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**The role of the Surrey Research Park in valorising smart  
specialisation**

*Plenary session*

*STPs and A0Is: valorisation of investments*

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# The role of the Surrey Research Park in valorising smart specialisation

## ***Executive Summary***

The latest thinking about regional innovation has been termed smart specialisation. This idea is based around the need to engage all regional stakeholders includes the input of entrepreneurs in helping to define a regions have a competitive advantage.

Science Park and Technology Parks and Areas of Innovation (S&TPS) have long been associated with creating the right physical facilities, value added services and management expertise to support technology focussed entrepreneurs.

This paper explores aspects of the performance of the Surrey Research Park as a centre that supports opportunity-led technology entrepreneurs in valorising, adding value, to smart specialisation.

## Abstract

The latest thinking about regional innovation has been termed smart specialisation. This idea is based around the need to engage all regional stakeholders includes the input of entrepreneurs in helping to define a regions have a competitive advantage.

Science Park and Technology Parks and Areas of Innovation (S&TPS) have long been associated with creating the right physical facilities, value added services and management expertise to support technology focussed entrepreneurs.

This paper explores aspects of the performance of the Surrey Research Park as a centre that supports opportunity-led technology entrepreneurs in valorising, adding value, to smart specialisation.

## Universities, science and technology parks and areas of innovation and economic development

Governments of both well-developed and developing economies are commonly turning to their universities to support economic development programmes. In Europe and many other parts of the world, these have traditionally focussed on regional innovation strategies (RIS) and associated regional innovation and technology transfer initiatives (RITTTS)<sup>1</sup>. However, with declining public funds in Europe a new variant to traditional RIS, termed smart specialisation, is now being promoted.

The major contribution made by universities to historic regional strategies and initiatives has been through research and teaching links with business, developing and retaining human capital in their regions, and engaging in local and regional governance to support innovation. Since the 1970s in Europe, a number of universities have also promoted science and technology parks as a brand of managed real estate with an explicit mission of supporting innovation based economic development.

The key features at the core of the mission of these parks include:

- They are place based property initiatives so tend to serve a local market for start-up companies<sup>2</sup>.
- They are concerned with supporting science-industry links and narrowing the business - science community gap to foster innovation.
- They provide services to support innovation by opportunity entrepreneurs.
- They are carefully managed so that they have the potential to either link to the wider community through step-out programmes (which export incubation programmes to other regional locations) or they provide specialist management support to encourage university - business interaction.

Based on these features, a number of civic administrations have also adopted the practices developed by science parks to enhance the value and status, or valorise, zones of their cities that they plan to develop as areas of innovation. Examples include Taejon in South Korea, Barcelona 22@ and, on a wider scale, the Torch Programme in China<sup>3</sup>.

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<sup>1</sup> Regional Innovation Strategies under the European Regional Development Fund Innovative Actions 2000-2002  
[http://ec.europa.eu/regional\\_policy/archive/innovation/pdf/guide\\_ris\\_final.pdf](http://ec.europa.eu/regional_policy/archive/innovation/pdf/guide_ris_final.pdf)

<sup>2</sup> Parry M. Tenant companies - the lessons for the planning, development and management of science and technology parks from an analysis of 29 years of data on tenant companies on the Surrey Research Park. Proceedings of the IASP Annual Conference Qatar 2014.

<sup>3</sup> Heilmann S., Shih L., and Hofem A. National Planning and Local Technology Zones: Experimental Governance in China's Torch Programme. China Quarterly 2013.

In 2010, the EU recognised the need to try to improve its policy base for economic development and published its strategy, Europe 2020<sup>4</sup>. This was modified in 2012 when the concept of smart specialisation was articulated as RIS3<sup>5</sup>. The intention of this new policy is to create a strategy that adds a more explicit role for entrepreneurs into the relationships between education and research.

The key features of smart specialisation that define its purposes are:

- It is 'place-based' in order to service regional economic development but also carries the ambition that this growth links to the global market and should be transformational in its outcome.
- Investments in R&D must be focussed on supporting a limited number of identified national and/or regional strengths in order to give a 'place' a competitive advantage and realise its potential for excellence. The intention being that this excellence should not only derive from an R&D base but also take account of the demand side that comes from business and entrepreneurs.
- To identify the strengths that enable policymakers to develop a smart specialisation strategy (S3) requires a broad based analysis of a region. Termed 'entrepreneurial discovery process' (EDP) this needs to be a bottom-up analysis and include firms in all stages of development or decline and from all sectors. It requires input from higher education institutions; public research institutes, independent innovators; and whoever is best placed to discover the domains of R&D and innovation in which a region is likely to excel given its existing capabilities and productive assets<sup>6</sup>.
- The process is concerned with creating sustainable employment by stimulating entrepreneurship and collaboration between education, research institutions and the private sector.
- The logic of reliance on entrepreneurs is based on their knowledge that goes beyond an understanding of science and technology by combining and relating this to their knowledge of market growth potential, likely competitors and the entire set of input and services required for launching a new business activity<sup>7</sup>.
- The outputs of any investments flowing from this analysis needs to be measurable in order that policies can be refined to improve performance which requires an effective governance structure.
- The engagement of entrepreneurs in delivering the strategy can also help to identify international markets that can offer wider commercial opportunities and influence diversification and prevent 'lock - in' to a historic technology by using demand-led information to influence investment.

