IT’S WORK BUT NOT AS WE KNOW IT

AN EXPLORATION OF WHAT THE FUTURE OF WORK MEANS FOR BUSINESS, SOCIETY AND PUBLIC POLICY

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An exploration of what the future of work means for business, society and public policy

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## Part 1  The emerging world of work

1  The progress of new ways of working  
1.1 The rise and rise of part-time working  
1.2 Mobile working, supported by new technologies, is also developing fast  
1.3 Home-based working  
1.4 Changing occupational structures with digitisation and robots  
1.5 Changing contractual relationships with employers  
1.6 Changing demographics  

2  Different conceptions of places to work  
2.1 Changing the Workplace  
2.2 Working beyond the ‘workplace’  
2.3 The emerging workhub / coworking sector  
2.4 Virtualising work, dematerialising products  

3  Emerging technologies for work and their impact  
3.1 End user devices and applications  
3.2 Infrastructure  
3.3 Cloud computing  
3.4 Video communications and collaboration technologies  
3.5 New screen and surface technologies  
3.6 The impacts of artificial intelligence and robots on work and the workplace  
3.7 Ubiquitous computing  

## Part 2  The impacts

4  Impacts for business  

5  Impacts for how we live  

6  Impacts for how government works  
6.1 What next for government?  

7  Public policy responses  
7.1 Supporting the new world of work – infrastructure  
7.2 Supporting the new world of work – skills  
7.3 Supporting enterprise and economic development  
7.4 Planning for future communities  
7.5 Reducing the need to travel and supporting sustainable workstyles  
7.6 Supporting balanced lives and an inclusive workforce  
7.7 Taking policy changes forward
Introduction

What can we do to maximise the potential benefits arising from the changing nature of work?

This is the question at the heart of this study.

Organisations are becoming more aware of how working smarter can enable them to do more with less. At the same time, employees are adopting a range of flexible working practices to enable them to balance work better with their other aspirations in life.

That said – can we be more ambitious in our aims for working smarter?

First, new technologies already in development will offer **further and exciting possibilities for transforming the nature of work, and of workplaces**. Innovations in technologies entering the workplace now and over the next 10 years will accelerate current trends, affecting how we interact with our work and with each other. It will transform the concept of ‘workplace’. These changes are happening in the context of changes in the composition and aspirations of the workforce. Together these changes offer the prospect of significantly different ways of working in organisations. Organisations need to look further forward if they want to make the most of this new world of work.

Secondly, new ways of working have the potential to enable a **wide range of social, economic and environmental benefits** – if we have the imagination and courage to adapt public policy to support transformative changes in the ways we live and work.

This study is an exploratory one. It involves pulling together research from around the world, presenting new analyses, and also taking a number of journeys into the rapidly changing world of work in the company of people who are making a difference including Plantronics, Citrix, Vodafone, our case study organisations and leading thinkers in the field.

We look at the changes and potential benefits for large enterprises, government organisations, small and micro businesses, and start-ups. And the benefits for people who work in and with them.

Then we extend the exploration to looking at the wider social, economic and wider goals that these changes can support.

The brief for the study is intentionally wide. There have been many studies that look separately at aspects of the whole, focusing on e.g. flexible working, work-life balance, remote working, new working environments, technology change, labour market change, etc. What we have set out to achieve in this study is a work of synthesis – what do these changes mean when considered together? How do they interact with each other, what will be the overall impacts, and how should we as businesses and society deal with them?

We hope this study will open doors to new ways of thinking about the future of work and its potential impacts.

**Structure of the report**

**Part 1** takes a hard look at the kinds of changes that are transforming the nature of work, and changes that are coming over the horizon. The **evidence, case studies and analysis** here provide new insights and help us understand the future world of work that is breaking in on the present with ever increasing urgency.

**Part 2** asks the question, **what happens to business and society when almost any place can be the workplace?** We look at the potential impact of these changes on businesses, on government and on society and look at the issues and opportunities that arise – what could happen, and what should happen. There are significant public policy questions to be addressed. In this study we do not claim to have all the answers. But we hope our explorations play a part in helping policymakers formulate the right questions, and that we provide pointers towards new and constructive approaches in a fast-changing world.

In the end, the study is about planning for tomorrow. To do this, we need to move away from the Industrial Age assumptions that inform our views about what organisations are, how work is organised and where it takes place. And we propose that the right approach is not to think in terms of the past, slightly modified by current trends. Instead we should be looking ahead ten years, and thinking, “Where could this all take us by 2024? And where would we like it to take us?”
In Figure 1 below we summarise the key trends we identify as affecting the world of work. In the first 3 columns trajectories of change are listed under the headings: Workplace, Technologies, and Workforce.

After looking at the nature of the changes in, we will look at the impacts in two particular directions:

1. The impacts on future forms of organisation, employment and enterprise
2. The implications for public policy

In each instance we will be asking the question, what do we need to do reap the maximum benefit?

Figure 1: Scoping transformative trends and their impacts
Executive Summary

The world of work is changing fast – but are we ready for what the future will bring? The changing nature of work has impacts far beyond the workplace. There are potential benefits, but we will not capitalise on them if we try to cling on to the structures of 20th century, Industrial Age working.

Changes in the nature of work

There are many changes coming together that are profoundly altering the way work is done and where it is done.

The rise of part-time working in the industrialised world is one of the strongest trends in the labour market – the trend for working fewer hours is here to stay.

