A TALE OF TECH CITY: THE FUTURE OF INNER EAST LONDON'S DIGITAL ECONOMY

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LONDON'S DIGITAL ECONOMY

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FOREWORD

Nowhere but a megacity like London, with its massively diverse, intensely globalised, traditionally innovative population, can really have a chance at succeeding in this most 21st century of revolutions. It is massively to the credit of the Coalition Government that it has noticed, and chosen to nurture, the disruptive forces a few miles to the east of Westminster, in the cluster of digital activity the Government has dubbed 'Tech City'. The Government's support, both vocal and financial, is a key factor in helping this cluster flourish in these very early years.

Of course, for every cheque we need a balance, and that is why reports such as this one are so very welcome. Hype, branding, the promise of a boom or the fear of a bubble will all obscure what is really going on if neutral but in-depth investigations like this are not made and regularly repeated. Indeed, both local and national government policy must be made in the same manner as the products of Tech City itself: iteratively, with constant attention to user feedback. In that way, Tech City policy may never be complete – it may never be possible to say precisely what it is, as if it was a finished, bound, completed thing. Government policy, influenced by reports such as this, should be in perpetual beta.

Data driven policy is only as good as the data itself, and so it is with joy that I note this report's attention to detail. We should all welcome the most comprehensive analysis to date of what and who makes up Tech City, and what it is the entrepreneurs behind the firms say they want from government. Combined with future repeat research – which I urge the authors to consider – we will be able, as policymakers, businesspeople, and academics, to have a much greater, deeper, and more effective understanding of both the potential and the dangers of interventions such as Tech City.

Clusters, as the report writes, are not to be made artificially. They cannot be. Instead, they grow and blossom organically from the rich soil of the surrounding

city. London is a special place, fertile with creative influences. Tech City is a success, and will grow, not because of the Tech, but because of the City – the humanity, the rubbing together of cultures, the tensions and the beauties therein. There is, yes, work to be done, but we live and work in one of the greatest places on earth, and with help – from everyone who might read this report – Tech City can both feed from and, more importantly, give back to the place we like to call our home.

Ben Hammersley
The Prime Minister's Ambassador to Tech City

EXECUTIVE SUMMARY

Since the late 1990s, a vibrant high-tech cluster has been growing in Inner East London, focused on Shoreditch and Clerkenwell. Since 2010 the UK's Coalition Government has led a high profile drive to accelerate its development – the 'Tech City' initiative – taking Silicon Valley as a model.

> *Our ambition is to bring together the creativity and energy of Shoreditch and the incredible possibilities of the Olympic Park to help make East London one of the world's great technology centres.*
> David Cameron, November 2010

We believe the Government is right to be ambitious for the UK's digital economy. The future of advanced economies like Britain lies, in important part, in growing research-intensive, innovative, high-value digital companies. Britain's digital economy already takes the biggest share of national GDP in the G20, and may increase that share by a third by 2016.

As a world city, London is well placed to take advantage of these trends. Digital economy firms tend to cluster in large, skilled, economically diverse, well-connected urban environments – the capital already has the UK's biggest concentration of digital activity.

Inner East London plays an important role in London's digital ecosystem. Our research demonstrates that a vibrant cluster of small and medium-sized digital businesses has grown in the area. With over 3,200 firms and 48,000 jobs in the area in 2010, we show that the cluster is larger than generally appreciated.

This report sets out a road map for the future of the East London tech cluster. We think this is needed. Despite all the attention Tech City has received, we know less than we need to about the inner workings of the cluster. And there has been little independent scrutiny of the policies and initiatives that have been introduced to grow it.

The economic significance of East London's digital economy means it is critical to get public policy right. Governments and city leaders all over the world dream of creating centres of technological innovation and expertise, to rival Silicon Valley and its multi-billion dollar tech giants. So far, however, most of these dreams have not amounted to much. There is certainly no simple formula for creating a successful high-tech cluster, let alone a world-beating one. Every high-tech cluster is different. The key is finding the right policy mix to suit local conditions.

This report sets out to answer the following seven questions:

1 — How large is the East London cluster and what place does it occupy in London's larger digital economy?

2 — What can we say about the digital entrepreneurs in the cluster, and the history, size, age, and focus and financial standing of its firms?

3 — What draws entrepreneurs to the area? What do they see as its advantages and its drawbacks?

4 — Which factors are facilitating the development of firms within the cluster, and which issues, if any, are acting as constraints on it?

5 — What can we learn from recent attempts to support and promote other digital clusters in the US, Europe and beyond?

6 — How effective are the policies that national, London and local government have adopted to support the cluster?

7 — What could government do further to support it?

Here's our vision for East London Tech City – a hub that stretches from Shoreditch and Old Street to the Olympic Park.
David Cameron, November 2010

We think there is much of value in current policies. We also have some concerns.

Government Tech City strategy has three related but distinct aims. First, to foster small and medium size businesses in the area; second, to promote international investment into it; and third, to encourage its spread eastwards to the Olympic Park and surrounding areas, post-2012. The principal agencies tasked with delivering this strategy are London & Partners, Tech City Investment Organisation and the London Legacy Development Corporation.

We argue that policymakers should refocus on supporting the growth of the existing cluster, and encouraging the development of high-performing firms. Efforts to secure international investment into the area need to support this objective, and the evidence shows that where investments are carefully calibrated, based on detailed knowledge of firms in the cluster, and what is most complementary to their long term development, they can be. Our evidence also suggests that the cluster's eastwards growth, although desirable, is likely to be limited. Fundamentally, Tech City should be about 'growing our own'.

Detailed Findings
Our research has three elements. First, we mapped the cluster, tracing its development over time, and analysing numbers of firms and jobs, and the industry mix. Second, our comparative analysis puts East London in wider context, drawing on seven international case studies. Third, in our qualitative analysis, we spoke to entrepreneurs in a range of local digital economy businesses, plus a control group from outside the area and a number of experts and stakeholders. We then tested our early findings at a roundtable event.
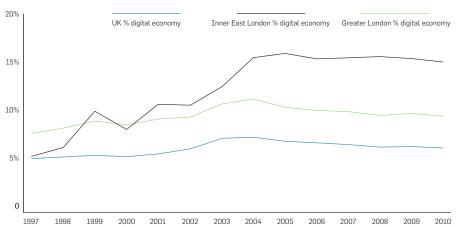
International lessons

We reviewed non-UK clusters including Silicon Valley, New York's 'Silicon Alley', 'Cap Digital' in Paris, Berlin, Tel Aviv's 'Silicon Wadi', and the Malaysian 'Super Corridor'. These vary in the degree of government involvement – from the 'hands-on' approach of Cap Digital to the more 'hands-off' Berlin.

The lessons that emerge are important. Our international case studies suggest that in some cases, government can help stimulate long-term development. In Silicon Valley, for example, government defence contracts – perhaps unintentionally – helped turn a defence industry hotspot into the economic powerhouse of today. Silicon Wadi has a similar dynamic, with the Israeli military playing a number of important roles.

But our evidence also tells us that artificially generating clusters in mature industries – as digital content and ICT now are – is very difficult. London and its local hotspots have momentum, but face sharp competition from older clusters and fast developing ones. Even with generous public support, these complex ecosystems of firms take many years to evolve and grow.

Getting the policy mix right is crucial. Most of the evidence we reviewed suggests that area-level approaches are less effective than approaches that focus on firms.

Tech City data

Our extensive analysis of the official data supports the claim that there is an important and growing cluster of digital economy firms in Inner East London. We counted over 3200 digital economy firms in the area in 2010, and almost 1600 in three core wards. These figures are significantly higher than previous estimates yet probably understate the true numbers.

However, the cluster has not grown consistently year-on-year. Inner East London's share of digital economy employment did grow steadily to 2005, but has remained static since then. Our research also highlights its vulnerability to the ill economic winds that have been blowing since the financial crisis of 2008.

About the Entrepreneurs

Our interviewees were overwhelmingly male, white, British and highly educated. Most were in their thirties. The firms that they own and run were typically micro-businesses (under 10 staff) and most were less than five years old. Over a third of all firms had an international structure of some kind. This is what they told us.

Location

Being located in Inner East London has a number of advantages for firms: cheap rents, accessibility to the rest of London, proximity to like-minded firms, amenities and 'vibe'.

Inner East London is very central, offers many night-time attractions, and so is highly attractive to the type of staff that digital businesses want to secure and retain – typically cool, creative, tech-savvy young urbanites. But there are concerns that rising rents may disrupt the cluster. Other downsides were mentioned, notably grime and crime, but did not feature strongly.

Figure 1: Digital economy employment shares 1997–2010
Source: BSD/Secure Data Service

UK % digital economy   Inner East London % digital economy   Greater London % digital economy

We identified seven main areas of concern:

1—Skills gaps
Many interviewees are worried by the problems of finding skilled staff. Some claim there is an under-supply of skilled developers and specialist staff in the UK. They blame ill-designed university syllabuses, and a lack of understanding at all levels of the education system. Visa restrictions on non-EU staff also cause concern.

2—Access to finance
Although accessing finance is a difficulty for some of the firms in our sample, it is far from being the biggest concern overall. Some entrepreneurs were critical of the apparent lack of understanding of the digital sector among financiers.

3—Workspace, access and cost
The inevitable paradox of success is the rising in cost of popular neighbourhoods. Cheap workspace is still a big draw to the area, but many interviewees were worried about finding office space in the future and that rising rents are pushing start-ups out.

4—Connectivity
Around a third of interviews mention connectivity issues as constraints to business. This is both in terms of reliability and speed and broadband connection times.

5—Mentoring and management skills
Our interviews often uncovered a strong demand for mentoring, and help with growing the firm – but many companies had trouble accessing this advice in the neighbourhood. By contrast, in established clusters like Silicon Valley, there are extensive professional networks for new firms to turn to, and angel / VC investors often have deep backgrounds in founding and growing digital businesses.

6—Business development
Although there were many success stories, we found surprisingly little appetite for developing firms into global players. This may indicate the cluster's existing entrepreneurs are better at having ideas than converting start-ups into mature businesses. For more world-beating firms to emerge, more of them will need help and support from experienced managers adept at expanding businesses.

7—Tech City Strategy
Many interviewees welcomed the high-profile Government efforts to support the cluster, even if most of them knew little of their detailed nature. But some firms and stakeholders expressed concerns that the three-pronged Tech City strategy – cultivating the cluster, promoting international investment into it, and encouraging its spread to the Olympic Park – is muddled, and potentially counterproductive. We also found frustrations with specific policies.

Scenarios
We set out four possible futures for Tech City. Our aim in doing this is to clarify thinking about what we want from the cluster, the forces driving change, and what policy can realistically hope to achieve.

Scenario 1: Go East
The cluster continues to add jobs and firms, with more firms expanding internationally and achieving global success. Large digital firms move to new sites further east in the Olympic Park and environs, creating a new digital hotspot.

Scenario 2: Upgrade
The cluster continues to add jobs and firms, with more firms expanding internationally and achieving global success. Some digital firms locate in the Olympic Park and environs but far fewer than hoped for.

Scenario 3: Corporate Takeover
The area gradually morphs into a version of the Square Mile, with large firms in finance and more non-digital business services dominating. The digital cluster gradually disperses.

Scenario 4: Decline
The area's firms fail to develop successful products and services: no global players emerge, and the cluster's star wanes, outshone by other areas and cities.

Clearly, the eastward growth of the cluster, as envisioned in scenario 1, is an attractive one, so it is not surprising that government strategy is aimed at trying to realise it. Our view, however, is that the odds are against it.

By contrast, we think scenario two, which is also a highly attractive scenario, could plausibly come about – indeed, we think that the cluster is already moving in that direction – and that Tech City strategy should focus on helping to realise this scenario. What does this mean in practice? We offer these detailed recommendations.

Building on current Tech City strategy, we recommend:

Recommendations: Strategy
1—Government and the GLA should review and clarify the objectives of Tech City strategy. The main aim of Tech City strategy should be to support the growth of digital economy SMEs and nurture new entrepreneurs in the existing cluster;

2—The Tech City Investment Organisation's inward investment activities should be focused on attracting complementary investments and the agency should boost its export promotion activities for London firms.

3—Government, the GLA, London & Partners and TCIO should temper their efforts to attract digital

employers and workers to the Olympic Park and its surrounding areas, *where it distracts from the primary aim of helping SMEs and nurturing entrepreneurs.*

Recommendations: Recruitment
4—Government speeds up Tier 2 processing – raising the target time from the current 75% in four weeks or less, to 100%;

5—TCIO develops a role as 'immigration intermediary' for London SMEs – helping them understand and move through the system – building on existing activity;

6—Government re-instates two-year post-study work visas for post-graduate in STEM subjects;

7—TCIO helps expand Silicon Milk Roundabout, the Skills Showcase and other digital economy recruitment fairs, working closely with universities and local businesses;

8—Local training providers should pilot and evaluate Tech City Apprenticeships and similar intermediary projects.

Recommendations: Entrepreneurship
9—TCIO should expand the annual Entrepreneurs' Festival – from the current number of 200 participants to at least 500 participants; and support business development competitions with London universities, drawing on MIT's MassChallenge and similar ventures;

10—TCIO should monitor and publish take-up of the Entrepreneur Visa in London; and TCIO and Government should monitor the performance of the Start Up Chile programme, and consider developing a UK version.

Recommendations: Access to finance

11—Physical relocation of angels and venture capital firms into Inner East London – for example, by introducing 'finance desks' in shared workspaces;

12—Banks should develop specialist digital economy offerings, covering both day to day banking and debt finance, as well as links to legal and accounting services;

13—Expanding existing online/physical networks for digital firms and finance providers – for instance, starting up a dedicated UK AngelList;

14—Government should develop a second digital-focused Enterprise Capital Fund, and increasing public investment into both funds to take the pot to £150m each;

15—Government should develop a clear legal framework for equity crowd-funding, drawing on US legislation and experience.

Recommendations: Connectivity

16—ISPs should try to guarantee a two-week connection time, where cabling and landlord permissions allow;

17—Workspace providers should consider integrating broadband into their basic rental packages, or include permission for connection within lease agreements;

18—GLA monitors connectivity in Inner East London and other digital hotspots in the city and seeks to ensure (possibly using the Urban Broadband Fund) that they have a rich network of wifi and 4G transmitters.

Recommendations: Workspace

19—Local authorities ensure Local Plans explicitly encourage the provision of affordable and shared workspace, supplementing National Planning Policy Framework clauses on change of use;

20—Local and central government explore the potential for converting empty buildings that they own in East London into workspaces, tendering management to professional shared space providers;

21—Government should encourage the provision of affordable workspace. This could involve modifying the existing Business Increase Bonus scheme – giving an additional subsidy when planning permissions for affordable space are granted.

Recommendations: Mentoring and management advice

22—Inner East London's existing professional networks should actively develop mentoring activities and meetups for younger firms;

23—The Tech City Investment Organisation should provide financial/in-kind support building on its existing Mentorship Programme.

Recommendations: Governance

24—TCIO becomes a quasi-independent agency with its own budget, with its main goal being to help start-ups and SMEs in the area. TCIO should report jointly to Number 10 and the GLA;

25—TCIO should expand its efforts to help SMEs with key issues including mentoring, immigration/recruitment support, access to finance, connectivity and export promotion;

26—Number 10 and the GLA should assess the effectiveness of Tech City policies – for example, the effect of winning the LaunchPad competition

on company performance, takeup of the Enterprise Investment Scheme and the Seed Enterprise Investment Scheme, and the role of shared workspace on start-ups' growth;

27—TCIO should closely monitor developments in New York and develop links with policymakers there.

1 INTRODUCTION

Since the late 1990s, a vibrant high-tech cluster has been growing in Inner East London. The Government's 'Tech City' strategy is a high-profile drive to grow the cluster. This report explores the development of Inner East London's high tech firms, sets out what we suggest is the best achievable future for the cluster, and makes a series of detailed policy recommendations.

