

CAMBRIDGE I-TEAMS: **Commercialising Innovation while Empowering Budding Entrepreneurs**



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1. Overview of Cambridge i-Teams

What? Cambridge i-Teams is a university programme that aims to assess the commercial viability of new technologies while instilling entrepreneurial interest amongst its participants. Under the auspices of the Engineering Department, University of Cambridge, Cambridge i-Teams links six schools within the university providing an exciting cross disciplinary, hands on project that revolves around entrepreneurship, consultancy and emerging technologies.

When? Inspired by the successful execution of iTeams MIT at the Massachusetts Institute of Technology, US, Cambridge i-Teams runs successfully at the University of Cambridge, UK as a termly programme since January 2006.

Who? Through i-Teams, budding entrepreneurs among the university members from all backgrounds are given the opportunity to develop their entrepreneurial interest in the backdrop of technology commercialisation. i-Teams pursues dual objectives in delivering outputs to the technology inventor as well as to its student participants.

How does i-Teams benefit inventors? Technology inventors among the university members wanting to investigate the commercial viability of their newly discovered technology and seeking access to useful market research propose a project to the i-Teams organiser. Upon a successful application, i-Teams helps the inventor to determine the best route for the technology commercialisation. This is achieved through the commitments of the inventors, i-Teams participants, mentors and facilitators.

How does i-Teams benefit participants? i-Teams participants among the university students apply to i-Teams projects. Selected students are then grouped and work together as a team for a term or nine weeks to assess the commercial prospects for the new technology by interacting with real target customers in relevant industries. Each i-Team consists of up to seven students from different disciplines and experience. They are guided by the technology inventors, a dedicated industrial mentor, facilitators and the i-Teams Programme Director, Amy Weatherup. At the end of the programme, their findings are presented to a diverse audience of business and academic experts.

Upon the successful implementation of i-Teams, both the inventor and the participants do not just gain the taste of the processes needed commercialise technology, but they also gain invaluable, hands-on, entrepreneurial experience. In doing so, the inventor saves time and energy to focus on the most viable market for their new technology to be commercialised in. The participants on the other hand, discover the right path to entrepreneurship beyond what can be learnt in books.

There are currently two different i-Teams programmes at the University of Cambridge namely Technology i-Teams and Development i-Teams. The former looks at how to take real Cambridge innovations into the outside world. The latter looks at how to use university inventions in the developing world. Development i-Teams was recently introduced in 2015 following the success implementation of Technology i-Teams. It was brought to bear in partnership with the Centre for Global Equality. In sum, the hallmark of i-Teams is to bring together the brightest students and the university ground-breaking research to develop a commercially viable strategy and build university-industry links.

2. Empowering young entrepreneurs

Over a decade, Cambridge i-Teams has been empowering young inventors and students. They engage in our entrepreneurial endeavor as the inventor wishing to assess the viability of their new technology or as the participants wanting to conduct a project looking at the commercial viability of the new technology. Through training and mentoring, we provide them with the technical support they need to succeed and access to the global business network.

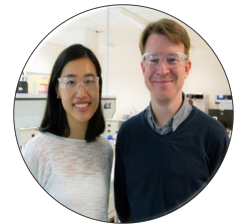
Any members of the university wanting to have a team are welcomed to propose their projects. As for the participants, this programme is currently open to the fourth-year undergraduate students, postgraduate students completing their Masters or PhD as well as post-doctoral researchers. Although we do not impose age limit as part of the requirements, most of our inventors are aged between 20 to 40, while the participants enrolling in i-Teams are aged 25 and under. Many of our inventors and participants have already led the charge in launching their own start-ups and hit major business milestones while only in their early 20s.



"I was one of the first students who joined i-Teams. The experience really shaped my career, as I changed professional course and from an engineering student doing his PhD, became a business consultant and then project manager, and I have now founded my own company".

George Lentaris (i-Teams 2007), Founder of EnerVibe

Dr Roger Coulston and Dr Jing Zhang first attended i-Teams as team participants while they were studying for their PhDs. In 2013, they bought their joint scientific research to i-Teams as a project to investigate its commercial potential. As the result of the positive industry feedback gathered by i-Teams, they entered and won the Cambridge University Entrepreneurs Business Creation Competition and set up a start-up called Aqdot. The company has raised several millions of pounds of investment and will shortly launch its first commercial product.