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<sup>4</sup> Communication from the Commission Europe 2020: strategy for smart, sustainable and inclusive growth. Brussels, 3.3.2010 COM(2010) 2020 final <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>

<sup>5</sup> Guide to Research and Innovation Strategies for Smart Specialisations (RIS 3). Luxembourg: Publications Office of the European Union, 2012 ISBN : 978-92-79-25094-1 doi:10.2776/65746

<sup>6</sup> Entrepreneurial discovery process; <http://s3platform.jrc.ec.europa.eu/entrepreneurial-discovery-edp>

<sup>7</sup> Guide to Research and Innovation Strategies for Smart Specialisations (RIS 3). Luxembourg: Publications Office of the European Union, 2012 ISBN : 978-92-79-25094-1 doi:10.2776/65746

In 2013, the Council of the European Union endorsed smart specialisation as part of the EU's cohesion policy for 2014-2020. All regions are now being encouraged to have a smart specialisation strategy (S3) in place in order to receive ESIF funding for innovation<sup>8</sup>.

### The role of the Surrey Research Park and valorising smart specialisation

The commonalities between the objectives of S3 and the mission of science and technology parks, such as the Surrey Research Park (SRP), has further sharpened interest in these locations as agents that can support the development and delivery of this strategy.

The thesis of this paper is that the coincidence of purpose of S3 and the objectives of the Surrey Research Park valorise smart specialisation.

A broad based appraisal of this commonality is characterised in table 1.

Table 1: Commonalities of S3 and the Surrey Research Park

Principles and objectives of S3	Principles and objectives of SRP
Place based	University of Surrey permitted to develop 70,000 sq. m of space on its land with permission from the local authority with potential to double that size because of its success as an area for employment generation - it is place based.
Supports technologies that imbue a region with a competitive advantage particularly where this has the support of entrepreneurial skills	Planned to give European centred companies on the site a competitive advantage by assisting with connections to technology and skills in the University and the region
Technology selection by demand and competitive advantage	Natural selection of tenants which if accepted onto the Park survive by being assessed by exposure to competition and demand to enable them to move to market funding - this is supported by pre, full and post incubation programmes and a specialist management team.
Performance is measurable by economic assessment and competitive advantage	Performance is measured by individual contribution of tenants and overall contribution of the site to meeting its objectives
Supports closing the technology/knowledge gap by linking science and industry	Effecting technology/knowledge transfer
Connecting the economy to global markets	By raising the profile of the University, the Surrey Research Park and its tenants attract foreign and local direct investment to the Park
Based on broad stakeholder engagement	On-site management taking an active role in the regional development agenda by active and senior level engagement with the relevant agencies

A deeper analysis of this commonality is set out below:

- The purpose of the principles on which the park was established - objectives.
- The hard infrastructure the site provides to support the development of opportunity-led technology companies - the physical plan.

<sup>8</sup> National/Regional innovation strategies for smart specialisation (RIS3).  
[http://ec.europa.eu/regional\\_policy/sources/docgener/informat/2014/smart\\_specialisation\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/smart_specialisation_en.pdf)

- The zoning / planning permission granted for the park- planning and entrepreneurial delivery.
- The soft infrastructure provided on the site for technology and knowledge transfer - relationship with the University.
- The soft infrastructure the site provides to support company development - pre and full incubation and access to finance.
- The role in the regional economy that the management has taken over the last 30 years and the principle facets that make up a smart specialisation strategy (S3) - engagement with regional development organisations.

### *Objectives*

When the initial plans for the Park were agreed, five objectives for its development were defined. These remain as guiding principles today. These relate in varying degrees to the University, business and the local authority that are the three stakeholders in the project.

These objectives included: helping European centred companies gain and maintain a competitive advantage by creating the necessary physical infrastructure to support pre and full incubation; driving technology and knowledge transfer; raising the profile of the University of Surrey as a centre of creativity and innovation; and linking this into the wider governance and economic ecosystem to support the economic development of the region while achieving this through self-funding.

These are consistent with the expectation set out in an EU review of the science and technology parks in smart specialisation strategies<sup>9</sup>.

### *Place based with the intention of retaining companies in the territory*

The Park now comprises some 70,000 sq. m. of space. This is offered in 30 separate buildings in a range of varying sizes. The 7,400 sq. m Surrey Technology Centre, offers pre and full incubation services on a membership and monthly licence contract. These contracts in effect share the risk during incubation. The range of buildings on offer have been planned to accommodate expansion of technology companies that have grown on site as well as small specialist parts of large companies.