Mobile working, supported by new technologies, is developing fast. Some 25% of EU workers are classed as ‘e-nomads’, and globally more than a third of the workforce is expected to be mobile by 2015.

Home-based working is being transformed, and is growing fast. In the UK there’s been a 32% increase in the numbers working from home since 2001.

Home is also becoming (once again) the default location for new business, despite trends to ever smaller homes. And new businesses are not in a hurry either to move into separate business premises nor to take on employees, preferring to be independent agents, working with partners as necessary.

Overall there is much more fluidity in the location of work, with people – where organisations support it – able to work wherever is most appropriate for the task. The proportion of people working in traditional workplaces such as offices and factories is declining fast.

The nature of the workforce is also changing with digitisation, artificial intelligence and robotics. Moving service work online, automation in factories and automating process work in offices is leading to the ‘hollowing out’ of the labour market, with the expected replacement of many process-oriented jobs in the middle by technology.

New roles are emerging at either end of the labour market: high tech high skill work in innovation and maintenance of these systems, and lower skill more hands-on work maintaining robots or working alongside them. This also changes the imperatives around where work is done.

Contractual relationships are also changing, with employers using more freelancers, contractors and temporary workers. The ‘workforce-as-needed’ sits alongside, and requires, a more entrepreneurial approach to managing careers.

Demographic changes are also leading to more people working beyond the traditional retirement age. Flexible forms of work and self-employment or starting a business in later life are part of the work landscape, rather than an abrupt halt to full-time employment.

Changes to the workplace and technologies

At the same time, ‘Smart Working’ using new technologies and new approaches to workplace and working culture is radically transforming the office:

- The office itself is transformed, becoming typically reduced in size, more intensively occupied, having a wider variety of ‘activity-based’ work settings, and more focused on collaboration rather than desk-work
- Work takes place in other physical locations, outside of the traditional workplace
- The network becomes the office, the shop, the warehouse/distribution centre, or factory.

While offices are used more intensively, factories, warehouses and locations for primary industries (e.g. mining) have fewer people on site as a result of automation, robots and remote control.

Increasingly powerful and portable devices are increasing the choices around where we work, just as work itself is becoming more knowledge-based and capable of being carried out from anywhere.

New screen and surface technologies, voice recognition and embedded artificial intelligence are taking us to the stage where the mouse first and then the keyboard will lose their central role as tools for work. This will have major impacts on how spaces for work are designed, both in the office and beyond. Designing offices primarily around desks is on its way out over the next decade.
New conferencing technologies, flexible telephony and social media applications are central to the new world of work. These are supported by a growing infrastructure of superfast broadband, wi-fi hotspots and cloud computing.

As well as providing productivity benefits to existing organisations, the new infrastructure of work also provides a platform for the rapid and low-cost development of new enterprises.

In the coming years we can expect remote collaboration to become much more the normal way of doing business, rather than the exception. Ever more immersive collaboration technologies such as 3D video communications and holopresence will come on stream to add new dimensions to remote collaboration.

Ambient computing – intelligent computing embedded in environments, interacting both with us and with other devices and technologies – will develop as a feature of working environments. This will be not only in offices, but wherever work is done, including public spaces and the home.

The more footloose nature of work is reflected in the rapid growth of the ‘workhubs’ or ‘coworking’ sector. Growth is particularly intense in Northern Europe and the USA, but is developing globally. Workhubs provide places with professional facilities where people can work on an as-needed basis, rather than renting an office or studio.

Workhubs can be expected to grow in line with the growth in home-based working on the one hand, and the downsizing of traditional and underused office space on the other.

The future for work and organisations is to be ever more flexible and agile.

What businesses should do

The changing nature of work is challenging, but also offers great potential benefits – of doing more for less, serving customers better, adapting to new market conditions and innovating faster, providing better working environments and workstyle options for employees.

But these benefits will not be achieved without adopting a mindset for transformation that recognises the scope of the changes taking place. It goes far beyond enabling ‘flexible working’ by granting requests from individual employees for new workstyles. It involves developing a vision and strategy for the comprehensive adoption of smarter ways of working, and investing in the tools, work environments and culture change to maximise the benefits.

Businesses should adopt completely new approaches to where people work, moving away from 20th century factory models of work organisation. They should think of being able to work more or less from anywhere, and recruit the talent they need from anywhere without necessarily requiring relocation.
For employees whose work remains hands-on or site-specific, other forms of time-based flexibility should be part of the strategy. Meeting employees’ aspirations for flexibility within an overall strategy for Smart Working will produce loyalty and engagement, creating better work and better places for work, wherever the work is carried out.

Small businesses and start-ups should embrace the strategy of ‘spaceless growth’ from the outset. Home is now the default space to start a business, and fledgling businesses should not be in a hurry to acquire expensive overheads in new premises. Money saved can be invested in developing the business.

The portability of devices, access to broadband or 3G and the ability to use workhubs and public spaces for meetings means for the entrepreneur and freelancer the office is wherever it needs to be.

What government organisations should do

As employers, and custodians of taxpayers’ money, government organisations have a duty to spend the money wisely. Adopting Smart Working enables them to reduce overheads in buildings, resources, and travel and channel it to delivering better services. At the same time, by embracing a strategy for Smart Working, they can offer better working conditions to staff while at the same time increasing efficiency.

