IASP World Conference, Copenhagen 2011

Accelerating client growth – the strategic route to STP sustainability and regional economic development

David N E Rowe

Summary

Many maturing Science Parks in developed economies are finding they face increasing competition from business parks. The case study presented shows how in the face of fierce competition one Science and Technology Park (STP) has used its natural advantage of working with its tenant businesses, most of whom are actively innovating to secure growth objectives. In this case the Park identified shortcomings in the regional provision of high level business support for its start up and SME clients and consequently developed a range of professional business support services of its own. A significant consequence has been accelerated business growth amongst its client base leading to these businesses becoming the major source of demand for the Park's profitable 'grow-on' space. In turn, this has ensured profitable growth and a strong balance sheet for the Park while allowing the Park to differentiate itself from the many nearby high quality business parks.

Background

The aim of the paper is to show how by proactively supporting and growing their tenants, STPs facing competition can achieve both a major differentiation from business parks and enhance their financial viability as well as considerably adding to the development of their local economy. This analysis is based on a case study of the University of Warwick Science Park, which has been established for over 27 years.

The Problem

In many parts of the world the gap between a well founded Business Park and an STP has narrowed considerably. Indeed, in those cities and regions where there is already a strong component of technology business in the economy, the client base on a business park can look remarkably similar to that of an STP.

Therefore, there is an increasing need for Science Park's to demonstrate how they are differentiated from Business Parks and how they add value to the local economy, while also demonstrating that they are fully viable entities.

Theoretical Considerations

In 2007 Prof John Allen set down a series of eight principles for a successful 3rd Generation Science Park[1] - principles that are now widely accepted. This paper combines and addresses key aspects of four of those eight principles:

- Finance – ensuring that the Park is financially sustainable
- Growing the tenant companies – being active in stimulating the growth of tenant businesses
- National and Regional context – being a leader in the local knowledge economy.
- Networking – both for the STP itself and for its tenants.

[1] "Third Generation Science Parks", Professor John Allen, pub. Manchester Science Park, 2007 (on line at www.msp.co.uk)

In 2000, Henry Etzkowitz[2] developed the concept of the triple helix of government, industry and universities acting in conjunction to deliver innovation and through increased innovation the development of regional and national economies. This model is redrawn in the upper part of Figure 1, showing STPs at the overlap of all three of the triple helix dimension, which is where they need to sit if they are to be effective.

STPs are not alone in triple helix space. It is a complex environment in which many actors have established a presence. Amongst the more noticeable players, the triple helix environment is today occupied by:

- Institutes of universities and government laboratories established with specific technology exploitation objectives
- Technology consultants
- Intellectual property organisations
- Technology Transfer organisations, including those of the universities
- Science and Technology Parks and Innovation Centres
- Specialist providers of risk finance
- Other specialist organisations

There is a growing trend for more and more organisations to diversify some part of their activity into the triple helix space and this even includes the investment property sector. In the early to mid 1980s when the UK Science Park movement was just starting to take off, the UK Science Park Association (UKSPA) attempted to interest the private property investment sector to participate far more in the founding and funding of STPs. However, there was too little evidenced track record for the highly conservative property industry to take any serious or systematic interest.

