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The IMAGINE IF! Accelerator: Leveraging the UK ecosystem to attract and accelerate early stage life-science companies

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Abstract: UK institutions are well known for their ability to spin-out high quality life-science companies. The convergent nature of high quality research output from multiple academic powerhouses, large STEM graduate populations and established entrepreneur ecosystems has led to ample opportunities for early engagement with promising start-ups. Accelerator programs are being employed throughout the UK and indeed the world to more efficiently capture, filter and award university spin-out companies at the early stage. Both entrepreneurs and investors seek to gain from engagement with the accelerator model. Crucially, entrepreneurs benefit from access to non-dilutive funding streams, mentorship and incubation options, presented within a formal training program. Investors are provided a wide range of pre-filtered companies that pitch to them directly on a competitive basis. The IMAGINE IF! competition, conceived in 2016 by the Innovation Forum, was held to bring a global selection of promising startups together in a competitive pitch-off towards the UK investment community in Cambridge.

Keywords: Accelerator, Innovation Forum, IMAGINE IF! Pre-seed start-up

1. Introduction

According to statistics published by the Centre for Entrepreneurs, 608,100 new businesses were incorporated in the UK start-up ecosystem during 2015, an annual increase of 4.6 % [1]. Of those, London contributed over 200,000 companies to the list. Boroughs in the capital city were also featured as top areas for company creation on a per capita basis – accounting for 15 of the top 20 areas. Although London remains unchallenged as a UK hub for start-up funding, support and growth, regional centers continue to perform well with established academic and financial hubs in Cambridge, Oxford, Manchester, Edinburgh, Birmingham and the North East also maintaining significant start-up ecosystems [2]. In addition to its well established start-up

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ecosystem, the UK has historically been a world leader in academic research in the life sciences, with UK institutions in 2015 publishing more in the top one percent of most cited STEM articles than any other nation excluding the US, and graduating over 100,000 scientists [3]. As supported by both university affiliated tech transfer offices (TTO's), top down government policies and bottom up grassroots organizations, many graduates will go on to become life science entrepreneurs, incorporating technologies developed from their graduate education into a startup company.

Their technologies and by extension the companies that they form become embedded into local biocluster ecosystems. As the UK academic ecosystem is divided into separate regions, formation centers around high-performing academic institutions that offer qualified local talent pools from which high-quality early stage technologies are reliably sourced.

UK University spin-outs represent roughly 30% of all life science start-ups registered in 2014, with most clustered disproportionately around universities with excellent research standards [4]. TTO's function within UK universities is to protect and commercialize intellectual property affiliated university research. In the UK, TTO's often seek an equitable share of the financial benefits of success on behalf of the university. This equitable share will vary dependent on the institution in question. UK universities lead the world for their reputation in technology transfer, with a higher level of engagement with industry through licensing than US universities when adjusted for research income. Many global companies and investors cite the UK as one of the best places in the world to form and scale-up new start-ups, with UK universities setting up twice as many new companies as the US annually with about twice the equity income received per pound spent per capita. In addition, the start-up ecosystem is moving towards longer lived, higher quality businesses, with an increase in sustainable spin-outs (three year survival), patent applications and patents granted over a recent ten year survey [5].

University affiliated technology transfer offices ensure that fledgling start-ups are provided with intellectual property (IP) protection, investment strategies and advice to help them securely and effectively launch a high-value added, IP protected innovative science start-up. Protection of IP remains the most predominant concern for early stage ventures in the UK. Since the establishment of designated TTO's across all UK life science academic institutions in the early 00's, there have been clear increases in the number of patent applications applied for, granted and the subsequent longevity of university affiliated spin-offs generated [4].

2. The Accelerator Model and its place in Life Science start-up culture

As UK universities are now generating more, higher quality early stage life-science start-ups than ever before, early stage capital institutions and individuals are employing numerous strategies [6] to engage, filter, evaluate and invest in high quality technology in a competitive environment. Table 1, sourced from a 2016 Harvard Business Review into the conceptual framework of an accelerator model for investment provides the typical components of an accelerator model. The overall objective of an accelerator program is to source, engage and evaluate early stage and promising companies whilst their technology is undervalued; providing an efficient low cost 'soft' platform for tech-scouting before formal agreements may be reached.