1.1: **What is 'Tech City'?**
The story begins in November 2010, with David Cameron's speech to East London technology firms (Cameron, 2010). Hailing the buzz of the Shoreditch area, in Inner East London, and drawing heavily on the imagery of Silicon Valley, the Prime Minister set out an ambitious agenda to develop Inner East London into 'one of the world's great technology centres'.

The Tech City strategy is about:

• Supporting the cluster of start-ups and small and medium-sized businesses (SMEs) clustered around the Old Street roundabout;
• Attracting large international investors; and
• Using this momentum to steer high-tech activity further east, including into a post-Games Olympic Park.

Underneath this strategy is an increasingly long list of policies that affect digital entrepreneurs, including an Entrepreneur Visa, cheaper finance for SMEs, tax breaks for seed funding, venture capital and video games, a fast broadband fund, and the LaunchPad competition for digital firms (Department for Business Innovation and Skills, 2010; HM Treasury, 2012; Technology Strategy Board, 2011).

Key national policies relevant to Tech City include:

Mentoring and advice—the BIS national business mentoring scheme, and the new

"OUR AMBITION IS TO BRING TOGETHER THE CREATIVITY AND ENERGY OF SHOREDITCH AND THE INCREDIBLE POSSIBILITIES OF THE OLYMPIC PARK TO HELP MAKE EAST LONDON ONE OF THE WORLD'S GREAT TECHNOLOGY CENTRES."
David Cameron, November 2010

£200m Growth Challenge business advice scheme;

Skills—the Entrepreneur Visa, for individuals outside the EEA with a business idea and at least £50K committed funding;

CASE STUDY 1: **Silicon Valley, Bay Area**
Silicon Valley is the world's leading, and best-known high-tech region. It is a city-region running the length of the Santa Clara Valley in the Southern San Francisco Bay Area, from San Jose in the South to parts of San Francisco in the North (Joint Venture Silicon Valley, 2012). The Valley needs to be seen as part of the large Bay Area system: it draws large commuter flows from San Francisco and the East Bay, and its high-tech firms have links to key players in the 'City', such as Adobe, as well as to UC Berkeley across the San Francisco Bay.

Geographically and historically, the Valley is very different from London: an agricultural area until the 1940s, it remains a low-density zone, with a number of small cities and towns peppered with industrial estates, and linked by freeways and the Caltrain commuter line.

Silicon Valley's history is well-known: from post-WWII roots in military technology, through the emergence of the semi-conductor industry in the 1960s and 1970s, software in the 1980s, and the internet in the 1990s and 2000s (Block & Keller, 2011; Markoff, 2005). Large military contracts and entrepreneurial academics, particularly in Stanford, have helped support the growth of high-tech firms: the Stanford Industrial Park was the world's first. However, the Valley's industrial system and culture has largely evolved organically, with little deliberate public sector involvement (Saxenian, 1994). Dense social networks, open labour markets, large immigrant communities, especially from South and East Asia, have helped the Valley's firms globalise production and access new markets and ideas (Kerr, 2009; Saxenian, 2006). The Valley's growth has fed on itself, helping create a vast agglomeration of firms, talent and finance in the region. The industrial mix is diverse: always strong on hardware, a new generation of digital content firms have now also emerged.

With over 22 local administrations in the Valley, the South Bay system is 'under-governed', with private sector-led groups like Joint Venture: Silicon Valley taking on public leadership and advocacy roles (Nathan, Rode, & von Streit, 2011). With the squeeze on California's public finances, and the rise of other tech clusters in the US and internationally, there are now some worries that the Valley might lose some of its international lead in the long term.

Finance—doubling Entrepreneurs' Relief to £10m; a number of early-stage finance initiatives, including doubling the limit for the Enterprise Investment Scheme to £1m, the Seed Enterprise Investment Scheme offering 50% tax relief on seed investments up to £100–150K, and the Angel CoFund, with £50m of Regional Growth Fund money for early-stage finance; a £100m fund to explore crowd-funding and mezzanine finance for SMEs; the Technology Strategy Board's LaunchPad competition, with £200m of matched funding for 20 winning companies, and additional 'public VC' for the digital economy and other sciences, including £200m for Enterprise Capital Funds and £150m for the UK Innovation Investment Fund;

Workspace—the Government will make empty public buildings available for entrepreneurs to use as start-up premises;

Connectivity—a £100m high-speed broadband fund for ten 'super-connected cities', including London;

Business development—the launch of the Government Digital Service, and the shift to 'digital by default' platforms for transactional services by 2015.

A number of developments have also been initiated at London level. These include:
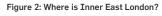
Mentoring and advice—the GLA has supported White Horse Capital's Accelerator Academy, as well as access to finance initiatives such as City Meets Tech;
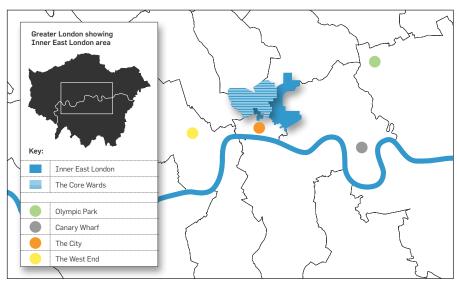
Skills—IT apprenticeships in London have doubled between 2009/10 and 2010/11;

Business development – the GLA's London Datastore has boosted Open Data in the city; London & Partners helped 130 digital companies to invest in 2011;

Olympic developments—such as the Intel Incubator, the Cisco-UCL-Imperial Future Cities Centre and the Olympic Media Centre competition.

Eighteen months later, the stakes for the Tech City initiative are even higher. In a speech to launch Google Campus – a new building south of Shoreditch, providing shared workspace and services to tech start-ups – the Chancellor of the Exchequer, George Osborne, heralded the Government's Tech City initiative as integral to the Coalition's entire growth strategy:

Figure 2: Where is Inner East London?

When people ask: give me an example of the Government's industrial strategy I say this: we want nothing less than to make the UK the technology centre of Europe … Tech City [is] at the heart of this ambition. George Osborne, March 2012

In fact, the Inner East London digital cluster has been around for many years, with roots extending back past the first dot-com boom to the mid-1990s. The 'City Fringe', as it was then known, was already developing a reputation as a neighbourhood combining creative and business service activities with firms deploying nascent digital technologies (Cities Institute, 2011). Our research shows that the Inner East London hot zone centred on Clerkenwell and Hoxton is part of a corridor of high-tech activity across inner London – and the most distinctive of many tech hotspots in the capital. And as our analysis makes clear, the cluster grew substantially – but quietly – until the middle of the noughties. Then in summer 2008, the FT ran a diary piece on 'Silicon Roundabout', and the secret was out (Bradshaw, 2008).

1.2: **Why does Tech City matter?**
The Prime Minister and Chancellor are right to be excited. Our analysis confirms, for the first time, the real significance of the Inner East London cluster. Inner East London is an important hotspot, with a large and growing share of London's digital economy. The area has at least 3,200 tech firms, and over 1,500 in Clerkenwell, Hoxton and Haggerston alone – double the count in 1997. The business base now includes global players like MindCandy, Unruly Media, Songkick and Last.fm. The cluster also contains over 48,500 digital economy jobs, increasing its share of London's tech employment by a third since 1997 – and in 2010, continued to gain jobs while digital economy employment in the rest of London fell.

We argue that the Inner East London hotspot – and London's digital economy as a whole – is important for London's economic fortunes. The digital economy is

characterised by high-wage, high-skill, labour-intensive activity. High-value digital economy jobs have a multiplier effect, supporting employment elsewhere. Digital economy activity is also physically clustered, in large part because big, economically diverse cities like London help firms like these develop new ideas and new ways of doing things. In other words, London benefits from a bigger digital economy, and digital economy businesses need cities like London to grow.

The digital economy also matters for the UK as a whole. Britain's digital economy already takes the biggest share of national GDP in the G20, and is projected to increase that share by a third by 2016 (Dean et al., 2012). As the UK's digital economy 'leader', London's experiences today may, in turn, hold lessons for other cities in the future.

> *What we've got here is fine. Don't f**k it up.*
> Inner East London entrepreneur, February 2011 (s8)

The economic significance of East London's digital economy means it is critical to get public policy right. Understandably, some people worry that since the cluster has grown organically for many years, outside intervention now could damage or even kill it. Certainly, the history of traditional, area-based cluster policies – such as science parks and official innovation districts – is not encouraging (Duranton, 2011; Maeir & Trippl, 2012). In principle, policies that are tailored to the local context, work with firms and with the wider 'ecosystem', can help clusters to develop, and high-performing companies to grow (Bresnahan & Gambardella, 2004). But every high-tech cluster is different. The key is finding the right policy mix to suit local conditions – and to avoid messing things up.

1.3: **Why this report?**
Now is a good time to take stock of Inner East London's digital economy, and how the Tech City strategy is working in practice.[1] While the UK economy remains weak, London's economy is performing relatively well. As existing firms grow, and new businesses appear, this should trigger further waves of interest from investors and new entrepreneurs. In the property market, prices are already starting to rise, and this may displace some existing firms; but new sites will also become available, notably in Hackney Wick, Stratford, and the Broadcast and Media Centres in the Olympic Park.

Of course we're not the only people to look at Tech City. The Tech City Investment Organisation has recently released their own first-year impact assessment (Tech City Investment Organisation, 2012). And a number of others have put out early assessments of Tech City potential (BOP, Consulting InPlace, & FutureCity, 2011; Cities Institute, 2011; McKinsey, 2011), including two authors of this report (Nathan, 2011; Vandore, 2011). Our research builds on these contributions, and aims to address two key issues.

First, there's still a knowledge gap about Inner East London's digital economy. We need to know about the area's industrial mix, its ecosystem of firms and entrepreneurs, their reasons for being in the area, and the opportunities and constraints they face. These issues matter, because it is firms that are the building blocks of clusters – and there is still little evidence on how the Inner East London system works at street level. We also need to identify what's unusual and unique in London, and to distinguish it from other high-tech hotspots around the world. This report will present an unvarnished picture of the cluster, its successes and failures. To do this we draw on international comparative research, new quantitative analysis and in-depth interviews with East London firms.

Second, there is also a policy gap. There has been a great deal of Tech City policy activity since November 2010, and the initiative is welcomed by many firms on the ground. But our research shows that many of those involved in the cluster feel there is still a lack of clarity on the overall strategy, its priorities, and on ownership of that strategy. This report will present some new thinking

on how the approach should evolve. To do this we develop four scenarios, setting out possible futures for the cluster and its firms. By comparing the most likely outcomes with current objectives, we identify a number of areas where strategy, policy and delivery arrangements could productively change.

The report is structured as follows. Chapter 2 explains why developing the digital economy matters, for London and for the UK. It then reviews the evidence on how clusters form and grow, and explores the kind of policies most likely to support high-performing firms. Chapter 3 places London in international context, drawing on seven case studies. It then maps and traces East London's digital economy in detail, using rich microdata to explore physical geographies, firm and employment growth, and industrial mix. Building on this, Chapter 4 reports the key findings to emerge from our detailed conversations with Inner East London digital entrepreneurs, policymakers and other stakeholders. Chapter 5 combines our research findings to explore four possible futures for the area. We assess the most likely scenarios, and compare these to current policy objectives. Concluding, Chapter 6 makes recommendations for national and local policymakers, as well as for private sector stakeholders. We assess the current strategic approach, as well as the detailed policy mix. We suggest a reformed vision for 'Tech City', and suggest improvements to specific policies and delivery arrangements.

Appendices 1–3 cover the project methodology, digital economy definitions and codes, and give details on our main data sources. Appendix 4 provides a glossary of key terms.

2 CITIES AND THE DIGITAL ECONOMY

This section defines some key terms, and explains the growing importance of the digital economy to London and the UK. Cities like London are natural homes for digital economy activities; in turn, digital economy clusters have important economic benefits. Policymakers can act to help digital economy clusters grow – but need to work with both firms and the wider 'ecosystem'.

2.1: **Definitions**
'Technology', 'tech', 'ICT' and 'digital' are often used interchangeably. But they're not equivalents, and their differences need to be understood. Our working definition of the 'tech sector' is the 'digital economy', as set out by the UK Government (Department for Business Innovation and Skills, Department for Culture Media and Sport, & Intellectual Property Office, 2010). The digital economy has two components. The first of these is information and communications technology (ICT), which encompasses systems (like broadband networks), hardware (computers and servers), software, and services (like sales, installation and maintenance). The second component is 'digital content', encompassing activities like publishing, advertising, design, music and broadcast media. A full list of included activities is given in Appendix 2.

This is a broad definition of 'tech', but we argue that casting the digital net wide makes sense. Many digital content sectors have become increasingly digitised in recent years, as technology has improved, and media content has moved online. The result has been the emergence of 'creative digital' firms – which typically offer multiple, 'real' and digital platforms for creative and business service activities (Cities Institute, 2011). Many of the companies we talked to in East London fall into this category: much of what they do is digital, but they struggle to describe themselves as 'tech' firms in the traditional sense – see Chapter 4 for examples.

2.2: **Why is the digital economy important?**
The growing importance of the digital economy for

the UK – and for cities like London – is well explained by exploring the geographies of globalisation and new technology. International economic integration, better technology and cheaper transport costs have helped shift an increasing share of manufacturing activity into low-cost locations around the world. From a long-term perspective, the most valuable sectors are in what economist Enrico Moretti dubs 'the innovation economy', where high-skill activity and high-wage employment are concentrated (Moretti, 2012). This includes high-tech manufacturing, science and engineering, some financial services, parts of the creative economy – and the whole of the digital economy.

Overall, the growth of the 'innovation economy' (or knowledge economy, if you prefer) is good for the UK. Innovation is a critical factor shaping long-term national economic development (Schumpeter, 1962). New ideas, as embodied in human capital and research and development, are foundational conditions for growth (Lucas, 1988; Romer, 1990). As a force of creative destruction and wealth generation, the internet is an ever more powerful innovation – the latest evidence suggests it creates over twice as many jobs as it removes (Economist, 2012; Moretti, 2012). These forces are particularly critical for the UK. A recent study by Boston Consulting Group finds that Britain's digital economy already takes the biggest share of national GDP in the G20, and could increase that share by a third in years to come (Dean et al., 2012).

Most importantly, the 'innovation economy' has substantial multiplier effects. In the US, Moretti estimates that each innovation economy job supports up to five jobs elsewhere – in other professional sectors and in the service sector. These halo effects are large because sectors like the digital economy are labour-intensive, well-paid, and tend to cluster – amplifying the benefits for those cities with clusters of innovation jobs.

2.3: **Cities and the digital economy**
The emergence of the 'innovation economy' has profound implications for cities. In short, cities are the natural home for much of this activity – especially big cities like London.

Why is this? Cities offer 'agglomeration economies' that help firms become more productive. These advantages include a critical mass of workers and infrastructure, and rich networks of suppliers and collaborators – for tech firms these might include venture capital and angel finance, specialist law firms and accountants. Most importantly, cities help new ideas to form and flow, so that firms and workers can learn from each other.

These benefits are particularly important for digital economy firms, where sharing the same neighbourhood –

CASE STUDY 2: **Silicon Alley, NYC**
New York City's 'Silicon Alley' is the digital hub that looks and feels closest to Inner East London. Both are high-density inner urban neighbourhoods, so that tech firms are only a short walk, bike or subway ride away from each other. Silicon Alley was originally a well-defined corridor in lower Manhattan along Broadway, from the Flatiron District up to SoHo; as in London, the cluster is starting to spread south into the financial district. Like London, New York's digital firms often have close links to the media, fashion and design sectors – whose firms are often located nearby. Digital media has been the fastest-growing segment of the NYC scene, with at least 121 start-ups funded in the last five years (Bowles & Giles, 2012). As the scene has grown, money has followed: New York is the only US tech scene to see a rise in VC deals between 2007 and 2011, although the city's VC pot is still a lot smaller than Silicon Valley. Employment in 'high-tech sectors' has also risen by over 90,000 between 2005 and 2010 (Bowles & Giles, 2012).