Many government organisations still use paper-intensive processes, which tether people to the office and to old ways of working, generating much unnecessary travel for routine tasks. Driving down paper should be a priority, moving to all-electronic systems.

New technologies should be used to support remote and hybrid meetings, with targets set for cutting meetings by at least a third. Remote collaboration should be the default rather than travel, saving travel for the occasions when getting together physically adds real value, e.g. for decision-making, team-building and innovation work.

A flexible approach to workplace in government should include working much more in the field, alongside citizens, sharing of workplaces on a routine basis by different departments, agencies and authorities, working from home and from workhubs.

Government workplaces need to evolve towards a ‘burealess bureaucracy’ – with the focus on people and their work rather than sitting at desks in offices, doing process work.

Political leaders need to take a lead on this. Elected members need to be brought into the 21st century. New protocols should create working practices where interaction with civil servants need not be physically face-to-face, and where they think of themselves as being part of overlapping virtual teams.
Travel and expenses can be greatly reduced by using modern conferencing technologies for committee work and taking part in debates and votes. This would enable representatives to remain more closely connected with their local constituents.

Rethinking public policy

Maximising the benefits from the emerging world of work will depend on modernising several areas of public policy.

Infrastructure

The emerging world of work requires excellent communications infrastructure. That means ubiquitous, superfast broadband and mobile telecommunications. This may be expensive, but it is not as expensive as building physical transport infrastructure such as motorways and high speed rail. This technology infrastructure carries economic activity and innovation in a very direct and efficient way.

Next generation applications will be bandwidth-hungry, using more in the way of immersive video, 3D imaging etc. These applications will be used not only for entertainment purposes, but also as everyday business tools. There needs to be a strategy for keeping ahead of the demand, rather than playing catch-up.

Skills

Policy for education and skills needs to recognise the hollowing out of the workforce as process work is increasingly automated. This means an increased emphasis on the high tech engineering and technical skills to support a world where increasingly we work alongside robots and artificial intelligence.

There will be a need for retraining and reskilling in the growth areas of high level knowledge work, and also health, education, cultural and personal services – and in starting a business to support work in these fields.

People will also need more frequent skills training to keep abreast of the changes in the technologies used for work. The model of the majority of the population having a one-off spell in higher education after they leave school is looking increasingly archaic. Access to high level training and education needs to be available throughout life, with access to higher and vocational education easier to manage throughout one’s working life.

As well as being able to ‘work anywhere’ the capacity to ‘learn anywhere’ means that policy and provision should increasingly support a mix of physical face-to-face, virtual face-to-face and self-managed online learning.

Management training and leadership development need to include essential skills for the emerging world of work, in particular how to manage, mentor and coach virtual and distributed teams, how to build a trust-based working culture and how to manage by results rather than by presence.

Enterprise and economic development

The emerging world of work lends itself naturally to entrepreneurship, locally-based enterprise and ‘smart economic growth’. New businesses can be home-based or occupy low cost premises in less favoured areas and not be disadvantaged by distance from markets – providing the infrastructure is available to work there.

Home as a centre of enterprise should be made a central plank of policies for localism. Outdated regulations preventing or over-regulating home-based work should be reviewed.

Public authorities should welcome and support the establishment of workhubs/coworking spaces. These will support local economic growth and can contribute to the revitalisation of town centres where shopping is in decline.

As self-employment is strongly connected to home-based working, it is particularly relevant in areas with low levels of self-employment. Economic development can be promoted in less favoured areas without building workplaces as traditionally conceived, and without depending on large-scale inward investment or public subsidy.

Home-based working is not all about working in high tech occupations. Many home-based businesses are involved in craft-based occupations, in food preparation, and in personal services providing healthcare and therapies. How they operate is being transformed by new technologies, and support in using them can help such businesses improve efficiency and market access.

Good support infrastructure for locally-based working can prove attractive to ‘sea turtles’ – people who have moved away for career reasons, and can now return home with their skills and market connections.
Planning for future sustainable communities

Designation of land for employment needs to be rethought in the context of the changing nature of work. Zoning for industrial or warehousing uses may create fewer local jobs than a community of live/work businesses. A modern office where Smart Working is embraced, on the other hand, will have much higher levels of utilisation, with a high throughput of people coming and going during the day. A new and more flexible approach is needed to land use and different types of employment.

The new world of work blurs the boundaries between work and home, and between work and other ‘non-work’ spaces. Planning for future communities should recognise the importance of mobile and home-based work. So the default separation in planning policy between homes and workplaces needs to end.

The design of homes should include the potential to work effectively from home. A proportion of homes should be designed as live/work properties, where there is sufficient space to run a business and receive clients and/or employ a small number of staff.

New employment-focused approaches to housing density need to be developed, as current approaches to high density are at odds with the changing nature of work. Planning needs to take account of the home and the garden as spaces for economic activity and self-sufficiency.

Reducing the need to travel

Supporting the capacity to work from home and in local workhubs with good design and infrastructure will have travel reduction impacts.

‘Virtual mobility’ – travelling without moving to undertake remote activities – should be seen as an important travel demand tool. By eliminating journeys it has a more positive impact on sustainability compared with policies that encourage people simply to shift their journeys to a different mode of transport such as bus, rail or car share, and at much lower cost.

