East London: world-class centre for digital enterprise

March 2011

Contents

"

London is already perhaps the world's largest single creative cluster going digital – bigger than San Francisco or New York City: a huge asset that has taken decades to develop. "

Andrew Bud,
mBlox

"

In the outstanding space and infrastructure offered by the London 2012 Media Centre, the Olympic and Paralympic Games will bequeath to London a vibrant new business quarter in the east of our city. We must do everything we can to support its development as one of the UK's leading hubs for businesses exploiting the digital and creative markets. "

Boris Johnson,
Mayor of London

"

To work in East London was one of the best decisions I have made. The direct community is very motivating and office sharing keeps us up to date. London is special – full of brilliant people, a great place to live. "

Juan Alvarez,
Amplicate

"

East London's attraction is that it is cool, fashionable and social. "

Jules Ehrhardt,
UsTwo

Preface

On 4 November 2010, the Prime Minister set out the government's commitment to enable a successful and sustainable technology cluster in East London.

We have all agreed to support this Tech City initiative, which we are confident will play a significant role in building a digital cluster in East London for the benefit of the UK and the global digital economy.

We welcome the research and the ideas contained in this report, which sets out a range of options for developing the cluster, and maximising the opportunities for future growth. The report has been compiled by McKinsey & Company, and is based on an analysis of the international experience of clusters and a body of evidence drawn from interviews with over 40 digital entrepreneurs, other stakeholder companies and government officials.

We recognise that all of us have a role to play in making the digital cluster in East London a success – whether founders and entrepreneurs, corporates, professional services firms, academics, or representatives of local or central government.

We all acknowledge the momentum building in East London as the result of the work of the founders and entrepreneurs who have acted as pioneers: we are determined to support their efforts where this would be most helpful.

Executive summary

East London's technology entrepreneurs have already prepared the ground for a successful technology cluster, which benefits from the capital's competitive advantages and has the potential to make a meaningful contribution to the wider economy. But the prospects for success can be significantly enhanced by learning lessons from international cluster experience and implementing some of the suggestions of those already involved in the East London cluster.

1) There is a clear economic rationale for supporting the development of the technology enterprise cluster in East London

East London[1] has a distinguished entrepreneurial legacy – in retail, manufacturing, fashion, and technology. Over the last decade, it has become a focus for digital and technology entrepreneurs, who have been drawn to the location for a variety of reasons which are explored later in this document. A string of successful digital companies such as Last.fm, Moo, and Dopplr have their origins in this area. Today there are more than 170 businesses currently concentrated here[2]. This presents an opportunity to build on the technology cluster that is already taking shape in East London and consider ways in which national and regional government, large technology companies, venture capital and professional services partners, Higher Education Institutions (HEIs), and the entrepreneurial community itself can transform it into a global hub.

This report reflects the views of the enterprise community of East London – from small stage start-ups to some of the world's most established technology businesses, from the public sector, to venture capital, academic and community organisations. All share a similar commitment: to make East London an international centre for technology entrepreneurs. One of the most remarkable features of this initiative is the degree of energetic consensus among stakeholders about the opportunities for future growth, and the focus on East London has already generated further momentum.

" This is a great community. It's a doing place not a talking place, there's a real meritocracy – quality gets noticed, and it's led by success: Moo and Last.fm "

[1] In the context of this report, East London refers to the focus of current activity centred in Shoreditch and Old Street and the future opportunity for accelerated enterprise development in the Olympic village in Greenwich.
[2] *Wired* magazine; McKinsey analysis

2) Studying international examples helps to identify pre-conditions for successful and sustainable clusters

According to traditional cluster theory, the development and promotion of clusters of companies can contribute to a nation's economic productivity. Furthermore, there is international evidence that the growth of technology enterprise – in particular rapid and sustainable growth – depends upon the development of a supportive and enabling enterprise eco-system.

The clusters in Finland, Israel, Singapore and Germany, among many others, demonstrate the fundamental difference that an environment and infrastructure oriented to the needs of entrepreneurs makes to the chances of successful enterprise.

Success in East London depends on the development of four key attributes.

• **Presence:** 'a reputation as a world-leading cluster, and the physical infrastructure that supports this and stimulates innovation'

• **Connectivity:** 'the right people networks linking the enterprise community'

• **Capability:** 'world-class skills and the ability to acquire them locally'

• **Support:** 'financial, regulatory and professional support designed around the needs of the entrepreneur'

A number of conditions are necessary to achieve each attribute:

1 Presence

• Active promotion and outreach

• Market stimulation

• Competitive infrastructure

2 Connectivity

• Accessible internal business and social networks

• External collaborations

• Global links – to other markets and other clusters

3 Capability

• Distinctive pipeline of talent

• Practical, applied business and management training

4 Support

• Accessible financing

• Favourable policy/regulation

3) There are significant opportunities to improve the enterprise eco-system in East London – with roles for government, Higher Education Institutions (HEIs), the corporate community, investors and the entrepreneurs themselves

Summary of opportunities:

i) Presence

- **Active promotion and outreach – co-ordinate the promotion of the East London opportunity to entrepreneurs and investors in the UK and overseas**

  - There is consensus over the need for a community umbrella body to bring stakeholders together and take responsibility for marketing both internally and externally

  - Visible external leadership and championship are important

  - A media partnership for sustained promotion could be valuable

- **Market stimulation – fuel the digital marketplace in East London**

  - There are opportunities to promote East London as a location for public sector technology infrastructure – encouraging key public services, such as the NHS and the DWP, to consider East London as a location for their agencies which invest in technology R&D

  - There is an appetite for a 'digital expo' to advertise the breadth of opportunities for digital enterprise in the public and private sectors

  - Digital prizes from different stakeholders have been proven to spark new enterprise as well as increase the presence of the cluster

- **Competitive infrastructure – ensure the physical infrastructure is worldclass**

  - Many entrepreneurs have highlighted improvement needs in broadband, transport, office space and physical security

ii) Connectivity

- **Accessible internal business and social networks – create a single point of access to the existing local people and skills networks**

  - There was uniform agreement that this type of coordination is missing, and key to a sustainable enterprise environment

> "East London is seen as the 'tech area' of the UK... but needs more visibility."
>
> Derrick Robinson,
> Freelance developer

> "The community seems fragmented – we need to group individual hubs, with links between the start-ups rather than between the people who run them."
>
> Juan Alvarez,
> Amplicate

• **External collaborations – improve collaboration with academic partners**

- Elite universities – both UK and international – should be actively encouraged to locate campuses in East London and develop formal knowledge-sharing programmes

- Local universities already have an active presence (such as London Metropolitan University offering accelerator space), but this activity can be increased and more direct links built with the existing local community to increase awareness, cater to needs, and bring the best of academic research to the cluster

iii) Capability

• **Distinctive pipeline of talent – encourage more people to set up start-ups in East London and facilitate the talent flow within the cluster**

- There is a clear opportunity to develop programmes to encourage university-leavers as well as those already in employment to regard a start-up as a legitimate career choice – through, for example, a Teach First-style initiative for entrepreneurs

- A further inducement would be allowing student loan 'holidays' for founders and entrepreneurs

- Many of the stakeholders interviewed support a review of visa requirements for overseas entrepreneurs, which, in their view, inhibit the ability of legitimate entrepreneurs to access the East London cluster

• **Practical, applied business and management training – establish a practical training programme in East London to teach founders the core business skills required to start, manage and scale a venture efficiently and successfully**

- A number of capability-building programmes currently exist in East London – more than 25 organisations offer training programmes and courses for tech businesses but are not considered holistic programmes. A distinct need identified by founders in East London was the request for a one-stop in-depth practical degree-style training programme

- There is also a need for further technical training due to a gap in software and engineering skills – higher education and further education courses can play a role here

iv) Support

• **Accessible financing – improve access to growth capital**

- A far-reaching initiative such as a business-plan competition would increase the hit-rate of East London's digital businesses in securing funding, by improving the quality of the propositions put forward to angels and VCs, as well as increasing network opportunities

- Access to bank lending can be improved. In the Enterprise Finance Guarantee scheme, the government underwrites 75% of a bank loan to a small business and for many businesses this amount is critical to short-term cash flow

> " We need to de-risk going into the technology business, create a better macro environment for entrepreneurs. "
>
> Alex Guest,
> TVPixie

> " The rigour of developing and continually iterating your business plan makes you robust... you have to open up so much to investors in them. "
>
> Justin Champney,
> buildabrand.com

- As a new source of funding, investment from high net worth individuals should be promoted. As well as increasing awareness amongst these individuals, some expansion of FSA regulations may be required to enable start-ups to share business plans with interested investors in the City more freely

• **Favourable policy/regulation – review the regulatory environment for tech start-ups**

Ideas include:

- Introducing tax incentives for digital enterprise, such as a tax rebate scheme to reclaim a percentage of costs incurred

- Reviewing R&D tax credits, to allow R&D tax credits to be paid 'upfront'

- Rebalancing tax incentives to support intangible investment

- Reviewing criteria for, and publicity of, the Enterprise Finance Guarantee

- Reviewing current IP and libel law

- Reviewing scoring criteria for government procurement

4) But, as development of East London progresses, there are lessons to be learned from other clusters

Lessons can be learned not only from successful clusters overseas, but also from those that did not succeed. In many cases, the two classes share many superficial similarities. What the failures lacked – and the reason why they ultimately wasted public and private resources – was six factors. Getting some of them in place can make the difference between success and failure. Getting all of them right could make the difference between East London being an also-ran and becoming the world-class success it deserves to be.

The six factors are:

1. Recognising (and communicating) the timescale needed for success: this is not a quick fix

2. Recognising the appropriate level of commitment, and avoiding both over- and under-investment

3. Taking care with the threshold requirements for companies to qualify for, or participate in, initiatives, so as not to exclude those organisations that could benefit most

4. Considering, and reviewing, the location and target sector for the cluster

5. Not focusing solely on local development, but considering international dimensions

6. Considering how to maximise the economic benefit of the cluster for the UK as a whole

Establishing the conditions for Presence, Connectivity, Capability and Support requires the commitment of a diverse group of stakeholders. It is the melting pot of roles, sizes, scales and ambitions that will lead to distinctiveness in East London.

Chapter 1

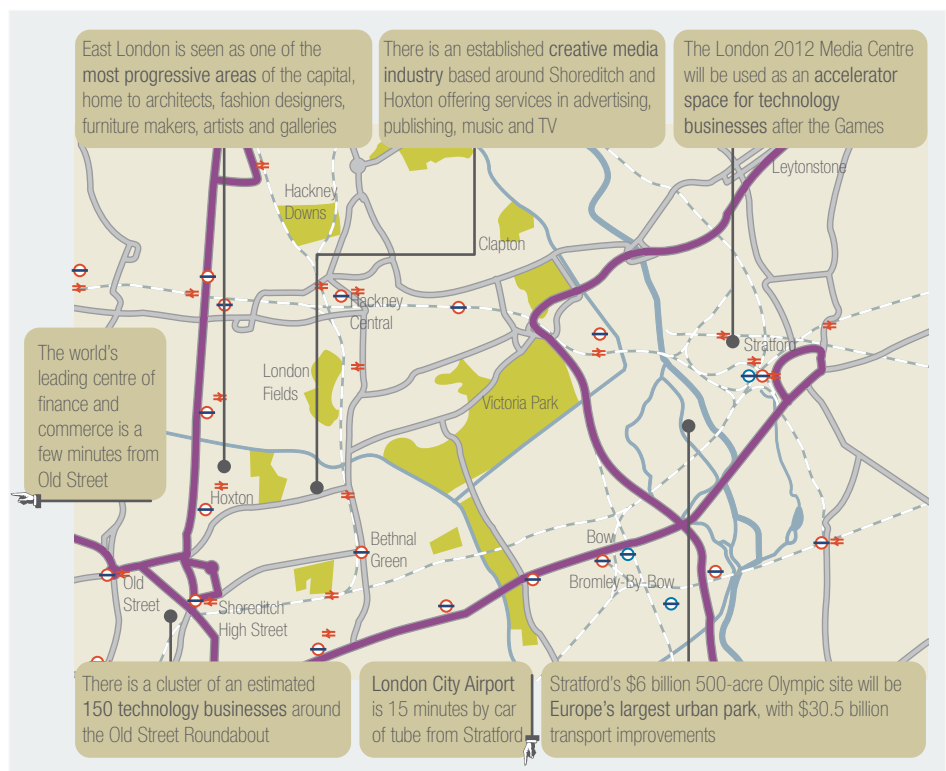# Rationale for a technology enterprise cluster in East London

1.1 The current ecosystem in East London already displays many of the characteristics of an innovative technology hub with the potential to compete on the global stage

London provides a good platform to support fast-growth business - with access to financial capital, the highest concentration of HEIs (nine in East London alone) and medical centres in the UK, clusters of creative capital, ongoing investment in infrastructure (such as Crossrail), and an open economy.

In addition to easy access to first-class institutions and established infrastructure in a global city, there is already a rapidly emerging culture of digital and creative entrepreneurship, fostered by an active and engaged community in East London.

EXHIBIT 1

East London already has many distinctive characteristics

East London is seen as one of the **most progressive areas** of the capital, home to architects, fashion designers, furniture makers, artists and galleries

There is an established **creative media industry** based around Shoreditch and Hoxton offering services in advertising, publishing, music and TV

The London 2012 Media Centre will be used as an **accelerator space for technology businesses** after the Games

The world's leading centre of finance and commerce is a few minutes from Old Street

There is a cluster of an estimated **150 technology businesses** around the Old Street Roundabout

London City Airport is 15 minutes by car of tube from Stratford

Stratford's $6 billion 500-acre Olympic site will be **Europe's largest urban park**, with $30.5 billion transport improvements

The original 2008 map of Silicon Roundabout by Matt Biddulph of Dopplr included 15 companies – today there are more than 170 digital businesses[3]. The exhibit below shows the range of businesses present today.

Of those start-ups surveyed, 55% are currently small enterprises of one-to-three people – and all of these are currently self-financed. However, there are recognised success stories from the past, such as Last.fm, and there are some today that are demonstrating rapid growth, such as Shutl and Techenlightenment.