Mayor Michael Bloomberg – himself an ex-technology entrepreneur – has made the development of 'New Tech City' a key legacy project. The NYC Entrepreneurial Fund matches $3m of public money with $19m from a local VC firm; the city also provides support for workspace, mentoring and networking services. Bloomberg has also donated a two million square foot site on Roosevelt Island for a new applied science and engineering campus, to be built by Cornell University and Technion-Israel Institute of Technology. Officials suggest this may deliver up to $7.5bn of value to the city in the next 30 years, including 600 new firms and 30,000 new jobs. A second campus, the Centre for Urban Science and Progress in downtown Brooklyn, was announced in April 2012.

or the same building – may generate a vital spark. Studies suggest spillovers are very localised, and innovative activity clustered in and within urban areas (Audretsch & Feldman, 1996; Bettencourt, Lobo, Helbing, Kühnert, & West, 2007; Jaffe, Trajtenberg, & Henderson, 1993). Economist Alfred Marshall famously explains how in cities, 'the mysteries of trade are … in the air' (Marshall, 1918).

The urbanist Jane Jacobs suggests knowledge spillovers work across industries, as well as within them (Jacobs, 1969). Big, economically diverse cities like London actively help one part of the economy to cross-pollinate others. Such cities are thus 'nurseries' for start-ups and SMES, as new firms can draw on a range of technologies and perspectives (Duranton & Puga, 2001). US and UK evidence suggests that Jacobs was right: while localisation matters, knowledge spillovers are mainly about the mix (Glaeser, 2011; Glaeser, Kallal, Scheinkmann, & Shleifer, 1992; Overman, Gibbons, & Tucci, 2009).

Recent work also suggests that knowledge spillovers aren't just about geographical proximity – rather, local networks play critical roles in influencing the local flow

CASE STUDY 3: **Berlin**
Berlin 'feels like Old Street did in 2006', according to one of our interviewees. Since re-unification, the city's low wages, cheap rents, large flats and vibrant cultural scene have proved a powerful draw for artists and creative industries startups. The German capital is now starting to make a name for itself as a technology centre with high-profile firms as SoundCloud, Wooga, 9flats and Phonedeck (Palmer, 2011). Berlin has particular strengths in digital content, especially in linking digital platforms to art, music and games. Between 2000 and 2006, the software, games and telecoms sector saw a 113% rise in companies, to 2900 firms (Berlin Project Future, 2008). Since 2008, 1300 internet startups were founded, up from 500 in 2011 (Winter, 2012). However, the scene is still nascent: SoundCloud and Phonedeck were both founded by the same entrepreneur, Christophe Maier (Wiesmann, 2012). Berlin is on the other side of the country from Germany's financial centres, meaning sources of finance are still poor, and Germany's VC community tends to be risk-averse.

of ideas (Breschi & Lissoni, 2009; Singh, 2005). These factors are particularly important in industries – like the digital economy – with a lot of small firms and compete-collaborate relationships (Currid, 2007). The history of Silicon Valley demonstrates the critical importance of these networks, and the role of large urban actors – such as universities and professional organisations – in forging links (Bresnitz & Taylor, 2011; Markoff, 2005; Saxenian, 1994). Universities are one of the city's most valuable public assets, and can potentially play a number of roles in helping London's digital economy – in providing skilled graduates and encouraging spin-out firms (Swinney, 2011). Research suggests that the physical proximity of universities to firms is an important enabling factor (Abramovsky & Simpson, 2011; D'Este & Iammarino, 2010).

Most importantly, agglomeration economies are self-reinforcing (Glaeser, 2011). These dynamic effects operate through a number of channels. For example, the agglomeration effects in large, diverse cities – particularly the presence of skilled workers – help firms generate and adopt new technologies. And large, diverse cities are well placed to resist external 'shocks' that might knock out part of the urban economy.

2.4 **Can policy help?**
Doesn't all of this suggest that there's no need for Tech City-type interventions? In economists' models, urban systems automatically adjust towards 'spatial equilibrium', where all actors are indifferent between locations in urban space (Glaeser, 2008). Of course, it is true that in reality we know that firms and workers may make bad choices, face information or financial constraints on moving, or have to handle other co-ordination problems. Given the productivity payoffs from agglomeration, there is then a welfare case for policies that try to foster clustering (Helmers, 2010). Digital economy businesses need cities like London to grow – and London should benefit from a bigger digital economy.

At this point many policymakers reach for the traditional cluster playbook, and deploy conventional area-level interventions. These are typically physical or planning programmes – building a new science park, or zoning a neighbourhood as an 'innovation district'. But this kind of approach rarely works – a recent review by Van Der Linde (2003) found only one successful example out of several hundred. As Duranton (2011) explains, a physical cluster is the outcome of what entrepreneurs, firms and workers do. Because the cluster is an emergent property of all these interactions, it is very difficult to make policy at cluster level: a better approach is to focus on the firms and people within it (Feldman, 2012; Wadhwa, 2010).

This firm-level approach has two crucial differences to traditional strategies. It is based on understanding the firms inside a cluster and their needs. This information is then used to develop a suite of policies, which may include encouraging entrepreneurship, building workforce skills and management capacity, and helping firms forge international links – as well as a workspace component (Bresnahan & Gambardella, 2004).

In turn, this suggests two main points of focus for policymakers. The first is encouraging entrepreneurship. Entrepreneurs promote economic channels in several ways. Start-ups and young firms are innovation agents, bringing new and often disruptive ideas to the marketplace, even as many of them fail (Schumpeter, 1962, Ericson & Pakes, 1992). Start-ups and young firms also play important roles in job creation. Evidence suggests it is not small firms *per se* who are the key job creators, but young firms who enter periods of rapid growth (Haltiwanger, Jarmin, & Miranda, 2010). In the UK, for example, around six per cent of firms – predominantly young, high performers – are responsible for the vast bulk of recent employment growth (NESTA, 2010). Lee (2012) identifies a number of barriers holding back high-growth firms in the UK: in particular, obtaining finance, recruiting suitable staff, managerial capacity and availability/cost of workspace. Our interviews highlight all of these issues (see Chapter 4) and it is clear that

policymakers need to do everything to remove or reduce these barriers.

The second area for intervention is the wider 'innovation ecosystem' that companies operate in – the key institutions and the key social, legal and local conditions that influence, help or hold back ideas and firms (Asheim & Gertler, 2005; Cooke, Urange, & Extebarria, 1997; Freeman, 1987; Storper, 1997). Acs et al (2004) urge policymakers to identify 'knowledge filters' – blockages in the innovation system, such as unhelpful intellectual property frameworks or an undersupply of early-stage finance. It's hard to promote innovation directly – but policymakers can influence the wider conditions (Ennis & Kozdras, 2011; Mazzucato, 2011).

Promoting foreign direct investment (FDI) is potentially a third point of intervention. In theory, FDI might act as a complement to policies aimed at developing domestic firms. For instance, knowledge might spill over from entrants to local firms, or local firms might benefit from supply chain relationships with entrants. Conversely, FDI might lead to greater competition, and lead to some domestic firms going out of business (Markusen & Venables, 1999). If the aim of policy is to grow a domestic industry, as Ministers have set out, such an outcome is not optimal.

In practice, it is not easy to work out which of these effects is strongest. A number of studies looking at countries and industries suggest positive spillovers from FDI, but few of these can identify causal effects (Javorcik, 2004). Many studies are also from developing countries, where local conditions are very different from the UK. The most robust evidence uses 'microdata' for panels of individual firms (Aitken, Harrison, & Lipsey, 1996; Aitken & Harrison, 1999). A recent review of twelve such studies in developed countries found mixed evidence, with less than half showing positive spillover effects from FDI (Görg & Greenaway, 2004). A key study suggests spillovers operate mainly through supply chain relationships (Javorcik, 2004).

There seem to be a number of critical mediating factors. First, ownership structure matters. Javorcik (2004) finds good evidence of spillovers for jointly owned domestic and foreign firms, but not from wholly foreign-owned investments. Second, the type of FDI matters – investments which are complementary are more likely to have spillover effects. In this case, that means technology-intensive activities (such as R&D labs) or support services (such as finance). Third, there are sectoral differences – the biggest spillover effects come from manufacturing, and we have fairly little evidence for sectors like digital content. Fourth, critically, local firms' 'absorptive capacity' matters – that is, whether they have the human capital and managerial skills to benefit from new ideas, and to compete effectively (Meyer & Sinani, 2009).

All of this suggests there are potentially important roles for FDI in a Tech City type strategy. But it needs to be carefully calibrated, based on detailed knowledge of firms in the cluster, and what is most complementary to their long-term development.

3 UNDER-STANDING THE CLUSTER

This chapter brings the Inner East London cluster into focus. First, we look at the comparative context, drawing on seven international case studies. Next, we analyse the cluster in detail, using rich microdata to explore physical geographies, firm and employment growth, and industrial mix.

3.1: **International context**

The UK's digital economy is clustered in London. The city has nearly 24% of British jobs in computer and related activities, and 22% of telecommunications jobs; for digital content, the figures are even higher (Theseira, 2012). As our primary research shows, Inner East London's digital firms are closely related to both financial and business services, and to London's creative industries. Inner East London and other digital hotspots have also emerged organically within London's neighbourhood fabric, rather than being planned 'innovation zones'.

CASE STUDY 4: **Cap Digital, Paris**

Paris is home to the Cap Digital 'Pôle de Compétitivité', one of France's 71 official 'competitiveness clusters'. The Poles are designed to encourage sectors considered to be a source of future growth and jobs. Cap Digital includes 20 large firms, 620 SMEs, 50 research centres and 10 capital investors; the companies cover a range of digital content sectors, as well as robotics and digital design.

Run as a non-profit association, Cap Digital approves new member firms according to strict quality and expertise criteria. The management encourage collaboration, both within the cluster and with other clusters across the country and beyond. Compared with London and our US case studies, public support is generous: in the past four years 350 projects have been awarded €650m, of which €300m is public money.
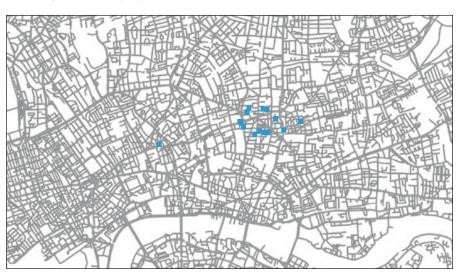
The success of this top-down approach is not easy to judge. An official study by Boston Consulting Group and CM International of the national Poles policy suggested over half the Poles had 'achieved their objectives', although these were not specified (Boston Consulting Group & CM International, 2008). Cap Digital itself is clearly large, and active. Cap Digital's own data suggest that across the Ile de France city region, 423,000 people are employed in the ICT sector. This includes a number of other hotspots outside the official cluster, including 'Silicon Sentier' in the Sentier district of Paris, a former textiles neighbourhood (Halbert, 2011).

London is also distinctive internationally: it is a global city, and its digital economy needs to be understood in that context. To help do this, we conducted a number of case studies. These are set out in boxes throughout the report. We categorise our case studies in three groups, according to the role government has played:

Hands-on – Cap Digital in Paris, Santiago in Chile, and the Malaysian Multimedia Super Corridor (MSC), are Government-generated clusters created through a 'hands-on' policy approach. Cap Digital and the MSC are run on traditional cluster policy lines, with demarcated physical zones and strict membership criteria. The Chilean model is bottom-up, where the main aim is to attract a critical mass of human capital.

Hidden hand – Both Silicon Valley and Israel's 'Silicon Wadi' represent a 'hidden hand' approach, where private sector entrepreneurship and a start-
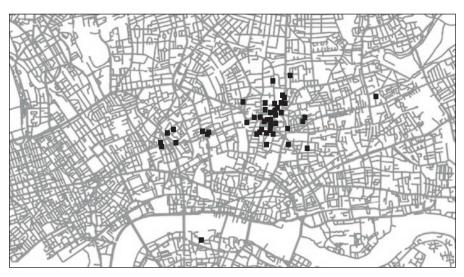
up culture have been accelerated by (sometimes unintended) non-market actions – in these cases, defence research, military spending and activist universities.

Hands-off – New York City and Berlin have both emerged very much organically, with little active government involvement. In New York this picture is now changing rapidly, with the city government developing a number of physical tech mega-projects, and leveraging large amounts of private venture capital. New York's tech scene, then, is shifting from hands-off towards hands-on.

Our survey holds a number of lessons for UK and London policymakers. First, London's digital economy is unusual in international terms – and importantly, very different from Silicon Valley. But it is not unique – Silicon Alley, New York's digital cluster, shares Inner East London's inner urban location, digital content focus, links into

Figure 3: Original Silicon Roundabout
Source: Biddulph, in Cities Institute (2011)

Figure 4: Wired re-edit
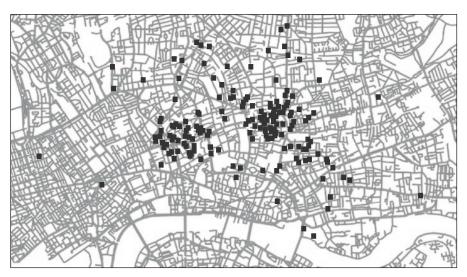Source: Wired UK, in Cities Institute (2011)

the wider city's knowledge economy, and place in policy masterplans. It is New York, not the Bay Area, that London's leaders should be watching most closely. Second, international experience confirms that there is no single recipe for helping a successful high-tech cluster develop. Although some of the projects we study are in the early stages, the analysis suggests that in the right local context, both hands-off and hands-on approaches could work. Third, clusters are hard to magic into being. Even with very generous public support, these complex ecosystems take many years to evolve and grow.

3.2: **Foundations**

For most people, the Inner East London digital cluster is centred on Old Street roundabout. From here it runs North into Hoxton and Haggerston, south to the City, west into Farringdon and City Road, and east towards Bethnal Green. A few 'foundational geographies' have shaped this (Cities Institute, 2011). The first is Matt Biddulph's original, speculative 'Silicon Roundabout',

Figure 5: Still from Tech City Map
Source: Tech City Map and PlayGen

covering 15 firms around the Old St hub (Bradshaw, 2008). The second is Wired's re-edit, which counted 42 firms (Wired UK, 2010). More recently, Tech City Map and PlayGen have developed a 'live' mapping of over 1100 digital economy firms, tracing tweets and other relational activity.[2] We can also add the map of 'real tech startups' developed by DueDil and TechHub, which locates 107 ICT firms under 10 years old in EC1 and surrounds (DueDil & TechHub, 2011).

Together, these maps suggest exponential business growth, an increasingly dense set of companies, and ever-richer interconnections between them. But this is not the whole picture. First, if we're interested in the resilience of the area, other metrics matter – notably employment, turnover and profits. Second, the Inner East London hotspot is not static, and has no fixed borders – focusing on the Old St core may miss change around the margins.

Third, few of these surveys are designed to be comprehensive.[3] Many of the firms captured in later surveys may have been around at earlier dates. It's therefore very misleading to extrapolate ever-accelerating cluster growth from comparing surveys from 2008 and 2012. This becomes very clear when we line up the different estimates published so far, which are not only wildly different from each other, but show no continuity over time (Figure 6).

Figure 6: How many tech firms in Silicon Roundabout?
Sources: Bradshaw (2008), Wired UK (2010), McKinsey and Co (2010), DueDil/TechHub (2011), Chris Orange, Tech City Map (2012), Osborne and Schmidt (2012).

