

# Commercialising innovation

Heart of the South West Local Enterprise Partnership  
November 2020

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## 1.0 Purpose of this document

Our draft Local Industrial Strategy states: ‘The Heart of the South West will strengthen the area’s capacity for innovation, commercialisation and the application of new ideas by enhancing its innovation ecosystem.’<sup>1</sup>

This paper sets out proposals to strengthen the commercialisation of innovation within the Heart of the South West region, making the case for the role ‘Innovation Driven Enterprises’ (IDEs) can play in the region’s economic recovery and proposing a set of actions intended to maximise their impact and the benefits accruing from them.

It focuses specifically on these R&D intensive firms and does not address more generic issues of innovative practice (on which the Business Leadership Group leads), nor does it seek to suggest how universities should manage their R&D activities (which is within their own purview to manage).

The covering LEP board paper serves as the executive summary for this document.

The overall objective of the measures proposed is to strengthen the innovation ecosystem within the region leading to more research intensive businesses being founded and achieving scale, and hence contributing to the region’s economic recovery and to improvement in its productivity and prosperity.

Key indicators of success would be:

- business investment in R&D per inhabitant increases from current 34%<sup>2</sup> of national average to 50% of national average;
- start-ups per inhabitant increases from 69% of national average to national average,<sup>3</sup>
- proportion of high growth firms increases from current 79%<sup>4</sup> of national average to national average.

Given uncertainty as to when and at what level funding might be available for the interventions proposed below and their untested nature it is hard to set a timescale for these objectives to be achieved, but five years from the interventions launching would be an initial guide.

## 2.0 The need for change

Prior to the pandemic and the consequent economic crisis, driving up productivity and prosperity were our key economic goals. Subsequently, job creation and demand stimulus have increased in importance as our region looks set to suffer disproportionately from the Covid recession.

R&D intensive businesses, IDEs, – whether tech, pharmaceutical, manufacturing, and regardless of sector - can make a significant contribution to achieving these goals as they make an outsized contribution to the economies in which they operate. Research by the Massachusetts Institute of Technology (MIT) indicates that every job created within an IDE creates five in the broader economy.<sup>5</sup> IDEs tend to pay higher average wages, benefiting overall metrics for productivity and prosperity, and also providing higher spending consumers for the broader economy. So, whilst they form only a narrow slice of the business community and are almost totally absent from important sectors such as tourism and hospitality, their presence within a region’s economy can assist those

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<sup>1</sup> Heart of the South West Local Industrial Strategy, October 2020 p.43

<sup>2</sup> Eurostat/MIT REAP Evidence Review HotSW p.58

<sup>3</sup> MIT REAP Evidence Review HotSW p.29

<sup>4</sup> Ibid.

<sup>5</sup> [https://www.kauffman.org/wp-content/uploads/2019/12/a\\_tale\\_of\\_two\\_entrepreneurs\\_report.pdf](https://www.kauffman.org/wp-content/uploads/2019/12/a_tale_of_two_entrepreneurs_report.pdf)

sectors indirectly, with consequent benefits to job creation and prosperity across the economy. A strong community of such businesses will help to retain talent in the region that otherwise would need to move away to find work of the calibre they desire.

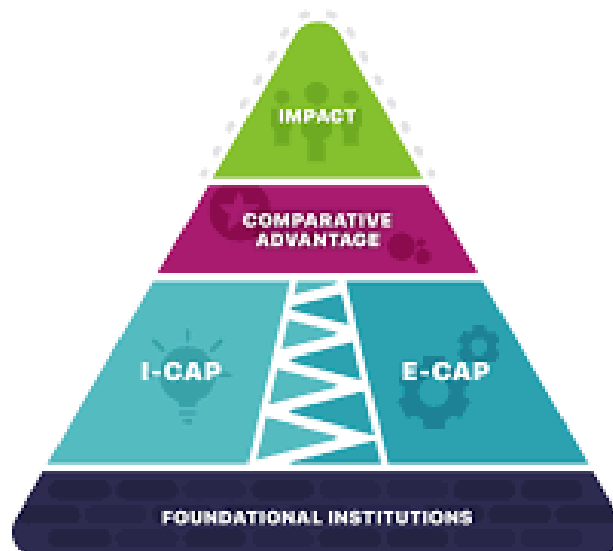
Whilst the economic benefits provide the strategic rationale for including a focus on IDEs within our overall plans, government policy adds a tactical aspect. The UK Research and Development Roadmap was published on 1<sup>st</sup> July 2020, setting out ‘the UK’s vision and ambition for science, research and innovation’. Our region has been underweight in its share of government funding for the commercialisation of R&D<sup>6</sup>, a secondary purpose for this innovation strategy is to shape our engagement with central government thinking and to set out a plan to raise us up to national average levels of activity and funding received within five years. This is a worthwhile goal, not least because it should be an achievable one. We have the potential, we have the fundamental research assets including certain capabilities that are near unique globally.