EXHIBIT 2

About 60% of the start-ups in East London are in media and design

Digital startups in East London – split by type of business

73

Other 11
Web-based networking 13
Application/ software 22
Web-based services 27

Tech 41%

Media and design 59%

103

Other 7
Design 24
Media/ advertising 72
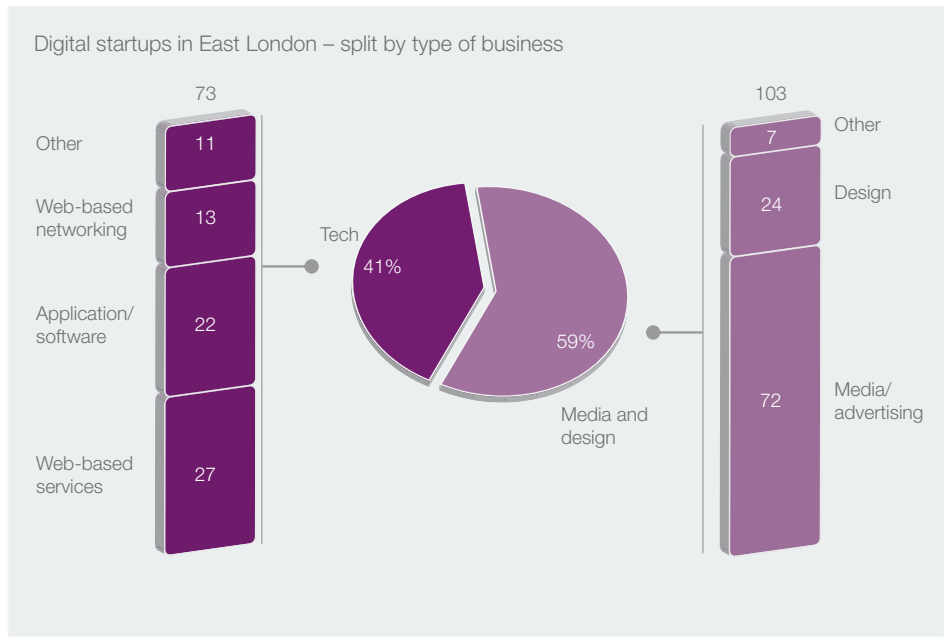
[3] *Wired* magazine, interviews, team analysis

LastFM

Founded in 2002, Last.fm is one of the best known success stories of London's developer community. What began as two separate companies – Audioscrobbler and Last.fm – came together in a single office to remove physical barriers to development. As the site grew, the speed with which it expanded to other languages and platforms drove much of its success. Last.fm is now one of the most prolific companies when it comes to trialing new technologies and working with the developer community to create the dozens of plugins and applications that can interface with the technology.

Last.fm regularly showcases its work at developer community events, enabling the company to keep its finger on the pulse of the industry. Furthermore, co-launching new technology with large corporate partners enables a greater reach for Last.fm and helps established partners such as Google maintain their edge in the increasingly-crowded marketplace. Last.fm's success was rewarded in 2007 when CBS Interactive purchased it for £140 million.

Shutl

Shutl is a service that allows shoppers to choose when they receive their online purchases. Founded in 2008, the service began in London using local delivery partners to enable targeted delivery slots. Retailers who use Shutl's service have seen order size increase by 31% and conversion rates rise by 37%. In 2010, Shutl launched a service with the UK's largest multi-channel retailer, Argos. Serial winners of entrepreneur start-up awards, in February 2011 Shutl were shortlisted for the category of "Technology Breakthrough Business" in The Guardian's Media Innovation awards.

Techlightenment

Techlightenment is a social technology company that brings together industry, marketing and branding expertise with technological capabilities. The company grew out of the conviction that the social nature of web usage and the volume of data about that usage could drive a new, more sophisticated way of understanding and engaging with brands online. The company has benefited greatly from sourcing talent from local heavyweights such as WPP, MySpace and Microsoft and offering them a start-up opportunity. On 17 January 2011, Experian acquired a majority share in Techlightenment.

> **" What draws entrepreneurs is a community that includes coffee shops, libraries and galleries as much as technical resources. Ultimately, it centres not on a roundabout but on a gathering of entrepreneurs. "**
>
> *Jemima Kiss,*
> *The Guardian*

The clustering of businesses in the Old Street area has created a visible sense of community. The environment in East London not only fosters the exchange of ideas in a business capacity, but also the opportunity to socialise outside the workspace. One of the reasons for Silicon Valley's early success was that engineers and programmers would meet after work at popular drinking establishments in the Valley to share hi-tech 'war stories'. These after-hours discussions enabled the individuals to share industry gossip as well as facilitating employment searches in the region.[4] The benefits of proximity have been cited by many who argue that employee-to-employee knowledge transfer is a key stimulant of innovation and growth: the Marshall-Arrow-Romer[5] spillover view is that this is promoted when knowledge is transferred between companies in common industries, while Jane Jacobs emphasises the importance of perspectives being shared across diverse industries, and Porter[6] argues that what spurs on the quest for rapid innovation is competition between firms in close proximity.

Techlightenment, one of the original 'Silicon Roundabout' companies, is based in Shoreditch's Tea Building. The space not only provides homes to many similar tech companies, but also provides lifestyle elements including a members' club, a pizza restaurant and a vibrant community of web design firms and galleries.

> **" The mysteries of the trade become no mystery, but are, as it were, in the air. "**
>
> Alfred Marshall,
> 1920

Similarly, Google and Pearson have invested in TechHub, a physical space in East London dedicated to bringing together London's developer community and connecting its members to the global community of innovators in the tech space. By providing affordable premises – down to the level of single desks – and direct access to other individuals facing similar start-up issues, TechHub exemplifies the value of a tangible, visible space for social and business. The low cost of access and the provision of networking events provide the kind of support that many start-ups have difficulty securing in isolation. The presence of so many individuals in one place has a gravitational effect on interested funders who can keep in touch with a number of companies relatively easily. To date, TechHub has helped over 200 entrepreneurs, and plans to launch new TechHubs in Edinburgh, Paris, Berlin, Seoul and Sydney.

> **" Having people around you who are also venturing their life savings on pursuing a dream is very important positive reinforcement. It also provides a resource to bounce ideas around and get feedback. Before TechHub opened, the only place I could get that was in San Francisco. "**
>
> David Caldwell,
> yourjobdone.com

[4] Saxenian, Annalee , *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* (Cambridge, MA: Harvard University Press, 1994)
[5] Carlino, Gerald A. (2001) 'Knowledge Spillovers: Cities' Role in the New Economy'., *Business Review* Q4 2001
[6] Glaeser et al., „Growth in Cities", Journal of Political Economy, 1992 Vol. 100, No. 6

In contrast the Trampery, a co-working space in the centre of Shoreditch, has specifically sought to develop an inter-disciplinary community that functions as a microcosm of the wider East London creative economy. The Trampery was founded by Trampoline Systems, one of the 15 businesses on the original "Silicon Roundabout" map. Its tenants include high-growth technology ventures, a leading technology-focused not-for-profit venture, a photojournalism publisher and a contemporary art gallery. As well as providing affordable deskspace the Trampery organises social activities that foster collaborative links between tenant businesses and accelerates tenants' integration into the East London community. In April 2011 the Trampery is opening a new building-doubling the number of desks and opening a fully-equipped event space capable of seating 120 people.

The networking opportunities that spaces like the Tea Building, TechHub and the Trampery provide are amplified by holding events to bring together the wider community. Every month in East London, for example, Minibar brings together roughly 250 developers (from their network of more than 3,000) in a social setting to hear 'lightning talks' on new and exciting websites and technologies. Speaker lists also often include speakers from government organisations, such as UKTI, or web platforms upon which many sites are built. Both sides benefit from the interaction of providers of the underlying technologies with those building consumer-facing products. This promotes rapid product development based on the ways that developers actually use technology, not just what is planned initially. As Gibson said[7], "The street finds its own uses for things."

National and global networking events have also attracted many East London entrepreneurs. Many cited Cloudcamp, an 'unconference' where like-minded people meet to discuss the "experiences, challenges and solutions" of working in cloud computing. Small-scale corporate sponsorship covers the basic costs of the meetups so that members face no financial barriers to attending. Access is open to anyone who registers. The events are divided between official presentations and the informal networking afterwards, to ensure that individuals have the opportunity to connect over free beer and pizza.

The challenge is now to build on this solid platform by developing a sustainable, world-class cluster of digital enterprises, with:

- an environment that supports both the initiation of start-ups, and the growth to scale (of those which wish to grow)

- a flexible focus towards areas where digital is making the biggest moves – whether marketing services, networked businesses, mobile applications, e-commerce or e-health

- full use of London's distinctive infrastructure, services and reputation

- an active, networked and collaborative community of founders, entrepreneurs, investors, academics, government and corporates

The next section considers how cluster theory and international examples offer lessons in how to make this happen.

[7] Gibson, W., "Burning Chrome", Omni 1982

1.2 Clusters have been proven to drive innovation and increase productivity

Despite seeming at odds with prevailing forces of globalisation, clusters are important features of our economic landscape. Conventional economic theory of clusters, as articulated by Porter, Eisenberg and others, identifies their role in generating competitive advantage through the following means[8,9,10,11,12]:

- Better access to employees and suppliers with capacity and flexibility to act at speed (e.g., a lower risk of relocation for talent, reduction in search and transaction costs due to greater concentration of talent)

- Access to specialised information and deeper market understanding (in a more connected community, information accumulates, and information transfer is facilitated by bonds of trust)

- Complementarities, access to institutions and public goods (collective action creating mutual gains, e.g., joint marketing)

- Sheer competitive pressure of proximity (combining fiercer motivation from local rivalry, and easier comparison through proximity – as mentioned earlier)

These same factors also encourage new businesses to locate within the cluster. The marginal risk of doing so is mitigated through lower entry barriers, more transparent market opportunities and often significant local demand from sophisticated customers who expect innovative offerings.

The concept of "economics of agglomeration" and the benefits of "localised industries" were first identified by Alfred Marshall in 1890 – essentially, that economies of scale and network effects promote the co-location of firms. Clusters have since been defined by Michael Porter as "geographic concentrations of interconnected companies and institutions in a particular field".

Globalisation has therefore, somewhat paradoxically, strengthened the role of clusters and furthered their development. Companies face increasing choices for locating their activities in places that provide the best business environment for their specific needs. The more markets globalise, the more likely it is that resources will flow to more attractive regions. Regions that do not specialise may be in danger of falling behind. Therefore all of them need to be provided with the conditions and opportunities to participate successfully in this process[13].

[8] Porter, Michael Location, Competition, and Economic Development: Local Clusters in a Global Economy journal, Economic Development Quarterly, vol 14, no.1, pp 15-34, 2000

[9] Porter, M. E. 1998, Clusters and the new economics of competition, Harvard Business Review, Nov/Dec 98, Vol. 76 Issue 6

[10] Clusters, convergence and Economic Performance, M. Delgado. M.E. Porter, S. Stern, 2010

[11] Making sense of clusters, J. Cortright, 2006

[12] Clusters and Entrepreneurship, M. Delgado, 2010

[13] DG ENTERPRISE AND INDUSTRY REPORT: Innovation Clusters in Europe: A statistical analysis and overview of current policy support

EXHIBIT 3

Assessing cluster
strength and
prosperity

Cluster strength and prosperity (EU15)

GDP per Capita (PPP adjusted), 2004

$Y = 83342x^2 - 16467x + 22886$
$R^2 = 0.3941$

Share of employees in strong clusters, 2005
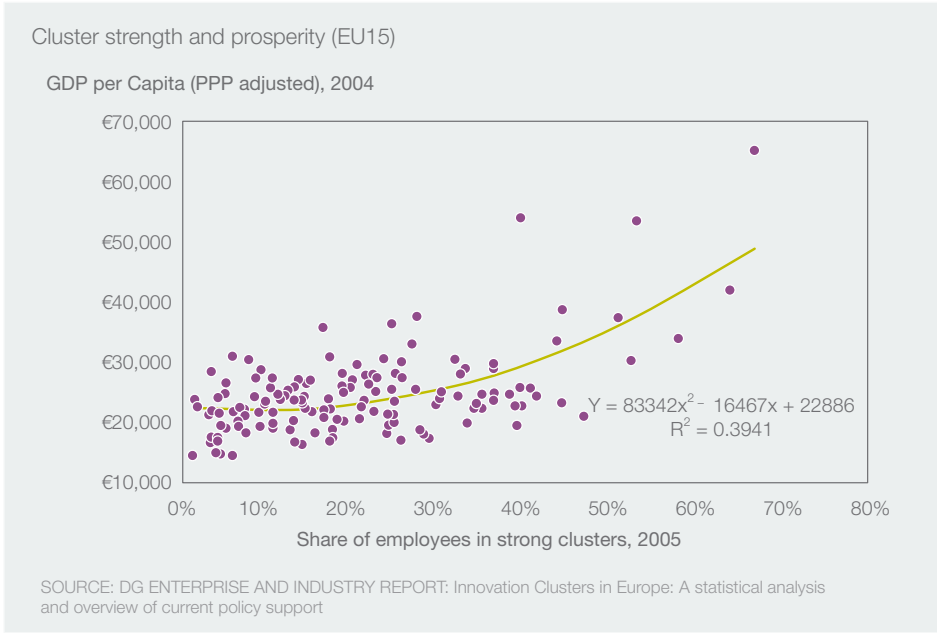
EXHIBIT 4

Assessing
the economic
performance of
clusters

Average annual income (Cdn$), 2001

Ottawa-Hull
Windsor
Oshawa
$R^2 = 0.45$
Montreal
Chatham-Kent
Cape Breton

Percentage employment in clusters, 2001
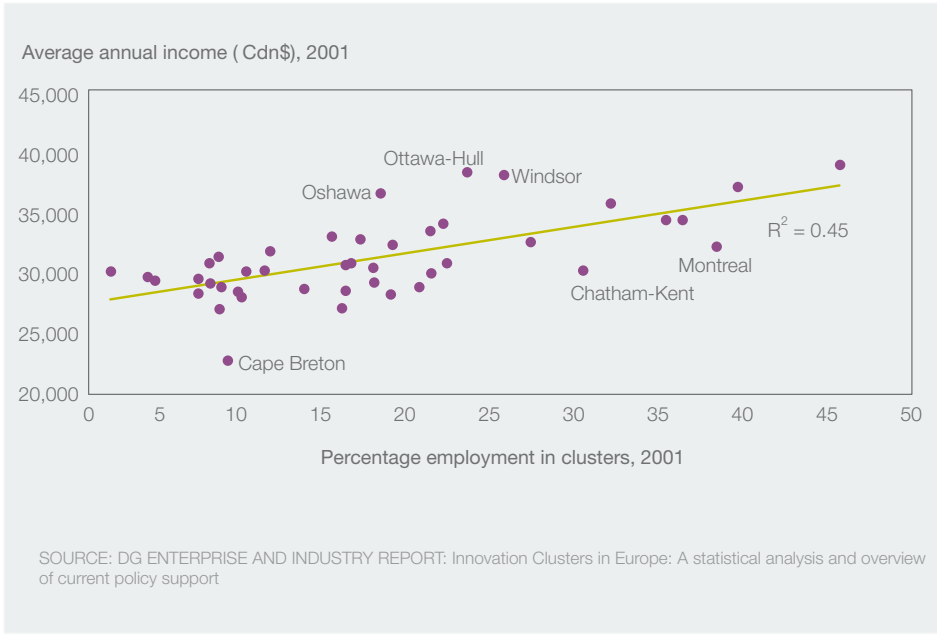
All this is well known. But more recent empirical work has deepened consideration of precisely how clusters both increase the productivity of the local and national economy and drive innovation. Industries with strong clusters are associated with higher employment growth and wage growth – and employment growth also increases with the strength of related clusters within the region and clusters in geographically-adjacent regions. Furthermore, new industries are born out of strong regional clusters, and strong clusters increase start-up firm survival rates.

The McKinsey report *From Austerity to Prosperity: Seven Priorities For Long-Term Growth* (2010) highlighted the UK's encouraging productivity growth over the last 15 years, matching the strong performance of the United States and closing the productivity gap with the EU-15. However, overall productivity levels still lag 17 percent below the US and 10 percent lower than Germany.

Promoting innovation and employment in East London can help stimulate the wider economy, and act as a model for other similar centres of excellence in the UK.