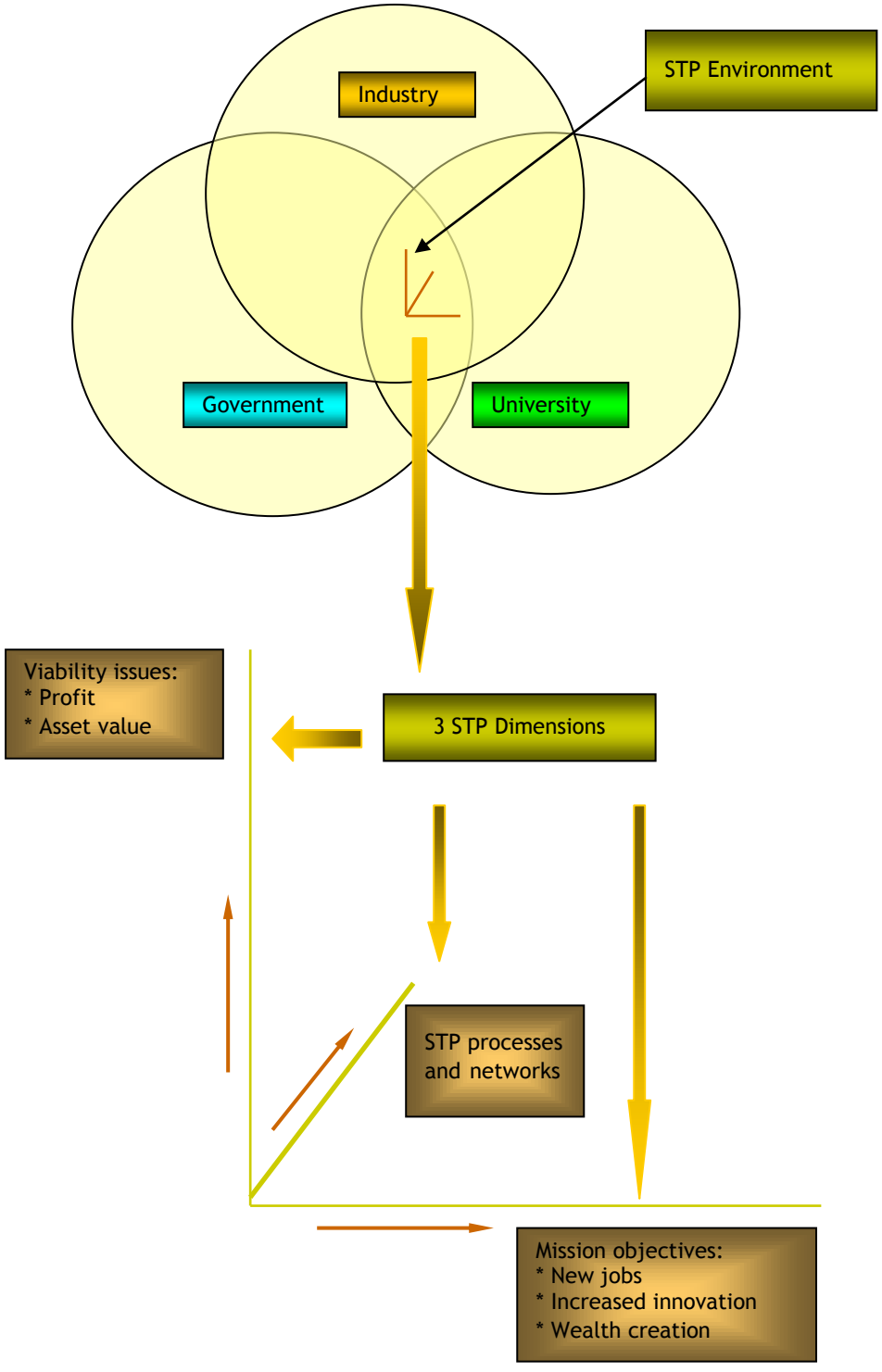
In the last decade the property industry in the UK has realised the market benefits of entering the technology and innovation environment. In most cases, even today, the property industry is unsure of what more they should do in addition to providing well specified and located space appropriate to the needs of knowledge based businesses – most frequently being interpreted as a combination of office, lab and workshop space. Thus, most of the private sector property investment in the UK has been focussed on those regions where there is either a growing or a well-established high-technology business base. This is the situation in which the University of Warwick Science Park now finds itself.

At its inception in the early 1980s, there were no business parks or similar suitable property options for the emerging technology sector in the region around the Science Park. This gave Warwick Science Park and its neighbour Aston Science Park a near monopoly opportunity, which persisted for about a decade. During this period, any and all space developed by the Science Park was very rapidly taken up and occupancy across the Park typically exceeded 95%. Furthermore, there was minimal competition either from other Science Parks or business parks in the region. However, over the last 15 years much has changed:

1. The number of competitor Science Parks within the region (within 80km) has risen from 1 to 6.
2. The number of substantive, good quality, local business parks (within 15km) has risen from zero to 9.
3. There have been two recessions and the dot com boom which turned into the general technology “bust” in 2000/01.
4. The buildings that the Science Park constructed in its early years started to age noticeably.

[2] “The dynamics of innovation: from National Systems and ‘Mode 2’ to a Triple Helix of university-industry-government”, Etzkowitz, Leydesdorff, Research Policy 29 pp109-123, 2000

Figure 1. The STP Environment and the STP Internal Dimensions



All these factors have meant that occupancy over the last 10 – 15 years has more typically been in the range 82 – 88%. This means that any action that the Park takes to create greater internally generated demand goes straight to the profit line.

However, STPs are usually much more than pure property plays. They have to find ways to operate effectively within the complex triple helix of government, university and industry and in so doing they need to balance three seemingly conflicting dimensions in their internal actions, which are:

- Securing viability through profits and increased asset value
- Securing economic development objectives set by stakeholders and
- Operating processes and networks in conjunction with the property offering as a means to facilitate innovation within their client base and promote wealth creation.

These dimensions are illustrated in the lower part of Figure 1.