Beyond the economic and the financial rationale, innovation can bring solutions to fundamental challenges, its role is to improve the world and in doing so it can provide purpose and meaning to the lives of those working on that discovery. From marine autonomy to industrial de-carbonisation, floating offshore wind to advanced data analytics, we can and should play our full part in this.

### 3.0 Methodology

#### 3.1 REAP

MIT’s Regional Entrepreneurship Acceleration Program (REAP)<sup>7</sup> is a structured course which has been used by 49 regions from across the world to develop strategies to foster the growth of IDEs and the contribution they make to their economies.



MIT’s model of the innovation ecosystem (above) focuses on the interplay between Innovation Capacity and Entrepreneurship Capacity, emphasising that the presence of both, in balance and inter-relating effectively, is key to garner economic benefits.

<sup>6</sup> <https://heartofswlep.co.uk/wp-content/uploads/2019/02/Accessing-Innovation-Support-in-Cornwall-the-Isles-of-Scilly-and-Heart-of-the-SW.pdf>

<sup>7</sup> <https://reap.mit.edu/>

BEIS arranged for six UK regions to pilot a slimmed down version of REAP<sup>8</sup> during 2020, prior to a potential national roll-out. Heart of the South West is one of the six regions in the pilot, and we have used that structure as the vehicle to direct our approach. The programme has encompassed four days of workshops with the other regions plus working sessions with faculty and a series of activities to aid strategy formulation.

### 3.2 Evidence base

Our work has been greatly aided by prior research, most notably the South West England and South East Wales Science and Innovation Audit<sup>9</sup>, and builds upon that. In addition, as part of the REAP process, we surveyed entrepreneurs within the region and conducted structured interviews with both entrepreneurs and risk capital providers.<sup>10</sup> A workshop with 25 stakeholders was held in September, and a series of individual meetings have also taken place to gain input from across the innovation ecosystem – entrepreneurs, corporates, local government, UKRI, universities, banks, angel funders and venture capital firms. A summary of the findings is in the chart at the top of p.6 below.

## 4.0 The issues

### 4.1 A poor record

The data for Heart of the South West underline the extent of our challenge, the need for action: start-ups per head of population at 69% of the national rate, high growth firms at 79%, and business investment in R&D at just 34%. This low level of R&D is likely to be a significant contributor to our weak productivity, at 83% of the national average ranking 31<sup>st</sup> out of 38 LEPs.<sup>11</sup>

Measure	HotSW	National	Notes
Start-ups per 10,000 working age population <sup>12</sup>	63.3	91.4	2018
Proportion of high growth firms <sup>13</sup>	4.8%	6.1%	2018
Export (goods) relative to GVA <sup>14</sup>	10.1%	17.8%	2017
Export (services) relative to GVA <sup>15</sup>	7.7%	14.6%	2017
Patent applications per 1m active population <sup>16</sup>	46.5	132	Devon only, 2017
Active graduate start-ups in LEP region <sup>17</sup>	44	114	2016
Business investment in R&D per inhabitant <sup>18</sup>	€139.7	€410.3	Devon only, 2017

<sup>8</sup> <https://reap.mit.edu/reap-uk/>

<sup>9</sup> <https://gw4.ac.uk/sww-sia/>

<sup>10</sup> MIT REAP Understanding the perspectives of our ecosystem's entrepreneurs & risk capitalists HotSW

<sup>11</sup> Data for 2018, ONS Sub Regional Productivity/MIT REAP Evidence Review HotSW p. 23