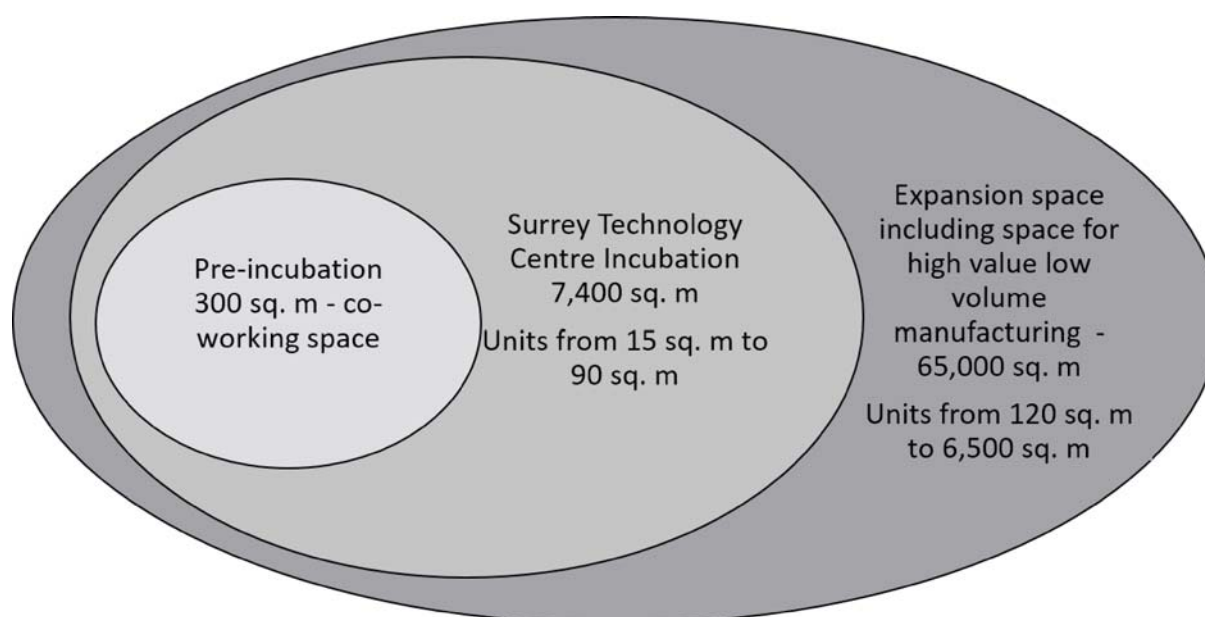
The Park also offers access to laboratory facilities to support companies involved in biotechnology and medi-tech sectors. In addition, the park is also able to offer facilities for high value, low volume manufacturing to companies that are successful in developing technology products. Examples include the development, manufacture and testing of Kinetic Energy Recapture Systems (MTS - a division of a Canadian engineering company) and in satellite development and construction (SSTL now owned by Airbus).

Fig 1 - diagrammatic representation of space on the park

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<sup>9</sup> Nauwelaers C., Kleibrink A., and Stancova K. The Role of Science Parks in Smart Specialisation Strategies S3 Policy Brief Series No.08/2014 JRC Technical Reports European Commission.





The Park's 'placed based' role is evidenced by the data collected over 25 years on the origins of its tenant companies which show that 76% are start-ups and of these 86% have been drawn to the site from within 50 km (sample size 488).

#### *Planning, entrepreneurial delivery and supporting innovation*

The intention when creating the Park by the planning authority in 1981 was to extend the influence of the University of Surrey in the regional economy by helping to create and support technology businesses that could transform and diversify the regional economy.

This was itself a further extension of the strategy of modernising the local economy that dated back to 1966 when the Borough Council helped bring the University from London to Guildford. At that time, the University purchased 300 acres of land on which to develop in the town.

The local planning authority agreed to the development of the Park to permit occupiers to undertake research, development and design in any science including social science that was complementary to the activities of the University of Surrey.

This remains as the permitted use but it has been the interpretation by the management of the site in such a way that it has resulted in a very wide range of uses that include some high value manufacturing and a heavy bias towards innovation rather than a narrow focus on R&D. This approach has helped to transform the local economy by increasing the proportion of successful technology companies in the business community.

The interpretation of this planning use has enabled, for example, the Park to influence the diversity of the regional economy by accepting that the complementarity between entrepreneurial led companies and the University is based on their respective use of the general purpose enabling digital technologies.

In the case of the University its role in developing the digital economy, has been through its highly regarded research and teaching base in the Digital World Research Centre, the Centre for Vision, Speech and Signal Processing, the Surrey Space Centre and the Institute for Communication Systems, to which has been added, in 2014, the £70m 5G Innovation Centre.

In contrast, the role of many tenants on the Park has been to extend the use of digital technology in the form of advanced applications.

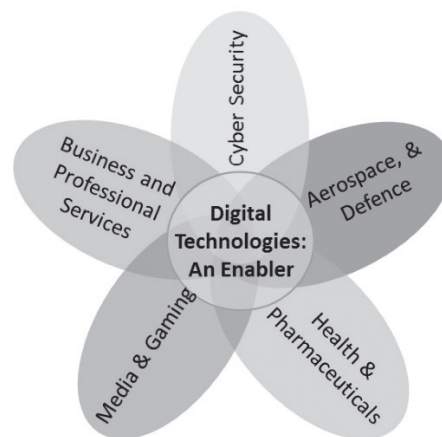
A review<sup>10</sup> in 2015 of the digital economy by the business led regional development organisation EnterpriseM3 (EM3) identified the importance of this sector to the region (Table 2).

Table 2 Data on the Enterprise M3 Digital Economy

8,500 Digital Businesses
50,270 Employed
1.8 Location Quotient vs. UK
92% < 10 employees
7.4% of all Enterprise M3 jobs
£4.17bn GVA in 2014
£105,460 GVA/worker vs. national average of £83,000

The elements of commercial endeavour that make up this sector are characterised in Figure 2.

Figure 2: Digital Technologies: an enabling technology supporting innovation in key sectors



The Surrey Research Park in collaboration with the University of Surrey and the business base in the region have, over the last 25 years, formed a close collaboration, which has helped produce these results. Of a sample of 488 companies that have located on Park over the last 29 years over 43% were active in building sectorial strengths around this technology.

#### *Digital technologies as an enabler*

This growth in the R&D base for mobile communication at the University of Surrey over the last 30 years has attracted a number of mobile communication companies to the Park.

Examples include the University of Cambridge spin out TTPComm, which was a leader in mobile phone technology, applications, protocols and silicon, which started to recruit staff from the undergraduate and post graduate courses at the University when it based a division on the site. The group was eventually purchased by Motorola and merged into their business before acquisition by Google.

PolicyMaster located on the Park in 1987 and was an early entrant into the use of software in the insurance industry. The company developed into an AIM listed company. The company is still active although now based in the north of the UK.