Table 1. Accelerator Profile at a glance

Duration	3 to 6 months
Cohorts	Yes
Company Interaction	Virtual / event driven
Selection	Competitive, cyclical
Venture Stage	Early
Education	Seminars/Workshops
Mentorship	Intensive - short duration
Venture Location	On Site/on-line
Incentive	Cash Prize/Services
Equity Taken	Typically, small or none
Incubation	Desirable for selected cohort members

Start-up accelerators support a cohort of early-stage companies through education, mentorship and potential financing during a fixed-period. Post sourcing, companies are preferentially selected through a rigorous and often multi stage filtration process, then matched with potential downstream investment options, incubation space and/or service based opportunities.

Our in-house research indicates that most accelerator programmes utilize non/low dilute capital as a key incentive towards early-stage companies. By surveying 108 accelerators operating globally in 2016, we have determined that most accelerators advertise a £20 - 30,000 cash prize towards cohorts, considered as a typical investment required to move a technology centric company into the next inflexion point at an early stage. Of the 108 accelerators surveyed, 44% did not take an equity stake, with the remaining 66% of accelerator affiliated organisations taking from 2 - 10 percent of the participating and/or winning participants companies. Many accelerators allow for online education components, distance-based mentorship and provide flexible time commitment; attractive options for early stage company directors also involved in graduate/post-graduate education or other employment. This is most evident when the start-up is geared towards a 'high-value added technology' area, where it is more likely that the core technology will be derived from an academic setting spin-out; and/or where the founders may choose to continue involvement in an academic setting alongside a business venture and is evidenced by several well-known and successful accelerator models operating in the UK [7, 8].

3. IMAGINE IF! Accelerator

In response to the ample opportunities for high value added technology company creation in the UK, the Innovation Forum's IMAGINE IF! Accelerator platform was established as a start-up accelerator program specifically geared towards engaging young scientists with mentors in a competitive multi-tiered programme. 272 companies submitted business plans from across the world during an eight week call for applicants, with roughly two in three represented by healthcare related technologies. Companies were selected basis on technical and commercial due diligence, matched to a mentorship network and then vetted to determine a final cohort of 15. The finalists were invited to pitch to a panel of investors during the Innovation Forum's annual conference in Cambridge.