Modest investment and awareness-raising programmes promoting remote working and conferencing technologies will achieve more in terms of travel reduction than any measures to shift people’s journeys from car to public transport. ‘Travelling by not moving’ needs to be a core element of any travel demand management policy, at all levels of government.

Supporting balanced lives and an inclusive workforce

Legislation in many countries supports people in requesting flexible workstyles. The problem is that such policies are based on the idea of ‘flexibility as exceptional’. This needs to evolve towards an approach of ‘flexibility as normal’.

Policy should encourage and expect employing organisations to embrace smart and flexible working – in the end this would reduce the number of requests, as changes to working pattern would either be unnecessary or easily accommodated within a strategic framework of flexibility.

Flexible working should not depend on eligibility tests around having caring responsibilities but be open to all, subject to genuine business considerations.

Governments should work with employers to find ways to support flexible work options for people not in work. For those with disabilities, long term conditions that limit the capacity to work, or without good transport connections where they live, as well those with caring responsibilities, the right to suggest flexible working patterns when applying for work without fear of being rejected would have great benefits. It’s time to embrace the future positively, rather than try to fit the new world of work into the structures of yesterday.
What the future of work means for business, society and public policy

Part 1 The emerging world of work

1 The progress of new ways of working

The title of this study – It’s work … but not as we know it – implies that there is a kind of work that we do know, and which is in the process of being transformed. So we begin by looking at the ways in which traditional notions of work are being transformed at the moment.

Loosely speaking, ‘traditional’ ways of working involve:

• set and regular hours – usually ‘9 to 5’ excluding weekends,
• travelling to a regular workplace which is separate from the home
• being based at a designated place at the workplace (e.g. in offices, this would usually be an assigned desk), and
• being an employee.

Of course, there have always been exceptions to this, but it broadly defines what was accepted as a norm throughout most of the 20th century, and still is for many people around the world. For emerging nations that are urbanising rapidly, this is the kind of work experience that is being introduced for many, both in companies and public services.

Not only has it become the set way of working for the majority in the developed world, but it has also been thought to be the form of working that was most desirable – offering stability, regularity and security. As we shall see, this mode of thinking remains dominant in the minds of many people, whether employers, employees, trade unionists or policy makers.

However, since the 1980s there has been a trend towards new, more flexible and ‘smarter’ ways of working. A range of trends has contributed to this, such as increasing numbers of women in the workforce, new technologies for work and ‘lean’ thinking in organisations. There are societal pressures where individuals express stronger aspirations for a better work-life balance and for more autonomy and choice in their working life.

These trends have been supplemented by governments introducing various kinds of legislation about flexible working or specifically about particular forms of it, such as ‘teleworking’.

There are no all-encompassing global indicators that monitor the uptake of new ways of working. But around the world there is strong evidence of change.

1.1 The rise and rise of part-time working

One of the major trends in the labour market over the past decade has been the growth of part-time working, although the rate of increase varies in different countries. Mostly it has been associated with the increased participation of women in the urban workforce. Part-time working increased from 17% of the workforce to 25% in European Union countries between 1991 and 2010. 38% of women work part-time compared to 13% of men. The Netherlands in particular has a high level of part-time working – 51%, with 80% of women and 25% of men. (Eurofound, 2012). Where studies are carried out, they tend to show around 75% who work part-time do so out of choice, with the remainder looking for opportunities to increase their hours of work.

Part-time working has been actively promoted by initiatives such as the UK government’s flexible working regulations, which for a decade have given people with caring responsibilities the ‘right to request’ flexible working, and the Quality Part-Time Work Fund (Lyonette & Baldauf, 2010).

In the United States, part-time working has risen from 17% to 20% during the recession. In 2012-13, three quarters of new jobs are part-time. Many commentators find in this a cause for concern, indicating a weak recovery. However, despite a small percentage increase in the number of people in ‘involuntary’ part-time work, 70% are in part-time work out of choice, rather than being a stop-gap while they look for full-time work.1

Even so, it is routine to hear politicians, economists and trades unionists take a condescending attitude towards part-time working, as if somehow part-time jobs are not real jobs. In fact they have great value to both employers and employees, and are a feature of the labour market that is here to stay.

There has been a trend over the past two hundred years for reformers to campaign for reductions in working hours – and it has seemed to have settled at 35-40 hours as the norm for a ‘full-time’ job. However, there are people who see further reductions as desirable. Two recent publications by the New Economics Foundation, 21 Hours (NEF, 2010) and Time On Our Side – Why we need a shorter working week (NEF, 2013) advocate working towards new norms for weekly working hours, proposing amongst other things 30 hour week as an interim norm, and shorter working weeks for new graduates and people heading for retirement as standard.
Part 1 The emerging world of work

There are many issues here, but the aim is to achieve a more equitable sharing of work and reward, and so release time for other personally and socially valuable activities.

Part-time working is by no means new. But it does seem set to be an enduring part of the new world of work. How it interfaces with other kinds of flexibility and with Smart Working will be an important factor in the future of work.

1.2 Mobile working, supported by new technologies, is also developing fast

The 5th European Working Conditions Survey (2012), from the European Foundation identified 25% of the EU workforce as ‘e-nomads’. That is, mobile workers who make extensive use of information and communication technologies (ICT) to support working in a variety of locations.

There are two key factors at work here that are having a large impact on the nature of work and workplaces, and on how we understand mobility:

1. Traditional kinds of field work are being enhanced by effective use of ICT to eliminate multiple trips to a base location, as the mobile worker can work from any location and fit more productive work into the day.

