DIT Hothouse: The Hothouse fuelling Ireland's entrepreneurship and commercialisation growth

Dublin, Ireland



General Information

Title	DIT Hothouse	
Pitch	The Hothouse fuelling Ireland's entrepreneurship and commercialisation growth	
Organisation	Dublin Technical University	
Country	Ireland	
Author	Dr. Victoria Galan-Muros (Technopolis Group UK)	
Nature of interaction	 Collaboration in R&D Commercialisation of R&D results Mobility of staff Academic entrepreneurship Governance 	 Lifelong learning Joint curriculum design and delivery Mobility of students Student entrepreneurship Shared resources
Supporting mechanism	 □ Strategic ☑ Structural ☑ Operational □ Policy 	
Summary	In 2007, Dublin Institute of Technology (DIT) created a technology transfer of- fice named Hothouse. It aims to maximise the commercialisation of technolo- gies developed by DIT researchers, with whom they have very good relations, and also supports the launch of knowledge-intensive start-ups, which is done through the New Frontiers programme. Hothouse has consistently outper- formed the rest of the technology transfer offices in Irish higher education in- stitutions due to their unique approach. This approach includes an effective team with an inspirational leader, a 360-degree view of the ecosystem where they operate, good relationship with all stakeholders, adequate expectation management, transparency and simplicity in their processes, flexibility and speed to respond to external requests and focus on what they are good at.	



1. BACKGROUND

Founded in 1978, Dublin Institute of Technology (DIT) is now one of Ireland's largest and most innovative university-level institutions, ranked in the top 100 HEIs worldwide under 50 years. DIT combines "the academic excellence of a traditional university with professional, career-oriented learning, preparing graduates for productive leadership roles". DIT is closely engaged with industry and the society and its mission includes the value of useful knowledge and the support for entrepreneurship. DIT aims to contribute to technological, economic, social and cultural progress.

Until 2007, a general industry engagement office focused on sponsorship had some contacts with industry, but there was no one dedicated to research commercialisation. DIT researchers presented their research at conferences and generate papers but there was no communication about how the research can be used in a practical sense.

In 2007, when only few Irish HEIs had any commercialisation capacity, Enterprise Ireland launched the 'Technology Transfer Strengthening Initiative', €30m to fund the hiring of licensing executives in HEIs. The funding spawned DIT Hothouse, which started as a three-person office to support research commercialisation in DIT.



2. OBJECTIVES AND MOTIVATIONS

The mission of DIT Hothouse is two-fold. It aims to maximise the commercialisation of technologies developed by DIT researchers and also supports the launch of knowledge-intensive start-ups.

Through Hothouse, DIT as an organisation aims to increases their impact in the regional innovation ecosystem, while gaining a source of funding. In particular, DIT Hothouse endeavours to support researchers to commercialise their research, which can also bring them financial benefits.

In supporting entrepreneurship, Hothouse seeks to support entrepreneurs in their activity with workshops, clinics, venture panels, and access to finance, mentors, research and infrastructure. At the same time, they strive to provide companies with access to cutting-edge knowledge and technology as well as providing investors with access to profitable investing opportunities.

3. STAKEHOLDERS

Hothouse has a large number of stakeholders, both inside and outside the university. Internal stakeholders include:

- DIT management which partly funds Hothouse, and support its activities;
- DIT researchers who tend to undertake more commercially-oriented research, which gives Hothouse an opportunity to license more research than even some of the bigger universities;
- Other DIT units (e.g. marketing or engagement) whose activities are related to Hothouse activities and with whom they keep a fluent communication.

Externally, the main stakeholders are:

- Governments at national and international level, such as the Irish government and its agencies together with the European Commission;
- Companies which are often presented interesting DIT research in their area to assess its innovativeness and whether they would like to work with the research team;
- Hothouse alumni with whom Hothouse keep a very close relationship and are often involved in Hothouse activities as mentors or investors; and
- Venture capitalists and business angels DIT Hothouse facilitates the networking between their companies/researchers and angel investors by setting up venture panels whereby the angel networks and VCs check novel inventions and innovative companies.