SOURCE/FOCUS	YEAR	COUNT
Matt Biddulph	2008	15
Wired	2009	42
McKinsey/'technology-orientated companies'	2010	'Over 170'
DueDil & TechHub/'tech startups'	2011	107
Digital Shoreditch/digital economy firms	2011	774
Gateway to London/tech startups	2012	410
Tech City Map	2012	1153
George Osborne and Eric Schmidt/'digital companies'	2012	'Over 700'

3.3: **Re-mapping the cluster**
Our analysis re-maps the cluster using the Business Structure Database (BSD) and the Business Register of Employment Survey (BRES). (See Appendix 3 for details of both datasets.) With Duncan Smith from UCL, we used BRES to generate exploratory maps of digital economy job density across Greater London. We then identified nine Inner East London wards as a 'rough cluster', spanning the boroughs of Islington, Hackney, the City of London and Tower Hamlets.[4] We also identified three 'core wards' – Clerkenwell, Hoxton and Haggerston.

We used the BSD to explore digital economy firm counts, employment growth and cluster composition. The BSD's great advantage is that it includes nearly all UK firms. The disadvantage is that it misses firms below the VAT threshold, which will include many tech start-ups or firms in the pre-revenue phase. This will barely affect employment data (as the firms excluded tend to be very small), but it does mean that the BSD data will underestimate the number of firms.

CASE STUDY 5: **Santiago**
Santiago is Chile's largest city, with over 35% of the population. In recent years the Providencia district has become a hotbed of tech firms, thanks to government policies to import human capital. In 2000, the national economic development agency CORFO rolled out a successful FDI programme, using upfront subsidies to attract firms across ICT, digital content, biotech and pharmaceuticals (Agosin, 2010). In 2010, CORFO launched the Start Up Chile programme in a bid to 'convert Chile into the definitive innovation and entrepreneurial hub of Latin America'.[6] The programme offers $40,000 of equity free seed capital, 1-year visa and free co-working space in Providencia. The first year saw 33 startups from 14 countries selected by an expert board; in 2012, over 650 firms are competing for 100 places. Participants are expected to network, attend local events, hold knowledge-sharing workshops and expand their businesses from a Chile base.

It is too early to determine the success of the programme, but Chile has some other factors in its favour: its internet penetration rate is 37%, one of the highest in Latin America, and it has also scored highest in the Continent on the Economist Intelligence Unit's 'e-ready economies' Index, 26 places higher than China and 28 places higher than India (Economist Intelligence Unit, 2010).
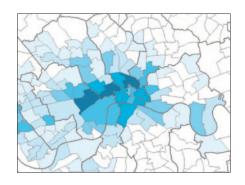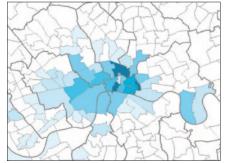
Employment locations
First, we explore the location of digital economy employment, using job density maps. Digital work is heavily clustered within Greater London: there are several hotspots, running roughly in a corridor from the West End through to Inner East London, with adjoining zones in SE1 and Docklands (see Figure 7).
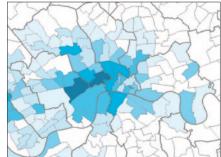
While Inner East London is the one of the densest parts of London's digital economy, it needs to be seen as part of the bigger ecosystem. This echoes earlier analysis done by the Cities Institute (2011).
Within the digital economy, we also find good evidence of 'micro-clustering', with the ICT and digital content sectors sorting into different neighbourhoods (Figures 8

Figure 7 (top): London's digital economy corridor. Job density 2008–10. / Figure 8 (bottom left): ICT content job densities, 2008–10 / Figure 9 (bottom right): Digital content job densities 2008–10
Source: BRES/NOMIS. Map by Duncan Smith, CASA/UCL

and 9). Our interviews confirm these micro-geographies, with different types of companies carefully locating themselves within the cluster (see Chapter 4).

Counting firms

Next, we look at how the business base has developed. Figure 10 shows growth over time, for both the area as a whole (Bishopsgate, Bunhill, Clerkenwell, Cripplegate, Haggerston, Hoxton, Portsoken, Spitalfields, St Peter's and Whitechapel) and for the three 'core wards' (Clerkenwell, Haggerston and Hoxton). We can see rapid growth in the late 1990s and mid-2000s: but the last few years have seen a flattening-off as the wider economy turned down.

Figure 11 gives some more detail. Numbers of digital economy firms have essentially doubled since 1997 to 2010: from 1,591 to 3,289 in Inner East London, and from 826 to 1,599 in the core zone. Within this, growth is driven by digital content firms. Strikingly, these firm counts are all substantially larger than any previous estimates. The data structure and the year measured

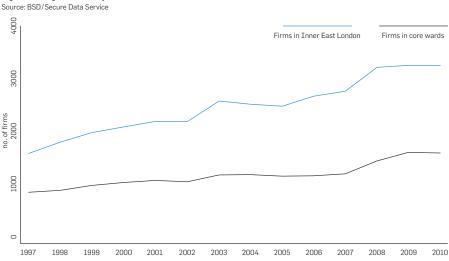**Figure 10: Digital economy firms IEL and 'core' wards 1997–2010**
Source: BSD/Secure Data Service

Figure 11: Inner East London's digital economy: firm counts, 1997–2010
Source: BSD/Secure Data Service. Notes: 'Inner East London' is defined as Bishopsgate, Bunhill, Clerkenwell, Cripplegate, Haggerston, Hoxton, Portsoken, Spitalfields, St Peter's and Whitechapel wards. 'Core wards' are Clerkenwell, Haggerston and Hoxton.

YEAR	Inner East London			Core Wards		
	Digital economy	ICT	Digital content	Digital economy	ICT	Digital content
1997	1591	348	1243	826	126	700
1998	1802	508	1294	885	184	701
1999	1980	674	1306	960	220	740
2000	2096	731	1365	1024	255	769
2001	2203	790	1413	1067	275	792
2002	2207	758	1449	1045	262	783
2003	2600	698	1902	1164	262	902
2004	2539	658	1881	1176	245	931
2005	2499	597	1902	1148	230	918
2006	2680	597	2083	1159	228	931
2007	2786	572	2214	1196	223	973
2008	3246	812	2434	1440	269	1171
2009	3288	688	2600	1611	291	1320
2010	3289	668	2621	1599	267	1332

Figure 12: Employment growth in the digital economy, 1997–2010
Source: BSD/Secure Data Service

YEAR	Digital economy		ICT		Digital content	
	IEL	London	IEL	London	IEL	London
1997	12,931	271,062	9,253	91,223	12,678	179,839
1998	23,488	286,027	8,725	96,224	14,763	189,803
1999	25,068	297,402	9,348	105,601	15,720	191,801
2000	20,728	265,751	5,153	77,742	15,575	188,009
2001	27,013	306,545	11,943	100,076	15,070	206,469
2002	27,183	322,108	11,278	112,456	15,905	209,652
2003	36,172	384,713	13,628	125,174	22,544	259,539
2004	43,867	406,271	19,450	128,033	24,417	278,238
2005	43,461	381,549	19,270	110,938	24,191	270,611
2006	44,110	381,662	20,245	113,642	23,865	268,020
2007	43,940	371,928	19,968	102,146	23,972	269,782
2008	47,583	385,554	22,035	107,511	25,548	278,043
2009	48,577	408,448	21,034	110,241	27,543	298,207
2010	48,586	392,334	20,379	102,625	28,207	289,709

both suggest that the true current figures will be higher still. For example, analysis by DueDil/TechHub (2011) finds a very large rise in new company registrations in EC1 from 2008 to 2011.
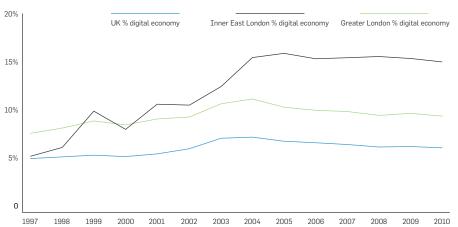
Employment counts, density and growth
What about jobs? Looking at the counts, we can see that digital economy employment rose a lot faster in Inner East London than it did for the city as a whole, more than doubling between 1997 and 2010 (Figure 12). As with firm counts, digital content jobs have outnumbered ICT.

The area has increased its share of London's digital economy jobs from about 8 per cent to over 12 per cent, a rise of a third since 1997. Notably, while digital economy employment in Greater London fell by 16,000 during 2009 to 2010, it rose inside the cluster. However, the numbers also show slowing jobs growth inside Inner East London since 2008, with falling employment in ICT and steady growth in digital content. On both firm numbers and employment trends, then, the cluster is consolidating its digital content character.

Job counts don't show the concentration of employment. Looking at this, we can see three distinct phases of development in Inner East London (Figures 13–15). Over time, digital economy employment has taken an increasing share of local jobs. However, growth has been quite uneven: we can see sporadic growth between roughly 1997 and 2001; substantial growth between 2002 and 2005/6, followed by a plateau and slight decline in density from 2006–2010 (Figure 11).
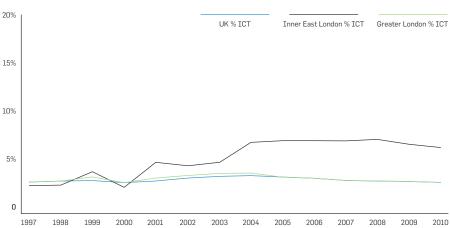
For ICT, since 2001 Inner East London has outstripped both Greater London and the UK, where employment shares have both stayed roughly flat. However, as with job counts, local employment shares have started to fall away since 2008 (Figure 12).

For digital content, the story is different again. Greater London has taken a progressively higher-than-UK-average share of digital content jobs since 1997. Within the city, IEL has only recently outstripped the London average (2003). By 2005 the area had consolidated a lead in employment shares, which it has held onto since (Figure 15).

Figure 13: Digital economy employment shares 1997–2010
Source: BSD/Secure Data Service

Figure 14: ICT employment shares 1997–2010
Source: BSD/Secure Data Service

Cluster composition

Finally, we take a more detailed look at the cluster's industrial composition. Figures 16 and 17 provide a detailed cross-section for 2010. The ICT subsector is dominated by telecoms, office repair/other office, and computer hardware consultancy (Figure 16). Of these, the telecoms sector alone accounts for 75% of all ICT jobs. Manufacturing and wholesale of ICT equipment form a pretty small slice.

The digital content sector is more diverse, covering printing, publishing, music, photography and TV as well as software (Figure 17). The largest categories are software consultancy and supply, advertising, radio and TV/news and publishing.

These 'official' industrial categories now feel slightly worn, and are notably weak on unpicking different types of digital content firms. However, our analysis lines up well with other survey data. For instance, a recent analysis of 774 firms from the Tech City Map found that nearly 16% work in digital marketing, and more than half (59%) are 'creative tech' companies, like 3D and animation designers, 'sitting at

Figure 16: Breakdown of IEL ICT sector 2010
Source: BSD/Secure Data Service

- wholesale computer hardware
- wholesale electronic parts and equipment
- other office related activities
- wholesale electrical goods
- wholesale other office machinery
- telecoms
- computer hardware consultancy

Figure 15: Digital content employment shares 1997–2010
Source: BSD/Secure Data Service

UK % digital content — Inner East London % digital content — Greater London % digital content

Figure 17: Breakdown of IEL digital content sector 2010
Source: BSD/Secure Data Service

- other printing
- ancillary printing
- software publishing
- data processing
- advertising
- news agency activities
- pre-press activities
- other software consultancy and supply
- database activities
- photographic activities
- radio and tv

the intersection of the technology and creative sectors' (Star, 2011).

3.4: **Summary: placing Inner East London**
From an international perspective, Inner East London is an inner-urban hotspot in a global city. From a local perspective, it is one of several digital economy zones in the capital, and the eastern end of a high-tech corridor running through the centre. Its combination of history (City Fringe etc.), location (next to Central London and the City) and industry mix is unusual.

Silicon Roundabout is genuinely a cluster, and it is bigger than we thought. Since the late 1990s, the area has seen a growing number of digital firms, especially in digital content: firm counts are much higher than previous estimates have suggested. Employment has also risen over the long term. However, it is not immune from wider economic trends. Since the late 2000s, though, the business base and overall job growth has flattened; only digital content activity has continued to grow.

CASE STUDY 6: **Multi-media Super Corridor, Malaysia**
The Multi-media Super Corridor (MSC) is a government-designated high-tech zone, designed both to attract foreign investment and grow a domestic technology sector. Initially the corridor covered a 15-by-50km stretch from the Petronas Twin Towers to Kuala Lumpur International Airport; it has since been expanded to cover the entire Kland Valley.

The Corridor's genesis apparently lies in work by McKinsey to implement Government structural reform pledges in the early 1990s (Vicziany & Puteh, 2004). The Corridor was planned out in 1995, with administration handed to a new agency, the Multimedia Development Corporation, with an annual budget of £6m. As with Cap Digital, the MDC awards MSC status to selected domestic and international companies: this brings with it a number of benefits, including 100 per cent tax exemption for up to 10 years, zero import duties on capital equipment, grants – and zero internet censorship.
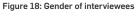
4
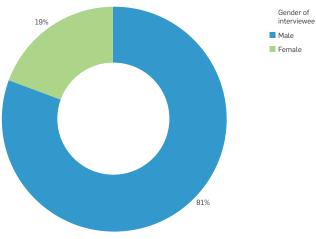# VIEWS FROM INNER EAST LONDON FIRMS

This chapter provides an overview of the interviews we conducted with founders or senior staff, from 34 randomly sampled Inner East London firms, and combines these with further insights from a number of other public and private sector stakeholders. Interviews are anonymised, and quotes are source-coded. More details of our sampling methodology are given in Appendix 1.

4.1: **Firms and founders: some basics**
The popular image of a digital start-up is a group of scrappy 20-something geeky guys hunched over laptops. One characteristic certainly holds true for our sample: the vast majority are male (see Figure 18). Just under half of interviewees are in their 30s, many of them late-30s. Of the rest, around a third are in their 20s and seven are in their 40s (Figure 19). Almost three-quarters are British-born (Figure 20).

Our sample is a lot less gender and culturally-diverse than other London SMES: the 2010 Small Business Survey suggests that 37 percent of London SMES have a migrant partner or director, and 15.3 percent are female-led.

Figure 18: Gender of interviewees

19%

81%

Gender of interviewee
■ Male
■ Female

However, the age profile is close to analyses of Silicon Valley entrepreneurs: a recent study by Wadhwa et al (2008) found the average age was 40 for men, and 41 for women. Some of the older people we spoke to are dot. com 1.0 or Bay Area veterans: they are on their second, third or fourth company, having picked up lessons on how to develop products and services, find customers and investors, and manage the firm.
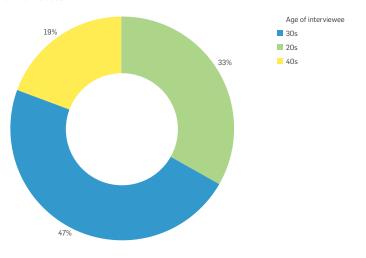
Our sample is also very highly educated: almost everyone has a degree, and about a third have a postgraduate qualification (some but by no means all in computer science). A third went to Oxbridge; 11/36 attended Greater London universities. Also, co-founder teams often had connections stretching back to university days:

We've known each other for a long time, which is really important, for the trust. You need a lot of trust when you're setting up a business together. (E28, C26)

The profile of firms[7] shows most are very young: 21 out of 34 sites we visited were five years old or less (Figure

21). This is lower than DueDil, who found nearly three quarters of 'tech start-ups' were five or under (DueDil & TechHub, 2011); both results suggest Inner East London firms are a lot younger than the Greater London SME average and the UK digital economy average (7.9 and 7.6 years respectively).

Of the youngest firms, 17 are start-ups – companies less than three years old, including spin-outs from larger firms (following Blank, 2011). This is slightly less than Vandore's survey, where 60% of respondents were in the start-up phase (Vandore, 2011).