2. Other kinds of worker who might have been anchored to an office (or other) base are set free to work anywhere. This is having a major impact on the way many managers and autonomous professionals work.

It is also telling that this reported increase in the number of mobile workers comes at a time when many traditional kinds of field sales and customer service roles (e.g. insurance sales representatives) have been replaced by call centres and web-based services.

So the scale of transformation in mobile working is to some extent understated by the headline figures. It is in effect a many-sided transformation involving:

- office-based jobs becoming ‘footloose’ (mobility increases)
- mobile workers becoming ‘untethered’ from a traditional base (mobility increases)
- previously mobile workers losing their field roles: these roles may variously be office-based, home-based, or automated and virtualised (mobile roles are eliminated, or the mobility is altered and reduced).

Overall, as the data shows, there is a significant net increase in mobility.

These trends are set to continue, supported by an ever-increasing range of portable devices, better integration with office systems and the development of cloud-based applications to integrate the activities of workers, wherever they are working.

A much-cited study by IDC has predicted that by 2015 the number of mobile workers will rise to 1.3bn, that is 37.2% of the global workforce, and a rise of 300 million since 2010 (IDC, 2011). This figure appears to be on the high side, and is based on a methodology combining a number of sources. It also uses a definition of ‘mobile worker’ that seems to include almost anyone who moves while working – from road warriors to home-based telecommuters to fork-lift drivers.

The estimate is also linked to the growth in the market for mobile devices, where the estimates are probably on more solid ground. But not everyone who works with a mobile device can be considered a mobile worker.

The different takes on the numbers arises in part from different ways of identifying mobile workers. Figure 2 opposite sets out the overlapping workstyles in terms of where people work.

Broad definitions of mobile working, such as the IDC one, include all mobile and home workers (and in this case also those people who are mobile on a single site). Many national statistics looking at home workers only include those in our segment 3 of figure 2 – that is people who work most of the time at home. However, one of the fastest growing areas of home-based working is amongst people who work in several places, with home as their base. This includes our segment 6 in the figure, and some people in 7 too.

Though the definitions and consequently the data may vary, the trends are very clear. The numbers of workers in categories 2 through 7 are increasing as a percentage of the workforce, while those in category 1 are decreasing.

The changing locations of work that result are of great significance not only for business, but for society as a whole in how we plan future land uses and transport, and how we design workspaces, homes and communities.
1.3 Home-based working

After the growth of part-time working, one of the most striking features of the labour market in many Western countries is the growth of home-based working.

In the UK, 4.1 million people work from home for at least half the week. 13.6% of the workforce. For this study we have commissioned a special analysis of the UK Labour Force Survey to look at the extent and regional spread of home-based working across the country.

Our findings show a 31.7% increase in the numbers working from home since 2001. 62% of those working from home are self-employed. The numbers of home-based self-employed – running an enterprise from home – has increased by 33%, from 1.9 million to 2.5 million. This actually understates the numbers of people running a business from home, as many business owners set up a limited company of which they are the sole employee, and are not counted in this category.

Currently 6% of employees work ’mainly’ from home – 1.54 million employees. The Fourth Work-Life Balance Survey for the UK government (BIS, 2012a) found that 13% of employees ‘regularly’ work from home – a further 7%. 44% of those employees whose employers allow working from home do so, with the uptake significantly higher amongst parents (53%). Uptake of home-based working is lower amongst employees than the self-employed, but appears to be increasing fast. As those who can do so increase the frequency of working from home, this will impact more on the official statistics. More importantly, it will have greater and greater impact on how space is used, on transport activity and on how enterprises organise themselves.

There are higher numbers of home-based workers in the South-West, South-East and East of England – more or less below a line from the Wash to the mouth of the Avon, and more or less corresponding to the more economically vibrant parts of the UK. There are lower levels of both home-based working and self-employment in areas dependent on traditional industries and public sector employment. This is an issue we will return to when looking at implications for economic development policy in the post-industrial age.

65% of home-based workers in the UK are male. They outnumber women both as home business owners (68%/32%) and as employee homeworkers (61%/39%). It appears that over the decade the gender imbalance amongst employee homeworkers is moving towards greater equality. However, persisting low levels of female self-employment as a whole is one reason for the dominance of men in the field of home-based business.

Looking deeper into the statistics in this way is illuminating and counteracts both the dominant image of home-based working in the media (see photo next page) and the thrust of government policy on flexible working to date, which assumes higher female uptake of homeworking as well as other forms of flexibility and also focuses on large organisations rather than small and micro enterprises.
Despite the overall dominance of the more urbanised South and East of England in homeworking, generally there are higher levels of home-based working in rural areas – by about 50%. So the picture of higher numbers of homeworkers in the South and East has to be qualified by noting the higher incidence within the most rural areas. And the levels increase according to rural remoteness, according to a study commissioned by the Commission for Rural Communities in 2005 (Dwelly et al, 2005). This is despite relatively poor access to broadband and mobile networks. Home-based working does seem a more natural option for people in remote areas. However, support for this style of working is often absent in economic development policy.

In the USA 5.9 million workers cite the home as their primary place of work, 3.1 million of these being employees. (The question asked in the American Community Survey is about means of travelling to work, and responses probably do not include many of those who use home as a base.) 24% of employees report working from home at least some hours.

