

New routes to innovation

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Jessica Griffiths and Matthew Durdy explain how and why Catapults are engaging SMEs in their work

A new network of technology and innovation centres, known as Catapults, has been set up by the Technology Strategy Board to help accelerate business innovation. It will do so by bridging the gap between the UK's world-leading research base and companies which are searching for new products and sources of growth in technology-enabled markets. The Catapults will provide access to the best technical expertise, infrastructure, skills and equipment, which often businesses cannot afford. The centres will also provide a national focus for collaboration within their industry.

SMEs face many challenges

Over the past decade, with the effects of the global recession, the small and medium sized enterprise (SME) model of innovation has been challenged. Those that have stuck to old business models have often struggled.

The old SME model had several flaws which contributed to high levels of failure. Companies lacked resources, and often because of inadequate access to knowledge, they tried to repeat what had already been done, at the expense of both time and money. The cell therapy industry, where the regulatory hurdles are not commonly understood, is an example of this. This is where centres of innovation such as the Catapults come in. Having built up expertise and strong relationships within the different industries, and with appropriate regulatory bodies, the Catapults can guide companies and understand the needs of emerging industries.

An additional common problem is that small companies often have a focus on one technology. This is usually deliberate but can lead to perverse management incentives. Management success can be too closely linked to the success of their technology, so if the technology fails, management fails. These problems are particularly acute in industries with high barriers to entry where significant resources are needed, for example medical technologies such as cell therapies. Perhaps the largest issue for these companies is that investors perceive there to be a high level of risk. This is compounded by the lack of information available and thus creates a further barrier to investment.

How Catapults can help

Catapults will help by creating and retaining knowledge and expertise, and by building strong relationships with important global players in industries. They are also able to assist SMEs in overcoming key issues such as lack of access to knowledge and resources, and perceived risk.

Suggestions on how SMEs can improve their chances of success in innovation and how the Catapults fit in

1. Find an accessible source of experience and resources

SMEs do not have time and money to spend on repeating what other companies have already done. With Catapults, companies can access a technology and innovation centre with a full suite of experience, expertise and assets, backed up by retained learning. The Catapults bridge the space between research and commercialization of projects. Similar organizations are available throughout the UK for different innovation stages (eg universities for earlier-stage research).

2. Maximize interest in arising intellectual property (collaborate)

It is essential for SMEs to maximize the value of intellectual property (IP) that arises from a technology. Innovation often has multiple applications, and collaborating with parties who have different interests could be mutually beneficial in a number of ways.

Firstly, combined expertise can lead to better outcomes. Secondly, the costs of development can be shared without compromising the immediate benefits of the innovation. Thirdly, higher levels of grant and other funding are often available for collaborative partnerships. For instance, in certain Technology Strategy Board competitive grants, if the company is collaborating with a technology and innovation centre SMEs can get up to 80 per cent of the project cost funded. If a large commercial company applies on its own, only up to 50 per cent of costs are eligible.

3. Plan for success

A lack of capital is often cited as the reason for failure of SMEs. On the other hand, investors claim that there is always money available for a good idea. Many projects simply plan to get to the next stage rather than to the right end point. It is essential to be able to see an end point at the beginning of the process and to fully understand the path to get there. In the market-driven innovation model, this involves

systematically working back from customer definition and needs to an outline programme of work designed to meet those needs. Clear articulation of the journey (with an acknowledgement that things may need to change along the way) will help secure partners and backing.

4. Present a full package

Some corporate investors still claim that they are only interested in the quality of the science. This can be misleading, as corporate investors take a very rounded view of investment. It is fundamental to present a complete package of information. The commercialization plan for the technology should aim to gather or create all of the necessary information during its execution.

The Cell Therapy Catapult works with collaborators towards an investible package which includes:

- clinical data;
- clinical trial access;
- manufacturing processes;
- regulatory pathway;
- intellectual property;
- market data;
- viable business model;
- reimbursement information;
- accessible clinical delivery partners (ie customers);
- skills and leadership;
- analytical tools.

5. Create or be part of a portfolio

A further way to make a project seem more attractive to investors is for it to be part of an actual or virtual portfolio. Investors need to invest certain quantities of money, but also seek diversification. At the same time, investors are limited in their ability to analyse diverse technologies. The innovation markets are very heterogeneous, with a great diversity of technologies, and within a defined space such as cell therapies, investors may lack the resources to make fully informed decisions. However, grouping technologies in actual or virtual portfolios allows groups of investors to share due diligence resources and achieve a high enough absolute level of investment.

Some innovation centres can act as the coordination or gathering point for such portfolios.

6. Help investors make educated decisions on whether to invest

If there is access to relevant expertise, investors may perceive the risks to be lower. A Catapult can help with due diligence and increase investor confidence. Perception of risk is further reduced by the belief that appropriate expertise will be available for the lifetime of the investment.

7. De-risk for management and talent

New ventures don't just need to be de-risked for investors. They need to be de-risked to attract capable managers. Managers are often asked to come into SMEs with high-risk profiles. Capable management, with other options, may opt for lower-risk companies, leaving only those who often have less experience.

8. Truly align investors and management

Reducing the risk as described can help attract talent. In the traditional SME model there is an additional risk. Good management operating as a true team is a precious resource that takes time to build. In a single technology company nobody knows more about what is going on than the management, and they are the conduit of information to investors. Investors will often withdraw resources as a product appears to face technological difficulty. The blame for failure is usually placed on management, without reference to the scale of the technological challenge they were asked to undertake. This means that managers may delay disclosing bad news in order to be able to continue product development. Maintaining a strong incentive for success and focus should not require the management to also take all of the downside of technological failure. Investors in SMEs (which includes the management) may be able to avoid throwing good money after bad by providing alternatives for management where there is technological rather than management failure. Technology portfolio companies are one way of offering this. Another is linkage with innovation centres where new opportunities can be found, maintaining a valuable team.

9. 'Seek the truth'

In the development and commercialization of technologies it is crucial for entrepreneurs and stakeholders to be evidence based in their decisions. An enthusiastic entrepreneur can drive a mediocre product a long way before it eventually fails. By this point often entrepreneur and investor are exhausted and a lot of money has been wasted. Making early decisions to opt out of technologies can save managers their reputation and investors' money. An example of this is in the biotech industry, where

products are occasionally pushed through to Phase II based on inadequate data, only to fail after much more expense has been incurred in subsequent trials. Rigorous early testing, and in the case of cell therapy a stronger Phase II trial design, can help avoid this waste, bringing down the development costs of the whole industry.

Conclusion

These thoughts arose during the strategic planning of the Cell Therapy Catapult, one of a number of elite innovation centres in the UK. It has been set up to close the gap between concept and commercialization, as have the other Catapults which cover a range of industries. Engaging closely with these centres will help speed the success of individual technologies and industry as a whole.

Jessica Griffiths is a business analyst at the Cell Therapy Catapult and Matthew Durdy is its Chief Business Officer. The Cell Therapy Catapult is focused on the needs of the industry, spanning capabilities from commercialization planning to manufacturing process development and regulatory and clinical execution. It is a national centre in a global location at Guy's Hospital in London and is developing 1,200m² of laboratories and offices containing the equipment and expertise needed to help SMEs innovate in cell therapy.

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