<sup>12</sup> MIT REAP Evidence Review HotSW p.29

<sup>13</sup> Ibid

<sup>14</sup> Ibid p.30

<sup>15</sup> Ibid

<sup>16</sup> Eurostat/MIT REAP Evidence Review HotSW p.33

<sup>17</sup> Smart Specialisation Hub/HEBCL/MIT REAP Evidence Review HotSW p.37

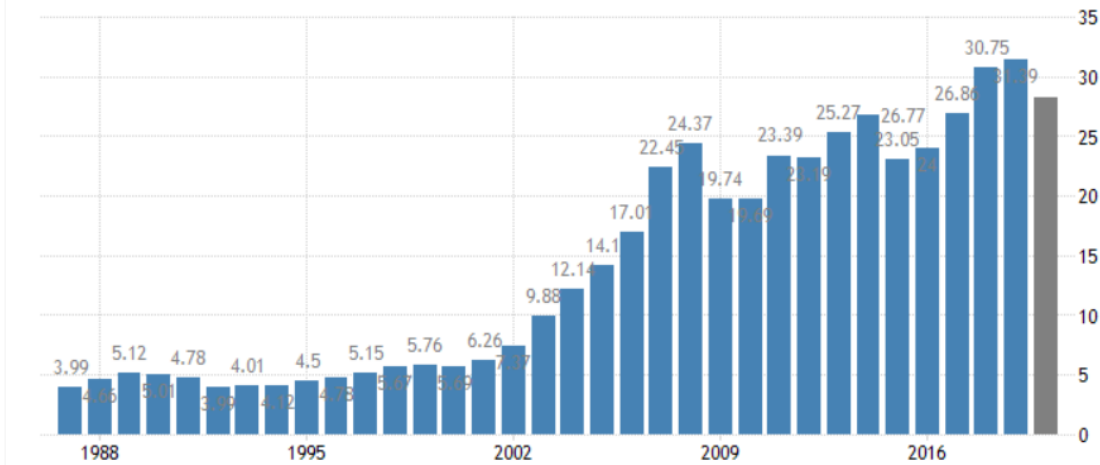
<sup>18</sup> Eurostat/MIT REAP Evidence Review HotSW p.58

In overall R&D intensity (Gross Domestic Expenditure on R&D divided by Gross Domestic Product) we are amongst the lowest ranked areas of England – only Cornwall, Lincolnshire, Shropshire and (due to the peculiar factors in its economy) London ranking below us.<sup>19</sup>

#### 4.2 I-Cap and E-Cap

A region with strong entrepreneurship but little research capability will have many start-ups, but they will tend not to be IDEs, and hence have weaker growth prospects and contribute less to productivity and prosperity. One with excellent research assets but little enterprise may make great discoveries, but their commercialisation will happen elsewhere, denying the area the economic benefit.

Heart of the South West is closer to the latter situation. We have leading universities and research institutes of international prominence, but we do not have a strong culture nor track record of creating IDEs. For comparison, Estonia has a population less than three quarters of ours, yet has created four unicorns (technology businesses valued at over \$1billion). This did not happen by chance. In 1997<sup>20</sup> Estonia committed itself wholeheartedly to a focus on technology<sup>21</sup> in education, public services and economic development. It has reaped the consequent economic benefits.



A case study of a tech-focused economy: Estonia, nominal GDP, \$ billion<sup>22</sup>

Survey work within the REAP process identified strengths and weaknesses for Heart of the South West in both our innovation capacity and our entrepreneurship capacity – but the weaknesses are more pronounced, and the strengths thinner, in regard to eCap.