Analysis by Global Workplace Analytics has found that regular telecommuting grew by 73% between 2005 and 2011 compared to only 4.3% growth of the employee workforce (i.e. not including the self-employed). Growth within different sectors of the workforce varied widely:

- Federal employees = 424% growth
- State government employees = 114% growth
- Not-for-profit employees = 85% growth
- For profit employees = 63%
- Local government employees = 67%.

Based on current trends, with no growth acceleration, Global Workplace Analytics estimate that employees who telecommute regularly will total 3.9 million by 2016, a 21% increase from the 2011 level. (www.globalworkplaceanalytics.com)

The Global Entrepreneurship Monitor 2012 report found that home is the place of choice for America’s entrepreneurs. 69% of US start-ups begin at home. And they tend to stay there. 59% of established businesses operate from home as well. (GEM, 2012)

In Canada in 2008 19% of workers worked from home at least part-time: 11.2% of employees and 60% of self-employed. The latter in particular showed a sharp rise in the middle of the decade (Turcotte, 2010).

Though there are issues with the numbers in terms of who and what are counted, the picture across the developed world is one of increasing rates of home-based working.

A note on teleworking/telecommuting and ‘traditional homeworking’

Over the past two decades researchers, statisticians and advocates have attempted to define teleworking or telecommuting as a phenomenon distinct from homeworking and from mobile working. We do not regard this as particularly fruitful in the 21st century when ICT has become for most an embedded part of the regular way of working. Most home-based and mobile workers routinely use the new technologies for their work.

The terms telework and telecommuting were introduced in part to distinguish them from traditional forms of craft-based or low-skill homeworking.

In the academic literature, particularly with regard to the developing world, homeworking is seen as low skilled, poorly paid, exploitative (particularly of women) and in need of better regulation to ensure better pay and conditions. No doubt this may be the case to some extent.
However, homeworking has been undergoing a transformation over the past 30 years, in large part due to the integration of telecommunications and computing, the rise of the Internet, mobile technologies and now enterprise collaboration, conferencing and social media. These have been transforming the nature of home-based enterprise, enabling the home to become the location for high value enterprise. And it has been a mistake in telework research to see home-based ‘teleworking’ as being primarily knowledge work. While that is a significant component in the new world of work, the technologies have also brought about changes in the nature of traditional cottage industries. The technologies are used to link home-based businesses more effectively into markets. In addition, craft-based enterprises that might have formerly needed separate premises to connect physically with markets can now be home-based and find suppliers and customers via the Internet. This is an important component in the growth of the home as a favoured location for work, particularly in rural areas.

For emerging economies, seeing large-scale migration into cities and factory-style jobs, reductions in traditional forms of home-based working risks breaking down traditional family and local support structures.

1.4 Changing occupational structures with digitisation and robots

Developed economies are seeing significant shifts in occupational structure. In summary:

- Higher skilled work in management and professions is growing
- Low skilled work in services is growing in particular sectors, primarily healthcare and personal services
- Work in administrative and secretarial occupations is declining
- Work in process, plant and machine operation is declining.

The UK government expects these trends to continue through to at least 2020 (UK Commission for Employment & Skills, 2012).

What is happening with these trends is sometimes referred to as the ‘hollowing out’ of the labour market, with the expected replacement of many process-oriented jobs in the middle by technology. The factors here include:

- automation in factories, warehousing and distribution
- electronic processes (e.g. enterprise systems that integrate and virtualise previous paper-based and more labour-intensive processes)
- electronic self-service systems for use by customers (e.g. online retail and services, web-based customer serviced) and by employees (e.g. self-help HR systems)
- the rise of higher level intelligent automation that we will look at in more detail in section 3.6.

The spatial impacts of these trends are that:

a) less space is needed for workers to operate these systems, and
b) in principle the systems can be accessed or controlled from other places. Work that had a significant physical component and required physical presence in particular places is being transformed into knowledge work that can be much more ‘footloose’.

The skills impact is also considerable. While fewer people are needed to run the processes, skilled professionals and technicians are needed to design, monitor and manage the systems.

These trends are the consequence of some 30 years of driving towards lean systems, first in manufacturing and then into the running of organisations. Now a further trend is being established, where areas of work with high levels of human interaction can be virtualised, or broken down into component tasks and outsourced.

We expect this trend to intensify with the advent of new systems incorporating advanced levels of artificial intelligence. Although much future work will be ‘knowledge work’, it is not a single or simple phenomenon. While much high level work is increasingly knowledge based, there are many roles in sectors of employment growth that are much more ‘hands on’ and place specific. Even so, the tools and organisational elements of such roles require use of new information and communication technologies, such as a care assistant on a home visit in addition to the physical tasks involved can now access patient records and update them remotely, log their work and travel online etc.
Similarly shop workers increasingly have to be able to work with online systems as much as with physical stock. Future changes in retail are likely to increase the trend whereby shops act at least in part as showrooms for products to be bought online.

**In time much more work will become to a greater or lesser extent ‘knowledge work’**. As well as work that is primarily knowledge-based, work now often thought to be hands-on will incorporate much more knowledge work alongside, and often integrating with, physical tasks. Probably the term ‘knowledge work’ will probably be seen as somewhat quaint by the end of the decade.