The extent to which an STP needs to establish in-house process and networking operations depends on its circumstances. The more sophisticated and extensive that the existing innovation and business support infrastructures are the more an STP can rely on sign-posting or networking them into its tenants and vice versa. There is also the dilemma for STPs that operating significant innovation and business support oriented networks and processes can involve substantial costs. For this reason it is usually only where there is a significant public sector stakeholder that an STP is able to secure resources or divert internally generated funding into the establishment of complex processes designed to overcome weaknesses in local knowledge and innovation infrastructures. **However, the case study presented below shows that under some circumstances the investment of internally generated STP incomes into processes designed to produce improved economic development gains can produce a valuable economic return to the STP itself which is greater than the return on investment from its property.**

The University of Warwick Science Park Case Study

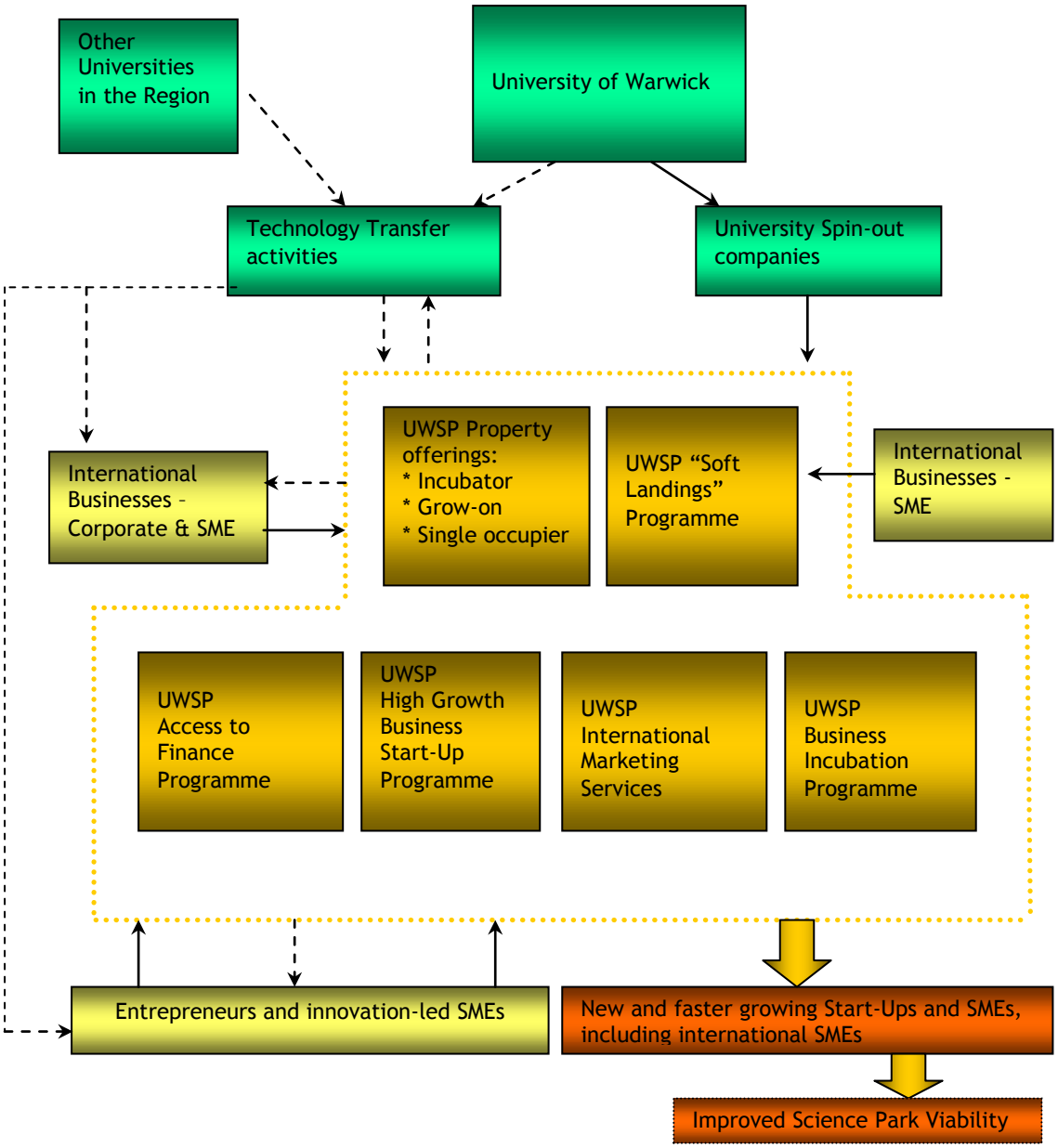
On the basis of the case study of the University of Warwick Science Park, evidence of an operational model has accumulated that shows how well constructed innovation and business support networks and processes not only enhance the economic development outputs from an STP but they also provide market differentiation from business parks and other similar competitors and, if well managed, will also improve financial viability.