All of the firms are SMEs or units of SMEs. Over half are micro-businesses (with 10 employees or less). Small firms (11–50 employees) make up just under a third, and there were five medium-size businesses (Figure 22). This is very close to the average distribution for London SMEs.

The bulk of the firms we visited were single companies ('enterprises', in the jargon). Six were branches or units of larger firms, often spin-outs into East London; one firm had recently been acquired by a much larger multinational.

Figure 19: Age distribution of interviewees

Age of interviewee
- 30s
- 20s
- 40s

19%

33%

47%

Figure 20: Country of birth

Interviewee is UK born
- Yes
- No

28%

72%

4.2: Ways of working

We asked firms if they considered themselves 'tech' companies. Strikingly, less than half (15/34) said yes – and most found the question hard to answer:

> *To be honest it's virtually impossible to explain what we do. I've been battling with it a while… we are a tech company definitely but we are also equally a creative company.* (E12, C11)
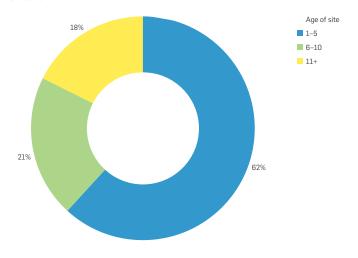
As predicted by our sampling frame, we found a high proportion of firms fitting the 'digital creative' category. Many see 'tech' as a way of doing business rather than their core function:

> *The measurement is the tech bit, the inspiration is the traditional communications consultancy bit.* (E25, C23)

> *We're tech savvy in that everybody is… most people are from an engineering or a computer science background. But in terms of… we probably see ourselves as a games company now.* (E23, C21)

The firms operate both on a local and global basis. Not surprisingly, every firm we spoke to had some degree of neighbourhood engagement – with the area providing a whole range of benefits (see next section). However, customers are typically not in Inner East London. Most firms sell some of their wares in central and West London; others, typically older businesses, sell UK-wide or internationally.

> *N: We've got Europe and America, really so we call ourselves an international as opposed to a global company. But it has been interesting that quite a few clients recently have been requesting a bigger push into Europe, and I've noticed that Germany is a big focus, for probably about five of our clients, and that's just from the last six months.* (E21, C19)

Well over a third of the firms had an international structure, with either units or a parent enterprise in another country – a much higher number than we were expecting (Figure 23). Of these, the majority had

Figure 21: Firms' age distribution

Age of site
- 1–5
- 6–10
- 11+

18%
21%
62%

Figure 22: Firms' size distribution

Size of the site we visited
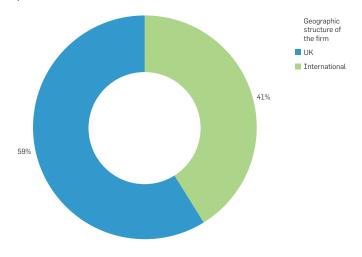- Micro
- Small
- Medium

18%
24%
59%

two to four locations, although a couple were present in six or more countries. Satellite offices often run more or less autonomously, tapping into local markets on the back of core products and services:

> *It's one or two people in all of those countries. Potentially just getting business and using freelancers to deliver. And coming back to us for advice on intellectual property and things like that … what we do export quite a lot of is consultancy advice, and the code potentially, and the products that we're building up.* (E2, C1)

Some of this is by accident rather than design: one company set up a New York office because they met a New Yorker they wanted to work with; in another case, a co-founder moved to Malaysia and built a programming team there. However, often internationalisation is strategic. One American company intends to use the London base as its international headquarters, responsible for building business in Asia and Africa:

Figure 23: Geography of operations

> *We are an obvious springboard for most of the rest of the world. Obviously America will do the Americas, but almost anywhere else it's going to be easier to service from London because the Pacific's so wide.* (E25, C23)

The internet, web-based technologies and platforms make it easy to work with people in multiple locations, either through collaboration with specialists overseas, or through outsourcing back-office functions:

> *You can find very highly skilled IT people based in Russia and the Ukraine, for about a third of the price of the UK or even less, and they work harder, you haven't got to manage them so much because they can work from home over there.* (E11, C10)

One six-month old start-up is already offering its products in thirty different currencies, and pays a few dollars per month for an American phone number that redirects to the founders' UK mobiles:

> *We're sort of pretending to be in the US, the American dollars, the 888 number, but everything is still shipped from the UK.* (E36, C34)

Most founders operate with a global mindset, considering it perfectly normal to work with staff, contacts and customers around the world. In Hal Varian's term, they are 'micro-multinationals' – SMEs reaping the benefits of digitisation (Varian, 2005). However, while firms found it easy to set up supply chains and collaborations internationally, many found the prospect of expanding into international markets more challenging (see 4.4 below).

4.3: **The area: benefits and disadvantages**
What first attracted these firms to Inner East London? For older firms, the decision to locate in the area was often by chance: founders lived there or nearby, or someone they knew offered them cheap or free space.

This story was typical:

> *We didn't know the area very well actually. An agent that [we] had talked to, who by chance knew about [this co-working space], said you should check this out, maybe you'll like it. First of all, this place was half as expensive as any serviced office. And secondly, there was an article in the* Economist… *and we saw that … and said, 'well, there's a lot going on'. It wasn't strategic or anything.* (E6, C5)

By contrast, the younger firms we talked to were making deliberate choices to come.

> *We moved here out of pressure from the [software] developers to move somewhere better. And by better, I think they mean somewhere which has lots of bars and lots of places you can eat. Most developers are young, and male, and that means that they don't cook, they rarely buy fresh food. So you basically want somewhere where there's lots of takeaway options, and lots of places to hang out in the evenings. That, more than anything, is what compels people to this area.* (E32, C30)

Once in the area, firms are making very deliberate choices to stay. Most firms say they still expect to be in Inner East London in five years time, citing a long list of benefits. As might be expected, these include:

- Amenities and 'vibe'
- Similar/complementary firms
- Branding and messaging
- Cheap space
- Proximity to central London
- Connectivity – to the rest of London and UK.

The area's vibe has multiple meanings and benefits for different firms. It can denote a kind of 'social wallpaper' – an nice environment to be in, and which helps attract and keep staff; a source of inspiration for the firm's products; or a source of ideas and collaborators:

> *There's a certain artistic/hipster roots of Shoreditch, and a sense that the companies around here are a little more in touch with current trends and the cutting edge a little bit more?* (E33, C31)

> *You have no problem, ever, persuading someone to work here. Whereas, if we were on a Science Park in Newbury, I'm certain we wouldn't find good calibre developers when we needed them, or that if we could they wouldn't want to move to where we were. So that's the first thing. Apart from that, it's kind of handy being close to other like-minded companies…. I actually don't think you get many pearls of wisdom in those conversations, but it just makes you feel less isolated.* (E32, C30)

The area's cafes, bars and amenities also provide what Currid (2007) describes as 'the social life of creativity': a set of spaces where creative work gets done. There is a strong element of apparent chance or serendipity in neighbourhood meetings and workflows. Firms describe lots of 'bumping into people' in the street and cafes. The density of firms doing similar things in the neighbourhood and the propensity of the workforce to socialise in bars and cafes increases the likelihood of such accidents.

> *There's a lot of impromptu networking here. We've had a lot of exposure that we wouldn't have had if we hadn't been here.* (E23, C21)

> *I like the fact that you bump into interesting people or people that you might sort of read something that someone's written online and then meet them down at the pub. Which is nice. … when I worked in South Kensington that never happened.* (E8, C7)

Well-curated shared workspace encapsulates many of these benefits. It provides hyper-local density, and thus a kind of accelerated serendipity. Firms say they have recruited from their shared workspace, sought help for technical problems and advice on business development, and met investors and contacts who happened to be visiting.

And as the area's reputation has grown, so has the branding advantage of an Inner East London address:

> *If you were an agency in Soho, for example, the assumption would be, you are a well-established, stable agency but you charge quite a lot. If you're an agency here, the assumption is generally you're not as well established, you're a bit more of a risk, you're a bit edgy, so you're probably going to be a bit more dynamic, so you're probably going to be able to respond a bit faster, and you're going to be a bit cheaper.* (E2, C1)

For most of our interviewees, the positives of locating in Inner East London far outweigh the negatives. In many cases, firms couldn't think of any downsides, or had to be prompted. The most common complaint is rising rents, the flipside of the publicity the area is attracting (see 4.6 for more on this). Other disadvantages mentioned include:

> Grime, ugly streetscape particularly around the Old Street Roundabout; Lack of amenities. The area caters for the needs of young men (takeaway food, alcohol), but less so women, working mothers or professionals.

> It is difficult to find a pair of tights or a grocery shop, for example; Crime was only mentioned by a couple of firms, perhaps related to local hotspots, such as pickpockets and bike thieves operating in the Brick Lane area.

As one put it:

> *I don't want to move anywhere else. I wouldn't ever dream of going to Soho. I would probably go kicking and screaming to Clerkenwell.* (E16, C14)

4.4: **Reactions to 'Tech City'**

Three contrasting messages about the Tech City strategy emerged from our interviews. First, awareness was lower than we'd thought, with around a third of interviews having little or no knowledge about the initiative. Second, those who did have views split down the middle, with equal numbers of positive and negative opinions. Of those with positive views, most welcomed the attention and exposure Tech City would bring, and the networks the initiative might foster:

> *Tech City's great. I think all of this helps to push the ecosystem generally, because it gets into people's minds …* (E24, C22)

CASE STUDY 7: **Tel Aviv and Silicon Wadi**

'Silicon Wadi' is a stretch of Israeli coastline, centred on Tel Aviv, and populated by high-tech companies. Israel has developed a strong digital economy since the 1990s, and today has 64 companies on the NASDAQ, the most of any country outside North America and China (Ferziger, 2011). Israel's technology scene is highly export-driven: during the 1990s ICT rose from 14% to 33% as a share of Israeli exports (Fontenay, 2004). There are increasingly close links between Silicon Valley and Silicon Wadi firms; a number of the country's startups have also been acquired by Google, Facebook, EBay and Apple in recent years.

The Israeli military has played a number of critical roles in the formation of the country's technology industry. After the 1967 arms embargo, the military massively invested in domestic military capabilities – with relatively small armed forces, there was particular interest in high-tech equipment, particularly in communications. The military, particularly the army, has been a key customer for Israeli technology; at the same time, a number of new tech start-ups have emerged from army units, particularly those involved with intelligence and/or surveillance (Senor, 2009). The government has also offered a range of financial incentives, including tax breaks and R&D funding.

It's creating a lot of similar-minded people in the area as well, and all of those people can feed off each other and the different ideas, the sense of community, can really make each of their businesses better. (E11, C10)

We also found some scepticism about Government involvement:

The first rule of Tech City is, you don't talk about 'Tech City.' (S8)

Tech City is what government people call it. I don't think I've heard anyone call it Tech City without sort of air quotes. (E18, C16)

My personal perception of Tech City is very much a government jumping on the bandwagon, and sticking a label on it. (E23, C21)

Many of the firms in this group see ministers seeking personal gain from the fruits of a cluster that was thriving without their help. They make a clear distinction between the Government-owned Tech City brand and 'Silicon Roundabout'.

Third, when pushed, everyone named something the government could do to help (we cover these issues in more detail in 4.6). The Tech City initiative thus faces a paradox: local businesses are facing real challenges, in areas where policymakers could arguably do more to help. But the brand is encountering some problems with its internal audience.

In addition, even among business community supporters there was widespread confusion about who to turn to for help and who is in charge – some knew about the Tech City Investment Organisation, but many suggested the initiative was 'Cameron's baby' or similar.

Stratford and the Olympic Park
The proposed spreading of the cluster eastwards raised the most red flags among firms we spoke to. Inner East

London firms feel little connection with the Olympic Park, which is seen as distant, inaccessible and with no obvious connections to the Shoreditch community.

I think it is the Government's way to get more money into the Olympic Park without saying "we're putting more money into the Olympic Park". (E5, C4)

It feels like the kind of thing where there'd be a first-user disadvantage to that space. There'd be a worry that you would be moving out onto a tumbleweed strewn cul-de-sac, and would be cut off from the vibrancy, etc associated with this particular area. So I suppose it will come down to financial incentives, but I don't know whether or not that will be enough. (E33, C31)

The Olympic Park is over three miles away from Old Street. Even if free space were offered in the Broadcast or Media Centre, some firms still worried about the perception of the area, and were concerned that clients and staff wouldn't travel there. Some of these concerns also applied more broadly to Stratford:

Everyone who doesn't live in Stratford is going to hate working at an office in Stratford, because getting to Stratford, even with the rapid new transport…its going to take a London-scale of transport experience to get there. So it's the opposite of being able to live and work in the same neighbourhood as we can here. (E18, C16)

For us it is not an option to be based in Stratford. Because we have to be in close proximity to our clients. (E5, C4)

A minority said they might be prepared to relocate further east in future if costs were low and – crucially – a neighbourhood emerged with like-minded companies and a creative environment. This suggests that links

to the artistic community in Hackney Wick could be developed. However, the distance between Hackney Wick, Stratford centre and key Olympic Park sites suggests a single eastern 'hot zone' may not easily emerge. We return to these issues in Chapter 5.

There are also real fears that by concentrating its energy on the Olympic Park sites, which many see as the main reason for the Government's continued attention, it risks diminishing the energy of what is still a young cluster.

> *I think the biggest risk to it is that they're ratcheting too many things together. I think if it just concentrated on innovating in East London, or specifically helping tech startups, then everything else would follow.* (E32, C30)

4.5: **Opportunities and challenges**

> *The thing I found the hardest, and still find hard, is scaling. It's very, very hard. It's not even necessarily the financial thing, it's more just like … building an organisation, just getting the right people and chains of command, all those things.* (E12, C11)

The main challenges facing firms are about growing, launching or managing the business. We identified six main challenges: mentoring and management advice; skills gaps; access to finance; workspace access and cost;

Figure 24: Key challenges for Inner East London firms

ISSUE SET	NUMBER OF FIRMS CITING AS CHALLENGE
Mentoring, management advice	13
Skills gaps	14
Access to finance	17
Workspace access and cost	13
Connectivity	13
Business development	19

connectivity; and business development. Each was raised by at least two in five of the firms we spoke to, and some by around half. These issues closely relate to barriers facing high-growth firms as a whole – see Chapter 2 – but in many cases, a digital economy twist makes it harder to deal with.

Figure 24 lists the key issues by frequency: that is, the number of firms mentioning each. It was also clear that two challenges stood out in terms of intensity: business development and skills gaps.

Mentoring and management advice
Inner East London contains a lot of very young firms who need business development advice, and the need for mentoring came up in over a third of our interviews. Many firms told us in retrospect they wish they'd had someone to turn to:

> *It's become very apparent over the last few years that what we lack is any marketing and sales knowledge. So we're good at what we do, the tech side of things … but we do not have very many clients, any potential clients at the minute.* (E10, C9)

> *When we started the website we were focused on developing traffic, and building a really good site. Which is fine. But we didn't spend enough time thinking about how to make our revenue. If we'd spoken to someone who had some common sense, we'd have picked up the phone and tried to sell to companies and tried to sell advertising space.* (E11, C10)

One interviewee remarked on the lack of 'elder wisdom' in East London compared to the US West Coast, 'where I've had my most useful conversations'.