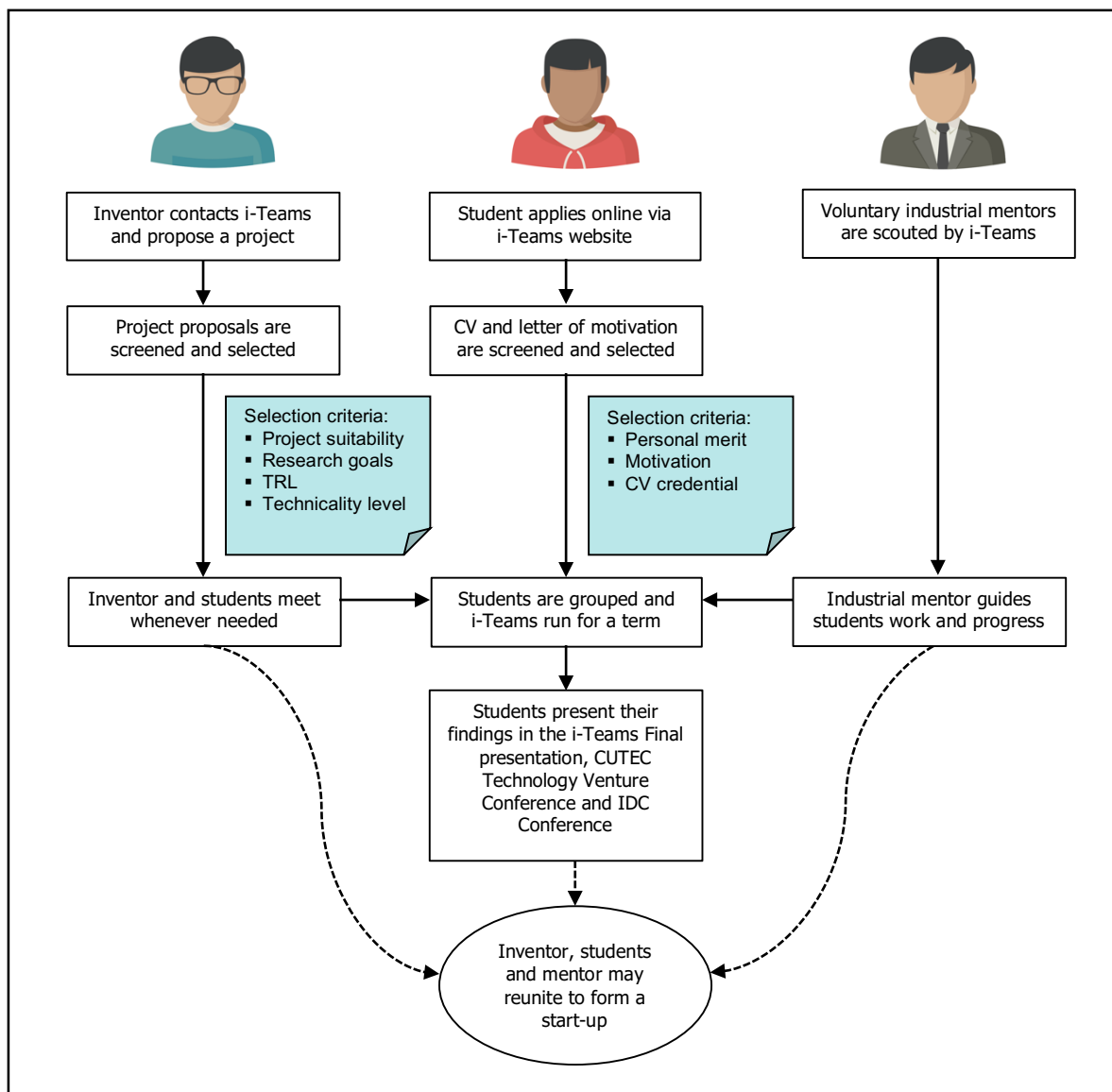


3. Application and screening process

We receive an overwhelming number of applications to join i-Teams from both the inventors and students. In selecting the projects, inventor's proposals are thoroughly screened and selected. Projects are sourced from various inventions at the University of Cambridge departments. Anyone working at the university are welcome to propose their project. This includes staff and research students. We have a rolling application process and try to accommodate any project that is suitable. Projects are selected based on several criteria namely; project suitability, goals of the research, technology readiness level (TRL) and level of technicality involved.