Key Network and Process Components

The basis of the Warwick model is shown in Figure 2. This model has evolved over 15 years, with each of the components being developed and refined through practice and experience. The diagram omits many parts of the complex networks involved for the sake of clarity. The key process components are:

- Technology Transfer activities, primarily involving the University of Warwick but also other universities when appropriate. This includes:
    - Working closely with the spin-out team within the University who identify commercial opportunities arising from the university's research and form companies to exploit them.
    - Actively helping client businesses to access university knowledge and technology as and when required.

Figure 2 – University of Warwick Science Park (UWSP) linking its property offerings[3], innovation and business growth programmes, including technology transfer, and the market.



Key

- - - - → Flow of Technology Transfer to business direct or via Science Park

——→ Client referrals leading to client acquisition

Science Park with its transformation services to enhance innovation and business growth

[3] The property offerings include: incubator, grow-on and single occupier properties for rent, with office laboratory and workshop facilities in each category. There are also buildings and land for purchase.

- Business start up activities. This is selective programme that identifies entrepreneurs with innovative ideas that have significant business growth potential. Selected candidates receive:
    - Free mentoring from an in-house professional mentor
    - Free web based business start up training material, which is modularised and can lead to a University of Warwick Certificate in SME Management for those candidates that submit business plan oriented assignments for assessment.
    - Free office or workshop space for 6 – 9 months while the business is still pre-trading and graded increase in rent thereafter related to business performance.
    - Access to all other programmes operated by the Science Park

  Three of the four incubators operated by the Science Park each have 6 dedicated small spaces for successful candidate start up businesses. No company is allowed to remain more than a year in these intensive accelerator environments other than by exception following a detailed review by the Park's management
- An "Access to Finance" programme which is made of:
    - An active Business Angel Network
    - An in-house "seed" fund
    - Investment readiness services[4] [5]
    - Networking to regional and national venture capital organisations
- International Marketing services including:
    - Basic market research
    - Reviews of competitors / competitor technologies
    - Market segmentation for new technologies
    - Identification of target customers
    - Regulatory issues for UK companies planning to enter overseas markets
    - Identification of potential overseas JV partners
    - Preparation of marketing collateral for UK and overseas markets

A number of key lessons have been learned for achieving cost-effectiveness in the delivery of these services.

First and most important, the staff operating these programmes must be professionally qualified and have significant relevant business experience. This makes them expensive. To justify this cost the programmes must operate over a large client base and this usually means working beyond the confines of the tenant base of the Science Park. This broader catchment of businesses provides a powerful argument for securing public sector grants to support the work. It also means that the Park is seen as operating far more broadly in the interests of the local economy. At Appendix 1 a schedule of the range of outputs generated by these activities from Warwick Science Park's business support programmes indicates the extent and types of gain to the locally economy that have been generated.

[4] "Investment Readiness - The new tool for bringing equity markets and high growth SMEs together at an early stage", David N E Rowe, IASP Beijing Conference proceedings, 2005

[5] "Investment Readiness Programmes and Access to Finance – A critical review of design issues", Colin Mason, Centre for Entrepreneurship, University of Strathclyde, July 2010

Secondly, therefore, seeking and securing successive grant awards to support this professional work, is essential. Over the last 15 years grants for service delivery secured by the Science Park have reduced the net cost of delivering the services to a modest sum, typically less than 10% of the annual profits of the Science Park. However, given the variability in grant support from one year to the next the range of impacts on the Science Park's finances has extended from substantial profit gains in some years to absorbing up to 20% of net profits in others. The main downside of securing grants is the amount of senior management time taken up in bidding for and managing the contracts, although the more of this activity that is undertaken the easier it becomes.

Thirdly, if other organisations can and do provide the professional services needed by an STP's clients at a cost its clients are able to afford and delivered with a high level of competence and relevance, then there is little point in developing these services just for the Science Park – rather it is better to network these capabilities into the STP's clients.

Fourthly, while some free services can be of great value in getting entrepreneurs started, most clients should be prepared to make some contributions to the costs and this can be achieved in a variety of ways e.g.

- In the international marketing work, clients typically pay 50% of the cost although it can be as low as 25% for start up companies.
- For business angel services clients will typically pay a success fee of 5-6% of any funding raised for them.
- Mentoring is usually provided free of charge.

Improving Science Park Viability

Over the last seven years the University of Warwick Science Park management team have been focussed increasingly on developing its business support services in such a way that not only is there clear evidence of gain to the regional economy, but also to ensure that the financial viability of the Science Park is enhanced.

The Science Park management had noted from an early stage in the Park's development that the building space it created for SMEs with teams of 20 – 50 staff was being taken up in part by businesses outgrowing the incubator. Indeed, some 30 – 35% of this category of space was taken up in this way. This statistic persisted for many years. We call units of this type 'grow-on' space and they are typically 200 – 600 sq m units developed into multi-occupier buildings having 4 – 10 tenants. These properties produce excellent net income streams when occupancy is high.