4. INPUTS

Hothouse is a unit within DIT that currently employs a director, three licensing executives for technology transfer, three professionals for entrepreneurship support, one marketing person and one administration person.

The Hothouse Director, Mr. Tom Flanagan, was an inventor himself, which gave him an intrinsic understanding of the potential for research and the people behind the technologies. Moreover, he has put together a small but very effective team of professionals and has created a supportive culture based on trust.

Hothouse is funded partly by DIT, partly by Enterprise Ireland (the cross-university collaboration – see box at the end of this case) and partly is self-funded from their returns from commercialisation, consulting services offered and sponsorship of different programmes.

The financial support received by Enterprise Ireland through the innovation partnership programme, is up to 80% of the funding for research projects comes from Enterprise Ireland and the IP originated from this projects will be owned by DIT. Moreover, through the Enterprise Ireland innovation vouchers (a source of funding for small projects up to €5,000) the company pays only the VAT on the project. EU funding also supports some of DIT project, typically the larger-scale ones.

The Hothouse office together with all the rest of the DIT activities have recently been relocated to a new education and research campus in the inner city of Dublin. The new campus at Grangegorman is a unique international innovation hub for the Dublin region, with education, research and health facilities co-located with industry, business incubation and community enterprise.

The Greenway Hub is a new 21,500 square foot Incubation Centre, located in the centre of the new DIT campus, Grangegorman. It was developed by DIT Hothouse and provides office space and supports to over 60 innovative entrepreneurs and their teams. The range of facilities include: own door business units, hot space desks, shared networking spaces and access to DIT researchers, technicians, laboratories, and equipment.

5. ACTIVITIES

The activities of Hothouse in order to support research commercialisation and entrepreneurship are:

New Frontiers Enterprising Support

This programme is dedicated to helping entrepreneurs to launch their businesses. Selected from 160-200 applications, 60 entrepreneurs per year are accepted into the programme in two rounds of 30. The selected entrepreneurs are primarily 25-35 year olds with at least a Bachelor Degree who are passionate but often have not validated their idea yet. The ideas are knowledge intensive, technol-ogy-focused and with high growth potential. Hothouse aims to identify 'the rockets', the high risk but high potential ventures that could create significant new jobs.

After their initial pitch, they receive feedback about how to improve their idea. Then they go through a 10-week programme part-time to test the feasibility. If this is accepted, they give up the day job and focus on the development of their venture, which includes workshops, peer learning, clinics with

mentors. For this, Hothouse hire in mentors such as accounting firms, legal firms, marketing firms etc. Hothouse also provides access to the hot desk areas of the incubator.

Hothouse also arranges venture panels who provide feedback and advice for the ventures.

"Even if investments are not made, it is useful for the angel or venture capital investors to get the opportunity to track an entrepreneur long before they actually invest, and it gives the entrepreneur a chance to get feedback from investors and more experienced business people", says Tom Flanagan.

Most entrepreneurs (around 70%) will have received angel or VC investment during the year. With that funding, they also try to get investment from Enterprise Ireland. Sean Mitchell was a particularly remarkable participant who started his business Movidius eight years ago, and has recently sold it off to Intel for €322m. The 'alumni' of Hothouse stay involved and can become either mentors or investors in upcoming new start-ups.

Hothouse organises several events each year including showcases for entrepreneurs presenting to venture panels (like a Dragon's Den) which connects the current participants with their alumni. The heavy peer-learning focus really helps to develop a strong network, which the entrepreneurs continue to value long after they leave the programme.

All this will be connected to an accelerator programme that is scheduled to be developed in 2017.

Technology commercialisation

Hothouse commercialises the knowledge and technologies of DIT researchers following a specific process, which they have used since their inception.