Since inception, i-Teams has risen in prominence among students. When applying online, student applicants are asked to provide a Curriculum Vitae (CV) and a covering letter explaining their interest in participating in the programme. They are also asked to select the project that they wish to work on. Nevertheless, all the matter pertaining to the team allocation rests solely with the organiser. This is to ensure a cross disciplinary line-up that results in a well-distributed team. As it stands, i-Teams is open for students from the schools of Physical Sciences, Technology, Life Sciences, Social Sciences, Arts & Humanities, including PhDs, postdoctoral, MBAs, and Masters students. Applications are screened based on personal merit, motivation and CV credential.

i-Teams application and screening process



4. Strategies to encourage inclusion

To ensure inclusiveness, i-Teams selects participants from a plethora of backgrounds. We strongly believe that the wealth of background breeds rich, cross-cultural and innovative ideas. In line with the university Equality and Diversity Strategy 2016-2021, i-Teams takes proactive measures to foster inclusion of diverse candidates. We recognise the strong case for improving the level of diversity in our programme which can be traced in the recruitment process prior to the programme, during the execution of the programme and after the programme.



Before the programme, the diverse candidate pool is carefully scoured to make sure that the programme results in a group of students that reflect the diversity of age, gender, academic and personal background. In doing so, i-Teams gains access to a wide variety of viewpoints. Due to the growing interest in this programme, we started to open application to the undergraduates since 2010. This is to ensure that interest in i-Teams are equally valued.



To ensure that all university members have access to the information about i-Teams, we do not rely solely on our official website as a means of communication because we do not want to limit the range of potential candidates who are exposed to the programme. Without abandoning the main recruitment channel, we constantly disseminate information through the departmental email as well as social platforms such as LinkedIn, Twitter and Facebook.

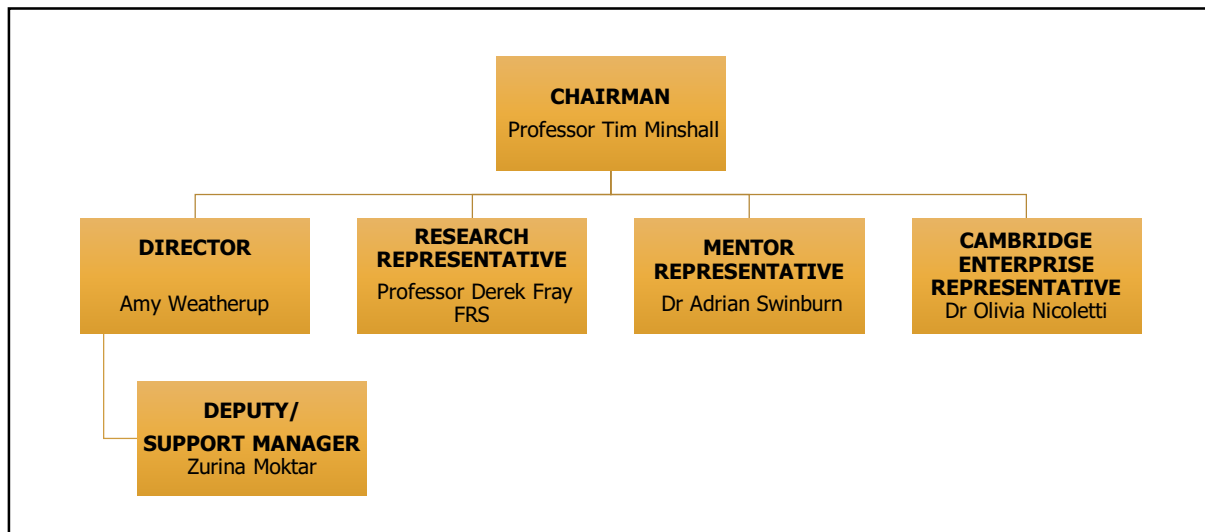
i-Teams screening process is determined only by merit; thus, no application is treated less favourably than another. Although students are asked to state the choice of the project they wish to work on, team allocation is done in a way that would reflect diversity of age, gender, academic discipline and personal background. Whenever possible, group allocation is randomised in a purposive manner.



During the programme, anti-bias aspiration is adhered to strictly. In addition, we also set and enforce ground-rules for respectful interaction in i-Teams sessions such as guidelines for contributing and responding to ideas. In applying the inclusive mentoring, we listen to the needs of inventors and students with a variety of backgrounds and abilities. Hence, when preparing teaching materials, we highly regard socio-cultural contexts. Our commitment to encourage inclusion and diversity persists even after the programme has completed. We monitor participant's diversity and aim at improvement in the future.