Some of the ways in which the professional services have been adjusted to maximise impact on the financial performance of the Science Park have included:

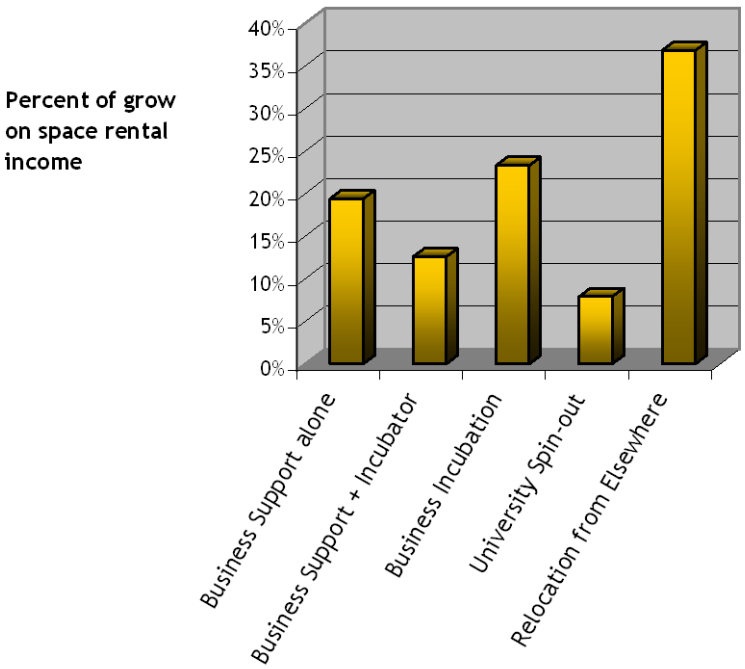
- Establishing the small, free offices described above for promising start up businesses as part of the high growth business start up offering.
- When the professional team secures Business Angel or other finance for a non-tenant client they proactively encouraged the client to relocate to the Park. This has the advantage that it helps us to assist the Angel in supporting the company post investment.
- Training the centre managers at all four incubators to identify opportunities amongst their individual client base where the Park's professional services might assist the development of a business. This involves close working between the centre managers and the professional team.
- Increased collaborative working between the Park's professional business support team and the University's spin-out team.

A few years after the Park management implemented these new ways of working the occupancy profile of its grow-on space was re-analysed and it was discovered that these units are indeed being increasingly filled by businesses that have emerged from positive

intervention programmes operated either by the Science Park alone or by the Park operating in conjunction with the University. By 2010, 63% of the grow-on space was taken up by businesses whose growth performance can be related to either the support they have received from the Park's professional business support services or the incubator activities or a combination of the two.

The key results are shown in Figure 3. The business incubator alone is still a valuable generator of demand for grow-on space leading to take up of some 23% of grow-on space. However, business support measures either in conjunction with the incubator or by themselves generates 32% of grow on space demand. University spin-outs provide a further valuable 8%.

Figure 3. The significance of business support in generating grow-on tenants at Warwick Science Park



Notes
In Figure 3 the abscissa wording has the following meanings:

a. Business support alone: The provision of one or more of the business support mechanisms described on pages 3and 4 but specifically excluding any case where the business also benefitted from occupation in the incubator.
b. Business support + Incubator: The provision of one or more business support services excluding those at c. below to a tenant in the incubator
c. Business Incubation: A combination of a specific business start up programme plus incubator or active and extended mentoring plus incubator
d. University spin-out – the growth of a spin out company started by the University but then receiving ongoing business support in the incubator before graduating to grow-on space.
e. Relocation from elsewhere – all other occupations in buildings designated as grow-on space.