When Hothouse was established, their first activity was to conduct a technology audit, whereby they analyse the institution's research projects looking for interesting and novel inventions and technologies. Hothouse identified a core group of researchers (around 30) who had research with potential commercial applications and with whom they knew that they could work. They worked together with the researchers to develop the research to be commercialisation ready. As income started to flow in from the various licences, Hothouse employed additional staff, which then meant that they could expand their operations to support more researchers.

In order to also capture inventions, Hothouse decided to create an inventors' competition, which is open to all staff and students across DIT. Inventors provide a one-page description of their idea to enter. Hothouse would then do a patent search to see what has already been developed, send them the patent information and ask how their idea was different. This is a way of identifying potential inventors but also showing how Hothouse adds value to the process. This helped them to identify non-scientific inventors, and helped them to reach a wider audience.

In the commercialisation process, Hothouse place researchers firmly in the 'driver's seat' when it comes to how their research can or will be used, which has a reassuring affect for the researcher who otherwise may feel threatened by Hothouse's involvement. Hothouse offers them legal, marketing and network support.

Once the technologies are identified and the IP is defined and designated, Hothouse offers a **range** of commercialisation paths.

One of them could be **licensing to existing business**. In this case, to offer the potential for multiple income streams from the one technological discovery, Hothouse license each application rather than

designating the entire range of applications for the technology in a single license to one party. Starting with the technology, Hothouse identifies all the applications that could come from the technology. They then go and speak with the targeted companies about the applications rather than the original technology and licence only the applications that the partner needs. This way, they commercialise multiple licences for different application areas to different partners.

Another option could be that the **academic themselves create a spin-out company** around the IP. In this case, Hothouse carefully manages the researchers' expectations before the decision is made, since researchers are often not aware of what being an entrepreneur really requires. As such, Hothouse staff gives advice, explain the full scope of the activities and encourage the academic to think of the full implications of this decision (i.e. raising money and being pulled away from their research), and if this is really what they want to do. Researchers are thankful for this advice. If the researchers want to go ahead with the new company, Hothouse offers them the support for the start-up activity.

However, if the technology is best **commercialised via spinout and the researcher is not interested in being the entrepreneur**, Hothouse would offer to bring in an entrepreneur to create a spinout company around the IP, either as a partner for the researcher or alone after licensing in the IP. The entrepreneur must be someone who has experience with developing ideas and in getting finance, but also someone that can work with the researchers. Enterprise Ireland has a business partner programme and Hothouse also has a network of VCs, angels and alumni as potential partners, although sometimes good CEOs are hard to find.

When it comes to **sharing the financial spoils**, within DIT researchers are entitled up to 70% of the revenue from commercialising their IP, which is higher than the average in other universities. Generally in Ireland, within a university there is a policy that often distributes 30% for the researcher, 30% for the research group and 30% to the university. At DIT as the license value increases (over €100,000) the researcher's percentage of the return reduces to be closer to the norm.

The set IP policy applied by DIT Hothouse for the process of research commercialisation, provides **transparency** for those involved in the commercialisation process, both researchers and potential business licensees.

Apart from the commercialisation of the IP generated by DIT researchers alone, sometimes researchers also undertake research or consultancy contracts with companies through which the company will pay for the total cost of the project and own the IP developed during the collaboration. This experience has highlighted that the sooner the business partner is involved in defining the research, the better the development of the technology, in line with their needs.

Hothouse commercialisation activities for other HEIs

A key milestone in the development of Hothouse occurred when the governmental Hunt report (2011) said that HEIs should consider consolidating and merging. With this background, Hothouse decided to approach four institutes (IT Tallaght, IT Blanchardstown, IADT in Dun Laoghaire and the National College of Ireland) that did not have licensing officers about a consolidation of the technology transfer function run by Hothouse staff.

The result, was the creation of the Dublin Region Innovation Consortium, through which Hothouse helps to commercialise the research at all five institutes to enhance economic impact in the Dublin Region. One of the multiple challenges of this process was the need to **build trust from the begin-ning** across the organisations and avoid them feeling that Hothouse might steal their research or company clients. Hothouse formalised these relationships through senior level buy-in and an alignment of their expectations.