This has spatial implications. One of the key issues is where the **knowledge-based components of work should take place** to maximise benefits to businesses, individuals, society and the environment. The options are much greater than the currently dominant choices of location.

And it also has implications for skills – are we preparing ourselves and the upcoming generations with the right learning and skills for a world where artificial intelligence and automation are increasingly taking over many of the tasks involved in everyday work?

**1.5 Changing contractual relationships with employers**

Integrated with the structural changes in demand for skills and labour are changes in the way people work with organisations. Charles Handy’s vision of the ‘Shamrock Organisation’ (Handy, 1989) identifies three components to the workforce:

- core employees
- contractors filling specialised role or to whom work is outsourced, and
- contingent workforce (temporary, seasonal, casual, ‘bank’ or ‘pool’ or ‘zero hours contract’ staff who work as needed).

Handy’s predictions seem more appropriate than ever, as organisations in all sectors increase their use of contractors and contingent workers. There are some people who expect that this will all roll back as the economy picks up. But the underlying trends indicate otherwise.

There has been steady growth of one-person businesses in the UK. Their number has increased by 51.4% between 2000 and 2012, some 1.2 million new businesses. Over the same period large organisations (those with more than 250 employees) declined by 10% from 7,200 to 6,500. While some of the impact may be attributable to the recession, the pattern is fairly consistent over the whole period (BIS, 2012b). These appear to be structural rather than cyclical changes at work.

Businesses with no employees accounted for 16.3 per cent of private sector employment and 6.6% of private sector turnover (£208 billion / $336 billion) at the start of 2012. From Labour Force Survey data, we might expect that some 62% of this is generated by home-based businesses – £129 billion / $208 billion. This is a very significant contribution to the UK economy. Many of these businesses will be undertaking work as suppliers to or regular partners of larger organisations. But it is not only in these contracts that they add value to the economy. Many one person businesses deliberately choose not to take on employees, but themselves act as micro ’shamrock organisations’ by working in partnership with other contractors or freelancers, either for projects or to outsource functions to them such as IT, accounts, marketing, legal services, etc.

In the UK recently there has also been a political controversy about ‘zero hours contracts’. This is the term used in the UK to describe people in a relationship with an organisation on a call-off basis. Whereas an annualised hours contract will specify the total numbers of hours to be worked per year, but which will fluctuate according to demand, the zero hours contract provides for the employer calling on the worker as needed, and the worker taking up the offer of work according to their availability. No particular number of hours is specified.

The Labour Force Survey identifies 208,000 workers with such contracts, while a recent CIPD report put the figure four times higher (CIPD, 2013). The Trades Union Congress is campaigning to outlaw all such contracts, claiming they are exploitative and open to abuse by employers.3

It has certainly been a growing trend, a particular form of temporary work that has advantages to employers in having employees-as-needed to meet demand. The number has risen by around 40% since 2006. The industries most likely to report employing at least one person on a zero hours contracts were hotels, catering and leisure (48%), education (35%) and healthcare (27%).

According to the CIPD report, employers in the voluntary sector (34%) and the public sector (24%) are more likely to use zero hours contracts than private sector employers (17%).
The average hours worked is 19.5 per week – but only 24% of those surveyed said they actually wanted to work more hours. And just 14% report that their employer often fails to provide them with sufficient hours to have a basic standard of living.

While unions and other campaigners may identify examples where such arrangements do not work in the interest of the worker, it seems that there is something else happening here. On the one hand employers, especially in the voluntary and public sectors and in particular services, find this a useful way to have a trained and regular contingent workforce on call. And from the employee side, it can give some control over when they work, which can be especially useful for balancing work with other demands and responsibilities in life.

Perhaps it is also possible to identify an almost entrepreneurial element in how people look for work as part of a contingent workforce. By having in principle greater ability to accept an offer of a work session or not, and the ability to work for more than one employer, the seasoned and trusted zero hours worker behaves in some ways more like a freelancer than a 9-5 employee. Like freelancers, however, they may also face higher levels of insecurity around income.

It goes by different names in different countries, but employees from burger flippers to waiters to office temps to nurses often work on a similar as-needed basis. It is probably a feature of the labour market that is here to stay. But many people who do this kind of work are also doing something else. Many are young people who are also in education, others are trying to develop a career or an enterprise in another field. Assembling a career and a set of skills piece by piece on a portfolio basis is not only the preserve of high level professionals.

1.6 Changing demographics

Generational change

By 2020 it is predicted we will have a ‘four generation workforce’ – possibly even five as more people keep working into their late seventies and eighties. The literature around flexible working tends to focus on those who have caring responsibilities, people more in the middle stages of their career. However, increased demands for more flexibility are also coming from either end of the age spectrum.
Part 1 The emerging world of work

Increasing numbers of people are working beyond retirement – but they don’t necessarily want to work full-time regular hours and always travel to a workplace. Entrepreneurship is strongest amongst more mature workers. However, they do not necessarily want to work all hours to build a global company: often it is to capitalise on their skills and experience and earn a living in a way that enables them to have greater autonomy and flexibility.

New entrants into the workplace come in from universities and colleges where using the new technologies to work, play and socialise is second nature. Going from such an environment into an employing organisation can seem like stepping back in time. There are many surveys that indicate these new generations (‘Millennials’ and ‘Generation 2020’) expect greater flexibility. What is certain is that they are mostly well equipped for Smart Working in terms of being familiar with the new technologies, being culturally attuned to working anywhere, and to collaborating online.