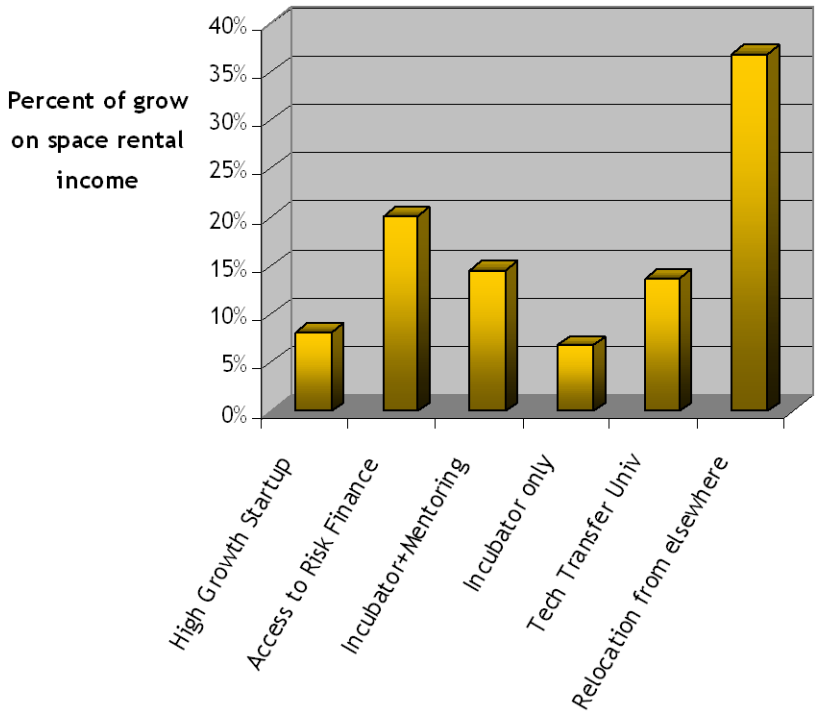
In each case the bar charts show the proportion of lettable space occupied by each class from 'a' to 'e' above in properties designated as grow-on space.

In aggregate, the business support measures have clearly become the most significant single contributor to grow-on space occupancy. Further analysis shows that amongst the business support programmes the most effective for generating new rental income in grow-on space have been:

- Access to finance actions and in particular operating a business angel network, seed fund investment and investment readiness services[6] [7]
- Professional mentoring in conjunction with incubator occupation over an extended period.
- Active Technology Transfer with the University during a business's early years on site usually in conjunction with occupation in the incubator.

These results are shown in Figure 4.

Figure 4. Analyis of the impact on tenant growth into grow on space of the different types of Business Support provided by Warwick Science Park



Notes
In Figure 4 the abscissa wording has the following meanings:

a. High Growth Start Up – Businesses moving into grow on space after progressing from a specific start up programme operated and delivered by the Science Park. The company is most likely to have reached this stage after going through the incubator.
b. Access to Finance – Businesses that have received risk finance as a direct consequence of the Park's business angel or other access to finance activities.

[6] ibid. note 4
[7] ibid. note 5

Notes continued …

c. Incubator + Mentoring – businesses that, while in occupation of the science park's incubator have received extensive mentoring from science park mentors either in-house mentors or mentors paid for by the science park.
d. Incubator only – businesses that have been in the incubator but have not received any extensive professional business support from the science park.
e. Tech Transfer University – businesses that have benefitted from extensive technology transfer activities with the university. This includes University spin-outs created by the University on the basis of the University's intellectual property.
f. Relocation from elsewhere – all other occupations in buildings designated as grow-on space

In each case the bar charts show the proportion of lettable space occupied by each class from 'a' to 'f' above in properties designated as grow-on space.

The economic viability equation

The cumulative net cost to the Science Park over the last 7 years of operating the professional business support services has been just c. €50,000. This equates to an average of £7,150 pa. Basically a trivial amount, but of course it had taken several years of prior experience to enable these results to be achieved.

The net financial benefit to the Science Park's income is made up from:

- The increase in rental income attributable to companies whose growth into the grow-on units has arisen from the actions of the professional business support team c. €700,000 per annum. This figure excludes situations where there has been growth from the incubator but where there was little or no professional business support provided.
- Plus savings made from reduced landlord payments of property taxes and service charges for space that would otherwise have remained vacant c. €300,000 pa.

Taking these factors into account the overall net benefit to the Science Park from the increased occupancy appears to be approximately €1,000,000. Thus, for every €1 pa committed from the Park's own resources as an investment in the support of its tenants it recovers €140pa. An astoundingly good investment it would seem.

Over the last two years, since the recession in Europe, the USA and much of the rest of the world took hold, further work has been undertaken to improve the efficiency of the professional business support services. Costs have been reduced further and operating practices improved to the point where there is now a high level of confidence that there will be zero net cost to the Science Park from the operation of the services for the foreseeable future – even when the availability of grant support is significantly reduced, as is now the case in the UK.

Of course, these calculations are somewhat simplistic. But by making more realistic assumptions it is possible to estimate the real financial return from establishing services of this nature for the first time starting from a zero base. For most Parks there will be an up-front investment of money and time in order to learn how to induce the desired outcomes. However, once the experience has been gained the opportunity for developing additional profitable income for the Park is real and quantifiable. This is an additional benefit on top of some very significant gains for the region from the growth of innovation-led businesses located outside the Science Park. Indeed, in the case of Warwick, most of the economic gains attributable to the efforts of the professional business support team arise from the growth of businesses who are not tenants but who are otherwise similar in the nature of their business activities.