Another challenge to overcome was the need of a **new commercialisation model** due to the different IP policies of each HEI. In the agreed model, HEIs still retained their own IP policies and Hothouse delivers a 'consultancy service' to their researchers for a fee. The knowledge and IP is "ring-fenced" within the HEI and is not shared with researchers at DIT. The local institutions also retain their local liaison person, who is responsible for getting licences approved by their management and for the relationships with researchers. Enterprise Ireland has funded the Hothouse consultancy services to these HEIs since 2012.



6. OUTPUTS

In a very short period of time, and with a very 'lean' staffing model, the outputs of Hothouse are quite remarkable. In terms of licenses, 114 licence agreements have been made since their inception. That rapid development has meant that Hothouse now completes typically 10% to 20% of all technology transfer licence deals in Ireland, based on only 3% of the research expenditure, outperforming all other Irish university technology transfer centres. At the same time, Ireland outperforms most other countries in Europe, according to the EU KTS study (2012).

Its close relationship with business has resulted in 34 high-value industry research agreements (company contributing more than €25,000) signed. Additionally, 390 qualified inventions have been generated, 30 spin-outs have been created from DIT research and 72 patent have been filled.

7. IMPACTS

As a result of their entrepreneurship and commercialisation activities, DIT Hothouse alumni have raised over €164m in equity investment and created more than 1,600 high-tech jobs, contributing to the local industry.

Some recent success cases are the semi-conductor company Movidius, which was acquired by the US chip maker Intel for €322m and the award of the prestigious Irish Times Innovation Award for Creative Industries 2016 to the New Frontiers Alumnus, Dublin Design Studio. A further success is the case of the spin-out Kastus. With an antimicrobial technology to control superbugs developed by the researchers in the DIT Centre for Research in Engineering Surface Technology (CREST), Kastus has raised €1.5m investment as it seeks to boost international sales.

The impact of the location into the new campus will most likely be seen in five years.



8. BARRIERS AND DRIVERS

One of the <u>barriers</u> for Hothouse is the fact that they are working within the university structure. Universities are of necessity large **bureaucracies** that tend to make changes slowly. Dealing with the university bureaucracy has taught Hothouse the need to 'set up the dominoes' (a process) to get the decision made as fast as possible. For example, there may be a number of people that need to be convinced of a change before it can be accepted and it takes time for each of them to agree to the change.

Hothouse have their aims and strategies to enable them to move faster, but they also accept that they are in the university and bound to that culture. An **understanding of this process**, and the fact that it will go slow, has been a driver for Hothouse to get things done in the required timeframes. They understand the university restrictions and to work within this. Hothouse management tries to buffer the team from the necessary reporting so that the licensing and entrepreneurship people can do what they need to do to serve the clients.

Staying focused on what they are doing is always challenging in a university environment, which generally encourages collaboration and involvement in multiple initiatives. Moreover, they have a large number of **stakeholders** inside and outside the university whose **management** is complex and time consuming. However, and in spite of the difficulties, Hothouse is committed to stay focussed, as one of the pillars of their effectiveness.

"In this position within a university, you can be pulled in so many different directions. One could focus on training programmes, developing new buildings, looking for philanthropy, and other university activities. However, nobody else knows how to do licensing deals, nobody else knows how to launch start-ups, or engage industry in research collaboration so we **focus** on these absolutely" said Tom Flanagan, Hothouse Centre Director.

Another barrier related with research commercialisation is the **difficulty to find good entrepreneurs** to take some of the university IP and to further develop the idea. For this, Hothouse needs someone who can get financing, have experience in business development and can create a successful company out of a DIT technology. If the researcher is still involved in the company, it is even more challenging to find someone that has all these characteristics and who also have a good working connection with the researcher.

A key **driver** for the success of Hothouse is the genuine connection they have built with the researchers, the source of ideas and technologies. Hothouse shows genuine interest in the researchers and approaches them with a transparent process in order to get buy in from them and build a connection based on **trust and commitment**.