> *It's either being able to call someone when you've got a problem, you know, whether it's, you know, a web server scalability problem, or whether you're about to*

raise a round of funding and you're wondering what to do about, you know, salary rises for your early employee or issuing equity … (E18, C16)

Older entrepreneurs and venture capital providers in London we spoke to are often happy to help – but young entrepreneurs lack networking skills (S1, S4). The networking culture in the area is helpful for making entrepreneurs feel less isolated, but many events are unfocused and can be of limited practical help:

There can be sort of … an aggressive pitching atmosphere in those. And we're not that early stage, we're not going around talking about how great it is … also we sometimes feel a bit excluded from that. Everybody and their dog talks about social media and app development and we don't do that. So … there'd be very few people who stand there and talk to us about large scale, highly scalable business solutions. (E6, C5)

Skills gaps
One of the most commonly mentioned complaints is finding skilled staff: it was often cited as the top issue, alongside business growth. Interviewees highlight an under-supply of skilled developers and specialist staff in the UK, blaming ill-designed university syllabuses, and a lack of understanding at all levels of the education system. Despite the large pool of skilled workers in London, some firms also complain about a lack of suitable support staff.

Some firms look abroad to plug skills gaps – often to North America or South/East Asia. The immigration cap creates difficulties here. Even if firms are not hitting the limits of the cap, the perceptions and experience of bureaucracy create genuine problems: as one interviewee put it, 'in this business six weeks is forever' (S4). Most of these companies are also too small to take advantage of intra-company transfer, where rules have remained relatively relaxed.

There just aren't enough computer scientists in the UK. And we need computer scientists, we don't need – what do they call it – ICT trained people. We need real computer scientists who do software engineering and programming. No education coupled with visa restrictions is not a particularly good combination. (E6, C5)

Some interviewees also voiced concerns that the government strategy of attracting inward investment means the top talent and ideas could be poached by large foreign firms. Others cited trouble competing with large financial and business firms for staff.

Access to finance

It's a specific skill set, raising money… it obviously took time to actually learn … The hard work is speaking to people. You just need to speak to a lot… if you want angel investment, it's a pure numbers game. You just have to speak to a lot of people to get funding. (E24, C22)

A recent GLA report (Rigos, 2011) suggests the equity gap for digital economy firms in London is not so much about the 'demand side' – the availability of seed funding and venture capital – and more about the 'supply side' – making UK entrepreneurs more investment-ready. Is that fair? We found evidence for both demand and supply-side problems: almost half of firms mentioned access to finance issues, but in many cases it wasn't the most urgent challenge. In some cases, founders haven't needed funding – drawing instead on personal wealth, contacts and networks:

We've been getting investment from three high net worths as opposed to any funds, one guy we've known for a couple of years, about a year and a half. The other two are kind of contacts from one of our guys.

Q: So these are personal contacts, basically?
A: Yeah, we went into funds, we've been to the bank but it's just not really that doable. (E31, C29)

Another group had relied on bootstrapping at the early stages. Having survived without external funding, they later felt unwilling to release equity in exchange for funding, citing conservative valuations of their company:

We just thought that we don't need the funding, so we don't need to give away half our company to get a million pounds. Let's not bother, let's keep doing it ourselves. There was a caution around valuation levels. And just a general caution full stop that characterised the VCs that we were talking to. (E26, C28)

For some of these firms, real or perceived difficulties attracting equity funding had driven them towards the bootstrapping route. Here there was an overlap with a third group, who found a number of problems accessing both debt and equity:

We're at the classic stage where we've got angel funding pre-product, which enabled us to build the product, and start a bit of a sales pipeline. And now we need a second round of funding to actually develop it. If we were in the US we would probably have gotten it all at once. But we're not in the US. So we've had to split it up into a number of small steps. (E24, C22)

The vast majority of VCs we spoke to are very much geared towards later stage. (E23, C21)

Two recent studies confirm some of these structural problems, citing the small size of the UK and European venture sectors as one reason for those sectors' underperformance (Lerner, Pierrakis, Collins, & Biosca,

2011; Reed, 2010). Fewer, larger rounds of investment also mean firms can grow more smoothly and with less dilution of ownership (Reed, 2010). Rigos (2011). suggests venture funds should be a minimum of £50m, and ideally £150m to allow long term, 'deep technology' investments over a 10-year cycle. Of the UK's ten Enterprise Capital Funds, only one – Passion Capital – specialises in the digital economy, and has a total pot of just £60m, closer to Rigos' minimum.

Many UK investors' risk-aversion and lack of digital economy knowledge were also major barriers for SMEs:

There's a ridiculous amount of capital sitting half a mile away from here, it's not being allocated to these activities. Ultimately successful venture capital is not a finance problem, it's a talent-spotting and technology awareness, due diligence problem. (E6, C5)

In Silicon Valley you can get investment based on an idea. And that's because they're used to investing in tech. (E2, C1)

Venture capital players we spoke to offer some agreement (S1, S2, S3, S4). They are clear that not all firms need outside finance; although it is critical for scaling up – 'jumping on the pedal', as one put it. They were equally clear that funding competition is 'brutal' – another company told us they'd seen 1200 ideas, met 30–40 people and funded three. But there was also acknowledgement that angels and venture capitalists need to understand digital better:

Investors need to understand what tech investment is all about. It's not about technology investment necessarily, it's more early stage investment, equity investment, VC investment with high risk, very improbable returns. Understanding that needs to be put forward. I've been in VC for four years now and it's quite hard to educate someone around this … . (S1)

We found only a handful of banks, VC firms and angels specialising in digital sectors or physically located in Inner East London. For investors seriously entering this market, physical presence in Inner East London is becoming important – practically, as a way of seeing prospects, and strategically, as a way of sending a message that they're in the area and open for business.

Workspace access and cost
The inevitable paradox of success, as previously mentioned, is the rising cost of popular neighbourhoods. Cheap workspace is still a big draw to the area, but around 40 percent of our interviewees were worried about finding office space in the future. In most cases, the worry was that rising rents would push start-ups out of the area.

> *One of the disadvantages of being in an area that's getting trendier and trendier and trendier is that the rents are going through the roof. It's on the edge of being sustainable.* (E29, C27)

As the number of firms increases, the shared workspace market is thriving, with new providers entering the market (Google Campus) and existing providers expanding (Tech Hub, The Trampery, Hoxton Mix). Pricier warehouse-style space is also provided for bigger companies in places like Zetland House and the Tea Building. Securing a place in shared spaces is likely to be an important issue for the next wave of start-ups.

As companies outgrow such spaces, they are concerned that they may have to look beyond the area due to a lack of appropriate larger floor-plate spaces – which in turn, helps raise prices at other points in the market:

> *The prices are definitely going up. We're going to have to move soon, and it's unlikely we can stay in Clerkenwell, so we're actively looking to go further east.* (E26, C24)

This is particularly stark for companies that have been based in the area for five or more years. Interestingly, newer firms to the area often appear ignorant of the differential between rents in Inner East London and other central London locations. Many believe the difference is now minimal. However, a recent Savills report (2012) says Grade A rental costs in City fringe areas are £35 per square foot, compared to £60 per square foot in Soho. One reason for this could be that start-ups find cheaper spaces either on the end of leases, or by inhabiting on a flexible basis otherwise redundant space.

In popular urban neighbourhoods, there is inevitably upward pressure on property prices. However, a number of interviewees explicitly connected the Tech City initiative to rising rents: while they welcome the attention, they worry that landlords will exploit it to make 'excessive' claims. One interviewee suggested that developers and owners were increasingly looking to the Tea Building as a model, rather than the cheaper products that have historically characterised the area (s2). Another argued that a critical issue for the next two years of the cluster would be the supply of incubator-type spaces (s3).

Connectivity
Over a third of companies mentioned broadband or wifi as an issue. We found three linked issues: public internet access, broadband access time, and (for some) broadband speed. For individual entrepreneurs and start-ups in their first days, public internet access – mainly through wifi – is an important tool in getting work done.

> *There's not enough cafes where you can sit down and get free wifi.* (E19, C17)

> *Why isn't there free wi-fi all over the area? It costs virtually nothing to transmit, everybody has an iphone or laptop or whatever, we are going around with [companies] charging too much, it's stopping people*

going on the internet and using their technology.
(E29, C27)

As firms move into shared space or their own premises, long access times for new broadband links are a common complaint:

> *It's not so much that there isn't good broadband here, it was more of the 6 weeks to 8 weeks time-lag before it's actually installed.* (E29, C27)

> *There was a cafe across the road, there's the Hoxton Hotel [that we had to use] but it's not a good way of doing business. You want everyone to move in and feel proud of their new office.* (E17, C15)

There is a complex set of co-ordination issues here. Landlords need to give explicit permission for new broadband connections; if landlords cannot easily be reached, this creates delays. Some connections may involve roadworks; and Internet Service Providers (ISPS) have to work with separate infrastructure companies to actually wire up buildings.

Once connected, a third issue is bandwidth. For some firms, especially those working in video or media, high-speed connections are critical – although notably, this was not an issue for all companies. More broadly, though, interviewees felt the lack of connectivity was detrimental for an area selling itself as the digital capital of Europe.

Business growth
The biggest challenge for many firms – and the most frequently mentioned issue – is identifying sources of future growth. For most firms the issue was simply scaling – and for the youngest firms, finding an audience, especially when the product was disruptive to existing markets. In a few cases firms were worried about the recession, but this was not at the forefront of most interviewees' minds. In other firms people had been laid

off, but respondents considered this normal in a start-up environment and didn't make a connection to the wider economic climate.

In many cases, the main challenge was in finding a market. Some firms reported problems accessing government contracts – highlighting procurement routines they feel are pointless and onerous. Despite claiming to be cheaper and more creative than major players, they feel locked out:

> *Of course we try and do good work, any company will tell you of course we try and do good work, but no we don't have a folder of documentation this thick that outlines the process of how we try and ensure consistent quality of our work, because if we start to write that folder, we'd be out of our mortgages in two months' time.* (E10, C9)

For others, the issue was scaling up for the much larger U.S. or Chinese markets:

> *I think, yeah, I think if we were to do America properly, it's such a huge transition that we'd need to have money behind us to really kind of fund some marketing and start an office and get a base over there and those sort of things.* (E11, C10)

> *I know it's seriously difficult, I know it's going to be at least as difficult as it was starting out here with no money, and I know how bloody painful that was. And I know that you can lose everything, because you can be distracted by launching in a new country, and then your UK operations suffer, and you've got shrinking market share in the UK, you try to do too much and lose everything.* (E27, C25)

We were struck by some interviewees' attitude to the prospect of potential growth, which was less positive than one might have expected. One firm now plans to become a £100 million company, but only after an

un-sought-for encounter with a financier who saw the potential of the service the company offers. There is a nervousness of relinquishing control of a company, and a lack of knowledge of the potential returns of doing so (40 percent of a £1 billion company is worth more than 90 percent of a £100 million company).

> *I've got advisors with companies with thousands of people and most of them say the maximum you want to go to is about 30 and after that you lose a lot of the essence about what the company is about.* (E12, C11)

Some might read this as a lack of ambition – an example of the UK's still-parochial tech industry. Or as one of our interviewees implied, it may actually indicate a generation of serial entrepreneurs in the making:

> *It takes different skills to invent an idea, start the business, run it, grow it, and take it global. This isn't always the same person…which is why some many entrepreneurs like to move to exit and start again.* (S6)

5
FUTURE SCENARIOS

Our analysis so far has focused on the past and present of the cluster. This chapter uses our findings to develop four possible futures for the cluster. Our aim in doing this is to clarify thinking about what we want from the cluster, the forces driving change, and what policy can realistically hope to achieve.

Scenario One: Go East

The Inner East London cluster continues to add new jobs and firms, with a number of companies expanding into international markets and achieving global profiles. As the cluster grows it expands eastwards. Two channels create this eastward momentum. First, rising property prices in Shoreditch and Clerkenwell start to price out younger, poorer firms: they gravitate to cheaper neighbourhoods such as Bethnal Green or Hackney Wick. Second, policymakers and developers succeed in generating a 'Canary Wharf effect' in Stratford City and key sites in the Olympic Park. Large technology firms, including international entrants, are attracted by big offices and campus-type spaces. The Media Centre also includes some incubator space, which over time draws in start-ups and SMEs, including micro-manufacturing firms attracted by dry lab facilities.

The digital economy as a whole is a winner in this scenario, and there are no losers. Although some smaller firms are displaced from the Inner East London core, they go on to find new spaces nearby in an emerging hotspot. 'Tech City' boroughs and the London economy gain from a growing cluster.

Scenario Two: Upgrade

The area's current patterns of economic development continue or accelerate, with high levels of job growth and start-up activity. More firms expand into international markets, with a few becoming well-known global players. The growing profile of the area and its lead businesses attracts further overseas tech firms, investors and other services; levels of angel/VC finance rise rapidly. Developers and landlords continue to

supply new workspace, but rents continue to rise and this displaces a number of start-ups, younger or less successful companies. The area's industrial mix gradually shifts towards older, more established businesses, and increasingly resembles a more digital Clerkenwell or Soho. Neighbouring areas north and east of the cluster see emerging communities of start-ups, as do parts of southeast and west London. Stratford and the Olympic Broadcast/Media centres also see some business growth, partly from multinational digital economy firms looking for large floor-plate spaces.

Those who do best in this scenario are larger/more established digital economy firms, property owners, and neighbourhoods experiencing a growth in economic activity. 'Tech City' boroughs and the London economy – and potentially the UK – gain from a growing cluster. The short-term losers are less successful SMEs displaced from the neighbourhood.

Scenario Three: Corporate Takeover

The area's growing profile induces a boom in speculative/large-scale property development. Property market activity drives a number of changes in economic activity and industry mix. The current community of digital economy SMEs is largely displaced, as landlords raise rents, and as buildings are sold for consolidation into larger floor-plate spaces. These firms are increasingly replaced by national/multinational tech firms, and financial services companies moving north from the City. A few high-performing SMEs expand into new premises. The rate of digital economy firm growth slows rapidly. Sector employment continues to rise, largely driven by the arrival of tech multinationals. Angels and VC finance increasingly looks elsewhere in the city for start-up and early-stage investment. Local services in Inner East London move increasingly upmarket. Looking for cheaper locations, East London's SMEs relocate to a number of other areas in the city. New clusters may eventually develop in these areas. Hackney Wick and Stratford pick up some of these firms.

Those who do best in this scenario are property owners and property developers, and large entrants to the area. 'Tech City' boroughs – and London's economy – gain from increased business rates, but lose as the cluster breaks up. The losers are the existing community of SMEs, who are displaced across the city, and whose development may suffer as the cluster dissipates.

Scenario Four: Decline

Inner East London's digital firms fail to develop successful products and services: no global players emerge, and the cluster's star wanes, outshone by other cities. In the short term start-up activity continues, but most firms fail to scale up, and those that do perform badly in the marketplace. The cachet of the area diminishes. Investors become discouraged and start to shift funds – both elsewhere in London, to clusters in Berlin, Paris and other European cities. Over time, firm and employment counts go flat and may even fall, as existing firms lay off staff and future entrepreneurs locate in more vibrant areas. Landlords and developers increasingly push for change of use, and many work-spaces are converted into residential housing. Large floor-plate sites in Stratford and the Olympic Park fail to find long-term tech tenants, and policymakers develop plans for other uses.

Those who do best in this scenario are firms in other parts of London, and those in other European tech clusters. East London's digital firms, their employees, and many local services are the losers.

5.1: Assessment

Which of these scenarios is most desirable? Of the four, only the first clearly meets all the Government's stated objectives. Scenario two meets some objectives, but there are winners and losers. Scenario three sees high-value activity typical of the City, but at the cost of dispersing the cluster. Scenario 4 sees the slow death of the cluster. Clearly, neither of these latter two meet the Government's stated objectives.

How likely is Scenario one? We suggest that as the Inner East London cluster expands, we can expect further digital economy activity to develop in Hackney Wick, Stratford and in Olympic Park sites. However, there are two important reasons why this is likely to be limited.

First, today's SMEs almost all perceive Stratford and the Olympic Park as both disconnected and uninteresting. Whether this is fair or not, the view that there is 'nothing going on' will take long-term effort to change. In the short term, it is plausible that property market pressures will tempt some firms to look at Hackney Wick, immediately west of the Media Centre. The area does share many characteristics with the Shoreditch of fifteen years ago – its artists, amenities and cheap workspace make it attractive to some, although its transport connectivity is very limited compared to rival Zone 1 locations.