5. Infrastructure, support and links

i-Teams steering group





















Ten years ago, entrepreneurial opportunities within the institution were very limited and mostly designed for students in the business school. In i-Teams, we provide a unique opportunity for all university members to pursue their entrepreneurial interest. Breakthrough research, quality mentoring and continuous support from the stakeholders are the pillars of i-Teams infrastructure. We integrate resources within and outside the university. Through the university global network, i-Teams inventors and participants benefit from the collective exchange of resources and intellectual ideas. i-Teams receives generous and ongoing financial, enthusiasm and development support from various bodies within and outside the university.

i-Teams also overlaps coherently and complements several entrepreneurship initiatives within the university including Cambridge Enterprise, Cambridge Innovation and Knowledge Centre (CIKC), Cambridge University Entrepreneurs (CUE), Cambridge University Technology and Enterprise (CUTEC), ideaSpace and Accelerate Cambridge. Apart from financial support and expert advice, these entities also play crucial role in the preparation and execution of i-Teams.

Prior to i-Teams, Cambridge Enterprise is heavily involved in looking at the intellectual property of the projects that often originated from the university laboratories. Representative from Cambridge Enterprise together with the inventor propose a project based on consensus achieved between them. During the execution of i-Teams, Cambridge Enterprise is also involved in giving a talk on the University of Cambridge Intellectual Property Policy and route to market for the university technology. After the completion of i-Teams, the participants make recommendations to the inventor. Their valuable findings are also shared to the wider audience of business experts, potential investor and researchers. Three platforms for the dissemination of findings are during the i-Teams Final presentation, Technology Venture Conference organised by CUTEC and International Development Conference (IDC) organised by the Centre for Global Equality. Post i-Teams projects are often given further incubation support by the ideaSpace, the Accelerate Cambridge and the Centre for Global Equality Cultivator (CGEC).

These entrepreneurial initiatives are all based within the vicinity of the university enabling inventors and participants to rapidly gain valuable insight on technology commercialisation while cultivating enterprising interest.

Support for i-Teams and links to other entrepreneurial initiatives

Locus	Institution	Remit	Support given to i-Teams
Internal	 <p>University of Cambridge UNIVERSITY OF CAMBRIDGE</p>	The university where Cambridge i-Teams is based.	<ul style="list-style-type: none"> ▪ Financial support/sponsor ▪ Source of inventions and participations
	 <p>Engineering Department UNIVERSITY OF CAMBRIDGE <small>Department of Engineering</small></p>	The university department that jointly support the implementation of Cambridge i-Teams.	<ul style="list-style-type: none"> ▪ Venue for talks, workshop and weekly meeting ▪ Administrative support
	 <p>Cambridge Enterprise (CE) UNIVERSITY OF CAMBRIDGE enterprise</p>	The Technology Transfer Office and a wholly owned subsidiary of the University of Cambridge.	<ul style="list-style-type: none"> ▪ Financial support/sponsor ▪ Licensing advise for inventors ▪ Representative deliver talks/involve in team meetings
	 <p>Cambridge Innovation and Knowledge Centre (CIKC) CIKC CAMBRIDGE INNOVATION AND KNOWLEDGE CENTRE <small>Advanced Manufacturing Technologies for Photonics and Electronics</small></p>	Centre of excellence for low temperature processing for applications in computers, displays and communications.	<ul style="list-style-type: none"> ▪ Financial support/sponsor ▪ Expert advice on the commercial exploitation of early stage university technology
	 <p>Cambridge University Entrepreneurs (CUE) <small>CAMBRIDGE UNIVERSITY</small> entrepreneurs <small>VISION TO SUCCEED</small></p>	Student run club that accelerates entrepreneurship and provides training for the university members and alumni.	<ul style="list-style-type: none"> ▪ Platform for i-Teams participants to share findings and present at the CUE Business Creation Competition ▪ Help with advertising to students
	 <p>Cambridge University Technology and Enterprise Club (CUTEC) CUTEC <small>Cambridge University Technology and Enterprise Club</small></p>	Student run club that organises events where business-minded entrepreneurs and academia interact with industry professionals.	<ul style="list-style-type: none"> ▪ Financial support/sponsor ▪ Platform for i-Teams to share findings and participates in the CUTEC Technology Venture Conference
	 <p>Accelerate Cambridge  UNIVERSITY OF CAMBRIDGE <small>Judge Business School</small></p>	Start-up accelerator by Cambridge Judge Business School offering a three-month accelerator programme and access to workspace.	<ul style="list-style-type: none"> ▪ Expert advice for the incubation stage/way forward for inventor to peruse the commercialisation of technology
	 <p>IdeaSpace ideaSpace</p>	Cambridge based hub for early stage innovation, providing space and resources to entrepreneurs.	
	 <p>Isaac Newton Trust </p>	A charity by Trinity College, University of Cambridge that provides support to early career researchers through grants.	<ul style="list-style-type: none"> ▪ Financial support/sponsor
External	 <p>MIT Entrepreneurship Center </p>	A research and teaching centre at the MIT Sloan School of Management.	<ul style="list-style-type: none"> ▪ i-Teams programme original module
	 <p>Centre for Global Equality  Centre for Global Equality</p>	Network of NGOs, academics and businesses, working to reduce global inequality.	<ul style="list-style-type: none"> ▪ Administrative support ▪ Co-host for Development i-Teams ▪ Incubation support after Development i-Teams
	 <p>Addenbrook's Charitable Trust act <small>Addenbrooke's Charitable Trust</small></p>	Registered charity dedicated to supporting innovation in patient care across Cambridge University Hospitals	<ul style="list-style-type: none"> ▪ Administrative support ▪ Co-host for Medical i-Teams
	 <p>Taylor Vinter TAYLOR VINTERS <small>SOLICITORS</small></p>	An international law firm that supports businesses and innovation economy.	<ul style="list-style-type: none"> ▪ Financial support/sponsor
	 <p>Marks and Clerk Marks&Clerk <small>Patent and Trade Mark Attorneys</small></p>	An international group of intellectual property service providers.	