1.3 There are several examples of regions where successful clusters have developed

The potential contribution of clusters to the UK economy, particularly to productivity levels, is an important factor. Alfred Marshall's initial views on clusters were based on his research into the Lancashire cutlery industry and Sheffield steel industry in 1919. Today's UK clusters include Motor Sport Valley in Central and Southern England, Northwest Biomedical, and Silicon Glen in the Scottish Central Belt. However, most UK clusters are currently small and variable in momentum.

One in particular stands out though – the cluster in Cambridge, 'Silicon Fen'. This illustrates the benefits that can be reaped from an area where the organic ecosystem has many helpful conditions – in this case, the university and R&D facilities, and the associated talent pool. Cambridge now enjoys the greatest concentration of hi-tech companies in Europe.

Cambridge[14]

The Cambridge Cluster (or 'Silicon Fen', as it lies at the south of Fenland) is the name given to the area in and around Cambridge (England), consisting of many new high-tech and IT companies. Many of these have connections with the University of Cambridge, and the area is now one of the most important technology centres in Europe.

The cluster started as a 1970s government initiative for universities to expand their contact with industry, with the objective of technology transfer, led to the Mott Report by a sub-committee of the Senate of Cambridge University. They recommended an expansion of science-based industry close to Cambridge to take maximum advantage of the university's scientific expertise, equipment and knowledge base, and to increase feedback from industry into the Cambridge scientific community. The cluster today consists of around 3,000 businesses.

[14] The Silicon Fen story, http://www.siliconfen.com/sfstory.php; Cambridge Network website, Cambridge Science Park, history; http://www.iankitching.me.uk/history/cam/phenomenon.html; Looking Inwards, Reaching Outwards The Cambridge Cluster Report – 2007; ARM website; Autonomy website; expert interviews; team analysis

EXHIBIT 5

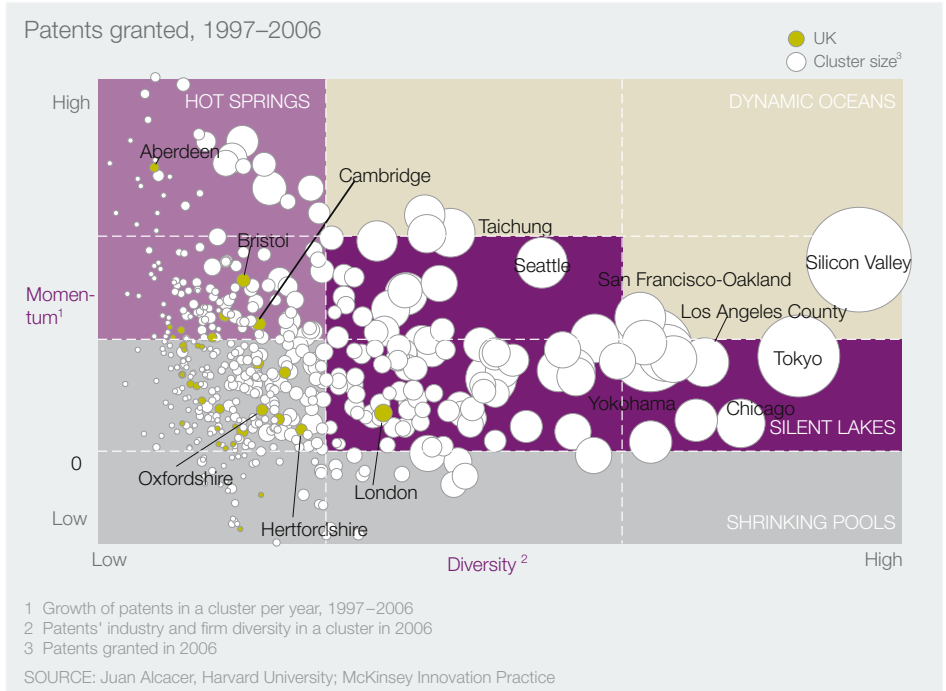UK clusters are small and of variable momentum

Patents granted, 1997–2006

● UK
○ Cluster size[3]

High

HOT SPRINGS

DYNAMIC OCEANS

Aberdeen

Cambridge

Taichung

Bristol

Seattle

Silicon Valley

Momen-tum[1]

San Francisco-Oakland

Los Angeles County

Tokyo

Yokohama

Chicago

0

SILENT LAKES

Oxfordshire

London

Low

Hertfordshire

SHRINKING POOLS

Low

Diversity [2]

High

1 Growth of patents in a cluster per year, 1997–2006
2 Patents' industry and firm diversity in a cluster in 2006
3 Patents granted in 2006

SOURCE: Juan Alcacer, Harvard University; McKinsey Innovation Practice

EXHIBIT 6

The Cambridge Network is an active network of businesses and academics focused on the Cambridge technology cluster

Mission

The Mission of the Cambridge Network is to link like-minded people from business and academia to each other and to the global high technology community for the benefit of the Cambridge region.

Membership and annual fees

Individual members: £50 + VAT but free membership to academics and students from member universities, and free membership to employees of member firms
Corporate members: £100 to £1000 + VAT depending on number of employees
Founder members: £5000 + VAT, providing additional benefits such as ability to manage Interest Groups and meetings with Network CEO

Events

● Cambridge Corporate Gateway
A two day event for organisations looking to base part of their operations in the Cambridge area. It offers an individually tailored programme of one-to-one meetings with University of Cambridge researchers and new technology companies. Previous delegates include Ericsson, Pepsico and Procter & Gamble
● Open Meetings
Networking meetings a year of 200-300 business leaders and venture capitalists that run about six times a year. Free attendance to all members and £50 fee to non-members
● Café Networking
Informal events of around 60 individuals run as a mini-jobs fair for any job-searchers to drop in. Run three to four times a year
● Lunchtime Sessions
Run at diverse business and science parks to help new members learn about the Network's activities

People

President: Professor Sir Leszek Borysiewicz Former CEO of the Medical Research Council; former Governor of the Wellcome Trust; currently at Imperial College
CEO: Matt Schofield Founder of the London Technology Network
COO/CFO: Hilary Laing Formerly Financial Director at ITV Digital and founder/CEO of HAL Accounting
CIO: Chris Owens Founder of Painted Horse consultancy and Finance Minister of La Playa

Other activities

● Special Interest Groups
Provides a platform for members of the network to interact with other companies focused around specific interests (e.g. cleantech, intellectual property, etc.)
● Learning Collaboration
A scheme to enable members to participate in in-house training provided by other members
● Member Directory
A searchable directory providing details of all members to all other members
● Virtual Press Room
A press room aggregating relevant press releases from all members to give better contact to media
● Jobs/CV Directory
A cost effective market for employers and prospective employees to find each other without the use of recruitment agents
● 4R's Survey
An anonymous tool for members to benchmark themselves against peers in remuneration, rent, money raising, etc.

Cambridge
NETWORK

SOURCE: Cambridge Network website, press search

The first step was infrastructure development – the development of the Cambridge Science Park with the building of specific start-up units and associated facilities. After a period of sustained growth following the opening of the Park, the Trinity Centre was opened to prove all residents with a place to connect – to meet, eat and host conferences. Organically, a large number of networking groups sprung up in the community, with the mission of linking people from business and academia to each other and to the hi-tech community in Cambridge. The Cambridge Network (see sidebar) is an example of one such network. The strong links between businesses and other stakeholders have led to 108 companies in the cluster being backed by venture capital firms in 2001-2006 alone. Commercial spin-outs from the University attracted £140m between 2001 and 2006, more than other investment totals recorded for UK and US universities. The strong links with undergraduates have seen 500 Cambridge students placed in over 150 companies within the cluster to complete engineering and management projects, with this experience facilitating a steady flow of highly-skilled post-degree labour to the Science Park. Similarly, University departments, such as the Computer Lab, Institute for Manufacturing and Judge Business School, actively engage with companies in the cluster on a range of recruitment, research and teaching activities.

Two prominent success stories from the Cambridge Cluster are ARM and Autonomy.

ARM is one of the best known 'Silicon Fen' companies. It is now considered to be the market leader in the field of mobile phone chips. It was founded in 1990, and it soon become the world's leading semiconductor IP company, with 600 processor licenses sold to more than 200 companies. In fact, ARM's business model involves the designing and licensing of IP to partners rather than the manufacturing and selling of actual semiconductor chips.

Autonomy is a global leader in infrastructure software for enterprises. Founded in 1996, Autonomy utilises a unique combination of technologies borne out of research at Cambridge University. The company currently has a market capitalisation of $7 billion, and it is the second largest pure software company in Europe, with offices worldwide.

The Cambridge Cluster was examined in "The Cambridge Phenomenon - The Growth of High Technology Industry in a University Town" by Segal Quince & Partners (1985). The Phenomenon is characterised by:

- Strong presence in and around Cambridge of many high-technology companies (computing, biotechnology, electronics & scientific instruments mainly)

- High proportion of young, small, independent and indigenous companies (as few as three people)

- Focus on research, design and development rather than production

- Complex direct and indirect links between the companies and Cambridge University

Underpinning all of this was the ease of the R&D pipeline to the cluster. Technology transfer was facilitated by the break-up of the British Technology Group's monopoly of intellectual property originating in UK universities in 1985, which helped to sustain the cluster's ability to commercialise academic R&D.

A similar set of conditions for success can be seen in international examples of technology clusters.

Germany[15]

The 3.6 million or so small and medium-sized enterprises in Germany – the Mittelstand – form the backbone of the economy, and have placed the country on the technology map with achievements that include making up 50% of all firms in Europe engaged in nanotechnology. The German government leveraged the existing presence of major corporations as the base for several distinct regional clusters:

- Ruhr: heavy industry and a hub for hi-tech

- Munich and Stuttgart: hi-tech and automobiles

- Frankfurt: finance

- Cologne/Hamburg: port, Airbus construction, media

In particular, some parallels can be identified between Munich and California's Bay area, as pointed out by Max Nathan, a research fellow at LSE Cities. In a paper on Munich published last December, he wrote: "Over the past 60 years, both have shifted from mainly rural communities to hi-tech hubs. Both offer a strong economy and an excellent quality of life – something that's helped keep people in the area".

The existing hubs have seen heavy investment to build efficient infrastructure, with a dense railway and motorway network spanning over 12,000km, as well as airports and seaports. The government developed a national hi-tech strategy to diagnose Germany's strengths and weaknesses in promoting enterprise, and introduced incentives such as dedicated financial support for start-ups specialising in hi-tech and knowledge-based industries. They also focused on education at the grassroots – with the Dual Education System providing a strong system of vocational training. This has led to a steady supply of skilled workers who have received practical, 'live' skills training to commercialise academic R&D. Some 83% of the population have a high-school level of education (compared to the UK at 67% and France at 66%), 81% of the total labour force has received formal training before starting their job, and Germany is ranked second in the World Economic Forum competitiveness index.

[15] Straubhaar, Thomas, ' Facts about Germany;' Goldman Sachs, ' German Manufacturing Will Survive;' http://www.guardian.co.uk/world/2011/mar/15/bavaria-reinvents-itself-germany-silicon-valley; Ministry of Education and Research, 'High Tech Strategy for German'; expert interviews; team analysis

Finally, corporate sponsors have played a role in stimulating the enterprise culture, with the introduction of initiatives such as business plan competitions. The effects of the Munich business plan competition, for example, can be seen in terms of its contribution to employment in the exhibit below.

In 2000, three years into the Munich competition, a survey of 840 of the start-up companies revealed an average of the equivalent of €400,000 of venture capital investment per company. Two case-studies of successful start-ups from Munich are shown below.

EXHIBIT 7

The Munich Business Plan competition had clear results in creating new ventures and new jobs

Munich Business Plan Competition 1997–2009

Number of new jobs

Number of companies
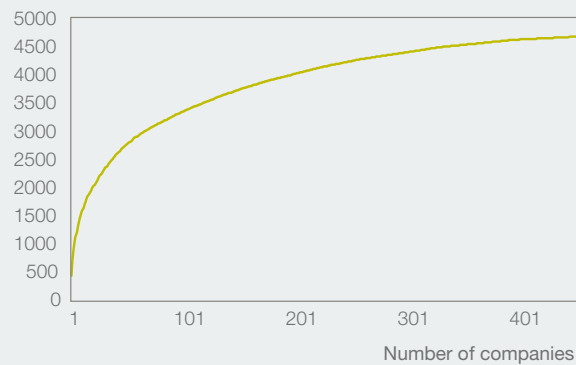
Companies
- **600** new companies
- **4.580** new jobs created

Financing
- Financing of about 590 m.
- 336 m. Seed / Start-up
- 253 m. Growth

SOURCE: MBPW Münchner Business Plan Wettbewerb

EXHIBIT 8

Wilex and SFC are two success stories from the Munich competition

WILEX

"Without MBPW, WILEX would not exist." Prof. Dr. Olaf G. Wilhelm

WILEX is a biopharmaceutical company. WILEX 's mission is to develop drugs with a low side effect profile and targeted treatment of different types of cancer as well as diagnostic agents for specific detection of tumours.

~ 67 Employees

Based in Munich

Strategic alliance with UCB Pharma

2006: IPO Wilex AG
Chairman Prof. Dr. Olaf G. Wilhelm
2004: 4th Financing round €30 Mio.
Research, certifications, cooperation's

1998-2000: Financing rounds of overall €37,5 Mio.

1997: Wilex Biotechnology GmbH founded

Development and testing of the concept to turn their results into a business: Winner of MBPW 1997

Research:
Prof. Dr. Olaf G. Wilhelm, Senior physician Klinikum rechts der Isar of Technical University Munich + team

SFC

"MBPW has motivated me to become an entrepreneur ." Dr. Manfred Stefener

SFC Smart Fuel Cell is the leader in mobile energy for leisure time, industrial and military applications . SFC has been successfully selling its fuel cells to industrial and retail customers for several years.

~ 100 Employees

Based in Munich

2008: SFC ranks third in the prestigious Deloitte -Fast-50-List of Germany's fastest growing companies.

2007: The SFC Smart Fuel Cell AG successfully goes public in the prime standard on the German stock exchange.

2003: The SFC A25 becomes the world's first commercially available fuel-cell system for private use.

2002-2008: Financing rounds with institutional and strategic partners

2000: Foundation of Smart Fuel Cell

1998: Development of the business plan

Awarded at MBPW 1998

Successful matching with an investor in the MBPW network

1998: Dr. Manfred Stefener is doing his doctorate on mobile energy at Technical University Munich

Singapore[16]

Singapore has moved from a starting point of no natural resources, a poorly-educated population with limited industrial know-how and low prosperity levels, to create an integrated vision around its ambition to be a "top-class world city to work, live and play". Infrastructure exploited the geographic location (at the tip of the Malay Peninsular) and the government backed an extensive marketing campaign – "Made in Singapore" – to boost the reputation of manufacturing across a range of different stakeholders and stimulate the internal economy.

In fact, since 1965, the government has focused on attracting foreign investors to develop manufacturing and financial sectors, and economic and sector level strategies have been tightly integrated and co-ordinated across government agencies and across key private sector stakeholders. The clear and consistent communication of the vision to all agencies and audiences has resulted in more than 7,000 multinationals establishing headquarters in Singapore and FDI was 17% of GDP in 2007. Incentives to attract foreign investment have included pioneer status bonus and investment allowances – the incentive package is highly flexible and negotiable and can be customised to meet the particular needs of companies as well as being tailored to ensure they remain for the long term – with incentives clawed back if long-term development plans are not followed through.