Smith Associates (Detica/ BAE Systems Intelligent Services) located on the Park in 1986 with 30 staff, was subject to a management buyout and renamed as Detica. It grew to over 1,200 staff in a number of national and international locations achieving a turnover in excess of £200m. It was first listed on the London Stock Exchange in 2002 and eventually taken into private ownership in 2008 by BAE Systems. The company has continued to consolidate on the Park as BAE Systems Applied

<sup>10</sup> Seizing the opportunities of the digital age Enterprise M3 digital technologies report - November 2015.



Intelligence where it works in four markets that it describes as actionable intelligence, threat intelligence, fraud containment and customer insights associated with large-scale data. The company currently employs over 600 staff on the Park, it is still growing and works closely with the UK Government's Communications Headquarters.

During its growth on the site Detica has been an important incubator company for spin-off companies by entrepreneurs that have remained on the Park and continue to grow their businesses in complementary sectors.

The success of the collective activities in mobile communications in the University and the influence of the Park, which has developed as a route to connect with SMEs in this technology, has helped to influence the investment of £100m of public and private funds in a new 5G innovation centre that opened in 2015. This level of investment includes substantial involvement from, for example, Huawei, Telefonica and BT. A proportion of the funds were provided by the business led but publicly funded Regional Development organisation known in the UK as the Local Enterprise Partnership.

This new 5G innovation centre is now extending its links into the Internet of Things (IOT) and synesthetic environment and in particular, the computer games sector.

In 1991 two entrepreneurs were recruited to the Surrey Research Park's incubator. They moved to the site from informal accommodation where they first began to develop games. The value to the company was that it was able to build a business based on short term leased space and equipment, it benefited from the address in attracting investment and as the company expanded the Park was able to accommodate the growth.

The company, registered as Bullfrog, took advantage of better storage capacity of CDs and the multimedia capability of computers to build a new genre of simulation games. Its success won a number of contracts that led to its acquisition in 1994 by Electronic Arts for a reported \$50m.

The creative founders then started Lionhead Studio, again on the Park, which went on to have success with its *Fable* games. The Xbox division of Microsoft bought this company to secure content for its console product. The creative entrepreneur again left Microsoft to start the company 22cans, which returned to the Surrey Technology Centre. This is now focussing on games for the smart phone platform. The Surrey Research Park continues to support their development as they are developing new funding models for publishing games.

Over the 22-year period since Bullfrog was recruited to the Park over 60 entrepreneur led spinout games studios have formed in Guildford. There is a whole raft of supporting companies in the locality, which include lawyers specialising in media law, games testing companies and specialist recruitment agencies. The presence of this cluster has attracted over £150m of foreign investment into Guildford by, for example, Sony in Media Molecule and Canon in Criterion Software, and which was later taken over by Electronic Arts which subsequently now has a major office in Guildford.

The very significant skills base that has developed in Guildford stretches across the globe with one tenant company, for example, 7 League Software working for the US based business Valve Games. This company is at the forefront of programming in a tight-knit integration with the team at Valve by working on rendering, physics, artificial intelligence and networking, across a range of platforms.

This reaffirms the evidence<sup>11</sup> that organisations that operate as part of a wider system, sharing knowledge and partnering contribute much more to the economy than those that are less globally

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<sup>11</sup> Innovating the business model to compete in the world of complex services. Visnjic I., Business Models Research Lead, Cambridge Service Alliance. Innovation in technology-based companies: re-inventing the business ecosystem. Royal Academy of Engineering July 2012. <http://www.raeng.org.uk/publications/reports/innovation-in-technology-based-companies>

connected. The increased use of ICT leads to greater coordination with others and more demand for customisation and specialisation solutions for clients.

Part of the valorisation engendered by the Surrey Research Park in the games sector is a new role by the University of Surrey in creating a range of support services for the games sector to help independent developers now working in Guildford to bring games to the market. This entrepreneurial-led initiative has also prompted the University to work with some entrepreneurial independent developers to create a subsidised co-working space dedicated to gaming. Other initiatives to support this have included events such weekend ‘games-jams’, and industry led networking events in which the University is taking a major role.

As a result, the University has also secured a £1m research grant to work on technical aspects of the software for motion capture and games development and is working with the EM3 Local Enterprise Partnership to create a 5G - games technical axis with the Surrey Research Park.

This focus satisfies one of the key principles of S3 in that it should embrace a broad view of innovation, supporting technological as well as practice and social innovation.

#### *Entrepreneurial delivery and innovation*

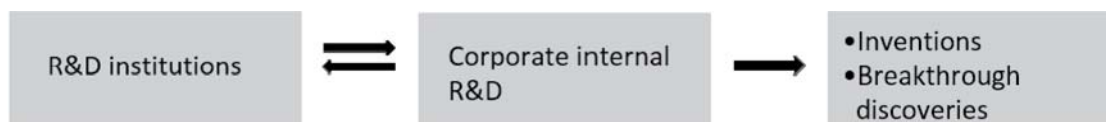
Experience of working with over 500 companies on the Surrey Research Park of which details of 488 have been recorded, has revealed a number of patterns of innovation that they have adopted as the companies become market funded by securing customers or secured private equity funding with which to continue to drive towards market funding.

These fit into four patterns<sup>12</sup>, which can be defined as scientific, engineering, customer focussed and efficiency-related innovation but are all-important in the Park’s role in supporting smart specialisation. The importance of this insight is that it sets out strategies adopted by companies that help them to maintain a competitive advantage in their market.