When researchers talk about their research, Hothouse always listens while politely challenging them by asking market-related questions. Hothouse often bring researchers in contact with business to see whether industry is ahead or behind their research or to learn the different ways they are doing research in industry, which often challenges researchers to think differently. This also often highlights to the researchers whether their research is as unique and cutting-edge as they think. An important development was to understand academics and their working schedule in a better way and then **adapt to the researchers' schedule**. This resulted in significantly reducing the number of formal meetings. Instead, Hothouse tries to informally catch up with the researchers in their labs or office.

For research commercialisation, the starting point is that it is the researchers' IP and Hothouse is simply there to support them in the commercialisation process through legal, marketing and networking support. Researchers are given the first say in how their research will be used and this eliminates the traditional view that researchers have of TTOs as 'IP Police'. All options are clearly explained and this **transparent process** is essential to establish trust with researchers and build realistic expectations.

In the words of Dr. Robert Ross, a Senior Lecturer in the School of Computing at DIT: "In my experience no other technology transfer centre is as engaged and as positive as DIT Hothouse. The team members consistently push the innovation agenda, and do so in a way that is sympathetic and understanding of the day-to-day life and priorities of academic staff," he said.

"While they take cognisance of the various pressures we have to deal with, a factor that in itself is refreshing, they also understand our research and our passion for innovation. They are very helpful and positive and put themselves at our disposal, providing advice and inspiration. They really excel when it comes to forging contacts. They are able to put us in touch with the right people in suitable companies and they help fast track the relationship-building process."

9. FUTURE CHALLENGES

Going forward, **balancing a market pull versus market push** approach to find the right mix of new to the world innovations and more incremental innovations present a significant challenge. The traditional model of developing new research is very much a 'market push' approach whereby the research is done and the technology is already developed, DIT needs to push this technology in the market, however there are significant issue with this approach.

As technology does not sell itself, Hothouse needs to invest time and effort looking for companies that might be interested in it. However, selling technology has its own parameters and a company must have the particular need at the specific time. It might be that the time is not right and they have done their due diligence on the idea, approved it, but they do not pull the trigger on acquiring it simply because the timing is not right.

The last main challenge is to "**keep it fresh**". Hothouse is often trying new initiatives and evolving as an organisation, for example they were the first to use short videos in Ireland to promote technologies, now they are developing a new approach to marketing technologies by developing sophisticated inbound online marketing.

10. CONTEXT

Dublin is a central place in Europe for technology with many large international ICT companies present. The assumption that this gives DIT an advantage in respect to research collaboration however, is misguided as most are subsidiaries. These companies typically have their own IP and researchers who are not based in Ireland, and so therefore the local office is primarily interested in talent acquisition rather than research relationships. As a result, Hothouse discovered that to licence a technology to these companies, it was often better to go to the main research centres in the US or mainland Europe and find a champion there first.

At a national level, Ireland has a supporting environment for technology transfer activities, with very relevant roles of the following organisations:

- Enterprise Ireland makes Hothouse's existence easier by funding collaboration with business and the collaboration across the institutions as well as undertaking prescreening of potential business partners;
- Knowledge Transfer Ireland is funded by Irish Universities Association (presidents of universities) and they provide a transparent, centralised office which is a good starting point for SMEs new to the process. There are templates for licensing and other processes and they have developed a national IP protocol (a set of rules of how universities should engage with business (e.g. if the business pays 30%, what should they expect as a result of its commercialisation). They also support researchers, TTOs and entrepreneurs; and
- The Local Enterprise Office is a Dublin-based organisation responsibility to develop business. They sponsor activities such as 'Be Inspired', a promotion with students to get them interested in starting their own businesses.