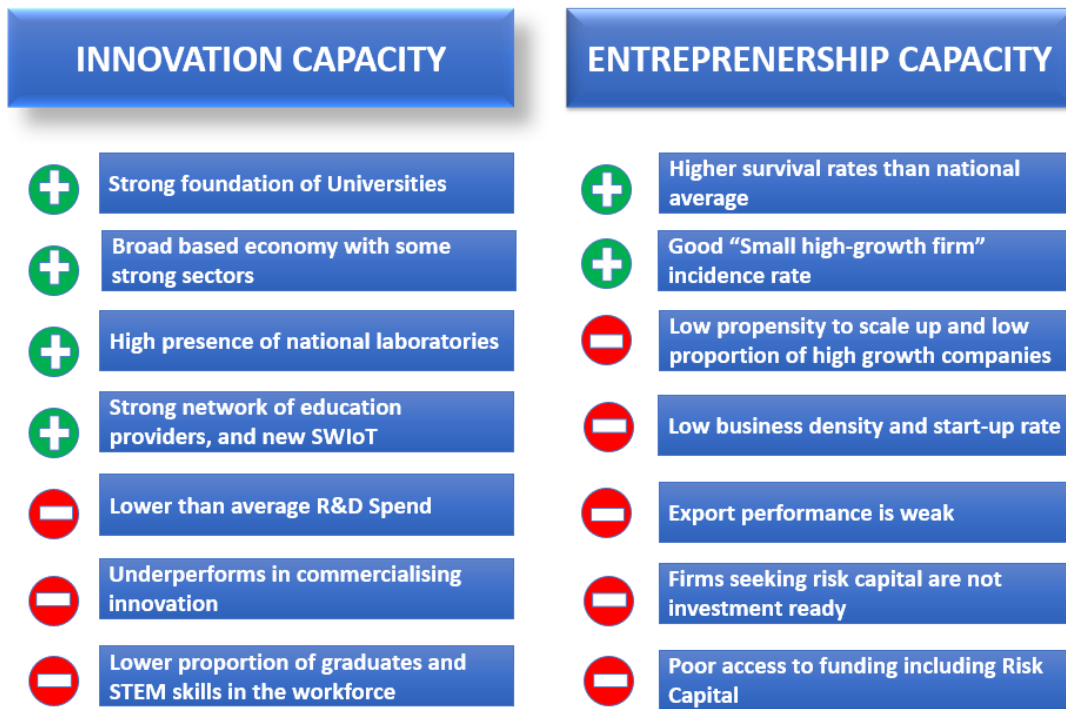
<sup>19</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/896799/UK\\_Research\\_and\\_Development\\_Roadmap.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896799/UK_Research_and_Development_Roadmap.pdf)

<sup>20</sup> <https://www.centreforpublicimpact.org/case-study/e-estonia-information-society-since-1997/>

<sup>21</sup> [https://www.ucl.ac.uk/bartlett/public-purpose/sites/public-purpose/files/iipp-wp-2018-09\\_estonias\\_digital\\_transformation.pdf](https://www.ucl.ac.uk/bartlett/public-purpose/sites/public-purpose/files/iipp-wp-2018-09_estonias_digital_transformation.pdf)

<sup>22</sup> <https://data.worldbank.org/country/estonia>, <https://tradingeconomics.com/estonia/gdp>



Heart of the South West: strengths and weaknesses in iCap and eCap<sup>23</sup>

### 4.3 A lack of scale

Innovation ecosystems require scale. They benefit from positive network effects to attract talent and investment, to share learning and spark ideas, to build a virtuous circle of entrepreneurs hiring staff who leave to found firms, selling up then angel investing and mentoring the next generation of start-ups. As venture capitalists and corporations seeking innovation move-in, they become yet more attractive to entrepreneurs. This drives the success of centres such as Silicon Valley, Shenzhen and Berlin.

This does, however, require some heft. A recent paper commissioned by the Scottish government assessed that 5,000 pre-start-ups are required to produce one unicorn<sup>24</sup>. A report last year for the CBI<sup>25</sup> identified a lack of critical mass in most regions as a key driver of the UK’s national shortfall in R&D spend. Positive network effects require momentum.

For Heart of the South West, it is unlikely that any of our centres – be that Bridgwater, Exeter, Plymouth or any other – will acquire sufficient scale by itself, and certain that combined together the region brings greater mass: more opportunity for entrepreneurs to share ideas, a better rationale for investors to give it attention. A curious side-effect of the pandemic has been the beginning of a natural agglomeration: as formerly physical events have become virtual they have attracted attendance from a broader spread across the region. We need this coalescence to continue.

### 4.4 Inclusive growth

There is a popular image of a tech founder: young, white, male, upper middle class, attended a prestigious university seemingly solely in order to drop out.