Scientific innovation (figure 3) is commonly regarded as the preeminent form of innovation and often thought to be the major focus of science and technology parks and areas of innovation; however, experience of dealing with the companies that have located on the Surrey Research Park is that this is the most infrequent form of innovation. Experience has shown that where this strategy has been used the cost of taking products to market is high and the period of incubation is protracted.

This pattern of innovation requires global reach with a strong link to the international research base, it requires access to long-term “patient” funding, and experience shows that these companies are commonly linked with prominent scientists in the field of science in which the innovation is rooted. This high-level linkage itself valorises the science and perception of the science by funders and often this type of innovation has the greatest potential impact in its market place.

**Fig 3 - scientific innovation**



An example of a company that has used this innovation model is ReNeuron, which spun out of Kings College Hospital, London, to commercialise stem cells. The company has been heavily supported by venture capital and has now moved to Wales with significant support from the Welsh Government. This company is involved in pioneering stem cell therapeutics with the objective of developing

<sup>12</sup> McKinsey & Company, Gauging the strength of Chinese Innovation

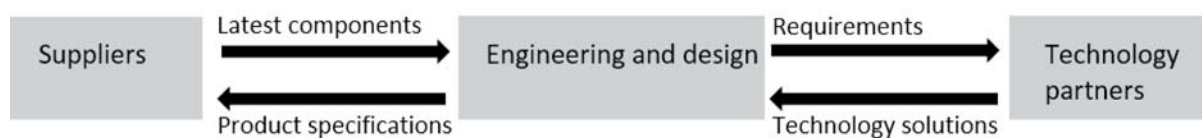
novel stem cell therapies targeting areas of significant unmet or poorly met medical need<sup>12</sup>. Its work has taken a scientific breakthrough from ‘bench’ to clinical trials.

The Surrey Research Park has also made available a large laboratory that the company could occupy with the necessary facilities to undertake both in vivo and in vitro research while working with the University and using this link to secure government research funded grants and allowing the sharing of equipment on campus.

The development of ReNeuron shares common features with another tenant ANGLE plc in that they are both entrepreneur led biotechnology companies. They have taken their technology out of a research institution, they have both responded to a market opportunity, they rely on skills at the cutting edge of cell biology/science, they are both funded through equity investment and they are addressing a large and complex health market. In both cases they have gained in image and reputation from the Surrey Research Park. The move of ReNeuron to an area of innovation in stem cell technology in Cardiff, Wales adds evidence to the importance of perceptions for companies as they drive technology up the value chain.

Engineering-based innovation depends on accumulated knowledge and experience and involves part science and part problem solving using expertise gained from practical learning. Experience shows this involves integrating technologies from multiple sources to form a single product.

Figure 4 Engineering-based innovation



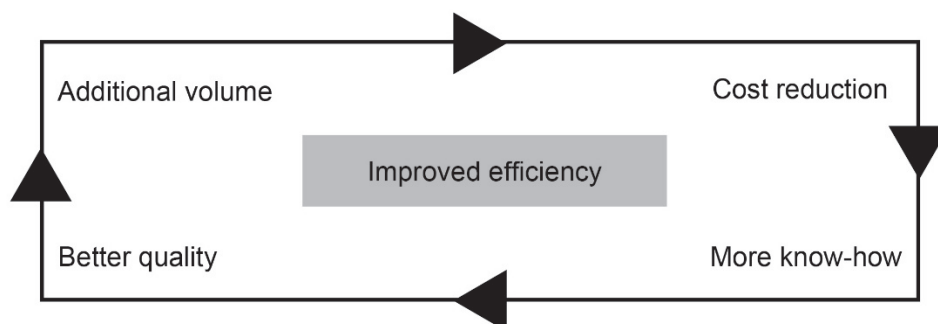
Policy strategies to support this include helping companies working along supply chains to engage with engineering departments at universities, helping to link companies in related sectors and supporting education to help build the right skills base.

Examples of companies that are active in this area of innovation include the University spin out SSTL. Originating from a postgraduate research thesis from the department of Electronics and Electrical engineering in the early 1980s this company was acquired by Airbus in 2006. Its specialism has been to develop small low cost satellites which it continues to do as a subsidiary of Airbus while remaining and consolidating its activities in a number of facilities on the Park which includes a development and production facility.

There are many other examples of companies on the Park that are involved in efficiency driven innovation. The commercial opportunity for this type of innovation is founded on the continual need to develop new ideas that save time in production and the delivery of goods and services. Examples of companies that are active in this area of innovation include IDBS and Gold-I that is a world leader in foreign exchange trading.

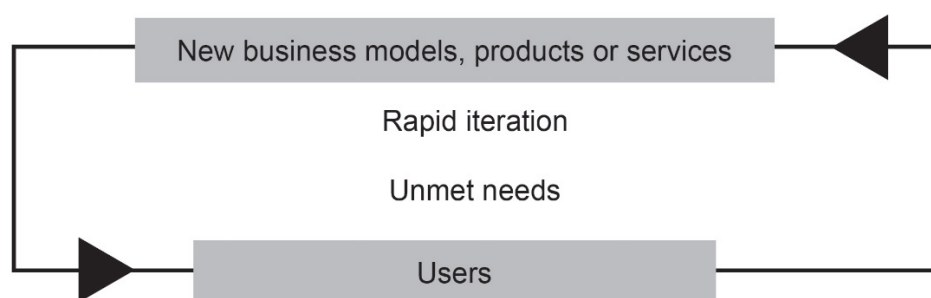
Figure 5 Efficiency driven innovation

<sup>12</sup> <http://www.reneuron.com/>



The Surrey Research Park hosts a raft of companies involved in customer-focussed innovation (Figure 6). These companies use rapid iterations to create products that provide for unmet needs of consumers. These needs span many types and solutions relating to a large number of potential customers. An example is the formation and sustained surge in the development of computer game studios that in turn contain a wide number of specialist areas of innovation that together have created a very significant cluster of games companies on both the Park and the town of Guildford.