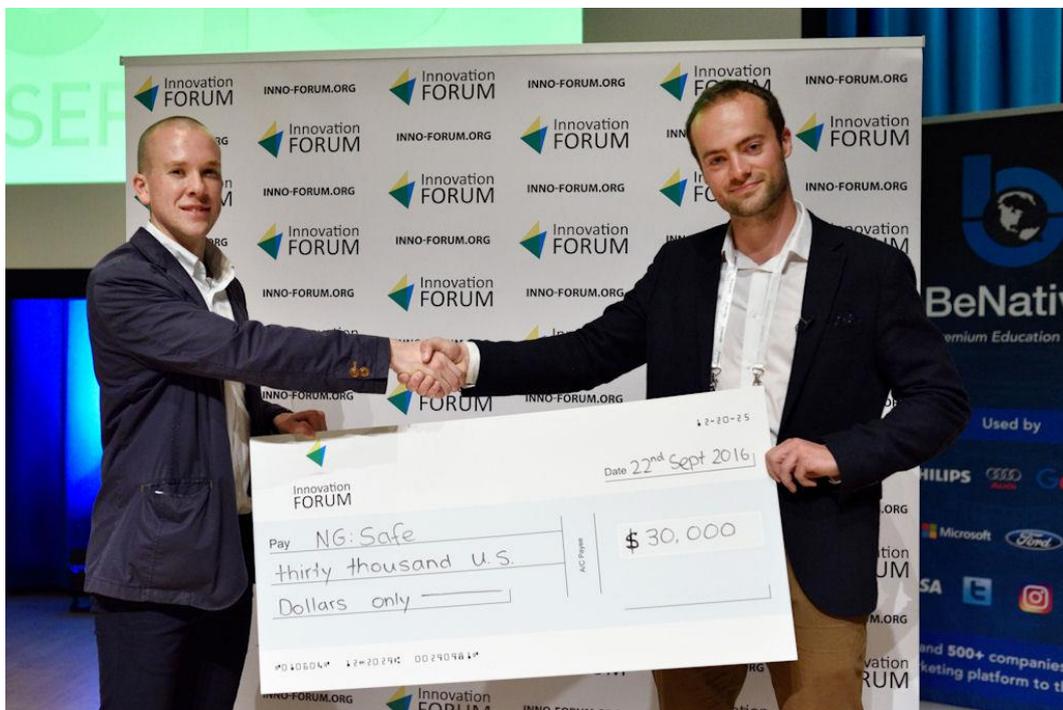


Figure 1. Photo (from left to right): Thomas Bray (IMAGINE IF! Accelerator) and Graham Mills from NG:Safe the winner of IMAGINE IF! 2016.

An independent judging process rewarded the IMAGINE IF! A non-dilutive \$30,000 prize to NG:Safe.

NG:Safe is a Cambridge based med-tech start-up, developing a bedside diagnostic test that ensures correct placement of nasogastric feeding tubes (NGTs). NGTs are routinely used in the critical care setting but misplacement in the lung can be fatal. NGT misplacement is an NHS 'Never Event', on par with operating on the wrong organ, but is still a routine occurrence in the western world. The global market for NGT placement is currently estimated at over £1.6bn, dominated by 'Gold Standard' Chest X-rays required on initial tube placement. The alternative,

a cheap and unreliable pH test, is inadequate in the critical care setting. NG:Safe will bring an accurate and cost effective bedside diagnostic test to the clinic by 2020.

NG:Safe's core technology exploits fundamental differences between the biochemical environments of the lung and stomach, making it an order of magnitude more sensitive than currently available solutions. NG:Safe is also semi-quantitative, meaning it can not only tell you where an NG tube is placed but how confident we are on this prediction. This non-binary outcome has polled extremely well in the critical care community. By supporting NG:Safe, you are helping to ensure that avoidable deaths caused by inappropriate nasogastric feeding tube placement are a thing of the past.

John Cassidy, Co-founder, and CEO of NG:Safe said:

We are absolutely thrilled to receive these funds from IMAGINE IF! Accelerator. Along with the mentorship and advice offered by the Innovation Forum, these funds will enable us to develop a working prototype of the NG:Safe cassette. Ultimately IMAGINE IF! will help NG:Safe get into the clinic faster and help us to realize our goal of avoiding accidental death by nasogastric tube misplacement sooner.

Through the Innovation Forum, we established new connections with professionals from different areas, and of different expertise's, and we look forward to maintaining these ongoing relationships. We were particularly pleased with the flexibility of the Cambridge IF team – who encouraged us to reach out to mentors we were not originally assigned, but who had expertise directly relevant for NG:Safe.

With the funds provided by the Innovation Forum, NG:Safe will continue to work toward building a working prototype in the next year. With the support of the IF accelerator, we will work on continuously improving the business case for NG:Safe, ensuring that our customer base is ready for the launch of our prototype devices."

The IMAGINE IF! Accelerator is a cyclic annual programme that looks to leverage the gap between the initial creation of high-value-added, technology centric companies with their first tranche of investment. Please visit inno-forum.org for more details.

The programme



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Thomas Bray is completing his PhD in Cancer Research at the University of Edinburgh. Prior to that Thomas lived in China, where he learnt Mandarin to a high level. In 2016 he oversaw the development of the IMAGINE IF! Competition with the Innovation Forum. In 2017 he starts a new position in Oxford working, for a well-known disruptive UK start-up in genomics.