EXHIBIT 9

Five agencies have been set up to drive Singapore's development

	Role	Status	Funding
EDB SINGAPORE	• Key government agency in charge of attracting FDI and creation of favourable business environment • EDBI is investment arm investing in new industries	• Government agency • One-stop shop for foreign investors • 500 employees of which ~100 in one of 19 international offices	• Government • 2008 expenditure: USD 400m
ie singapore	• Promotion of exports of Singapore-based enterprises • Financing options and capability building focus (skill-building)	• Government agency • One-stop-shop for firms seeking to export • ~500 employees of which ~50 in 30 offices abroad	• Government • 2008 Expenditure: USD 117m • Payment by companies for selected customised services
SPRING singapore	• Agency supporting SMEs and start-ups with overall mission to 'enable enterprises' and create a competitive SME sector through financing	• Government agency • One-stop-shop for firms seeking to export • ~500 employees of which ~50 in 30 offices abroad	• Government • 2008 Expenditure: USD 117m • Payment by companies for selected customised services
a* Agency for Science, Technology and Research	• Agency for Science, Technology and Research in charge of promotion of research and innovation • Focus on life science and engineering/IT	• Government agency • ~150 employees	• Government • 2008 expenditure: USD 710m • Payment by companies for selected customised services
EnterpriseOne	• Online information portal serving the business community by centralising all relevant information to start, sustain and grow a business	• SPRING (government agency) in collaboration with 44 partner agencies involved in the Enterprise One project	• Government

16 ICFAI 'Made in Singapore' Case Study 2006; Kong, Lily, 'Science and Education in an Asian Tiger'; Olds, Christopher, 'Global Education Hub'; EDB Government Website; IE Government Website; Lall, Sanjaya, 'Reinventing industrial strategy'; Kong, Lily, 'Science and Education in Asian Tiger'; Yue, Chia, 'Singapore Model of Industrial Policy'; Hew, Denis, 'Industrial Competiveness and Policy in Singapore'; Government websites; team analysis

Singapore has a heavy focus on education, with the government creating a strong education system on a global level (for example, it is ranked first in the TIMSS scores for mathematics), the International Enterprise Agency providing scholarships for international management courses abroad for executives, and the Economic Committee focusing on the skills required to respond to development strategies (such as a shift in economic policy in the late 1990s to place a high premium on innovation, flexibility and entrepreneurship). Coupled with the strong focus on attracting top global talent by improving the quality of life for highly-skilled expatriates (with a top tax rate of 12% and the highest ranking of any Asian country in the Mercer quality-of-life survey in 2007), Singapore has ensured a steady supply of well-trained talent to support the growth of high-value business.

Finland[17]

Finland used R&D agencies to build a successful cluster around a single anchor tenant, Nokia.

Oulu development began in 1972 when Nokia was offered a government radio-technology contract on the condition it located in a 'peripheral' area of Finland – a key factor in winning the contract was the promise to work alongside the University of Oulu in solving technical issues.

In 1974, the government-owned Research Institute VTT opened a Laboratory of Electronics in Oulu. This was to become a centre for innovation over the next three decades, with significant co-operation between Oulu University, Nokia and other firms, and VTT. A number of key figures in the development of the ICT industry in Finland moved between these three organisations.

In 1983, government R&D subsidies were reorganised from the politically-controlled Ministry of Industry, which favoured heavy industry, into a separate agency, TEKES, which allocated subsidies based on the anticipated innovation and growth benefits, and tended to favour high-tech firms. Early on, almost 30% of TEKES' funding went to Nokia alone.

During the 1980s, the government also began to align around a high-tech strategy. The Science and Technology Council, featuring the Prime Minister and several key Ministers, was founded in 1983 to provide central leadership.

High-tech employment in the municipality of Oulu, Northern Finland reached 18,000 jobs (nearly 10% of the population) during the 1990s, an increase from fewer than 1,000 high-tech jobs in 1975, making Oulu the fastest growing region in Finland. When the Soviet Union collapsed, which contributed to a deep recession in 1990 and 1991, government R&D subsidies through TEKES and other channels are credited with saving Nokia from bankruptcy.

Oulu was voted the "Best place to live in Finland" in 2003 by leading newspaper *Helsingin Sanomat*. By 2004, Nokia accounted for 3.5% of Finland's GDP and almost 25% of its exports.

[17] Expert interviews; "What Next? Finnish ICT Sector and Globalisation", Steinbock; "the Oulu Phenomenon", Morris; "Oulu: A Five Star Technology Cluster"; "Finland and Nokia", HBS case; Expert interviews; "Ease of doing business" report, 2008; McKinsey Report, 'Finland's Economy,' 2007; McKinsey Report, 'How the world's best performing school systems come out on top'; Government websites; HBS, 'Nokia and Finland

1.4 An analysis of cluster theory and international examples identifies four attributes for a world-class centre of excellence:

- **Presence:** 'a reputation as a world-leading cluster, and the physical infrastructure that supports this and stimulates innovation'

- **Connectivity:** 'the right people networks linking the enterprise community'

- **Capability:** 'world-class skills and the ability to acquire them locally'

- **Support:** 'financial, regulatory and professional support designed around the needs of the entrepreneur'

The research shows that a competitive cluster will display all four attributes, which complement each other. To achieve each attribute, a series of conditions must be in place:

1 Presence

- Active promotion and outreach

- Market stimulation

- Competitive infrastructure

2 Connectivity

- Accessible internal business and social networks

- External collaborations

- Global links – to other markets and other clusters

3 Capability

- Distinctive pipeline of talent

- Practical, applied business and management training

4 Support

- Accessible financing

- Favourable policy/regulation

Chapter 2

Opportunities to enhance the emerging cluster in East London

Evidence drawn from the perspectives of all the stakeholders interviewed generated a wide range of ideas for bolstering the four attributes set out in the previous section – Presence, Connectivity, Capability, Support. These ideas cover all stages of business growth: idea creation and business setup, product development and launch, through scaling and taking to mass markets, and into further expansion and maturity. They also take into account the roles of all the various stakeholder groups that collectively form and sustain the digital community in this area: founders and entrepreneurs, investors, academia, government and the corporate sponsor companies.

2.1 Presence

- Active promotion and outreach
- Market stimulation
- Competitive infrastructure

2.1.1 Active promotion and outreach

i) Promote the area with much greater national and international publicity, via a single umbrella body for the cluster

There is consensus over the need for a community umbrella body that would bring together stakeholders and take responsibility for marketing both internally and externally.

As a first step, the umbrella body should clarify the name, brand, value proposition and messaging around Tech City/Silicon Roundabout. There is a role here for one of the myriad creative media agencies in the area to play in developing this with grassroots support.

Once this is established, promotion for the cluster should be amplified. Nationally, the government can ensure that the reputation of the digital enterprise culture reaches far beyond London. This can be done by the government, private sector and university networks sponsoring and publicising signature events, such as supporting the 'Digital Shoreditch' event in May 2011 or looking into bringing the TED 2012 conference to the Olympic Park.

Internationally, there is a role for a consortium of sponsors and champions to play a role in broadcasting the consistent messaging in a targeted manner and generating international press coverage and excitement.

ii) Ensure visible external leadership with prominent champions

Cluster development requires prominent champions from both the public and the private sector. The government's focus to date on East London has already led to increased interest in the area and consequently significant benefits for some founders and entrepreneurs (such as large jumps in stock price).

However, the level of interest needs to be sustained, including through continued promotion by credible leaders – for example, by the annual appointment of a successful East London founder as the figurehead and champion on national and international circuits.

Many successful clusters overseas received high-level endorsement.

- Finland developed a goal-oriented vision to build a leading information society to reorient its economy, with the Prime Minister personally leading the effort.
- In France, steering groups including the Prime Minister, senior ministers, and industry leaders collaborate on "Plans Sectoriels"
- In Ireland, the Prime Minister personally led efforts to attract FDI in semiconductors and pharmaceuticals

iii) Engage a media partner

A committed media partner – a television network or a newspaper – would enable sustained publicity for the area, and open a range of creative channels for promotion. This would provide a vehicle for wider promotion of success stories from the area, and potential for documentaries or 'tourist' promotions, quickly giving the East London community a reach beyond its own geography. The 'umbrella body' can consider testing the appetite for this from the media sector, and secure the best candidate for a long-term relationship.

2.1.2 Market stimulation

London has the advantage of already being a hub for the creative and media industries, which can provide digital content to fuel new enterprises. However, there are opportunities to stimulate the digital market further.

i) Prioritise East London as a location for related business

By relocating to East London in part or whole, both private and public sector organisations can physically promote awareness of their digital needs to entrepreneurs in the vicinity and thus help stimulate new innovations. This may be large, established digital companies (where opportunities may play out from the presence of Google, Facebook and others in the Olympic Park site), satellites from completely unrelated industries (e.g., manufacturing or retail), where digital innovations could play a role, or offices from supporting sectors (e.g., investors).

The government can look for appropriate sites to base public sector departments or initiatives in East London. And East London could also be considered a prime location for one of the new Technology Innovation Centres[18] – the initial centre to be focused on manufacturing, also mentioned in the HM Treasury Budget 2011, could provide a real spark to the local digital community to come up with relevant innovations. With regard to the private sector, a permanent taskforce composed of GLA and UKTI could be established to sustain the current drive to promote East London as a centre of digital innovation and the ideal location for headquarters or operational facilities.

ii) Hold a 'digital expo' to advertise the breadth of opportunities for digital enterprise in the public and private sector

At present, there is no forum that exposes founders and entrepreneurs to the full range of opportunities to expand the market for digital innovation. There would be great value in an international trade fair where small enterprises could display their technologies, whilst large businesses and public sector departments raised awareness of their needs. In particularly, the government stands would include displays on the data available to the general public and its potential uses (e.g., a physical and well-promoted manifestation of the data transparency focus of the data.gov.uk website). This expo could be run commercially by the government or by a private sector firm.

"
If the UK is serious about creating a 'knowledge-economy', we must continue to invest in, and support, research excellence; ensure we support areas of UK industry which have the ability and absorptive capacity to capture a significant share of high value activity; and close the gap between universities and industry through a 'translational infrastructure' to provide a business-focused capacity and capability that bridges research and technology commercialisation. Other countries benefit greatly from a translational infrastructure that bridges this gap – for example, the Fraunhofer Gesellschaft in Germany, ITRI in Taiwan, ETRI in South Korea, and TNO in the Netherlands.
"

Dr Hermann Hauser,
VC & entrepreneur

[18] The Current and Future Role of Technology and Innovation Centres in the UK – A Report by Dr. Hermann Hauser, http://www.bis.gov.uk/assets/biscore/innovation/docs/10-843-role-of-technology-innovation-centres-hauser-review

An example of this model is South by Southwest (SXSW), an annual music, film, and interactive conference and festival held in Austin, Texas.

Creators gain exposure to a vast audience through media presentations, music showcases, panel discussions and film screenings. The conferences and festivals provide a launching platform for new creative content in a number of ways:

- SXSW Music and Media Conference. Speakers, panel discussions, parties, and above all hundreds of musical acts on over 80 stages in downtown Austin

- SXSW Film Conference and Festival. New talents, audience and industry expert explore new trends and take advantage of networking opportunities

- SXSW Interactive. Presentations in emerging technology, networking events hosted by industry leaders, and special programs displaying digital works, video games and innovative ideas

SXSW, Inc. is a private company based in Austin, Texas, and employs professionals throughout the year to run the conference and festival events. Music and Media Conference & Festival has been running since 1987. This event has grown from 700 registrants in 1987 to nearly 12,000 registrants after 25 years. Film and Interactive events attract approximately 17,000 registrants.

An East London version of this – an idea described variously as a 'Digital Glastonbury' and EXNE – could play a similar convening role. At present, many of those interviewed noted that they are as likely to meet other Londoners at events in Austin or Barcelona as they are on home turf.

"
The South by Southwest (SXSW) Conferences & Festivals offer the unique convergence of original music, independent films, and emerging technologies. Fostering creative and professional growth alike, SXSW is the premier destination for discovery.
"

South by Southwest
http://sxsw.com

iii) Launch a series of digital prizes, each from a different East London stakeholder group

Prizes have long been used to encourage innovation. As outlined in the McKinsey report "And The Winner Is…"[19], there are several purposes to prize giving. Most relevant to East London are exposition, point solution, or market stimulation prizes. These prizes could be started by a range of people or firms with a stake in the success of the East London digital culture, or by the broader digital industry – government, entrepreneurs, corporates, universities or investors. In addition to sparking new innovations, the publicity that prizes generate would obviously also boost the presence of the cluster.

An exposition prize would be designed as much to highlight a broad list of promising ideas as to choose winners among them. It would expose and compare new ideas and innovations in the manner of a World's

[19] McKinsey report – "And the winner is …"- Capturing the promise of philanthropic prizes

Fair. Not surprisingly, this type of prize is now taking advantage of the Internet to develop open and inexpensive online forums for a mass audience. One example is the PICNIC Green Challenge in the Netherlands , which gathered 235 entries in 2008 to highlight products or services "that [reduce] the greenhouse effect in a consumer-friendly way and [contribute] to a sustainable lifestyle". Although the Challenge does select a winning idea, it works with other organisations that are interested in "helping to realise ideas that don't win".

Market stimulation prizes address a market failure that, in the eyes of the sponsor, prevents the achievement of a desirable social outcome. Market failures can include a lack of investment, a limited supply base or poor consumer understanding of product potential. Market stimulation prizes emulate free market mechanisms by mobilising unidentified talent, driving down product costs, attracting new suppliers, signalling market potential, and exposing latent demand. The most celebrated recent example is the $10 million Ansari X PRIZE, launched in 1996. By launching a competition to create a reusable manned spacecraft, the prize helped spur the development of the private spaceflight industry. Some 26 teams competed, investing more than $100 million in combined research and development. The prize was ultimately claimed in 2004 by Burt Rutan's SpaceShipOne, with financing help from billionaire Paul Allen. Investors have since dedicated more than $1.5 billion to developing the private spaceflight industry. Within a few years, any would-be astronaut who can afford the $200,000 ticket will be able to take a trip to space on Virgin Galactic, based on technology developed for the Ansari X PRIZE.