Figure 6 Customer focussed innovation



### *Value added services*

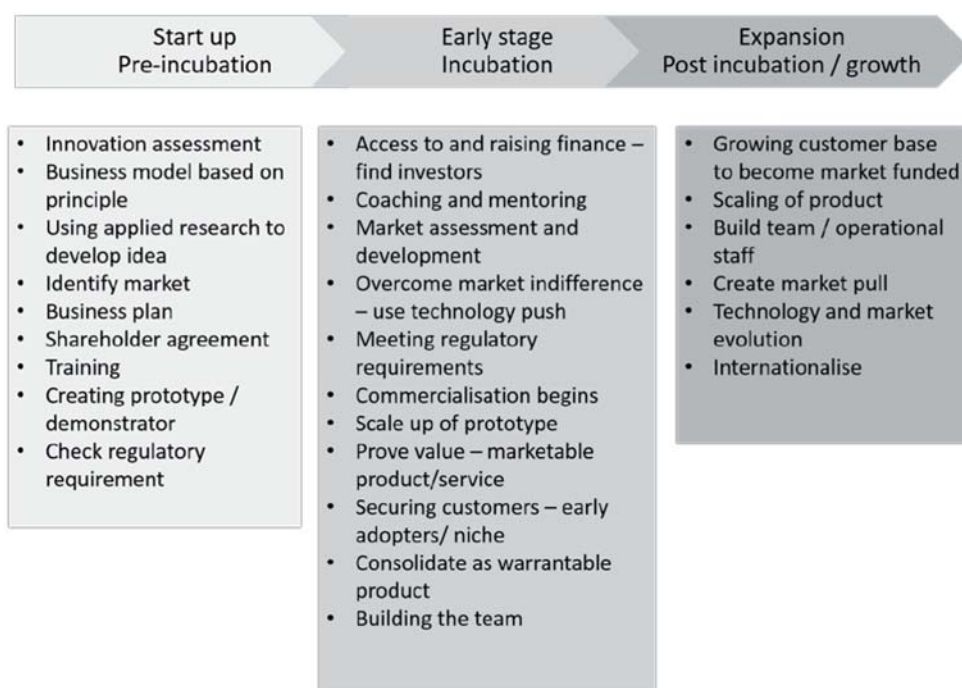
The traction gained by science and technology parks in supporting RIS regional economic development comes from their role in delivering direct and indirect value added services to encourage the formation and growth of technology businesses<sup>13</sup>.

One of the most significant roles of the Surrey Research Park has been its role in pioneering incubation. The experience of operating the Surrey Research Park for over 30 years has shown that offering incubation plays a significant part in adding value to smart specialisation strategies. The top down commitment by the University of Surrey to developing pre and full incubation in the form of both a 7,400 sq. m building and investing funds to support the process has created an important framework to support the regional entrepreneurial base.

The elements that Surrey's incubation programme offers which is characterised in figure 7.

Figure 7: Value added elements of Surrey pre and full incubation services

<sup>13</sup> Smart Specialisation Platforms S3 guidance. European Commission. <http://s3platform.jrc.ec.europa.eu/faqs-on-ris3>