<sup>23</sup> HotSW REAP R&D strategy – key themes

<sup>24</sup> Scottish Technology Ecosystem Review p.13

<sup>25</sup> [https://www.cbi.org.uk/media/3844/12547\\_raising-regional-rd\\_online.pdf](https://www.cbi.org.uk/media/3844/12547_raising-regional-rd_online.pdf)

In fact, entrepreneurs come disproportionately from ethnic minorities<sup>26 27</sup> whilst businesses founded by older entrepreneurs are more likely both to survive and to scale<sup>28</sup>. If we are to strengthen our entrepreneurship capacity within the region we need people of all identities and backgrounds to be able to see themselves founding businesses.

For innovation to play its part in achieving inclusive growth, opportunities must be available to all regardless of protected characteristics, and also of location and socio-economic background. The pandemic has triggered what is widely anticipated to be a permanent increase in video meetings and remote working, increasing the practicality of founding IDEs in more peripheral locations. From many rural parts of our patch, Plymouth and Exeter Universities can be reached in broadly the amount of time it takes to travel from Canary Wharf to Imperial College – these are assets as much for Tavistock, Wellington and Barnstaple as they are to the cities in which they are located.

Inclusion is of course a moral imperative, but we should make no mistake it is also an economic one. We simply cannot afford to forego the contribution of any individual because of who they are or where they live. From a weak base of entrepreneurship, it is essential we nurture all who can advance us.

#### **4.5 The high bar for national recognition**

The UK Research and Development Roadmap and the Strength in Places fund underline how high the bar is for national recognition of a research strength.

Many sectors which are relatively strong in our region either lack the scale globally or even nationally, or simply don't see meaningful levels of R&D carried out within our area. To secure central government recognition – and funding – we will need to present a truly compelling and coherent package.

During the first round of Strength in Places funding, the LEP endorsed a number of competing proposals, whilst other regions marshalled support behind a single vision. It seems probable that our chances of securing future recognition and funding will be enhanced if we ourselves agree what we believe our greatest competence to be, and communicate that clearly.

We have a truly leading specialism in marine and environmental intelligence, with the universities, Plymouth Marine Laboratory, the Met Office and the United Kingdom Hydrographic Office (UKHO) combining to provide a cluster of assets unique in Europe and distinct in the world. The Met Office is one of only two aviation World Area Forecast Centres, alongside the National Oceanic and Atmospheric Administration in Washington DC<sup>29</sup>, the UKHO provides data to 90% of global shipping<sup>30</sup> and the Mayflower Autonomous Ship<sup>31</sup> is demonstrating in practice the change that marine and environmental intelligence can enable.

Whilst we have many other research strengths which can and should be celebrated, we must be known for this.

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<sup>26</sup> <https://www2.aston.ac.uk/news/releases/2018/july/immigrants-twice-as-entrepreneurial-as-white-britons>

<sup>27</sup> <https://www.statista.com/statistics/693431/rate-of-new-entrepreneurs-by-race-us/>

<sup>28</sup> 'The Rebel Entrepreneur' Moules, J, Kogan Page 2012

<sup>29</sup> <https://www.metoffice.gov.uk/services/transport/aviation/regulated/mo-wafc>

<sup>30</sup> <https://www.gov.uk/government/organisations/uk-hydrographic-office/about>

<sup>31</sup> <https://mas400.com/technology>





## 5.0 Recommendations

### 5.1 Southwest Technopole

A Southwest Technopole should be established as a combination of service and community to nurture research intensive businesses regardless of location.

The Technopole, which could be thought of as a virtual science park, would bring together R&D intensive businesses by working with existing entities such as Tech South West, the Impact Lab and TechNation, receiving referrals from the Growth Hub and FE colleges, as well as pro-actively contacting relevant firms.

The service would include:

- advice and support on access to academic expertise, funding and collaboration opportunities, going beyond the broader assistance available to all businesses through the Growth Hub;
- sector based communities bringing together related organisations, working with and making use of existing groups such as the South West Defence Cluster where applicable;
- thematic virtual events providing advice and enabling knowledge sharing on issues such as access to finance, business planning, marketing;
- outreach to investors, corporates, Innovate UK and others to draw them into the community and strengthen the innovation ecosystem;
- an inventory of physical assets - prototyping facilities, laboratories, co-working spaces, serviced offices – that businesses might require and could hire;
- potentially – dependent on funding – seedcorn research projects in an extension of the work of the Impact Lab.