Last, a point solution prize would focus the East London community and mobilise talent and capital to solve a well-defined problem with no clear path to a solution. Many existing and emerging "open innovation" platforms, such as

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The Netflix Prize

www.netflix.com

NETFLIX

BASIC DETAILS

About	"The Netflix Prize seeks to substantially improve the accuracy of predictions about how much someone is going to love a movie based on their movie preferences"
Program Details	■ Contest established and managed by Netflix ■ Begun on October 2, 2006, to be continued through at least October 2, 2011 ■ Seeks to improve the accuracy of Netflix's Cinematch algorithm by 10%
Design	■ Prize size: $1 million for the Grand Prize (first algorithm to reach the 10% target); annual $50,000 Progress Prize for the best incremental improvement in a given year, at least 1% better than the prior year ■ Timing: Ongoing, one-time competition

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NASA Centennial Challenges

www.centennialchallenges.nasa.gov

NASA

BASIC DETAILS

About	A suite of technology competitions to: "Drive progress in aerospace technology …" "Encourage the participation of independent teams, individual inventors, student groups and private companies … in aerospace [R&D]" "Find the most innovative solutions to technical challenges through competition and cooperation"
Program Details	■ Founded by NASA in 2003, on the centennial of the Wright Brothers' successful flight at Kitty Hawk ■ Prizes designed and funded by NASA, but managed by independent partner organizations ■ Part of NASA's Innovative Partnerships Program ■ Current challenges: - Lunar Regolith Excavation (case study focus) - General Aviation Technology (case study focus) - Lunar Lander - Power Beaming and Tether - Astronaut Glove - Lunar Oxygen Production or MoonROx
Design	■ Prize size: varies by prize, from $300,000 to $2 million ■ Competitor pool: seeks "independent innovators" ■ Timing: varies by prize, several annual

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X PRIZE Foundation

www.xprize.org

X PRIZE FOUNDATION

BASIC DETAILS

About	A foundation seeking to catalyze "radical breakthroughs for the benefit of humanity … by creating and managing prizes that drive innovators to solve some of the greatest challenges facing the world today."
Program Details	■ Founded in 1995 by Dr. Peter Diamandis ■ All prizes designed and run by the foundation ■ Prizes funded by nonprofit and for-profit sponsors ■ Prize programs include: - Ansari: commercial space travel (1996–2004) - Progressive Automotive: economically viable, 100 mpg vehicles - Google Lunar: robotic lunar exploration - Archon Genomics: medical genomics - Future X PRIZEs expected in the areas of education, energy and environment, exploration, global entrepreneurship, and life sciences
Design	■ Prize size: all awards are at least $10 million ■ Competitor pool: varies by prize ■ Timing: varies by prize, but no annual prizes

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InnoCentive and NineSigma, focus on point solution prizes, working on behalf of their clients (typically large companies and foundations) to pose ideation and technical challenges to their networks of solvers. In fact, many online business models are embracing point solution prizes. Threadless, a successful online

> " There are physical
> infrastructure problems
> in the area – Power cuts,
> broadband outages, and the
> lack of midsized offices. "
>
> Angus Keith,
> El Mysterioso

t-shirt store, holds weekly competitions for the best shirt designs, awarding prizes of up to $10,000. Local Motors, a "next-generation car company", is designing cars by harnessing external designers through online competitions. Point solution prizes are riding the emerging wave of crowdsourcing, the use of unknown innovators to solve problems or submit ideas, often through mass collaboration.

2.1.3 Competitive infrastructure

The established and growing digital centre in East London means that many of the conditions for distinctive infrastructure are already on the way to being met.

i) Collate and publicise information about existing facilities

Many of the issues concerns raised seem to result from a failure to publicise what already exists.

This is exemplified by the common request for more inexpensive desk space with short-lease terms, with facility for co-working. Whilst it is acknowledged capacity is tight, most founders named only a couple of incubator spaces that they knew to exist in the area. The map shown, although by no means definitive, illustrates the existence of multiple co-working spaces in the east of London with affordable rent and packages varying in nature and cost. It is possible to pay a fee per visit (e.g., £20 for a day at the Trampery), per week (£49 for a week at Happiness at Work), or per month (£295 for a month's unlimited usage at Hub World Limited). Facilities can include broadband, fixed line telephone, catering facilities and meeting rooms.

Collating all these options into a single brochure or online catalogue would be extremely valuable for new and established businesses. This can be coordinated by a single access point (as discussed later), central government or any firm with no commercial interest in any single incubator space.

EXHIBIT 10

There is coworking space in East London...although much is at capacity

A number of organisations offer coworking spaces in the East of London, with packages varying in nature and cost

- It is possible to pay a fee per visit (e.g. £20 for a day at the Trampery), per week (£49 for a week at Happiness at Work), or per month (£295 for a month's unlimited usage at Hub World Ltd)

- Facilities can include broadband, fixed line telephone, catering facilities and meeting rooms

East London

Abbey Business Centre
Lemon Studios
Bootstrap Company
Hub World Ltd.
TechHub London
The Trampery
Hubworking
Abbey Business Centre
Happiness At Work
Abbey Business Centre
eOffice

Camden, Islington, Hackney, Westminster, Kensington and Chelsea, City of London, Tower Hamlets, Hammersmith and Fulham, Wandsworth, Southwark, Lambeth, Lewisham
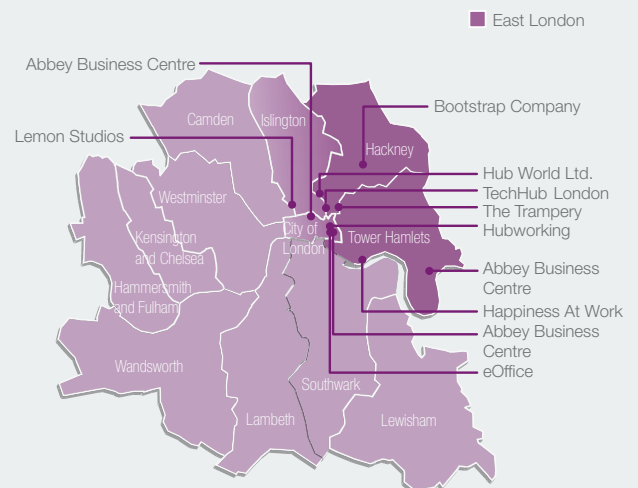
ii) Boost transport links within East London

There is a widely-held perception that the distance between Old Street and the Olympic Park is 'just too far', and thus defies the geographic principle of a cluster. This distance is actually only five miles, whereas Silicon Valley covers an area of 30-by-15 miles and the North Carolina research park spans 8-by-2 miles. Nevertheless, any improvements to the existing transport links, e.g., via some simple extensions, would result in reduced journey times and increased convenience, to the economic benefit of the cluster.

Suggestions include the introduction of specific cluster bus routes (with an envious nod towards the wi-fi enabled buses that Silicon Valley residents enjoy). Furthermore, the planned expansion of the London Cycle Hire scheme to east London would include the entire borough of Tower Hamlets and North Shoreditch, with an extra 2,000 bikes and 4,200 extra docking points to be installed by Spring 2012.

iii) Check adequacy, speed and cost of broadband provision

Broadband is more widespread in the area than generally recognised and the wi-fi coffee shop culture is thriving. Local broadband speeds generally lag behind national and international averages, but significant investment is now being made in fibre-optic connections.

There were two other concerns: there have been localised outages (e.g., Hoxton); and hosting fees are too high. There is a role here for major network providers to ensure that the broadband infrastructure is world-class.

While the importance of the communication that physical proximity makes possible has not changed, the development of global networks means that such physical proximity will no longer be sufficient for achieving all of the rich communication and collaboration that lies at the heart of successful innovation clusters. Increasingly, innovators in East London will and do find themselves reaching out across global networks to access skills and find partners at all points in the innovation process from ideation through to financing, commercialisation and market entry. In such an environment, an important success factor for East London will be access to robust superfast broadband networks and an overlay of communication and collaboration capabilities and services – especially

EXHIBIT 11

The transport infrastructure is strong, but can be boosted

Old Street — 5 miles — Stratford

By car — 15 mins
By tube (1 change) — 21 mins

Travelling time from Old Street — to — Travelling time from Stratford

London City
car / tube — car / tube

SOURCE: TFL, Google Maps, Department for Transport

EXHIBIT 12

There is a need to improve broadband infrastructure - and plans in place to do so. An Enterprise Zone in East London would provide funding for broadband infrastructure to local authorities

East London currently **has slower broadband than the London average**

- East London average speed of 5.73Mb (London average 6.36Mb)
- E1W (Whitechapel and Shoreditch) and E2 (Bethnal Green) among the 10 slowest London postcodes

BT are accelerating their 40Mb fibre-optic rollout, including to East End locations

- BT aim to offer 10 millions households (through 303 exchanges) 40Mb fibre optic broadband by 2012
- **3 East End exchanges will benefit** before summer 2011, reaching over 4,000 non-residential properties:
  – Kingsland Green (E8 2LA) – 1,787
  – Hackney (E9 6NP) – 1,343
  – Stratford (E15 1AF) – 1,338
- As part of its Tech City commitments, BT has agreed to rollout fibre-optic broadband to Mile End and Shoreditch by 2012

■ Broadband speed

	East London	San Jose	Tokyo	Masan
Speed	6	19	21	39
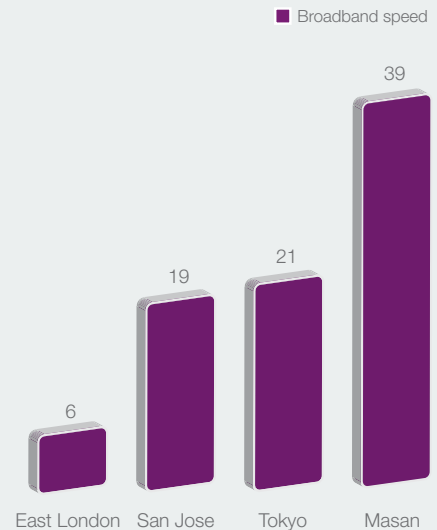
those involving video – that can enable the innovation community to transcend geographic limitations to its success.

iv) Review the security of the area

To attract new business and safeguard existing investment, the perception that East London is unsafe to walk around after dark needs to be tackled – an unsurprising perspective from businesses where hours are irregular and people work into the night. The local council could review the level of police patrols, street lighting and access routes to public transport.

v) Target (but don't over-manage) real estate and neighbourhood development

The stretch of land from Old Street to Stratford passes through a number of neighbourhoods, and the real estate throughout differs substantially in its type and potential use. But creating a uniform culture should not be the aspiration. It is this diversity that allows small and large businesses to exist side by side. However, with careful planning of occupancy and development, the natural entrepreneurial culture can be cultivated. As an example,

in addition to attracting a number of digital enterprises, there could be a call for, and support of, all the supporting small businesses that can make an enterprise hub thrive – from cafes to meeting points to print shops (and ensuring this mix is also present in the Olympic Park, co-existing with the large businesses that settle there).

There are also some aspects of real estate development to watch out for as the cluster develops. Rental prices, for example, are likely to rise further as the popularity of the area grows. Yet their current low levels are one of the reasons why the area is currently attractive. As this rise happens, subsidies and seed grants may become important to ensure that those who are starting up or choosing to remain small can still be part of the cluster.

Finally, local councils should clearly be involved in the initiative – maintaining the infrastructure and neighbourhood will require constant attention and the levels of council care should be the highest in London to help build up the reputation of the East End.

2.2 Connectivity

- Accessible internal business and social networks
- External collaborations
- Global links – to other markets and other clusters

2.2.1 Accessible internal business and social networks

Although almost all agree that an effective network is key to a sustainable enterprise environment, there was less consensus on how such a network should be funded and run. The development of an integrated network – which could also execute the promotional requirement described in 'Presence' above – is critical to the long term success of the East London cluster. Government and the GLA have a role to play in getting it off the ground while leaving administration and oversight to the entrepreneurial community.

A large number of business networks and social events already exist in East London …

"Everything is siloed, there are events but there is no cross-over to make a cohesive network.

Lisa Delaney,
Hai Media Group

EXHIBIT 13

Networking and other events are organised by the community

100+ networks exist in the East London community

Focus (%)

Social
Technical
Business -skills

Networks

- 50
- 30
- 20

Events

- 100+ community-organised special events each year, many socially focused, including:
  - Moo Summer BBQ
  - Last.fm parties
  - Seed Camp
  - The Europas
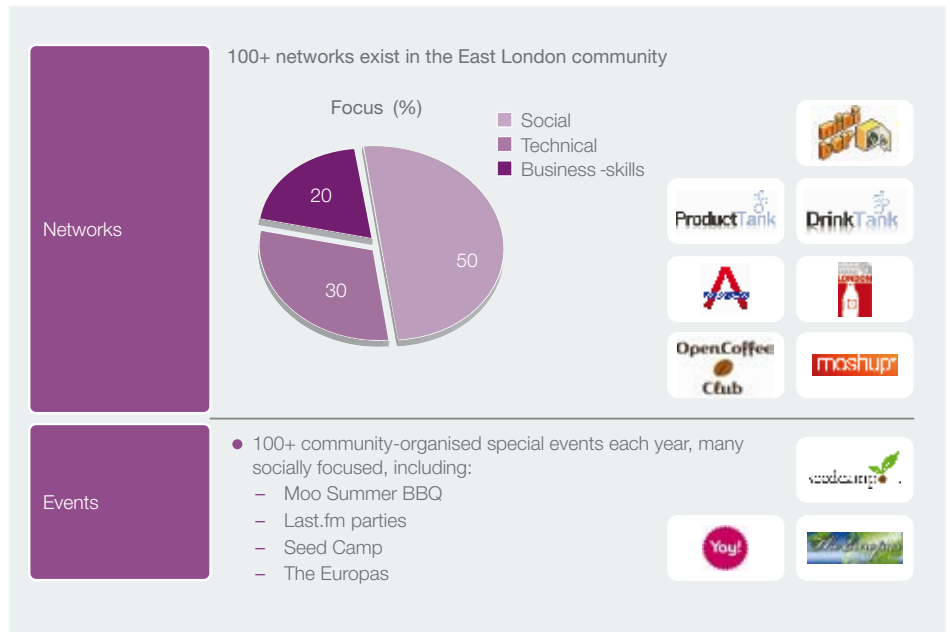
… but there is a strong view that their accessibility is limited because there is no single access point (at least, none that is independent, with no vested interest in self-promotion) to help make sense of the array on offer and help newcomers decide which network is most attractive to join.

i) Create a single point of access with a primary role of coordination

There is considerable support for the idea of a single central, independent, not-for-profit point of access, for three reasons:

- It was consistently apparent from our discussions that one person's unmet need or 'demand for the cluster' is, in fact, already being met by another person's or organisation's business or network – but there is no coordinated way of finding this out

- There is a strong, active and vocal existing community, but the lack of a unified voice or single contact point slows access and engagement with external parties (such as the government or investors) and dilutes the messaging coming from the cluster

- There is no independent figurehead organisation in East London at present, bringing together stakeholders in the region – without commercial benefit dictating the types of activities of networks that are created.

One popular view was that this could come from the grassroots, and be addressed by the current community selecting their own body, with a membership representative of those who play a role in the community. This would include several digital business owners at different stages of growth, with locations covering the span of the cluster,

from whom a 'leader of the council' is chosen annually, a known individual to act as chair (someone who is a prominent 'cluster success story' and can be a figurehead – see section 2.1.4 ii), voices from the investment, academic and corporate sponsor communities, and also representatives from the government.

If such a body is to be created, its set-up and maintenance will require some administrative support. The people involved in this single point of access would then decide their full remit and the channels it will require for coordination and promotion (internal and external) – eg an official cluster website with a fully

interactive, tagged map of the area and its facilities/services, a physical 'HQ' location or a Project Manager – and request funding from government bodies or corporate consortia accordingly.

ii) Create further mechanisms to boost collaboration between firms

There are a number of innovative mechanisms for stimulating collaboration. These may include the creation of incentives for collaboration (e.g., government-matched funding provided to consortia of firms) and the facilitation of external connections (e.g., benchmarking tours).

