

Title: Synthesizing the Triple Helix in Lisbon, Portugal.

State-of-the-art:

The National Institute for Industrial Property (INPI) is one of the key players in the drive to develop the Portuguese knowledge economy. Since the beginning of the 21st century INPI has led a concerted effort to connect the different actors required for developing a functional triple helix type knowledge economy. Government funds were made available for the establishment of 22 intellectual property support offices (Gabinetes de Apoio a Propriedade Industrial (GAPI)). These offices served many different entities including: business associations, technological parks, and Universities.¹

By establishing IP and technology transfer offices the GAPI initiative sought to put in place key components of the triple helix model. The project achieved its primary goal in providing basic IP services to many entities that previously had none. However one of the initially attractive features of the program turned out to be one of its major flaws. Each entity that established a GAPI could do so in any way it chose. This has meant there was no central control or governance, many functions were duplicated, and no best practices were learnt and passed on to other offices.²

More recently there have been two further initiatives aimed at consolidating institutional support for entrepreneurial and technology transfer activity. The

¹ <http://www.marcasepatentes.pt/index.php?section=486>

² Prado, A. M., & Cristina, D. (2010). Setting up a Technology Transfer Office for a Life Sciences research Institute in a European Economy : Opportunities and Challenges, 2(1), 38–45.

University Technology Enterprise Network (UTEN) is a network of universities, R&D organisations and technology parks were the main objective “is to promote the development of globally competitive and sustainable Portuguese technology commercialization infrastructure”³. UTEN does this by organising training and mentoring programs with partner institutions in the US. GAPI 2, launched in 2009, was tasked with consolidating the IP infrastructure created in the original GAPI program.

One of the main criticisms of the knowledge and technology transfer system in Portugal is that it is too fragmented. Most universities and many research institutions have their own technology transfer office (TTO) but the budget from these offices is usually very limited and in some cases has to be supplemented by the office partaking in projects that do not necessarily support the TT activity of the host institution.

One of the areas where this fragmented approach is most notable is the institutes and universities of the capital city, Lisbon. This paper identifies common limitations in TTO structures and proposes a solution suitable for the Portuguese context.

Specifically we propose a model that consolidates the competencies and skills of individual TTOs and reduces the financial burden on host institutions. We also describe the on-going effort to implement the recommendations outlined in this paper.

Methodology

An online questionnaire was sent to TTO’s located all over the world in order to collect evidence of TTO best practises and problems. Additionally many stakeholders

³ <http://utenportugal.org>

(representing research institutes, Universities, businesses and TTO's) within Portugal were interviewed to identify problems and opportunities specific to the regional context.

Findings and Interpretation

Three critical factors limit the effectiveness of Portuguese TTOs

The system of small TTO offices in university and research institutes was found to be relatively ineffective in being able to deliver effective technology transfer. It is unlikely that no one single reason is the cause, but rather a combination of factors.

These include:

1. **Critical mass of Funding** – A relatively low level of state funding is divided by many different institutes, or institutes are required to fund their TTO out of their own general budget. This means that TTO's are often very small, in some cases only one person is responsible for all TTO duties.
2. **Critical mass of Science** – Each TTO serves a relatively small institution and consequently the research base is not sufficient to supply a continuous feed of high potential technology transfer projects.
3. **Critical mass of Skills** – There are many different skills required in a TTO, not least a sound understanding of science, business and intellectual property. Frequently some of these skills are missing, in part because budget restrictions mean that salaries are low making it impossible to attract the necessary talent.

These three factors are not necessarily mutually exclusive. If we assume that the government will subsidise the nations TTO activity, then a budget needs to be agreed

for this activity. This budget can then be made available in many different ways: for example to specific institutions, regions and/or by competitive application.

Concentrating funds to specific regions means that you not only achieve the critical mass of funding, but you also achieve the critical mass of science, as typically a region (by definition) will include several universities and/or research institutions.

A central Lisbon TTO

The greater Lisbon area is a good example of a region that could be well served by a single TTO. A single TTO serving all universities and research institutions means that many duplications can be avoided, and all three critical mass requirements met.

Further a centralised TTO that represents thousands of scientists/researchers from multiple universities and research institutions, and has the funding necessary to be dedicated to supporting academic-industry interactions, is much more relevant for industry. Essentially this approach allows an entire region's academic R&D to become branded, giving individual scientists (technologies) a voice and reach far stronger than that which is possible with a small institutional TTO.

Challenges of changing the TTO system

Recognising the benefits of a centralised TTO does not necessarily mean it is easy to implement. There can be many problems when trying to move from the system that currently exists to a new centralised office. Not least it requires convincing many decision makers simultaneously about the benefits of changing their system. There are questions of institutional structure; do member institutes pay a service fee? Does the TTO receive a share of license royalties? Then there are general fears, such as "what if another group in a different institute makes the same discovery at the same time?"

All of these questions, and others can be addressed, but doing so still requires a leap of faith, by many institutes.

Implementing the centralised Lisbon TTO

Ultimately showing by doing is so much more powerful than explaining by presentation. This is why we have founded an independent company offering knowledge transfer and business development solutions, in the greater Lisbon area.

There are some limitations to operating as a company, principally we do not receive any government investment – we lack critical mass of funding. However there are significant advantages, the setup enables us to operate immediately and we can work with multiple institutions – we have the critical mass of skills and science base. We hope that by operating as a company and working with multiple institutes we will accelerate the uptake of a central government funded TTO.

Conclusions

There is no one size fits all approach to setting up a triplehelix environment. All aspects of the local/regional environment, such as the availability of financial support, number and concentration of academic research centres, need to be considered.

Regional geography is also important as regular contact with all centres is necessary, therefore all sites must lie within a daily commutable distance.

Small TTOs that serve a single institute frequently cannot perform knowledge transfer and business development functions as effectively as a larger central office that serves multiple institutes. This is because they usually (but not always) lack the critical mass

of funding, skills and broad science base that can be achieved when aggregating resources.

Finding effective solutions to support the growth of knowledge-based economies can be difficult, and sometimes this requires changing plans and modifying existing structures. However improving the system can be accelerated by taking intermediate steps, such as establishing a company to demonstrate the effectiveness of a different model.

Implications for business management or policy

In the search for policies to support the growth of knowledge economies, governments are often keen to replicate US and UK policies (as they are seen as reasonably effective). However many regional environments have additional constraints which may demand alternative approaches, such as centralised TTO offices that serve multiple universities and institutes.