The Southwest Technopole would aim to make it easier and (hence more desirable) to start innovative businesses and to build an expectation (and make it easier) that they scale. It could also play a role in protecting the LEP's investment in physical innovation infrastructure, by increasing demand for paid access to those facilities.

One of the clearest messages from the survey of entrepreneurs carried out within the REAP process was that other entrepreneurs constituted their most effective source of support – the response of 73% of those surveyed<sup>32</sup>. As one wrote: "Other entrepreneurs are part of my support eco system. I learn from them and their support motivates me." Outside our major towns and cities, however, such support, such relationships can be hard to find: building a virtual community is key to enabling entrepreneurs to support each other, and to raising ambition through the example of those that scale.

Key sector clusters within the Technopole could potentially include:

- photonics;
- aerospace;
- marine and maritime;
- advanced manufacturing;
- defence;
- renewables;
- nuclear
- data analytics;
- meditech;
- agritech.

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<sup>32</sup> MIT REAP Understanding the perspectives of our ecosystem's entrepreneurs & risk capitalists HotSW p.9

ACTION: The LEP management team to:

- identify funding sources for the Technopole;
- draw up appropriate proposals to access funding;
- liaise with related bodies to consider their potential roles in the operation of the Technopole.

### **5.2 Marine and environmental intelligence**

Marine and environmental intelligence should be affirmed as a regional specialisation.

Communication with central government, MPs and other stakeholders should build understanding of this strength and lay the groundwork to optimise prospects within future funding opportunities.

ACTION: LEP communication and lobbying activity to:

- maximise awareness of the region's expertise through a concerted campaign to government;
- promote the region as the best location for innovative businesses linked to environment and marine intelligence;
- lobby government to support large scale propositions to enable the region to exploit the research base regionally and globally.

### **5.3 Fostering a culture of entrepreneurship**

Celebrate and encourage the role of entrepreneurs in delivering life-enhancing innovations, in creating jobs, in delivering tax revenues.

Communications activity should celebrate success stories, focusing particularly on societal benefits delivered (which we know is the prime motivator for entrepreneurs in our region) and on ensuring a broad range of entrepreneurs – by sex, ethnicity, background, age, geography, sector, etc. – is featured so that potential founders can see themselves reflected in those we celebrate.

ACTION: LEP communication activity to:

- highlight and celebrate entrepreneurship, emphasising the benefits innovative businesses bring to society, and ensuring entrepreneurs and teams featured reflect the breadth of our population.

### **5.4 Improving access to finance**

Support a regional Risk Capital proposition, linked to the Technopole and accelerators (Quantex/SETsquared). Working through the Technopole, raise entrepreneurs' awareness of and connections to sources of finance, including Innovate UK and Intellectual Property (IP) based lending.

Build a regional angel investor network, to provide both seed funding and mentoring to start-ups.

By, in the Technopole, building a denser community of IDEs, increase the effectiveness for equity investors of considering businesses in our region.

Challenge banks and equity investors to address disparities in access to funding based on sex and other protected characteristics.

ACTION: Technopole to take forward once established.

## 5.5 Strengthening skills

Significant relevant work on skills is already underway.

At grass roots, our schools, colleges and universities already have enterprise programmes in place. These could be encouraged, where they do not already, to illustrate the distinction between IDEs and SMEs and to position the decision to start a business not as a one-off choice on leaving education, but as one which can be taken at any career point.

The Institute of Technology and the universities will deliver technical skills at all levels, from apprenticeships through to PhDs and Knowledge Transfer Partnerships (KTPs – post graduates working with businesses). Entrepreneurship training should be combined into these wherever possible.

ACTION: Skills Advisory Panel to

- explore how entrepreneurship training could be made available to those on apprenticeship programmes;
- consider the potential to include entrepreneurship within STEM/STEAM programmes – ESTEAM.

ACTION: The South West Institute of Technology should incorporate entrepreneurship training into its programmes, including by use of the SETsquared Student Start-up course.<sup>33</sup>

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<sup>33</sup> <https://www.setsquared.co.uk/programme/student-enterprise/>