If it is assumed that the Warwick model is followed, this will entail:

- Creating a small team with relevant expertise who will work with knowledge based start ups and SMEs in and outside the STP,
- Focussing on ways of securing start up and tenant growth for the STP,
- Operating publically funded programmes across the local region, which in some measure cross subsidise some of the work of supporting tenant businesses.

The profile of costs to the STP will involve some set up costs and costs that arise from learning how to make the systems effective. There is also the period between operating the services and the time when businesses have grown sufficiently to take up grow-on space. The following model and its costs are based on a minimal programme of professional business and innovation support. Larger programmes are likely to produce higher absolute financial returns but the breakeven points are likely to stay much the same. The costs for the limited programme might be as follows:

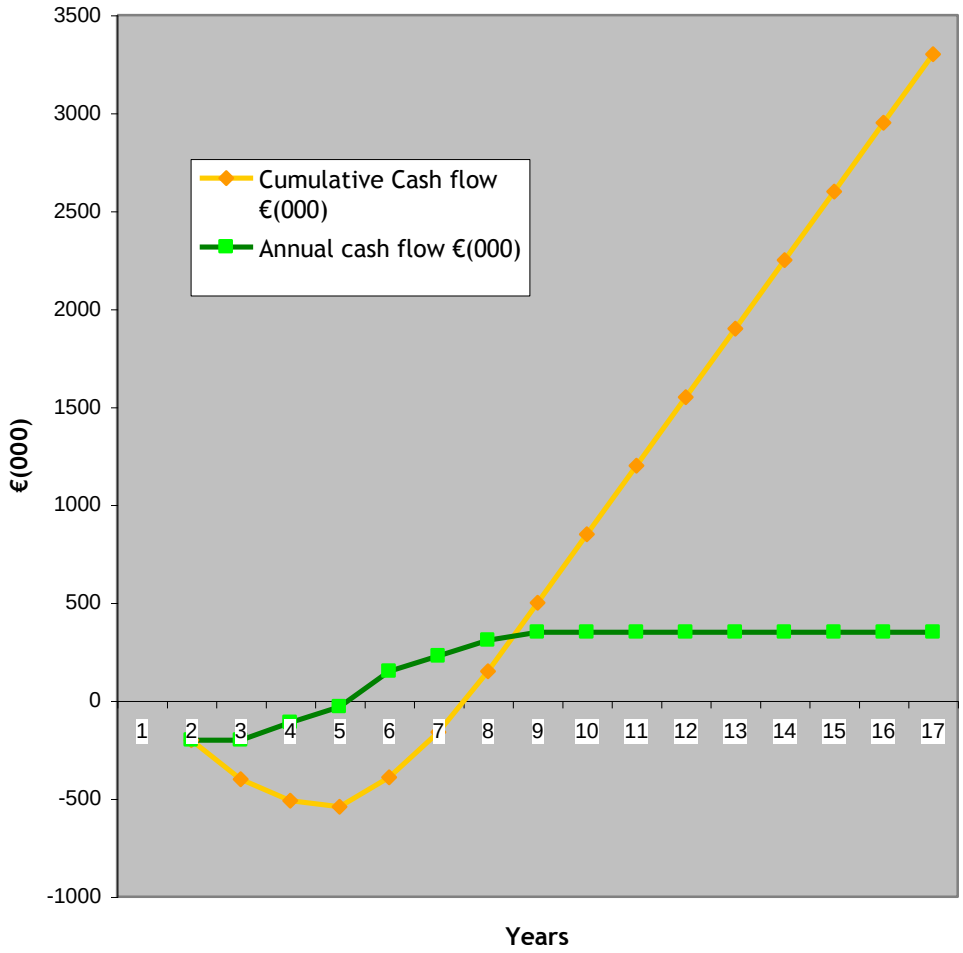
- Set up costs €200,000 spread over the first two years
- Subsidy from the STP over the first 5 operating years - an average of €150,000 pa net after grant incomes and incomes from client services
- Subsidy from Park thereafter €50,000 pa net after grants and incomes from client services. The reduced net cost arising from improved efficiency in the provision of services and / or higher average success in securing grant or additional client income.
- Time before first tenant moves from incubator to grow-on space, giving a realisable benefit – say 3 years
- Time before full flow of benefits from the programme is realised approximately 8 years.