The North Carolina Research Triangle Park (RTP) is one example of such a model, with an even greater, more formal scale of self-governance. The Park is managed and developed by the Research Triangle Foundation of North Carolina, with 15+ full-time members of staff, a Board of Directors and a Headquarters – the community identified the need for a 'town hall' to foster 'creativity stimulated by connections'. Of note, roles on the Foundation's management team include:

- A Chief Strategy and Branding Officer, who strategically positions RTP through branding & stakeholder partnerships, and oversees communications

- A Director of Business Development, who is the primary liaison with state/regional economic development groups, and is the contact for new businesses wishing to locate at RTP

- A Director of @rtp Programs, including SmartCommute@rtp (the Transportation Management Association created by the RTP Owners & Tenants Association) and Environment@rtp, a committee created by the companies within the Research Triangle Park to share best practices and coordinate action to manage environmental issues

- In Italy's Emilia Romagna, the government passed laws to support concentrations or associations of businesses, award grants to consortia of companies for technical and managerial training services, provide capital to consortia of small companies, fund groups of five or more small companies for innovation; and support credit consortia and loan guarantee cooperatives

- The National Institute of Standards and Technology's Advanced Technology Program, the US Department of Labor's Regional Skills Alliance program, and the National Science Foundation's Advanced Technology Centres, all require multi-firm and/or multi-institutional collaboration

2.2.2 External collaborations

London universities should be actively encouraged to open locations in East London and engage in the development of formalised knowledge-sharing programmes. In addition, universities should consider reducing their standard charge rates for commercial partners when dealing with small enterprise start-ups in East London. For example, universities could participate in schemes to allow academics to second to small business enterprise at no charge during start-up periods.

i) Continue to build links between academia and industry by encouraging interactions and flow of ideas and people, through:

- co-location of universities (particular R&D departments) and industry

- formalised programmes to share knowledge, such as seminar series or the equivalent of TED Talks

- MIT Industrial Liaison Program provides access to proprietary research, seminars and expert meetings for a membership fee

- Triangle Universities Centre for Advanced Studies Inc. was created to promote linkages between industry and academia in North Carolina Research Triangle

- ITRI in Taiwan actively encourages workers to initiate commercial ventures (in 2000, 15,000 worked for ITRI and 12,000 moved to high-tech sectors)

- ideas to link students with start-ups

- promotion of entrepreneurship to facilitate wider cultural shift

- teaching entrepreneurship – building on and scaling out Imperial College's model, currently run from their business school

- externships for researchers to enter industry.

2.2.3 Global links – to other markets and other clusters

The public sector could more actively promote awareness of opportunities for digital entrepreneurs. In the context of reforms to promote more access to data, as well as the digital development of public services, government could prioritise engagement with entrepreneurs. See also *'public sector procurement'* below.

i) Consider formal international linkages

There may be value in twinning with another cluster, with the benefits of knowledge transfer and potential talent exchange programmes, as well as co-promotion. This could be explored further by UKTI.

ii) Help create international sales and marketing channels for East London businesses

Many of the East London businesses have a defined local or national market. However, for those for whom reaching scale requires overseas expansion, both corporates and the government can help. Corporates can act as brokers with their international divisions to promote relevant innovative ideas, as well as sharing latest sales and marketing practices with entrepreneurs (see section 2.3 on capability-building). There is a particular role for UKTI to play in continuing to broker international relationships with potential customers, and even considering a dedicated roadshow to promote the East London start-ups.

2.3 Capability

- Distinctive pipeline of talent
- Practical, applied business and management training

2.3.1 Distinctive pipeline of talent

High-paid corporate jobs tend to absorb many of the most talented UK graduates. This and the fact that there are few internationally acclaimed Computer Science degrees in the UK, means that the pool of talent available to start-ups is much smaller. Only five of the top 100 computer science programmes in the world can be found in the UK; 19 of the top 25 are in the US.[21] Some entrepreneurs pointed out how the relatively low presence of big technology firms neither gives enough visibility to a career in technology for young talents, nor provides a fallback 'safe' option to those graduates who want to work in small start-ups.

"The lack of the right kind technical talent is a key structural problem. Graduates with the right qualifications are currently attracted to financial services where the risk/reward balance is more palatable. There are not enough mature start-ups (i.e. Google/Facebook etc.) here that can offer graduates an alternative career path. Catch 22 is that without the right number/qualifications you won't have the mature start-ups, and without the jobs there won't be enough students attracted to those university courses."

Tom Allason,
Shutl

[21] http://www.arwu.org/SubjectCS2010.jsp

EXHIBIT 14

In other clusters, there has been a focus on raising the skills level to create a distinctive talent pool
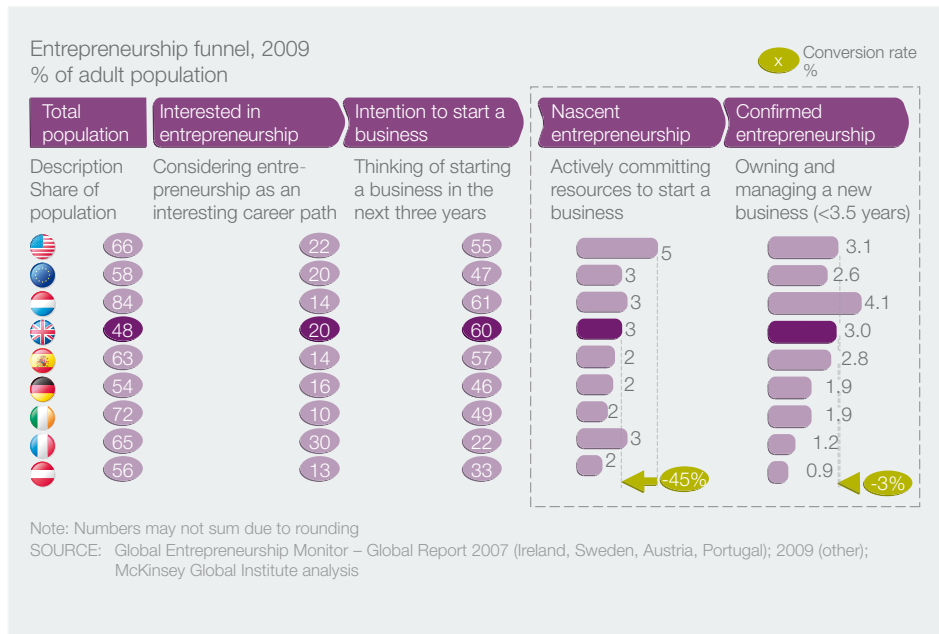
	Context	Actions	Impact
Israel	• Lack of natural resources, with high dependence on imports of petroleum, coal, food, uncut diamonds and production inputs • Economic crisis of 80s destabilized country and economy	• Israel's expenditure on education is the highest in the world, leading to a highly educated workforce • Financial support for students opting to pursue engineering degrees • Graduates with potential are filtered into the Army specialist unit 8200 where they develop advanced technologies and are provided with extensive on-the-job training	• 29% of 24-65 year olds have attained higher education • Israel ranks top of a country survey of availability of qualified engineers • Veterans of unit 8200 have spun off over 50 tech startups worth billions of dollars in the past decade • Highest number of scientists per capita globally
Singapore	• No natural resources • Poorly educated population with limited industrial "know-how" • Low prosperity levels • Heterogeneous population	• International Enterprise provides scholarships for international management courses abroad for Singaporean executives, • Government has created a strong education system on a global level (e.g. ranked 1st in TIMSS mathematics examinations) • Economic Committee focused on what types of skills required to respond to development strategies (e.g. shift in education policy in late 1990s to place a high premium on innovation, flexibility and entrepreneurship) • Strong focus on attracting top global talent by improving the quality of life to highly-skilled expatriates and actively marketing Singapore internationally	• Regarded as strongest education system globally (e.g. ranked 1st in TIMSS mathematics examinations) • In 2007 Mercer quality of life survey, Singapore was the top ranking Asian country • Steady supply of well trained talent supported growth of high-value add areas
USA	• 1950s region was one of the lowest per capita incomes in the nation • State economy dominated by low wage manufacturing industries (furniture, textiles, forestry etc.) • 'Brain Drain' as graduates left state in search of more profitable opportunities	• Positioning of park to leverage the 3 leading Universities in the state led to a steady supply of skilled scientists, engineers, managers	• Critical discoveries of 20th century influenced by scientists and researchers working in RTP (e.g., Universal Product Code, 3D ultrasound technology, Astroturf and Taxol – leading anti-cancer drug)
Finland	• Resource-based economy dominated by wood, pulp, and paper exports • Fall of Soviet Union devastated export industries – GDP fell >10% from 1990 to 1992	• Strong emphasis on education – Rigorous teacher screening and selection process; teachers recruited from top 1/3 of graduating cohort and possess a minimum of a masters degree – Strong remedial education programme based on intensification of effort, and use of different teaching approaches • University of Oulu focused on electrical and mechanical engineering	• Access to highly skilled labour force that complements new economic needs • Strong education outcomes, with low variations in results – Top ranked country in terms of quality of education system (WEF 2009) – Currently ranked 1st in science and 2nd in maths in PISA examinations – Lowest variance in education outcomes amongst OECD • Top ranked country in World Economic Forum 2009 Global competitiveness index on availability of scientists and engineers
UK	• Leading University situated in the town, renowned for its science department • Little industry in the area asides from some light activity in the electrical sector	• The presence of Cambridge University was leveraged and strong connections were built between the university and the science park • Undergraduate link between University and businesses sees 500 Cambridge students place in over 150 companies within the cluster to complete engineering and management projects • University departments and organisations such as the Computer Lab, Institute for Manufacturing and Judge Business School actively engage with companies in the cluster on a range of recruitment, research and teaching activities	• Steady flow of highly skilled post degree labour to the science park
Germany	• Mass destruction since WWII • Relatively poor in natural resources • Early industrialisation heavily dependent on subsidies	• Dual Education System provides strong system of vocational training	• Steady supply of skilled workers who have received practical, 'live' skills training y to commercialise academic R&D • 83% of the population have high school level of education (compared to UK at 67% and France at 66%) • 81% of total labour force has received formal training prior to starting their job • Ranked #2 in World Economic Forum competitiveness index

There is a clear difficulty in ensuring that the right digital talent, and the right amount of it, flow into East London – this requires a focus on the educational curriculum (both school and university, as shown in the examples of other countries), and the much stronger promotion of an entrepreneurial career as an attractive, viable option to graduates.

During our research, we heard a distinct call to encourage the culture of entrepreneurship and competition at the grassroots. By comparison with the US, the British (like their European neighbours) are not entrepreneurial. The share of the British population interested in entrepreneurship is 18 percentage points lower than in the US.

EXHIBIT 15

Fewer people in the UK are interested in entrepreneurship than in other countries

Entrepreneurship funnel, 2009
% of adult population

x = Conversion rate %

	Total population	Interested in entrepreneurship	Intention to start a business	Nascent entrepreneurship	Confirmed entrepreneurship
Description	Share of population	Considering entre-preneurship as an interesting career path	Thinking of starting a business in the next three years	Actively committing resources to start a business	Owning and managing a new business (<3.5 years)
	66	22	55	5	3.1
	58	20	47	3	2.6
	84	14	61	3	4.1
	48	20	60	3	3.0
	63	14	57	2	2.8
	54	16	46	2	1.9
	72	10	49	2	1.9
	65	30	22	3	1.2
	56	13	33	2	0.9

-45%   -3%

Note: Numbers may not sum due to rounding

SOURCE: Global Entrepreneurship Monitor – Global Report 2007 (Ireland, Sweden, Austria, Portugal); 2009 (other); McKinsey Global Institute analysis

i) Encourage the launch of start-ups in East London

There is a clear opportunity to develop programmes to encourage university-leavers as well as those already in employment to regard start-up as a legitimate career choice, with a Teach First-style initiative for entrepreneurs.

Teach First is an independent educational charity founded in 2002. It aims to address geographical areas of educational disadvantage by placing graduates as teachers in selected schools. Graduates work for a minimum of two years as teachers, after which they are supported by corporates if they wish to leave teaching and enter industry or professional services. Many remain actively engaged in education through Teach First's ambassador community.

Teach First is financed by private donations and supporting partners (for whom there are different categories of levels of support).

"Our mission is to address educational disadvantage by transforming exceptional graduates into effective, inspirational leaders in all fields."

www.teachfirst.org.uk

Teach First has grown from 186 participants in 2003 to 560 participants in 2010, with an ambassador community of over 1,100 people. It also expanded from London to five regions in the UK. In 2010, it ranked seventh in the UK Times Top 100 Graduate Employers, and it received a £4 million grant from the government to put more graduates into schools.

Schemes such as Teach First have been successful in encouraging graduates to spend time in education whilst removing the risk of jeopardising their career prospects in commerce, should they eventually choose that path. There is an opportunity to work with employers with an interest in the development of the East London technology cluster to encourage graduates to participate in a similar way.

Accordingly, we see the opportunity for a Teach First–style programme, where individuals with the most promising digital business ideas can start their business, with corporate mentoring, business training and networking events and surgeries, as well as incubator space in East London, but with the option to enter post-MBA programmes at a selection of corporate sponsors/industry/professional services firms after two years if they wish.

There are three benefits to such an initiative:

- Increasing the flow of entrepreneurs, and encouraging digital enterprise in particular

- Reducing the risk of becoming an entrepreneur, with the programme being recognised by major corporations at the end of the two years

- Greater probability of the rapid securing of pre-seed funding due to the enhanced training and business support (and the prestige of the programme with the associated corporate sponsors).

To succeed, this initiative will require a rigorous and selection policy, and buy-in and resource commitment from a consortium of large corporate sponsors.

ii) Introduce loan relief for graduates

The government could suspend loan interest repayments for students who start a business within three years of leaving, where they earn more than £21,000 but where part of their earnings are used to re-invest in their businesses (for example, to pay office rent) so that their income is reduced below the repayment threshold.

iii) Review visa requirements for overseas entrepreneurs

Many of those interviewed felt that current requirements inhibited the ability of legitimate entrepreneurs to access the East London cluster. Although no-one underestimates the political complexity around the issue of migration, the cluster would benefit if these requirements could be eased to enable visas to be transferred between businesses.

There was a very clear request from the East London community for the government to review current visa criteria, with the associated prevention of talent flow into the country being cited as a critical barrier to business growth.

Under the current points-based system, applicants for Tier 1 (Entrepreneur) visas are required to

- Hold a minimum of £200,000 to start the proposed business

- Work full-time in the running of the business

- Create full-time employment for two EEA nationals

- Take a controlling interest in the business and a share of its liabilities

- Have sufficient funds to maintain themselves until the business becomes profitable

- Show a 'convincing and viable business plan'

- Have funds of £2,800 at the time of application for initial entry clearance, or £800 at the time of application for leave to remain.

In November 2010, the government announced wide-ranging changes to the UK's visa system, to take effect from 6 April 2011. But in general these reforms will not affect the Tier 1 (Entrepreneur) visa. Although most categories of visa will be subject to a limit of 21,700 per year, the entrepreneur visa will not be subject to any cap.

The new requirements as of April 2011 will be:

- English language fluency, to be proved either by holding a degree taught in English or passing a test of English as a foreign language equivalent to the Council of Europe's C1 level

- A criminal record free of 'unspent' (expired) convictions

- In order to secure indefinite leave to remain after five years, passing the Life in the UK test.