6. Performance and statistics

For the past ten years, Cambridge i-Teams has steered over 140 projects, involving over 1000 students and early career researcher coming from all six Cambridge University schools, 40 industrial mentors in which 125 inventions have received market feedback from the industry.

i-Teams performance in numbers

140	projects accomplished
>1000	students trained
40	industry mentors engaged
125	inventions received direct market feedback
>2500	new industrial contacts were established
45%	i-Teams projects morphed into start-ups
56	start-ups
30%	start-ups are joined by alumni
17	start-ups have raised over USD2 million investment
2	successful exit
4	alumni are Royal Academy of Engineering Enterprise fellowships
4	alumni are hired by CE
7	alumni are CUE and CUTEC presidents

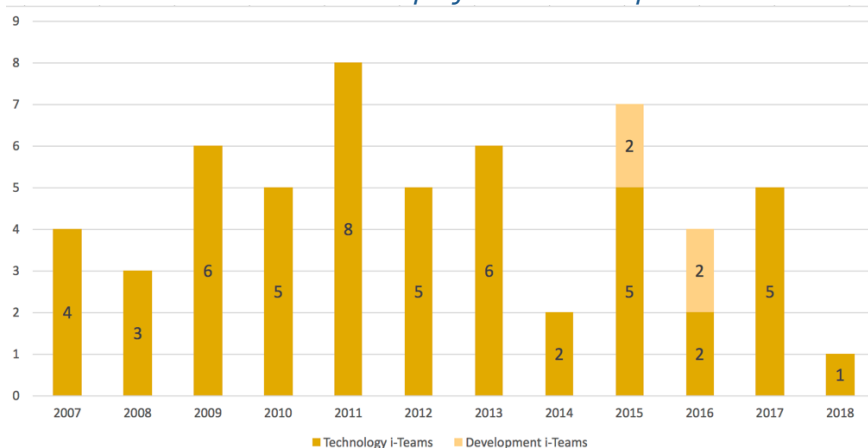
Since 2007, each year saw the establishment of start-up originated from i-Teams projects. Presently, 50 or 45% of i-Teams projects have now morphed into start-ups in which two companies have been acquired. Example of past projects that are now start-ups are Raspberry Pi, AQDOT, Cambridge CMOS Sensors, Ampika, WaterScope, Intelligent Fingerprinting, Illumink and many others.

In the latest development reported in February 2016, three past i-Teams projects raised over USD17 million funding between them; Sphere Fluidics raised USD 7 million for the development of single cell analysis system, Aqdot raised GBP 5 million for company development and Silicon MicroGravity raised USD 3 million in its first funding round.



Inventor and students rated i-Teams as one of the best opportunity offered by the university to learn entrepreneurial skills by doing it. Our aspiration of embedding entrepreneurial spirit within the student community is reflected in the ever-growing interest put forward and the steady growth from 40 students a year at its inception to 100 students a year now, with a further increase planned for 2018.