These issues raise a second, more fundamental problem – which is that London's digital economy already has a number of hotspots. As our analysis in Chapter 3 makes clear, the Inner East London zone is part of a bigger digital economy corridor, and there are a number of other emerging zones. This means that comparisons with Canary Wharf are probably misleading. In the case of Canary Wharf, it was relatively easy to encourage mass migration. Financial services in London have always been highly concentrated. By the late 1980s the sector was experiencing a severe squeeze – large firms were arriving post-Big Bang, and planning restrictions in the City were very tight. Canary Wharf offered a unique opportunity for multinationals to co-locate in a brand new neighbourhood.

By contrast, digital economy firms already have a number of attractive sub-markets to choose from, such as Moorgate, Borough, Covent Garden, Victoria and Paddington – with Facebook, Google and Nokia respectively locating in the latter three (Savills, 2012). For SMEs, Dalston is already becoming a popular location, and the Overground (East London Line) is putting large areas of south London within reach of the Old St

core. For the Olympic Park sites, the combination of the Olympic address, brand new space and favourable terms will be enough to tempt some firms in. However, it seems unlikely that the Press and Media Centres will become the next Silicon Roundabout. The competition from other locations is too strong.

Our quantitative, qualitative and case study evidence suggests that the most likely outcome is Scenario 2, a consolidation of the current cluster. In this scenario there are winners and losers – and tensions between different Government objectives emerge. In turn, that suggests Ministers need to revisit, and clarify, the current Tech City strategy.

6
CONCLUSIONS AND RECOMMEND- ATIONS

Inner East London's digital economy has come a long way in the last fifteen years. A thriving cluster of firms has emerged, centred on Shoreditch – and our research shows it is bigger than previous estimates suggest. It is an important, high-value part of the London economy.

6.1: **A vision for the future**
The best achievable outcome for this cluster, and for the London and UK economies as a whole, is that this trajectory is maintained, or enhanced. We share Ministers' desire to grow the UK's digital economy, and want London to play its part in this. We would like to see more high-growth firms, and more developing into international players – either in existing product and service markets, or developing niches of their own. In this scenario, London's economy will benefit from the resulting growth in high-value economic activity. Equally, our evidence shows that firms in the area get real competitive benefits from their location, and so stand more of a chance of becoming global successes. For these reasons this cluster deserves further support. But there are risks for government. As our review of the evidence makes clear, too much interference, or prioritising inappropriately could limit firms' opportunities for growth.

6.2: **Assessing the current approach**
Will the Government's current approach deliver these outcomes? The current Tech City strategy has three broad aims. It sets out to:

- Help the existing digital SME community, and encourage new entrepreneurship;
- Attract outside and foreign direct investment, especially from global tech players;
- Encourage its spread eastwards to the Olympic Park and surrounding areas, post-2012.

The Government's approach has both 'hands on' and 'hands off' elements (see our typology in Chapter 3).

Its first aim is very much 'hands off', and so is consistent with both the evidence and Ministers' political preferences. In practice, the Government has brought in a long list of policies, from tax breaks to new visa rules, aimed at supporting and encouraging entrepreneurs and investors by dealing with co-ordination problems and market failures. Ministers deserve credit for much of this. We make suggestions for further improvements to the policy mix in the next part of this chapter.

The remaining two aims, to bring in foreign investment and to seed a tech cluster in the Olympic Park are more 'hands on'.

The second aim, the drive to attract large foreign investors to Inner East London is, in many respects, laudable. As Chapter 2 makes clear, the evidence shows that some FDI activities can complement domestic success.

The net effects of FDI crucially depend on the type of investment, ownership structures and local firms' capacity to absorb knowledge spillovers. Our evidence shows Inner East London is an important, growing cluster, with a core of high-skill activities which would benefit from increased ideas flow. However, we have also found a lot of very young, relatively inexperienced firms, with an evident lack of managerial and business development experience. There is a clear risk that without carefully planned FDI, competition effects will swamp any spillover benefits.

So it is critical that current FDI policies become much more tailored, to attract investments that are both high-value, and complementary to indigenous economic activity. Quantity is less important a success measure than quality and fit of investment.

There is also a broader point here. Although promoting FDI can have many benefits, resources spent on this might be better spent fostering the development of home-grown firms. Firms that own the ideas and the technology and keep their profits in the UK are likely to be far more beneficial to UK plc than foreign-owned firms, however successful they may be. For these reasons,

the first goal of policy for the cluster should be helping domestic firms that generate new products and services, and successfully sell them globally.

This implies some change in strategy for policymakers and agencies such as TCIO. They should reduce the priority of attracting FDI *per se*, concentrate on targeted investments that will complement existing firms – and increase resources devoted to helping domestic firms grow internationally, through export support activities.

"We have shown more than 150 senior executives around Tech City, from Shoreditch to the Olympic Park, this year" (TCIO Impact Report, 2012)

The final aim – to encourage the spread of the tech cluster into Hackney Wick, Stratford and the Olympic Park – is on the face of it a good one. However, our extensive evidence tells us that only a limited expansion of the cluster to this area is likely to occur. Yes, these locations have some potential as a location for digital industry in the years to come, especially for larger firms who may have trouble finding suitable space in Shoreditch and surrounds. Rising property prices may also encourage some smaller firms into cheaper areas like Hackney Wick.

However, Inner East London is part of a digital economy 'corridor', with many other ready-to-go locations for firms looking to relocate. Our interviews indicated limited willingness to go further east, especially into Stratford. It may take many years before these neighbourhoods become as attractive to digital economy firms as the current cluster core, if ever. The history of master-planning clusters suggests the chances of success are limited.

For all of these reasons, the opportunity costs of a 'go east' policy are high. Our evidence highlights a number of priorities for London's existing digital SMEs. If the overall policy objective is to grow the city's digital economy, this is where resources should be focused first.

6.3: **Recommendations: strategy**
Building on current Tech City strategy, we recommend:

1 — Government and the GLA should review and clarify the objectives of Tech City strategy. The main aim of Tech City strategy should be to support the growth of digital economy SMEs and nurture new entrepreneurs in the existing cluster.

2 — The Tech City Investment Organisation's inward investment activities should be focused on attracting complementary investments and the agency should boost its export promotion activities for London firms.

3 — Government, the GLA, London & Partners and TCIO should temper their efforts to attract tech employers to the Olympic Park and its surrounding areas, *where it distracts from the primary aim of helping SMEs and nurturing entrepreneurs.*

National and local policymakers also need to make adjustments to the detailed policy mix, working with private sector players in the finance and workspace sectors, alongside education providers and professional networks.

Two strong priorities emerged from the entrepreneurs that we interviewed when we asked them about the challenges they were facing. Most important was business development support, followed closely by recruiting skilled staff. Beyond these two priorities the most frequently cited challenges were mentoring and management advice, access to finance, workspace access and cost and internet connectivity. We offer the following recommendations to address these issues.

6.4: **Recommendations: recruitment**
Recruitment issues are one of the biggest concerns of the firms we spoke to. SMEs may have problems recruiting skilled staff – with their limited budgets, less internal career progression, and potentially less security. These issues are amplified for digital economy SMEs. Tech start-ups are seen by many potential staff as risky. And firms tell us they tend to search for skilled hires (e.g. software/web developers, digital/game designers) in national/international labour markets, often outside the EEA (Americas, Asia). Official data back this up. The current UK Border Agency shortage occupation list for Tier 2 includes several digital economy occupations, including visual effects and 2D/3D animation software designers, compositing artists, matte painters, riggers and stereo artists (UK Borders Agency, 2011).

Our evidence highlights various problems with immigration policy. Firms worry about both the immigration cap, and delays in recruitment within the Tier system, typically at Tier 2 level. Changes to the post-study work route have also made it harder to recruit skilled graduates straight out of university, by restricting permission to stay to those with a job offer.

In 2011–12, 20,700 Tier 2 places were made available in the UK across all sectors (not just the digital economy), but only around 10,000 were taken up. This might indicate that the cap is set above labour demand. Alternatively, individual firms may be reacting to the expectations of difficulties caused by the cap by making (potentially) second-best hires within the EEA. Our initial evidence supports the second interpretation.

Our research also suggests there are two issues when it comes to hiring within the UK. First, firms worry about competing with banks and new entrants for talent. Second, some companies want to hire intermediate/entry-level positions locally, for roles such as systems administrators, office managers, and receptionists – but find it hard to get suitable candidates from the local area.

Based on this evidence, we recommend:

4 — Government speeds up Tier 2 processing – raising the target time from the current 75% in four weeks or less, to 100%;

5—TCIO develops a role as 'immigration intermediary' for London SMEs – helping them understand and move through the system – building on existing activity;

6—Government re-instates two-year post-study work visas for postgraduates in STEM subjects;

7—TCIO helps expand Silicon Milk Roundabout, the Skills Showcase and other digital economy recruitment fairs, working closely with universities and local businesses;

8—Local training providers should pilot and evaluate Tech City Apprenticeships and similar intermediary projects.

6.5: **Recommendations — Entrepreneurship**
International evidence – and London's experience – suggest that maintaining routes into the city for local and international entrepreneurs is crucial. Entrepreneurs are crucial links in the innovation chain, helping develop new ideas and build the digital business base.

Our evidence in Chapter 3 shows a rapid growth in Inner East London's business base. Our qualitative research suggests the vast majority of IEL businesses are founded by British entrepreneurs.

Long term, London and the UK also need to stay open to international talent. International clusters, particularly Silicon Valley and Silicon Wadi/Tel Aviv, have benefited from the presence of international migrant and diasporic communities. Santiago, Chile, is currently pursuing a cluster-building strategy based on attracting international entrepreneurial talent.

Based on this evidence we recommend:

9—TCIO should expand the annual Entrepreneurs' Festival – from 200 to at least 500 participants; and support business development competitions

with London universities, drawing on MIT's MassChallenge and similar ventures;

10—TCIO should monitor and publish take-up of the Entrepreneur Visa in London; and TCIO and Government should monitor the performance of the Start Up Chile programme, consider developing a UK version.

6.6: **Recommendations: access to finance**
Government has been active in this area. Finance incentives and public funds make up the bulk of Tech City policies, and most were warmly welcomed in our conversations. However, we suggest the policy mix could be further improved. Our research also highlights some related issues for Inner East London businesses: co-ordination failures and information gaps; a lack of specialist financial providers, at angel and early-stage venture capital; and an absolute gap in the level of venture capital. We also identify a need to improve the business-readiness and capacity of tech firms (see mentoring, below). Fixing these issues will help London's economic development. As a recent GLA report argues, 'start-ups in these sectors need funding if they are to stay and contribute to economic growth in London rather than fail or move overseas.' (Rigos, 2011).

Policymakers should also move faster to open up innovative new finance tools, especially the crowd-funding market – where companies raise debt or equity finance through large numbers of small investors. There is great potential for digital firms to make use of equity crowd-funding. In the US, the Obama administration has recently formalised this market through the JOBS Act (UKIE, 2012). By contrast, in the UK the rules remain opaque, with some firms operating in a legal grey area. The Government has promised exploratory funding for 'non-bank lending' channels (Breedon Review, 2012; Department for Business Innovation and Skills & Treasury, 2012). But it is hard to see how this market can develop without greater legal clarity.

We recommend:

11—Physical relocation of angels and venture capital firms into Inner East London – for example, by introducing 'finance desks' in shared workspaces;

12—Banks should develop specialist digital economy offerings, covering both day to day banking and debt finance, as well as links to legal and accounting services;

13—Expanding existing online/physical networks for digital firms and finance providers – for instance, starting up a dedicated UK AngelList;

14—Government should develop a second digital-focused Enterprise Capital Fund, and increasing public investment into both funds to take the pot to £150m each;

15—Government should develop a clear legal framework for equity crowd-funding, drawing on US legislation and experience.

6.7: **Recommendations: connectivity**

Our analysis suggests three linked issues for Inner East London firms: broadband speed (for some), broadband access time, and general connectivity. For individual entrepreneurs and start-ups in their first days, public internet access – mainly through wifi – is an important tool in getting work done. As firms move into shared space or their own premises, long access times for new broadband links are a common complaint. For some firms, especially those working in video or media, high-speed connections are critical – although notably, this may not be an issue for all companies.

Our findings chime with wider evidence on the UK internet 'offer'. By international standards, UK broadband speeds are not the worst, and have been improving over time. However, Britain needs substantial future investment in its broadband network, over and above funds currently announced, to approach world leaders such as South Korea. There are also persistent concerns that the UK regulatory framework, which has focused on retail price competition, has been less successful at improving minimum service standards, encouraging investment and technological change. Disputes over 4G roll-out are the most recent example of this, with 4G now not arriving here until 2013 (Thomas, 2012). US experience suggests that 4G will become an important complement to wifi, but won't supplant it. Digital economy firms will need smooth access to both technologies.

We recommend:

16—ISPs should try to guarantee a two-week connection time, where cabling and landlord permissions allow.

17—Workspace providers should consider integrating broadband into their basic rental packages, or include permission for connection within lease agreements.

18—GLA monitors connectivity in Inner East London and other digital hotspots in the city and seeks to ensure (possibly using the Urban Broadband Fund) that they have a rich network of wifi and 4G transmitters.

6.8: **Recommendations: workspace**

Access to cheap workspace is critical for start-ups and early stage firms – in particular, well-curated shared workspace can provide a supportive community. The accelerated serendipity of shared space mirrors the wider benefits of the cluster itself. Our evidence finds high levels of demand for shared space, with existing landlords expanding and new entrants appearing. At the same time, the area's growing popularity is already putting upwards

pressure on rents, and some companies are considering leaving.

In a popular area with constraints on space, these pressures are inevitable. Rent control might seem attractive – but simply advantages existing firms at the cost of future start-ups. Local planning, development control and direct provision offer better ways to ensure Inner East London maintains space for business. Local authorities' financial capacity to directly provide space varies widely, so this will not be an option for all. Developing new financial incentives for local authorities should also be explored by Ministers.

We recommend:

19—Local authorities ensure Local Plans explicitly encourage the provision of affordable and shared workspace, supplementing National Planning Policy Framework clauses on change of use;

20—Local and central government explore the potential for converting empty buildings that they own in East London into workspaces, tendering management to professional shared space providers;

21—Government should encourage the provision of affordable workspace. This could involve modifying the existing Business Increase Bonus scheme – giving an additional subsidy when planning permissions for affordable space are granted.

6.9: **Recommendations: mentoring and management advice**
Inner East London's digital economy is dominated by young firms. Many lack experience of management and business development. Our interviews often uncovered a strong need for mentoring, and help with growing the firm – but many companies had trouble accessing this advice in the neighbourhood. By contrast, in established clusters like Silicon Valley, there are extensive professional networks for new firms to turn to. Moreover,

angel investors and vc firms are often themselves former serial entrepreneurs – unlike the UK, where as we have seen, the specialist tech finance scene is a great deal smaller. Only a handful of operators like Passion Capital, Seedcamp, Index Ventures and Silicon Valley Bank – and now Google – provide US-style elder wisdom for Inner East London's entrepreneurs.

There is clearly a need for more. However, this is not an area where public policy can or should easily take a lead. BIS has established a national business mentoring scheme with a target to recruit 40,000 mentors; not surprisingly, the target has recently been scaled down to 26,000 (Stacey, 2012). By contrast, the GLA and TCIO have taken a more hands-off role, encouraging the development of networking across Inner East London.

We recommend:

22—Inner East London's existing professional networks should actively develop mentoring activities and meetups for younger firms;

23—The Tech City Investment Organisation should provide financial/in-kind support building on its existing Mentorship Programme.