The main issue for entrepreneurs remains the capital requirement. The UK Border Agency's website pledges to "introduce flexibilities and create a new avenue for promising start-up companies which do not meet our investment threshold," although there is no information on what the new capital requirements will be or when they will take effect.

> "I think it means that business is going to find it harder. It may be they will be unable to bring in the best people for the job."
>
> Caron Pope,
> Head of business immigration
> at CMS Cameron McKenna

A next step is for government to continue to engage with the community in East London to ensure that critical issues are being addressed. Specific steps suggested by the East London community included:

- Basing the criteria for entrepreneur visas on job creation (rather than capital)

- Introducing transferability of sponsored visas between eligible companies; a Tech City sponsorship allowance; or one-for-one sponsorship matching based on levels of resident employment

- Returning key-hire visa sponsorship levels to previous levels

- Creating an HMRC-style helpline to assist with visa applications.

2.3.2 Practical, applied business and management training

A number of capability-building programmes currently exist in East London – more than 25 organisations offer training programmes and courses for tech businesses. Examples include:

- School for Startups – entrepreneurial academy for start-ups and small businesses

- Bootlaw – regular pragmatic discussions on law for start-ups

- iPhone boot camp – three-day intensive workshops on developing iPhone apps

- East London Small Business Centre – not-for-profit support agency for small businesses

- Entrepreneurs Business Academy – one-day courses and events for entrepreneurs

There are also at least 60 government-supported events for businesses in London each month.

Event types
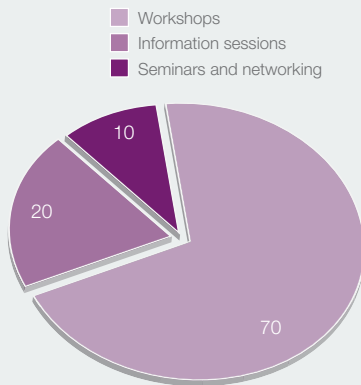
Organiser	Focus
HMRC	Taxation and employment (e.g., 'How VAT works')
Business Link London	Employment, sales, marketing and legal issues (e.g., 'Employment law – the basics'); online information and a personal advice service
UKTI	Attracting inward investment (e.g., Global Entrepreneur Programme) Aiding exporting (e.g., Export Marketing Research Scheme, Digital Mission)

These offerings notwithstanding, a distinct need that was heard consistently in our discussions with founders in East London was the request for a one-stop in-depth practical degree-style training programme (far more comprehensive than a one-day seminar) on running and growing a competitive business, to include:

- greater basic business guidance – e.g., accounting, tax, law and marketing training

- personal skills – e.g., personal impact coaching

- communication skills – e.g., presentation skills and pitching

- managerial skills – e.g., team leadership, facilitation skills, succession planning.

i) Establish a training course in East London for founders to learn the core business skills required to manage a venture efficiently and successfully

Some 40% of those we interviewed emphasised the need for a practical, relevant training course – citing the current one-day offerings as not being 'deep, up-to-date, or theory-focused'. Entrepreneurs requested a course that could be completed in evenings and/or weekends, with online portions to enable remote working, but with some in-person sessions to provide networking benefits. We heard four benefits to such an initiative:

- Students will receive extremely practical teaching of key business skills (compared to the theoretical-practical mix of MBA or other post-graduate programmes)

- The course will be designed to facilitate attendance whilst coping with the demands of a start-up business

- Small class environments will allow tailoring of the course to specific questions from entrepreneurs

- Expert guest lecturers will provide the latest cutting-edge business insights.

For this initiative to be successful, founders stressed that the course must be co-designed with them so that it exactly reflects their requirements and the syllabus must be continually updated.

- FINPRO (Finland) helps SMEs access the international marketplace by monitoring trends and market developments and providing guidance to Finnish firms seeking to enter markets

- International Enterprise (IE) in Singapore focuses on the specific needs of each company which seeks its help (providing step-by-step help)

2.4 Support

• Accessible financing

• Favourable policy/regulation

2.4.1 Accessible financing

There is currently a large and active investor pool. Over 60 venture capital firms that focus investment on technology businesses are headquartered in the UK, with a total fund size of over £4 billion. There are also over 35 angel networks, including brokers charging a fee to link entrepreneurs to angels and venture capital (e.g., Beer & Partners), professionally-run angel networks charging fees to connect angels to entrepreneurs (e.g., Envestors) and groups of angels inviting entrepreneurs to connect (e.g., London Innovation Angels).

There is also a healthy exit market, with over a dozen software and technology IPOs worth over $1 billion in the last three years, and a further 75 buyouts of London-based technology companies.

Finally, there are several government-led initiatives to support SMEs, including:

▪ Government guarantee of 75% of an SME's bank loan

▪ Government-backed VC funds aiming to invest in fast-growing SMEs

▪ Income tax and CGT relief for investors

▪ CGT relief on disposal of business - the government has announced a change of the CGT relief on disposal of a business - and will double the lifetime limit for Entrepreneurs Relief to £10 million[22]

Despite this, there is a strong opinion among many of East London's digital founders and entrepreneurs that financing is inaccessible and difficult to secure at an early stage.

[22] HM Treasury – Budget 2011 (March 2011)

i) Increase the hit-rate of East London's digital businesses in securing funding

Seedcamp is well known for bringing dozens of hopeful start-ups together each year in a highly publicised competition for VC funding. Successful applicants to the competition prepare business plans and pitches, which they present to a heavyweight panel of venture capitalists. There is a clear value in gaining visibility from firms such as Index Ventures, Google and others. In addition to this validation derived from industry heavyweights, applicants also network with one another and can leverage participation in Seedcamp for further funding attempts. The disadvantage that entrepreneurs cited is that Seedcamp take a portion of equity in exchange for these services.

The perception among entrepreneurs that there is little venture capital available for small or start-up digital enterprise in the UK and in East London in particular is not borne out in practice. However, there are issues that local entrepreneurs face in identifying those capital partners and also in making the best possible investment case. In other countries, notably Germany, entrepreneurs have been helped by the establishment of business plan

> "Although I didn't win investment at Seedcamp, the contacts I made led to investment in my business a few months later – brilliant!"

competitions which serve two key functions: improve the capability of small business to design successful plans and advertise their ideas to the venture capital sector. There is an opportunity for such a competition in the UK, which will not only guide entrepreneurs through the process of writing a winning plan (invaluable regardless of their success in the competition), but will provide significant other learning, training, networking and mentoring benefits, without requiring a stake in the start-up. This independent competition will offer a distinctive value proposition for multiple stakeholders in the East London cluster.

EXHIBIT 17

A business plan competition provides distinct benefits for all stakeholders

Investors
- Creates a regular pipeline of high quality deals and potentially reduces transaction costs
- Reduces risk of business failure
- Improves potential of business concept

Sponsor companies
- High impact and supports CSR efforts
- Effective, low maintenance vehicle for corporate social responsibility investments
- Provides a well-structure, high impact team building/ volunteering experience for employees

East London entrepreneurs
- Simplifies and "fast-tracks" start-up/expansion process
- Reduces risk of business failure
- Improves potential of business concepts
- Provides access to experienced support network
- Links the participant to potential investors

UK Government/ GLA
- Delivers tangible impact on job creation, economic development, and skill/competency building
- Provides fact-based, objective guidance on policy development

Service providers
- Creates a regular pipeline of business prospects
- Provides preferential referrals from a trusted advisor
- Increases awareness of service provider in target markets

SOURCE: McKinsey

EXHIBIT 18

A tried-and-tested methodology takes entrepeneurs from an idea to full business plan

Process

	Phase 1: Outline business concept	Phase 2: Detail business plan	Phase 3: Refine and finalise business plan
Focus	• Potential of concept, customer value • Management capabilities	• Market strategy and financing • Viability of business concept	• Implementation • Funding
Deliverable	• ~3-5 pages business concept	• ~20 page business plan	• ~30 page business plan

Support	• Events and lectures on entrepreneurship and business topics
	• Networking events
	• Research support from
	• McKinsey and others
		• General business coaching
		• Specific coaching including
		  - Market strategy
		  - Accounting/finance
			• Deal making with financiers
			• Additional contacts
			  - Lawyers
			  - Tax experts

Example prizes (tbd)	• 10 x £1000 • Selection of free local services	• 10 x £2,500 • Selection of free local services	• 3 x £50,000 • Selection of free local services
Barriers addressed	Building an entrepreneurial culture	Skill development of new entrepreneurs	Finding funding to scale

SOURCE: McKinsey

East London digital entrepreneurs who enter the competition will benefit from a first-class learning programme during each phase.

ii) Improve access to bank lending

In this scheme, the government underwrites 75% of a bank loan to a small business and for many businesses is critical to short term cash flow. In addition to the size of the unallocated funds (£350 million in 2009-2010), at present only 6% of loans issued are to the technology and communications sectors. There is a clear opportunity to promote awareness of the scheme to digital entrepreneurs, and to make it easier for small start-ups to access funds. The fund is also aimed at businesses with cash-flow problems – but whilst such problems may be expected, entrepreneurs should be made aware that banks will investigate other matters such as problems with employees, property and commercial disputes and weak terms and conditions of supply – and that businesses should prepare their application thoroughly and consider seeking legal advice in advance of applying.

"

Between 14 January 2009 and 31 March 2010 a facility of £1.3 billion was in place to enable additional lending. During that time 9237 loans have been offered to businesses with a value of £947.1 million, and between 1 April 2010 and 31 March 2011, EFG will enable up to £700 million of additional lending.

Department for Business, Innovation and Skills

"

iii) Increase investment from high net worth individuals in the City of London

In seeking to increase the availability of investment finance for East London digital businesses, Venture Capital funds will not provide the solution alone. A June 2009 report from the Kauffman Foundation ("Right-Sizing the Venture Capital Industry") concludes that the total capital under management by VCs will contract by 50% by 2013, from $24 billion to $12 billion globally. Therefore it is critical to increase the availability of investment capital from new sources.

The most compelling possibility lies in Shoreditch's proximity to the City of London, one of the world's highest concentrations of high net worth individuals. 330,000 people work in the City, many of them earning seven figure salaries and holding extensive resources under investment. Early stage technology equity is a high risk high return category which can form an attractive part of a diversified portfolio. However, it is reckoned that only 1% of City professionals have ever invested in an early-stage business. There is an opportunity to increase this level significantly.

The main barrier preventing high net worth individuals investing in start-ups is the complexity of FSA regulations which effectively prevent small private businesses from talking directly to potential investors. In 2009 Trampoline Systems, a software business in East London, successfully placed their business plan on the web and raised £500,000 from private investors. However, to do this the company had to spend a month with legal advisors and present investors with a byzantine process of self-certification and submissions of expressions of interest to avoid breaching FSA requirements.

It is recommended that the FSA "excluded categories" regime, which enables people qualifying as High Net Worth Individuals or Sophisticated Investors to discuss investments with private companies, should be expanded to enable start-ups to share business plans with interested investors in the City more freely. In parallel, events should be organised to bring City professionals into the technology cluster and increase awareness of opportunities for start-up investment.

This approach is different from Angel Networks in that it enables entrepreneurs to engage directly with high net worth individuals without requiring an intermediate organisation.

2.4.2 Favourable policy/regulation

i) Introduce tax incentives for digital enterprise

One step recently taken by the government is the planned reform of the Enterprise Investment Scheme (EIS) and Venture Capital Trusts – the government plans to raise the rate of EIS income tax relief to 30 per cent from April 2011 .

However, further potential measures have been highlighted.

To promote digital enterprise, a tax rebate scheme could be introduced for UK digital entrepreneurs, allowing them to reclaim a percentage of costs incurred when operating in the UK. This would have multiple benefits, such as the improved competitiveness of the UK digital industry, economic growth through the increased contribution of digital business to UK GDP and the improved perception of the UK as a favourable business environment.

The UK film industry's Film Tax Relief (FTR) is a useful case-study for this idea. This relief has had a major impact on the development and survival of the UK film industry. An independent analysis, carried out by consultancy Oxford Economics, and funded by the film industry, found that the relief had more than paid back the investment in the scheme by the Treasury. In particular, it found the relief has quadrupled the level of UK film production, adding £1.4 billion to GDP.

EXHIBIT 19

The UK film industry's
Film Tax Relief could
be a useful precedent

Details	Eligibility	Impact
• FTR allows: 　– Claim of a payable cash rebate of up to 25% / 20% of UK qualifying film production expenditure 　– Losses can be surrendered for tax credits • Costs the UK government £110m a year	• Aimed at film production companies (FPCs) • Qualifying films must meet three conditions: 　– The film must be intended for theatrical release 　– The film must be certified British 　– Not less than 25% of the core expenditure on the film must be UK expenditure	• UK film industry attracts ~11% of global film production • Predicted 2010 UK film costs were 27% less than those in the US • The UK film industry contributes additional £1.4 billion a year of GDP £13 in GDP is generated for every £1 invested • Abolition of the film tax relief would result in the reduction of 25,000 jobs directly and 50,000 taking into account multiplier effects

SOURCE: HMRC – Film Tax Relief; UK Film Council website Economic contribution of the UK Film Industry, Oxford Economics, July 2007

There is also a need to extend the recent review of entrepreneurs' capital gains relief, and amend the requirement for full-time employment. A forceful case was made by business founders, in early stage business contexts, that their companies were being forced to continue to employ them because if they left the firm after it was sold they would be disadvantaged by current capital gains tax rules. Amending this requirement would mean that small companies could release their founders from full-time employment – a significant burden in some cases, on both the companies and on the founders themselves.

ii) Review R&D tax credits

All companies that spend over £10,000 a year on R&D are entitled to a deduction when calculating their taxable profits (150% for SMEs or 125% for larger companies). The tax credit can either reduce a company's tax bill or, for some SMEs not in profit, provide a cash sum. A company claims R&D tax credits in its company tax return (Form CT600). In the 2011 budget, the government outlined plans to increase SME's R&D tax credit rate to 200% from April 2011 and to 225% from April 2012[24].

> "Entrepreneurs' relief is welcome and vital but still creates some perverse incentives: its 5% threshold forces some entrepreneurs to resist dilution by acquisitions or desirable injections of growth capital, and its rules on role encourage founding executives to hang on in companies at all costs."

Andrew Bud,
mblox

[24] HM Treasury – Budget 2011 (March 2011)

As a further step, it would be useful to allow R&D tax credits to be paid up front. At present R&D tax credits, an important component of the cash flow of a small technology business, can only be paid retrospectively. Many in the East London community urge a change in the scheme to enable the benefits to be claimed prospectively.

iii) Rebalance tax incentives to support intangible investment

The tax system in the UK, similar to those in most other OECD countries, currently disadvantages intangible investments such as process improvements, creative ideas, skills, and IT.

Relatively generous incentives are in place for R&D expenditures, but other types of intellectual assets receive no tax benefits. However, the potential for intangible investment to drive innovation is clear – for example, the UK has achieved considerable success in the creative industries across activities ranging from software development to films. Creating a more neutral tax system would remove this bias in the current tax code.