From i-Teams projects to start-ups



Year	Start-up	Website
2007	1. Wind Technologies	http://www.windtechnologies.com
	2. ASUUTA	-
	3. Laser Fusion Technologies	https://testlft.wordpress.com
	4. * GreenPB	-
2008	5. Sphere Fluidics	http://www.spherefluidics.com
	6. AI Speech	http://www.aispeech.com
	7. Cambridge Lab on Chip Ltd	-
2009	8. Raspberry Pi	https://www.raspberrypi.org
	9. Ampika	http://www.ampika.com
	10. Cambridge Temperature Concepts	https://www.sensiaa.com
	11. PervasID	http://www.pervasid.com
	12. KidzEyez	https://www.louiseallen.com/kidzeyez.shtml
	13. Cambridge CMOS Sensors (Acquired by Arms)	http://ccmoss.com
2010	14. * Cambridge Nanotubes	-
	15. Intelligent Fingerprinting	https://www.intelligentfingerprinting.com/
	16. Cambridge Carbon Capture	http://www.cacaca.co.uk
	17. Silicon Microgravity	http://silicong.com/
	18. Capillary Film Technology	http://www.capfilmtech.com
2011	19. Sky Medical	http://www.skymedtech.com
	20. eScent	-
	21. * Aqdot	http://www.aqdot.com
	22. Pavegen Systems	http://www.pavegen.com
	23. Spectral Edge	-
	24. Development Muse	-
	25. Purocity	-
	26. JustMilk	http://www.justmilk.org
	27. * Lungfish Dive Systems	http://divelungfish.com
2012	28. Purit Technologies	-
	29. Cambridge Solar Environmental Solutions	-
	30. * Cambridge Nanosystems	https://cambridgenanosystems.com
	31. Cametics	http://www.cametics.com
2013	32. *H2GO Power	http://h2gopower.com
	33. *Iumink (acquired by Tracerco)	https://www.tracerco.com
	34. Crossbridge Scientific Ltd.	-
	35. MEMSBIO	-
	36. Cavendish Nanotherapeutics	http://cnt.uk.com
	37. Sensor Hut	https://www.sensorhut.com
2014	38. *Immaterial Labs	http://www.immaterial.co
	39. Orphidia	http://www.orphidia.com
2015	40. * Waterscope	http://www.waterscope.org
	41. Easy M	http://easy-m.io
	42. * Fluidic Analytics	http://www.fluidicanalytics.com
	43. Baky Ltd.	-
	44. HALO	-
	45. Capsil	-
	46. Cambridge Nanosensors	-
2016	47. OpenDiagnostics	-
	48. Heartfelt Technologies	-
	49. AlgalB12	-
	50. Flexypix	-
2017	51. Microfoam Technologies	-
	52. Cnergytec	http://www.cnergytec.com
	53. Colorfix	-
	54. Healthy Planeat	-
2018	55. Pharmedable	http://www.pharmedable.com
	56. Intellegens	https://www.intellegens.co.uk

(* included members of the original i-Teams or an i-Teams mentor)

7. Challenges and way forward

One of the challenges we encountered is to instill interest among students from the non-engineering background. Applications are highly dominated by the engineering community. In response to this, we introduced Development i-Teams in 2015 to cater the unmet need of the social science students. In Spring 2018, we aim to launch another i-Teams called Medical i-Teams focusing on inventions coming out from the life sciences research across the university. As part of this new initiative, we are fostering new links with the Cambridge Academy for Therapeutic Sciences and Addenbrookes University Hospital.

Since i-Teams gives rise to more start-ups each year, this term, we take a new approach to reinforce experiential learning by introducing new workshops in our module such as Lean Start-up and Design Thinking. Through this, young entrepreneurs will have more room to experiment and navigate their new business.

Due to the astounding interest expressed by our stakeholders, i-Teams has now been launched at several institutions across the UK with our support. The institutions that we are currently supporting are the University of East Anglia and the Universities of Hertfordshire, University of Essex, University of Lancaster and the University of Cardiff (iSolve).

In conclusion, Cambridge i-Teams has showcased a novel incubator initiative that focuses on the commercialisation of technology and the development of entrepreneurs. We take on board all constructive feedbacks and continue to learn from the best practices elsewhere. The catalyst for i-Teams successful deployment lies in the commitment given by the inventors, participants, industrial mentors and facilitators. Realizing this, we will continue to stay relevant in our quest to inspire young entrepreneurial minds to pursue their enthusiasm.

Cambridge i-Teams, commercialising innovation while empowering budding entrepreneurs.