11. KEY SUCCESS FACTORS

10 key factors have been identified as crucial for Hothouse's success:

1. <u>Focus</u> - They are extremely focused and are clear about what they are good at: commercialising technology and supporting entrepreneurs, despite the many distractions that could pull them in other directions;

2. *Easiness* - They have a philosophy to be flexible and very easy to work with, while effectively managing the expectations of their stakeholders;

3. '<u>Big picture' understanding</u> - The DIT Hothouse team has a 360 degree understanding of the ecosystem where they operate. This 'big picture' is essential to understand how their different actions affect each of the stakeholders and to manage their activities more efficiently;

4. <u>Personal relationships over IP</u> - They build trusted relationships with researchers, the university management, investors, alumni and other stakeholders in their ecosystem so that a more open collaboration can take place built on a deep understanding of their interests and needs. They have taken some of the mystique associated with the commercialisation activity away;

5. <u>Business acumen and processes</u> - They apply business acumen having very professional people, structures and systems for leveraging those relationships and to bring university knowledge or external innovative ideas into use;

6. <u>Transparency in the process</u> - Hothouse model is respectful, realistic and underpinned by transparency of the processes, using clear guidelines for funding application, licencing, or launching a spinoff and including FAQs. This also helps to manage expectations and avoid misunderstandings;

7. *Differentiation between applications and technologies* - Hothouse highlights the importance of seeking different applications for each of the technologies. This multiplies the chances of licencing (as they licence per application) or the number of markets to operate, if a start-up is created around it;

8. <u>The profile of the DIT Hothouse founder and director</u> - Tom Flanagan has global business experience, inventions patented, a large network in Ireland and outstanding interpersonal skills is another key factor in the success of the unit;

9. <u>The DIT Hothouse team</u>. In words of Tom Flanagan, "we have to get people excited about getting people excited. We recruit people based upon their interests, so we ask them what they love to do and we match up those interests with what we need them to do. We have built a high-performance team and we try to develop a fun working environment and a supportive culture with good 'banter' and relations based on trust. It is possible for a small and 'lean' team to create a large impact inside and outside DIT"; and

10. <u>A supportive environment</u> - with organisations such as Enterprise Ireland and Knowledge Transfer Ireland, which have many funding programmes to support Hothouse activities.





12. MONITORING AND EVALUATION

Hothouse monitors its research collaborations with industry, its licences and its spinouts. It typically does 10 significant collaborations, 20 licences and five spinouts per year based on €18m of research. These metrics are reported annually to the President of DIT and are included in the DIT Strategic and Operational Plans.

13. SUSTAINABILITY MEASURES

Hothouse was recently awarded funding from Enterprise Ireland for the next five years and is already thinking about how to make its operations less dependent on such an award. It is looking at increasing the share of licence fees retained by hothouse, securing additional overhead on each research collaboration and providing for fee consultancy services to other technology transfer offices and to industry particularly SME who may not have dedicated technology scouts or IP specialists.

14. TRANSFERABILITY

The success of DIT Hothouse is based on a series of principles that are completely transferable to any other intermediary organisation, for example transparency, focus, good relationships, respect, efficiency, expectation management, flexibility, etc.

These principles will need to be adapted to the new organisation, but all of them will enhance the performance of any unit operating in the interface of universities and business.

15. AWARDS AND RECOGNITION

DIT Hothouse Licencing Executive, Andrew Marsh, won the Knowledge Transfer Ireland, Research 2 Business Collaborative Impact Award (2016).

Two technologies commercialised by DIT Hothouse has also been awarded at the Enterprise Ireland Toplink.ie Innovation Arena. BovAlert won the Animal Health Award (Start-up Category) (2014) and Smart Chick won the Software Special Merit Award (2015).

In 2014, DIT had a mid-term review of their operations and received a gold standard rating for their operation from external agencies and experts.

DIT Hothouse also won the Shell Livewire Services to Enterprise Award (2007) and The Irish Internet Association Social Contribution Award (2010).

16. LINKS

DIT Hothouse <u>http://www.dit.ie/hothouse</u>

DIT Hothouse success stories <u>http://www.dit.ie/hothouse/hothouseoverview/successstories</u>

17. CONTACT PERSON



Tom Flanagan Director of DIT Hothouse tom.flanagan@dit.ei