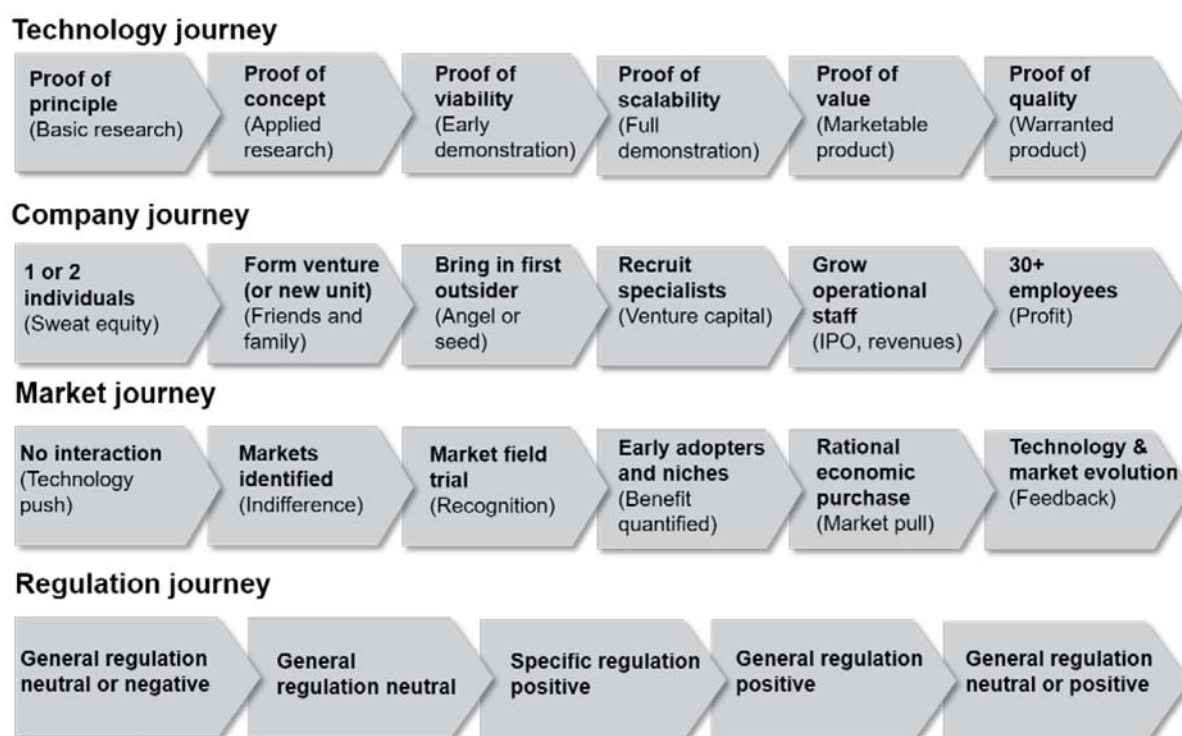


These processes overlay a number of different aspects of creating a company. This has been characterised<sup>14</sup> in Figure 8. The process being supported is based on a combination of developing a technology from an idea to warrantable product, creating the team of people in company to support the development, and moving the market from possibly complete indifference to one in which multiple rational purchases are made. For this to be achieved it needs, at least, to take place in a neutral or supportive regulatory framework.

<sup>14</sup> Parry M. Technology, market and company journeys: how can we help them succeed? Proceedings IASP Annual Conference, 2011 Copenhagen



Figure 8: The journeys for building a company.



The experience of running the Surrey Research Park is that using the balanced start up process helps companies to define their strengths and weakness in this process and part of the incubation programme focusses on this aspect of support.

The Park has also created the Surrey 100 Angel Investor Club, which has raised and leveraged over £40m funding for the companies that go through its development and education programme.

In addition, using its networks to support companies to raise equity finance, the Surrey Incubation team has recently embedded a member of the UK government's innovation agency (branded as InnovateUK) within its co-working space. The accessibility of this officer to the whole park provides a new dimension to being able to support smart specialisation because of connections to policy programmes within the framework.

The value of pre incubation is that it supports entrepreneurs while they create an idea for commercialisation, help to test this against demand and competition, and if that is successful help evolve this into a marketable idea or product while also developing the company to support its exploitation.

On the Surrey Research Park two entrepreneurs in residence and a network of investors, mentors and coaches that are associated with the Park support this process. Part of the success of the Surrey Incubation programme is its capacity to support companies as they pass through the three critical pinch point at which many companies fail. These are helping them create a prototype, which if achieved, overcomes the first major hurdle and potential points at which companies fail, then supporting them past scaling the business to, finally, helping the company find customers.

The phase of development between pre incubation and the expansion includes raising finance, supporting the company with coaching and mentoring and overcoming the second and third major challenges for any company of scaling and securing customers.

If the company succeeds in developing market funding, then it needs to build on the outcomes of the pre and incubation phases. Services commonly needed by the SME, for example, are to increase sales or improve its productive processes, such as internationalisation services or innovation



introduction through building and understanding the market and then establishing a regime to continue to innovate by developing new ideas. Where incubators are run by investors based on securing some equity in successful incubatee companies these operations often develop as accelerators.

The success of this collaborative approach provides: access to the University to support the technology journey; support from a network of investors, mentors, coaches and specialist technology recruitment companies on the site for the company journey; connections to markets through the network of sector links that have been created over 30 years; and, finally access to specialist companies involved with regulations including IP protection and specialist tax arrangements. This has all helped to achieve high rates of success in creating a powerful cluster of technology companies and entrepreneurial skills.

A recent example of this collaborative approach was demonstrated in February 2016 when the Surrey Research Park team created a collaborative venture with two entrepreneurs to support independent games developers. The project known as Rocketdesk, is part funded by the Surrey Research Park, part funded by the entrepreneurs who manage this 'hub' and part funded by independent games developers in the region that requested the Park to create this facility. It is managed by entrepreneurs from the sector who are continuing to build up the number of its members.

Of the services developed, those that are relevant to smart specialisation are noted in Table 1<sup>15</sup>.

The SRP offers pre, full and post incubation services to technology businesses. To support this the Park's management has created an access policy for businesses associated with specific sectors that have been identified through an analysis of investment and from the number of enquiries from entrepreneurs. The basis of this policy is whether it reflects either a University strength or a sector in which the Park is gaining momentum the tenant base on the Park is showing strong growth.

### *Management*

The management board of the Park comprises senior academics that have commercial experience, senior operations managers from the University including the Director of the Technology Transfer Office, external directors that represent important commercial sectors and senior members of the management team.

Experience has confirmed that the Park's management team must take an active role in supporting regional innovation agencies. The capacity to do from the early development of the site until today is based on agreement between the University of Surrey and the local planning authority, because at the beginning there were no regional development organisations in place.

The understanding that was developed about permitted use and implementation enabled the Park to support a number of companies that have helped to diversify the local and regional economy. The high level of occupancy is evidence that the site offered the right soft and hard infrastructure. The rate of company formation and growth and acquisition demonstrates the relevance of the site and its management to the principles of smart specialisation.

Since the enactment of the Regional Development Agencies Act 1998 in the UK, the role of universities in teaching and research has expanded to include an obligation to develop a social mission that engages them in supporting community development.

The Regional Development Agency that emerged from central government in parallel with this obligation enabled grant funding to support the development of the Surrey Incubation programme and a specialist incubator for space technology.

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<sup>15</sup> EURADA 2011. Directory of No Nonsense Activities to Build S3 - minded Regions.

The experience of Surrey Incubation has been that it has been highly successful in supporting entrepreneurs in a wide variety of technologies and currently there are over 70 members of the programme and all are technology based, are scalable and consequently have the potential for global reach.