Then, there is a need to be more rigorous in the treatment of the incomes as follows:

- There will be a proportion of cases where the Science Park as operator of the business growth services knows for certain that the businesses assisted would never have otherwise started, or never moved beyond being very small scale, or would probably have failed early or never moved into the Science Park without the presence of the professional services supplied. In the case of Warwick we put this proportion at 30%. In these cases we can count all the relevant grow-on income and savings for the entire time that the company is likely to remain on the Park in grow-on space. This is typically 10 years. In the case of Warwick these financial benefits have built up to a steady state level of approximately €300,000 pa
- For another proportion of the businesses the services simply accelerate growth; shortening the time to when there is a move into grow-on space. At Warwick, we estimate that typically the acceleration in growth is equivalent to a reduction in the time before a business needs to move up to grow-on space of about 2 years and this applies to about 50% of the businesses assisted. Therefore, in these cases we can count just 2 years of the grow-on space occupation by each of these companies as a benefit from the professional business support services. Using Warwick data, the steady state level of the financial gains from this category builds up to an average of approximately €100,000 pa 5 years after the first company success. The first success occurring 2 years after the programme starts.
- For the final proportion of companies, while there may have been some modest acceleration of growth it is not deemed sufficient to count a financial benefit. In the case of Warwick this is about 20% of the grow-on clients that have been through the business growth services
- Finally, any increase in space by companies that is purely taken within the incubator is not counted whether or not that expansion could be attributable to the business growth services. This is because the incubator is invariably nearly fully occupied so incremental growth within it has little overall financial gain. This contrasts with the grow-on space where over the last 10 years there has been typically about a 20 – 25% vacancy rate in aggregate across the grow-on buildings so any measure that successfully stimulates uptake does provide overall financial gain. Therefore, this financial model is not relevant to any Park that does not ever carry any significant vacant stock of grow on space i.e. they benefit from a vibrant market, or a market with little competition, or both.

Figure 5 plots the cumulative and annual cash flow from modelling the above assumptions. It shows that financial costs and gains come into balance by year 5 and cumulative breakeven is achieved by the end of year 7. The calculated internal rate of return (IRR) on the investment in the professional business services is 22% over the first 10 years, rising to 29% after 20 years. Both highly respectable rates of return which generally significantly exceed the 10 – 15% IRR returns that he Science Park achieves on its investment in its properties.

Figure 5. Anticicipated Financial Return to a Science Park from Investment in well designed Professional Business Growth Services



The competitive advantage equation

As noted on the last paragraph of page 2, the University of Warwick Science Park has moved from circumstances where it had a near monopoly regional position as provider of premises for technology companies in the 1980s to a situation today where there is substantial competition from high quality Business Parks that actively market to the technology sector. The competition is made all the more fierce by the fact that these competitors generally have newer premises. For these reasons it has become increasingly important for the Science Park to be clearly differentiated from the business parks. The clear and active links with the University is one important way this is accomplished, but equally, if not more important are the portfolio of professional business support services which raise and differentiate the profile of the Park as follows:

- They have become well know in their own right throughout the region, but are branded under the Park and thereby raise the profile of the Science Park.
- The successes of the companies assisted by the services, whether tenants or otherwise, are used as basis for PR that gains wide press coverage, attracting the interest of other businesses to the Park.
- They generate high levels of customer loyalty amongst those businesses that are assisted so that they are far less likely to be enticed by property offerings from competitors.

In all these ways, the Park is able to clearly distinguish itself from other property offerings being placed in front of technology businesses locating in the Science Park's vicinity. This has resulted in an average occupancy level, which generally exceeds that of all nearby business parks by about 10 – 15%. The cash value of this improvement in occupancy compared to competitor business parks in the locality is approximately equivalent to the benefit attributable to the rental income gain from the professional business support services.

Thus, it is reasonable to conclude that the operation of the professional business support services provide definite financial benefits as well as adding to the economy of the region.

Conclusions

In the face of increasing competition an STP can differentiate itself from business parks and other STPs by directly assisting its more promising start up and early stage clients with appropriate innovation and business support measures that are well adapted to the needs of innovation-led businesses. A well-designed programme will help to maintain high occupancy, generate high customer loyalty and contribute significantly to improved financial viability as well as contributing to wealth creation in the local economy - an important part of the mission for many STPs.

Appendix 1

The Outputs achieved from the Business Growth Services

The following outputs were achieved over the last 10 years from the University of Warwick Science Park's business support and networking services which were funded by public sector grants, income from clients and subsidy from the Science Park itself as described in the main text of the paper.

- 600+ companies assisted with technical marketing with
  - 220+ companies assisted to access export markets (included in the 600+ total)
- £15 million invested by virtue of Business Angel, Venture Capital and Investment Readiness programmes in 80 businesses. This led to many subsequent funding rounds where investments were typically 5 – 10 times larger.
- 96 entrepreneurs trained through the high growth start up programmes leading to 40+ growth oriented new business starts.
- 9 networked clusters of businesses were created involving over 100 businesses who were assisted to become more innovative.
- 500+ student projects completed fro individual SMEs helping tem innovate through either product improvement or new business processes
- 2,750 new jobs created or preserved.