) took part and in which more than 400 women participated. The results of this

clinical test have been accepted for publication in the top American scientific magazine, "Clinical Cancer research", thus confirming scientific approval and recognition of the DySIS device, which integrates the most innovative and advanced imaging process in the world from a technological standpoint.



Apart from the gynecologic applications of DySIS technology, a new generation of endoscopes is being developed today that will combine high-quality digital imaging of the internal organs of the human body by providing quantitative and objective diagnostic information for the detection, mapping and delimitation of the defect. This will lead to the reduction or abolishment of the invasive biopsy, as well as to the potential for guiding the

surgical avulsion of the defect so it can be performed with great accuracy and completeness, thus reducing the possibility of metastases.

It is worth mentioning that, despite the fact that there was a lack of experience in patentability matters of research results, as well as great difficulties in finding resources for the funding of the application and the legal support on international patents, FRT flexible structures and the progressive vision of the members of its management contributed to the conversion of the research results to high tech products.

The state, however, should take initiatives not only to help research institutes protect their results with intellectual property rights (IPRs) by allocating appropriate sums, but also by commercialising them.