6.10: **Recommendations: governance**
Tech City Investment Organisation is the main agency for delivery of the Tech City Strategy. TCIO's three main activities are raising FDI, export promotion and increasing funding flows by engaging with overseas venture capital (Tech City Investment Organisation, 2012). TCIO has also set out about establishing itself as a champion of local start-ups and SMEs.

Given the complex set of issues firms face, there is a clear need for a single, locally engaged champion: and our interviewees had many positive things to say about TCIO and its senior staff (S3, S4). The agency has made a good job of drawing attention to East London, and says it has 'helped attract' over 30 inward investments.

Our research, however, raises two challenges for TCIO. First, as an agency of UKTI, TCIO's roots are visibly in inward investment and trade support, and this is an area where it has been very active. This is undoubtedly very helpful. But our evidence shows that overseas expansion is a critical issue for SMEs, and that there are some potential downsides to foreign investment, so *it is essential that TCIO prioritises trade support over FDI*. Further, our research identifies a number of issues where TCIO could do more. For instance, TCIO's impact report makes clear that it currently spends few resources on mentoring and skills support.

There is also some confusion about which part of government TCIO works for, although this is partly unavoidable with an initiative so highly prioritised by Number 10.

Many of these issues are not of the agency's making. They are a reflection of the lack of a clear overall goal and the initiative's multiple objectives. There is now a strong case for further clarifying the mission and governance of TCIO – and broadening its activity set: a future Tech City champion could usefully do more, not less.

We recommend:

24 — TCIO becomes a quasi-independent agency with its own budget, with its main goal being to help start-ups and SMEs in the area. TCIO should report jointly to Number 10 and the GLA;

25 — TCIO should expand its efforts to help SMEs with key issues including mentoring, immigration/recruitment support, access to finance, connectivity and export promotion;

26 — Number 10 and the GLA should assess the effectiveness of Tech City policies – for example, the effect of winning the LaunchPad competition on company performance, takeup of the Enterprise Investment Scheme and the Seed Enterprise Investment Scheme, and the role of shared workspace on start-ups' growth.

27 — TCIO should closely monitor developments in New York and develop links with policymakers there.

6.11: **A final word**
One of the most striking characteristics of the East London cluster is its organic growth. It has been evolving for years under the policy radar, and only now – as it reaches critical mass, and becomes the figurehead of London's digital economy – is it receiving much public attention.

This raises an important question for the future of the capital's digital economy. What, if anything, can government do to help? Our international case studies suggest that in some cases, government can help stimulate long-term development. In Silicon Valley, for example, government defence contracts – perhaps unintentionally – helped turn a defence industry hotspot into the economic powerhouse of today, A similar dynamic is evident in Silicon Wadi, with the Israeli military playing a number of important roles. And in New York – which shares many similarities to the UK capital – city government is now actively trying to accelerate digital economy activity in Silicon Alley.

Our evidence tells us that artificially generating clusters in mature industries – as digital content and ICT now are – is very difficult to do (Moretti, 2012). London has momentum, but does not have first mover advantage. Getting the policy mix right is crucial. We have suggested a number of policies that we believe will be helpful.

Long term, a sensible approach for London would be to promote investment in new thinking, new ideas and smart people. In part, this means maintaining public investment in digital sciences, and maintaining incentives for private investment – such as the R&D credit, and recent tax breaks for video game companies. It is also likely to mean developing bigger 'innovation competitions', along the lines of the LaunchPad scheme.

London's universities are another key element in this strategy. The GLA and TCIO need to encourage London universities' sense of wider mission in the years ahead.

All of these initiatives are enabling the real action, which takes place inside firms. The decisions they make about strategy, markets, products and services and how in turn customers and competitors respond, will determine their success, and on a more macro scale, the success of the cluster. As we have argued, policy should re-orientate to place support for firms at its centre, consider additional wider strategic initiatives that help build the conditions for success and continue to keep a close ear to the views of entrepreneurs and investors. Tech City should be about taking what Inner East London already has, and helping it get even better.

APPENDIX 1
PROJECT METHODOLOGY

A1.1: **Aims and approach**

Our research aims to understand the Inner East London digital economy cluster in detail: to locate it in international technology space, understand the local context, identify key trends over time, and ways of working/being for today's entrepreneurs, firms and workers. To do this, we use a mixed methods approach, combining comparative, quantitative and qualitative elements:

- We use a series of descriptive ecosystem case studies to provide international context, drawing on existing literature and online sources;
- We use microdata analysis and GIS mapping to develop a detailed picture of the firms in the London digital economy, and the development of the Inner East London zone;
- We use semi-structured interv iews with a random sample of firms, and with key stakeholders to understand the characteristics of the cluster from 'street level';
- We use scenario planning and a stakeholder roundtable to develop a picture of likely futures for the cluster, and recommended changes to the strategy/policy mix.

This combination allows us to look at the Inner East London system in context, at different spatial scales and at different points in time. Our primary point of analysis is the firm, rather than the cluster. Most importantly, by drawing on multiple sources of information, we avoid talking only to well-known London tech firms – whose experience may not be representative. As such, we should develop an unvarnished picture of the Inner East London system.

A1.2: **Quantitative analysis**

Our quantitative research uses firm-level microdata from the UK Business Structure Database. This dataset covers almost all firms in the UK, allowing us to build detailed

descriptive information on the digital economy inside and outside Inner East London, its development and current position. We also used microdata from the 2010 Small Business Survey to compare Inner East London tech firms with the Greater London and UK averages. Alongside the microdata analysis we also use local area aggregate data from the Business Response and Employment Survey (BRES). Employment data from BRES are used to generate job density maps, helping us locate the Inner East London cluster in physical space. Mapping was done by Dr Duncan Smith at UCL's Centre for Advanced Spatial Analysis.

A1.3: **Qualitative research**
Our qualitative research is at the heart of the analysis. There are no official business directories for Silicon Roundabout firms, but we were able to construct a sample of 100 firms with the help of the Tech City Map, the largest and most comprehensive unofficial listing. The Tech City Map includes both well-known East London firms and newer, younger companies. We were concerned to talk not only to the well-known 'usual suspects', but to cover a representative sample of the whole ecosystem. The most robust way to do this is through random sampling, as this maximises the chances of picking a representative mix (as opposed to, say, trying to pick all the businesses by hand).

The Tech City Map is constructed from two separate lists of software/tech start-ups and digital economy businesses, plus a number of firms who have signed up online. Working with Tech City Map, we drew a sample of 100 businesses, stratifying our sample on tech start-ups, and then did some manual cleaning to remove a small number of irrelevant firms (e.g. t-shirt printing).

We complemented our sample with two 'control' groups, in order to compare and contrast:

• We sampled five firms from Wired's 2009 list of 'Silicon Roundabout' firms – who were considered most likely to be large, established businesses;

• We sampled five firms from outside Inner East London, from the DueDil/Tech Hub list of 'real tech startups' – in order to compare experiences outside of Inner East London.

We contacted firms by email, following up with further emails/phone calls. Using a topic guide, we conducted a series of semi-structured interviews, talking to firm founders or to senior staff. In total, we contacted 34 firms in Inner East London and spoke to 36 people (including four of the Wired group). We also spoke to three firms/founders outside Inner East London. All interviews were recorded, transcribed and anonymised. Outline text coding was done using Dedoose.

Firm interviews were complemented with a number of stakeholder interviews, covering key national/local policymakers, finance, workspace and education providers.

APPENDIX 2
DEFINING THE DIGITAL ECONOMY

We use the 2010 BIS/DCMS definition of the 'digital economy'. This is broad-based, and includes both ICT activities (such as software development) and digital content activities (such as digital media and advertising). We have used four-digit 2003 SIC codes in order to consistently analyse firm and employment data from 1997 through to 2010.

Information and communications technology (ICT) sectors

30.01	Manufacture of office machinery and computers
30.02	Manufacture of computers and other information processing equipment
31.30	Insulated wire and cable
32.10	Electronic valves and tubes and other electronic components
32.20	Television, radio transmitters and apparatus for telephony and telegraphy
32.30	Television/radio receivers, sound or video recording or producing apparatus/rel goods
33.20	Instruments and appliances for measuring, checking, testing, navigating, other purposes
51.43	Wholesale of electrical household appliances and radio and television goods
51.84	Wholesale of computers, computer peripheral equipment and software
51.85	Wholesale of other office machinery and equipment
51.86	Wholesale of other electronic parts and equipment
51.87	Wholesale of other machinery for use in industry, trade and navigation
64.20	Telecommunications
71.33	Renting of office machinery and equipment including computers
72.10	Computer hardware consultancy
72.50	Maintenance and repair of office, accounting and computing machinery
72.60	Other computer-related activities

Digital content sectors

22.11   Publishing of books
22.12   Publishing of newspapers
22.13   Publishing of journals and periodicals
22.14   Publishing of sound recordings
22.15   Other publishing
22.21   Printing of newspapers
22.22   Printing not elsewhere classified
22.24   Pre-press activities
22.25   Ancillary activities relating to printing
22.31   Reproduction of sound recording
22.32   Reproduction of video recording
22.33   Reproduction of computer media
72.21   Publishing of software
72.22   Other software consultancy and supply
72.30   Data processing
72.40   Database activities
74.40   Advertising
74.81   Photographic activities
92.11   Motion picture and video production
92.12   Motion picture and video distribution
92.13   Motion picture projection
92.20   Radio and television
92.40   News agency activities

APPENDIX 3
DATASETS

Good quantitative data on the London digital economy are not easy to find. Ideally, we wanted a single large data source that would give us firm-level information on business and founder characteristics, as well as ways of working, opportunities and challenges. The sample size would also be big enough to look at Inner East London in detail.

The first type of data source is business surveys. The London Annual Business Survey, which met all these criteria, was discontinued in 2007 and has not been replaced. The 2010 Small Business Survey provides tolerable coverage at Greater London level, and is used in the analysis, but the sample is too small to use at Inner East London level.

The second type of data source is large commercial business databases such as Orbis, or Companies House data, as used by DueDil/Tech Hub (DueDil & TechHub, 2011). These datasets are very large and provide a lot of firm-level information – but are often incomplete at firm level, and require substantial cleaning. Given the project timescales, this was not a realistic option – although future research could productively make use of these datasets.

The third type of dataset is public microdata, such as the Business Structure Database (BSD). The BSD is drawn from Companies House and VAT registration data, and as such is close to a universe of UK firms. The data are accessed through the UK Secure Data Services, and is provided a series of cross-sections from 1997 to 2010 (at the time of writing). The BSD provides information on birth and death dates, turnover, employees, location and sector. Together, these characteristics make it uniquely rich as a data resource. For the purposes of this project, its drawback is that it excludes any companies not registered for VAT – which is likely to miss out a number of digital start-ups and SMEs in the pre-revenue phase. Manual checking by SDS staff using parts of the Tech City Map confirm this tendency to undercount. Employment data are likely to be more or less unaffected, since start-ups have very low headcounts. However, firm counts will

be significantly different. Since we know the direction of bias in the BSD, we can say that these firm counts are likely to be substantial under-estimates. We can also say that firms not in our database in any given year are likely to enter it in later years – conditional on survival and revenue growth to the VAT threshold. However, this means that changes in the trend in any given year may be the result of already-existing firms entering/leaving the BSD, rather than new firm creation/exit.

For digital economy mapping, we use employment data from the Business Response and Structure Database (BRES), accessed through NOMIS. BRES is assembled using BSD microdata, and is thus fully compatible with our BSD-based analysis. Industry-consistent SIC codes for BRES are currently only available for the years 2008 to 2010, so we are unable to construct historic maps. Future research could use the BSDS source data to build maps over much longer time periods.

APPENDIX 4
GLOSSARY

Agglomeration economies—the economic benefits that firms obtain from being located close to each other.

Angel funding—Investment in early stage companies, often in exchange for equity ownership. Fills the gap between borrowing from friends and family and venture capital. Unlike venture capital, investors often commit their own money.

BIS—UK Department for Business, Innovation and Skills.

Bootstrap—Scrounge, starve and generally cut costs to a minimum in a bid to get a new business off the ground, generally without recourse to funding beyond family and friends.

Business Increase Bonus—allows local authorities to retain some of the uplift in business rates for a period, rather than passing the money to central government for re-allocation.

Cluster—spatial grouping of inter-connected companies.

DCMS—UK Department for Culture, Media and Sport.

Digital content—see Appendix 2.

EIS —Enterprise Investment Scheme or government project designed to help smaller higher-risk companies raise finance by offering tax breaks to investors.

Entrepreneurs' relief—allowance taxed at a reduced rate for entrepreneurs selling their business.

Enterprise Capital Funds—government funding alongside private sector investment to establish funds that finance SMEs.

FDI—foreign direct investment or overseas investment.

FE—further education.

GLA—Greater London Authority or the administrative body for Greater London.

ICT—Information and Communication technologies, see Appendix 2.

Incubator—programmes designed to support early stage companies by offering business support services and resources.

Inner East London—for the purposes of this report, nine East London wards spanning the boroughs of Islington, Hackney, the City of London and Tower Hamlets.

Knowledge spillover—passing of experience or information between firms.

Localisation economies—the benefits that accrue from many firms in the same industry locating close to each other.

Microbusiness—company with ten employees or less.

Microdata—statistical term for individual response data in surveys.

NPPF—National Planning Policy Framework.

Seed funding—very early stage financing for nascent companies, usually of smaller amounts and at an earlier stage in a company's development than vc funding (see below).

SEIS—Seed Enterprise Investment Scheme: offers tax incentives for investors bankrolling small businesses in the early stage.

SIC codes—Standard Industrial Classification codes, used to distinguish different types of business. sic4 refers to four-digit codes, a high level of detail.

SME—small and medium sized enterprises or companies.

Start-ups—companies less than three years old.

Tech City Investment Organisation (TCIO) —government agency leading on the development of the Inner East London technology cluster. Part of ukti (see below).

Tier 1—the uk Government's category for highly skilled migrants. Within this, exceptional talent places are granted to a small number of scientists and engineers.

UK Innovation Investment Fund—public fund set up in 2009 to invest in technology-based businesses with high growth potential.

UKTI—The uk Government agency for Trade and Investment.

VC—venture capital, or financing in exchange for a percentage of the company, often to early-stage companies.

NOTES

1. We distinguish between the 'Inner East London digital economy' or 'digital cluster' – the thing – and 'Tech City' – the strategy and set of policies to develop it.
2. www.techcitymap.com
3. The exceptions are the Tech City Map and the DueDil/TechHub analysis, both of which have a specific sectoral focus.
4. Bishopsgate, Bunhill, Clerkenwell, Cripplegate, Haggerston, Hoxton, Portsoken, Spitalfields, St Peter's and Whitechapel.
5. Tech City Map have developed experimental SIC codes for this purpose.
6. http://startupchile.org/about/the-program/
7. Unless otherwise stated, figures for firms refer to the enterprise. In a few cases, sites visited are local units of a larger business.

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All over the world governments dream of creating centres of digital innovation to rival Silicon Valley. The British government is no exception. Over the last two years it has led a high profile drive to support 'Silicon Roundabout' – the high tech cluster that has emerged in Inner East London – and turn it into something bigger: 'Tech City'.

But policy makers haven't known as much about the cluster as they need to. Based on fresh qualitative and quantitative research, including in-depth interviews with digital entrepreneurs in the cluster and beyond, *A Tale of Tech City* maps the development of 'Silicon Roundabout' from its emergence in the late 1990s, and provides the most detailed account yet of the firms and jobs that make up the cluster. Counting over 3,200 firms and over 48,000 jobs, the research shows that the cluster is larger than is generally appreciated.

Despite this, future growth is not guaranteed. *A Tale of Tech City* puts forward possible scenarios for how the cluster could develop and makes recommendations on skills, access to finance, workspace, connectivity, mentoring and business development to help 'grow our own' high-value digital firms of the future.

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