There is an opportunity to improve financial incentives for enterprise. Most international clusters operate tax reliefs for enterprise; some offer direct subsidies. In the context of East London, there may be an opportunity to introduce limited, but valuable, tax reliefs in the shape of an Enterprise Tax Relief scheme (ETR) modelled on Film Tax Relief (FTR) – in which up to 25% of film production costs can be claimed as a cash rebate. The ETR might provide similar rebates for businesses less than two years old that employ at least five people.
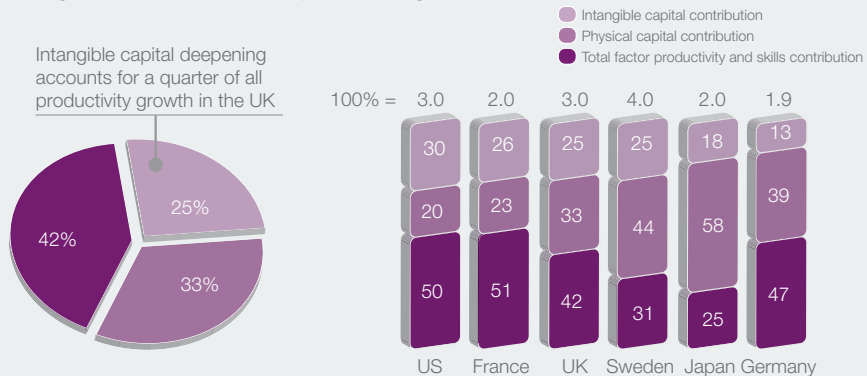
iv) Review criteria for, and publicity of, the Enterprise Finance Guarantee

The current statistics for the EFG show there is a need to promote the scheme vigorously to digital enterprises, and particularly to start-ups, as well as reviewing the criteria for the scheme to ensure it is fairly targeting all sectors and stages of growth.

EXHIBIT 20

Intangible investment is almost as important as physical capital for productivity growth

Contributions of different sources to labour productivity growth, 1995–2006
Percentage contributions to labour productivity growth, market sector

Intangible capital deepening accounts for a quarter of all productivity growth in the UK

- Intangible capital contribution
- Physical capital contribution
- Total factor productivity and skills contribution

	US	France	UK	Sweden	Japan	Germany
100% =	3.0	2.0	3.0	4.0	2.0	1.9
Intangible capital contribution	30	26	25	25	18	13
Physical capital contribution	20	23	33	44	58	39
Total factor productivity and skills contribution	50	51	42	31	25	47

Pie chart: 42%, 33%, 25%

Note: The estimates are based on national studies. They do not yet reflect standardised methods and definitions. Figures for Japan refer to the whole economy. As shown in various OECD studies, labour productivity can be affected by demographic trends and employment dynamics

SOURCE: OECD, based on COINVEST and national studies; OECD, Ministerial Report on the OECD Innovation Strategy, May 2010

EXHIBIT 21

Current intangible investment incentives are biased towards R&D

Overview of tax credits and additional allowances for intellectual assets in select OECD countries

✓ Incentives exist
✗ No pertinent incentive
Blank Information unavailable

Country	R&D	Acquired patents	Training	Software	Organisational change
Austria	✓	✗	✓		
Australia	✓	✗	✗	✗	
Belgium	✓	✓	✗	✗	✗
Canada	✓	✗	✗	✗	
Czech Republic	✓	✗	✗	✗	✗
Denmark	✓	✗		✗	✗
Finland	✗	✗		✗	✗
France	✓	✗	✓	✗	✗
Germany	✗	✗		✗	✗
Greece	✗	✗		✗	
Hungary	✓	✗		✗	
Iceland	✗	✗			✗
Ireland	✓	✗	✗	✗	✗
Italy	✓	✗	✗		✗
Japan	✓	✗	✓	✓	✓
Korea	✓	✗	✓		✗
Mexico	✓	✗	✗	✗	✗
Netherlands	✓	✓	✓	✗	✗
New Zealand	✗	✗		✗	✗
Norway	✓	✗	✗	✗	✗
Poland	✓	✗		✗	
Portugal	✓	✗		✗	
Slovak Republic		✗			
Spain	✓	✓	✓	✗	✗
Sweden	✗	✗	✗	✗	✗
Switzerland	✗	✗		✗	✗
Turkey			✓		
United Kingdom	✓	✗	✗	✗	✗
United States	✓	✗	✓	✗	✗

SOURCE: "Tax treatment of business investments in intellectual assets: an international comparison", OECD working paper, 2006

EXHIBIT 22

The EFG Scheme incentivises banks to lend to start-ups – the scheme is about to be widened to a larger panel of lenders

Details	Eligibility	Current statistics

• Enterprise Finance Guarantee (EFG) scheme incentivises banks to lend to start-up companies with little or no credit/ collateral
 	
• Government guarantees 75% of loans distributed by banks through the scheme, with a cap of 9.225% on total funds lent by any bank
	• Aimed at small businesses and start-ups in any sector
	
	• Qualifying firms must meet two primary conditions
	  – Annual turnover of £25m
	  – Seeking loan between £100,000 and £1m for working capital or investment to grow or develop the business
		• From Jan 2009 to March 2010 72% of the available £1.3bn was lent
		  – 12.25% of loans were in the London area
		  – Only 6% of loans were in the IT and communications sector
		  – 69% of the value of loans given went to businesses that had been in existence over 5 years
		
		• £700m additional funds were made available between 1st April 2010 and 31st March 2011

v) Review current IP and libel law

The importance of IP rights in stimulating creativity and innovation is well recognised. However, startups often lack the knowledge or funding to take advantage of their own innovations and creations. Part of the support the government can provide start ups in East London is training on how they can make better use of the IP system themselves.

Two issues sometimes cited by entrepreneurs are the costs of licenses from others and enforcement of their own rights. The government has launched an independent review of IP laws to consider how the IP system can better support innovation and growth in the UK. One particular aspect of the Review will consider if the UK should allow more use of copyrighted material without copyright holders' permission, a move likely to meet with opposition from content creators with copyright-based businesses such as the music and film industries.

Many entrepreneurs also raised the need to review libel law. In the US, section 230 of the Communications Decency Act gives websites broad immunity from liability for comments written by users. There is no equivalent in the UK.

"

EU copyright does not allow a general, US-style 'fair use' provision, but has an exhaustive list of possible user rights, like format shifting, back ups and parodies… The prize is big: innovation and flexibility for citizens and tech industries rather than the dead hand of maximalist copyright laws. "

Jim Killock,
Executive Director of Open Rights Group (a digital rights campaign body)

"

A website built on user-generated content is better protected in America than in the UK. That impacts on our digital economy… The law says a host must take down a libelous comment "expeditiously" once made aware of it, or run the risk of being liable for it. It can be hard to determine if a statement is libelous or not, so hosts don't like running that risk. "

Struan Robinson,
Editor, Out-law.com

vi) Review scoring criteria for government procurement

The current government procurement system and its administration have been the subject of much discussion. The Prime Minister's Office has asked for direct user comments via its website. A possible next step is to encourage small enterprises to take a stake in government procurement contracts by giving prime contractors incentives to include small digital enterprises in their bids.

A key issue raised by many entrepreneurs who were attracted by the opportunities for innovation in public service reforms – especially in the context of greater access to data – was the difficulty for small businesses to participate in public sector procurement processes. A combination of costly process and what is perceived as a bias by public sector organisations against small business is cited as a disincentive for entrepreneurs in East London. The government could prompt public sector agencies to level the playing field, particularly in the context of larger public procurements, by requiring bids for digital technology contracts to demonstrate the inclusion of small entrepreneurial business in consortia as part of the scoring criteria. It could also require public sector agencies which routinely contract for technology services to create frameworks of smaller suppliers to help them raise their profile with prime contractors for larger contracts.

"
Government procurement has extremely stringent requirements that do not suit small businesses. There is no opportunity for the community to work together to bid.
"

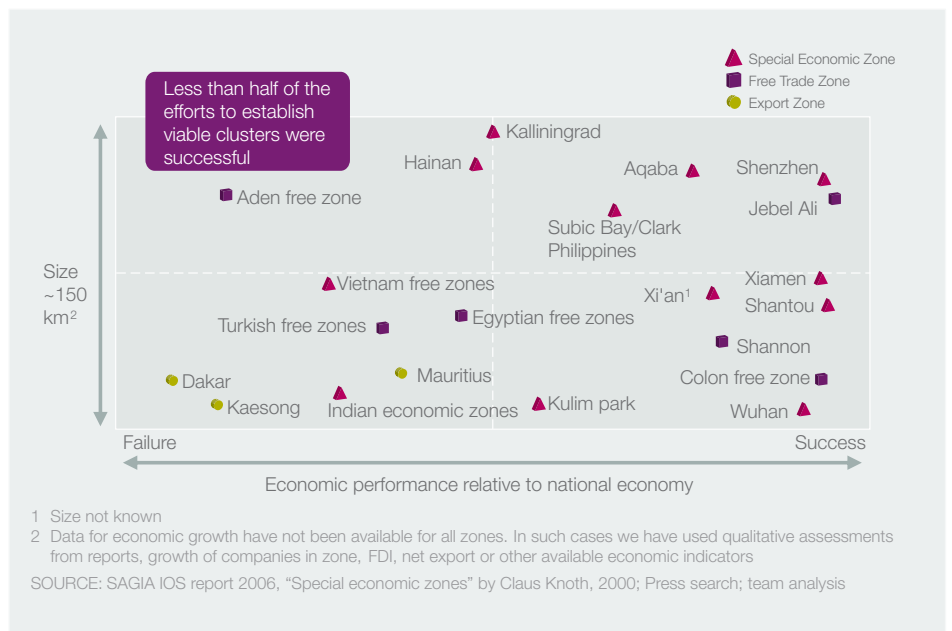James Stewart and James Weiner,
Ket Lai

Chapter 2

Final thoughts – requirements for success in East London

Lessons can be learned not only from successful clusters overseas, but also from those that did not succeed. Government-driven efforts to stimulate clusters have a mixed record. International evidence suggests that creating a successful cluster will be a significant challenge – only half of the clusters in emerging markets have been successful (i.e., grown faster than the pace of the overall economy).

EXHIBIT 23

We have screened about 30 Special Economic Zones and other government led cluster developments

Less than half of the efforts to establish viable clusters were successful

▲ Special Economic Zone
■ Free Trade Zone
● Export Zone

Kalliningrad ▲

Hainan ▲   Aqaba ▲   Shenzhen ▲

■ Aden free zone   Jebel Ali ■

                              Subic Bay/Clark
                              Philippines ▲

Size
~150
km²   ▲ Vietnam free zones   Xi'an[1] ▲   Xiamen ▲
                                             Shantou ▲

            Turkish free zones ■   ■ Egyptian free zones
                                                  Shannon ■
● Dakar   ● Mauritius   Colon free zone ■
● Kaesong   Indian economic zones ▲ ● ▲ Kulim park   Wuhan ▲

Failure   Success

Economic performance relative to national economy

1 Size not known
2 Data for economic growth have not been available for all zones. In such cases we have used qualitative assessments from reports, growth of companies in zone, FDI, net export or other available economic indicators

SOURCE: SAGIA IOS report 2006, "Special economic zones" by Claus Knoth, 2000; Press search; team analysis

And these failures have come at considerable cost to taxpayers. The following lessons learned might help increase the prospect for success.

FACTOR 1:
Recognise (and communicate) the timescale needed for success

- Creating a cluster is a long-term process. Many of the most successful have developed over decades as opposed to years

- Political cycles lead to a bias in favour of short-term results, and as a result initiatives are often cancelled or changed before having proper time to develop. The Malaysian government's BioValley initiative suffered from extensive policy changes and the effort was scaled back due to limited success in the first four years

FACTOR 2:
Recognise the appropriate level of commitment

- Frequently, governments under- or over-commit to entrepreneurship initiatives

- Under-commitment leads to limited or curtailed impact

- Over-commitment by public bodies often occurs in the form of too much financing – often not directed at the right sources. This results in the private market being crowded out, and again, a curtailing of entrepreneurial activity. For instance, ensuring every country has its 'fair share' of funding has meant that many European initiatives to stimulate entrepreneurialism (e.g., the European Seed Capital Fund Scheme) have had limited impact. Another example is legislation in the Canadian Labour Fund Program that actively promoted investment in the mass population – this led to an overall drop in venture activity in many states because skilled investors had to compete with the mass resources of uninformed investors.

FACTOR 3:
Take care with the threshold requirements for companies to qualify for, or participate in, initiatives

- Requirements to participate in many entrepreneur schemes often result in the intended target companies being excluded. In the US, for example, the Small Business Innovation Research Program aims to increase funding for small business. However, strict requirements on size and ownership have led to many small high-tech business being rejected or not applying to the programme

FACTOR 4:
Consider the location and target sector for the cluster…and revisit this over time

- Public initiatives often 'jump on the bandwagon' of other success stories

- Many attempts have been made to create a cluster in an underperforming economic location and around the latest economic growth sector, without any thought being given as to whether the area meets any basic cluster requirements. Following the success of Silicon Valley, for example, 49 of 50 US states launched initiatives to stimulate biotech growth with little-or-no analysis of whether the attributes of the area were conducive to biotech. The result was that the majority of these initiatives failed

FACTOR 5:
Don't focus solely on local development

- Initiatives need to encourage investment from, and links with, other global hubs around the world. In attempting to stimulate an entrepreneurial culture, Japan focused solely on developing its local venture capital market, without trying to attract foreign investment. This, combined with the poor performance of Japan's venture funds, led to a steep fall in venture capital activity

FACTOR 6:
Don't neglect the wider ecosystem, in order to maximise the economic impact of the cluster

- Many of the ideas set out in this report can be extended to promote entrepreneurship beyond the East End

- It can be seen from the experience of clusters around the world that establishing the pre-conditions for Presence, Connectivity, Capability and Support requires the commitment of a diverse group of stakeholders. Many of the discussions centred on the true definition of the East London community that is the focus of this initiative. There is some concern that the increase in prominence of new types of business (notably the introduction of the large corporates into the Olympic accelerator) may smother or crowd out the unique culture of the emerging community at Old Street

It need not be a question of either-or. As in the examples of the most successful enterprise cultures around the world, the distinctiveness and the sustainability of such a culture in East London will come from (and rely on) the coexistence of large and nascent, of small and scaled, of foreign and local, of headquarters and satellites, of Old Street and Stratford. The needs of corporate giants and Day 1 start-ups are clearly at different ends of a spectrum. But exploring and capitalising on the benefits that each could bring to the other, whilst working to ensure that the conditions are in place for businesses of different types, sizes and ambitions to thrive in their own right, is what will ultimately promote East London to the ranks of truly distinctive clusters. The findings in this report assume this diversity (and the associated differing needs) will continue to flourish.

For centuries, London has been a city where people can see their ideas become reality. From Shakespeare and his contemporaries in the playhouses of the Sixteenth Century to Joseph Priestley and his fellows in the coffee houses and learned societies of the Eighteenth to the Shoreditch founders and entrepreneurs of today, creative innovators have found that the city offers the networks and opportunities they need. London is close to the seat of government – as both enabler and customer. It is the capital of world finance. It is a creative and cultural capital. It is home to some of the best universities in the world. So many of the building blocks required for a successful cluster are already in place here.

Ultimately, the success of the East London digital cluster will depend on the entrepreneurial talents of the founders and entrepreneurs who are already building it. But this report sets out a range of actions which will help accelerate and strengthen the cluster into a distinctive asset for London, for the UK and for the world.