The contrast is that the very focussed space incubator, which still operates, has attracted fewer members. The conclusion is that the cost of entry to the space market is very high, it is a heavily regulated industry, is less easily penetrated by young underfunded entrepreneurs.

The competition in other areas of the economy particularly in the digital technologies is more accessible which has enabled greater penetration by young companies.

A wider role taken by the management of the Park has been to secure places on the advisory groups to the regional development agencies and now to secure a place on the Board of the Local Enterprise Partnership EM3.

This requirement has resulted in a number of interventions by the University of Surrey through the Surrey Research Park in supporting the objectives of smart specialisation. These comprise research and innovation, enterprise and business development, developing human capital, and enhancing social equality<sup>16</sup>.

During the history of the SRP, there have been numerous examples of where this process has happened. These include the work of Stingray that developed laser technology that was used for detection of submarines in the north Atlantic and developed this for the oil industry. A major oil and gas data company acquired this company after creating a fully warrantable product.

The offer of laboratory space on the Park attracted ReNeuron to the park in the late 1990s. The company formed using among other inputs, technology from research at the Institute of Psychiatry. As a venture capital backed company it located on the Park until April 2016 when it relocated to a new production plant and laboratories in Wales with the support of the Welsh Government. During its 18 years on the Park the company formed a number of successful research and technical links with the University of Surrey.

An example of how this wider thinking has helped meet the principles of S3 relates to a computer games development company that was recruited in 1991, which was not aligned with any university activity but clearly was involved in an emerging market using the key enabling technology (KET) of high density storage media (CDs) and the refinement of computers offering multimedia capacity to promote their own genre of computer game. This decision has spawned a games cluster with an international reputation, which in turn is now influencing research and innovation in the University.

The games cluster has developed to the current extent purely because of entrepreneurial activity but it has relied more latterly on the spread of broadband capacity, which has been built up with government support following the liberalisation of the telecoms that prompted private sector involvement in the ensuing commercial opportunities.

As mentioned earlier, examples of this include the creation of SSTL, now owned by Airbus and resident on the SRP, which developed out of a Surrey PhD thesis involving space related communications and associated radio antennae technology. The thesis led to a need to build a small low cost satellite and when successfully launched and in orbit its success as a communication tool, the University created a company (SSTL) to commercialise small spacecraft. After its acquisition by Airbus, it has since expanded into satellite production. The sale of the company also

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<sup>16</sup> Goddard J., The role of the university on the development of the region. <http://www.slideshare.net/EUROsociAL-II/the-role-of-the-university-in-the-development-of-its-region-john-goddard-emeritus-professor-of-regional-development-studies-universidad-de-newcastle>

cemented a research and development deal in which SSTL bought research capacity from the University. These links are proving to be very successful in driving innovation.

### Evaluation

An independent study of the performance of the Surrey Research Park<sup>17</sup> after 29 years of operation and an update of this based on observation of performance noted that against its principal objectives the site reported the following performance related measures:

- The Surrey Research Park has been and has continued to be a commercial success; by 2015 it had generated over £100m of free income from the real estate and as a capital asset its value exceeded £105m.
- It has created over 7,000 technology jobs and is still growing.
- The presence of the Park increased the number of technology jobs offered in the town of Guildford putting it on a par with other towns in the region.
- The links for technology / knowledge spanned the use of shared equipment, academic and research links, educational links particularly in relation to business education, accommodating spinout and spin-off companies from the University of Surrey and a number of other research institutions and universities, student placements, staff movement and a number of technology focussed events.
- The Park has raised the profile of the University of Surrey and in particular, it has helped do this with respect to its role in defining the technologies behind the regions smart specialisation strategy and is influencing regional investment by the business led local enterprise partnership in technology.
- The work of the Park continues to attract international interest and continues to attract inward investment into the site in the form of international technology companies, which further boosts the commercial impact of the site and drive entrepreneurial discovery.
- An analysis of the turnover per employee of companies on the Park as revealed in May 2016 noted £604.4 m GVA to the UK economy and 8,308 jobs<sup>18</sup>
- The Park has 65,000 sq. m of space on site and it has remained at over 80% occupancy since first built and the 7,400 sq. m Surrey Technology Centre, which is the sites incubator facility that operates at between 90 and 95% occupancy. This suggests the Park provides a facility that meets market needs. The nature of the short-term contracts and the services it offers helps to share the risk of development that the innovative companies the Park attracts.

Critical to its efficiency in driving innovation is the response by entrepreneurs to the opportunities and ideas that emerge from output and influence of the combination of ideas, when combined with R&D deliver the potential for creating prototypes or new business models for ideas, that leads to production and sales, revenue and profit.

The process of capturing and converting ideas that have commercial potential needs technology to be available to this group with access to funding and the necessary skills from which to select personnel that can form and drive a company.

### Conclusion

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<sup>17</sup> Review of the Surrey Research Park under the UKSPA Aspire Science Park Improvement Framework programme 2013. C Monck.

<sup>18</sup> BiGGAR Economic Study of the economic impact of the Surrey Research Park May 2016.

The coincidence of the principles that underpin both the investment and operation of the Surrey Research Park and Smart Specialisation have been a positive factor in enabling the Park to valorise the policy.

The evidence for this added-value come from the Park's performance in supporting the formation, growth and retention of companies the area: they both are place based.

Many of these companies have been in pioneering areas of the utilisation of technology, which has helped diversify the economy and demonstrate the role that entrepreneurs that are supported in the early stages of development can achieve.

In economic terms, the evaluation of the performance of the site has reported over 8,500 technology jobs being created and a GVA in excess of £640m being achieved.

The continual development of the site and a further extension of 11 hectares will enable the site to continue to grow.