Many of the analyses that try to apply general characteristics to whole generations have little value. It is after all people who are in the Baby Boomer generation who have pioneered most of the new technologies and pressed for flexible working. It is the older generations for the most part who have created the context for change and pioneered new ideas, while struggling to overcome the baggage of traditional ways of working. The new tech-savvy generations coming into the workforce will have had these battles fought for them.

The impact of more women in the workplace

The other major demographic change in the workforce has been the number of women entering the workforce, reaching numerical equality with men in many countries. Other aspects of equality may prove more elusive, such as equal pay and representation at senior levels – along with equality of caring responsibilities in the home.

An increasingly female workforce has been a major factor in the growth of many forms of flexible working – part-time working, job share and term-time working in particular. Many of these forms of flexible working have been promoted as part of an equalities agenda to enable more women to work, with the (often unspoken) assumption that it will be women who take the predominant parenting role. Measures such as the ‘right to request’ flexible working in countries such as the UK and Australia, though they apply to mothers and fathers equally, have had the intention of providing a level playing field in the workplace for women and promoting retention of mothers in the workplace beyond maternity leave. In the USA similar legislation has been passed at state level in Vermont, and city level in San Francisco. The UK, however, is legislating to provide all workers (not only parents and carers) with the right to request flexible working, due to come into force in mid-2014.

But is the workplace adapting enough to the changing role of women? A study by the Pew Research Center ‘Breadwinner Moms’ found that women are the sole or primary source of income in 40% of houses in the USA. That is up from 11% in 1960. This consists of 25% of households with a single mother and 25% where a married mother is the primary provider (Pew, 2013a). In the UK a third of working mothers are the main breadwinner in the household (IPPR, 2013), and 40% of working women earn more than their partners.

A related study by Pew Research Center found the roles of fathers and mothers converging when looking at the amount of time spent on paid work, housework and childcare – though clearly gaps remain.

<table>
<thead>
<tr>
<th>Average number of hours per week spent on…</th>
<th>Paid work</th>
<th>Housework</th>
<th>Child care</th>
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<tr>
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<tr>
<td>Fathers 2011</td>
<td>37</td>
<td>21</td>
<td>14</td>
</tr>
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Source: Pew Research Center
Attitudes to work-life balance are also converging, the study finds, with men almost as likely to say they struggle with it as women say they do (Pew, 2013b)

While Western countries have assumed that more women in the workforce means more women in the workplace, a different approach is being tested in other cultures. In Qatar the Supreme Council of Information and Communication Technology and telecoms operator Qtel set up a homeworking programme for women in 2010 ‘to help ensure women can remain fully committed to their family obligations while still being an effective part of Qatar’s vibrant workforce.’ The initiative aims to produce a work-from-home model that can be deployed at other organizations in Qatar.4

A similar approach has been undertaken to enable people with disabilities to enter the labour market by working from home.

In many parts of the world it has long been the norm for women to undertake paid work at home. Such initiatives can help to modernise the type of work that women do in the home or support traditional forms of work with new technologies, rather than expect women to leave homes and communities on a daily basis to work – or, as in the case of many migrant workers, to be separated from their families for months at a time.

While there are different issues for different cultures, the central one is how can people, both women and men, have the opportunity for more balanced lives, blending home and work life in ways that suit them best at any given stage in life?

Flexible working is essential to achieve this – but how is it best implemented, and how can organisations and public policy support the most appropriate and beneficial forms of flexibility? We pick up these questions in the second part of the study.
“Traditional open-plan spaces, characterised by ranks of desks, have clearly had their day”
2 Different conceptions of places to work

One of the key features of the evolution to smarter and more flexible working is that work often takes place in different locations. There are three main aspects to this transformation:

1. The workplace itself undergoes a transformation, becoming typically reduced in size, more intensively occupied, having a wider variety of ‘activity-based’ work settings, and more focused on collaboration (rather than desk-work) in office environments.

2. Work takes place in other physical locations, outside of the traditional workplace.

3. The network becomes the office, the shop, the warehouse/distribution centre, or factory. That is, many of the activities that might previously have required physical presence and physical resources at a workplace are now undertaken online.

We have seen in Section 1 evidence of the growth in mobile working and home-based working, using new technologies and new work styles. In this section we will explore how organisations are changing the locations of work and transforming their workplaces.

2.1 Changing the Workplace

The workplace that we are perhaps most familiar with – the office – is in the process of going through major transformations as a result of the availability of new technologies for work and the adoption of Smart Working.

Earlier trends saw moves away from small cellular offices (for individuals or shared by small teams) to open plan settings. Such changes improved space efficiency and arguably created the potential for better collaboration by bringing people more regularly in contact with each other. But in essence, traditional open plan spaces, characterised by ranks of desks where people sit in the same place every day, are based on a factory model of office work that has clearly had its day.

Space audits that measure how much individual desks are actually used typically find around 40% average occupancy of desks over the working day. The space efficiency of the traditional office has always been more apparent than real.

The underused space comes from a mixture of:

- Over-provision of desks (e.g. keeping desks despite headcount changes; a desk for each part-time worker, etc)
- People on leave (about 12% of working days per person)
- Sickness absence (5%+)
- Field workers and others working outside the office
- People working in other parts of the workplace for parts of the day.

The opportunities for savings come from:

a) aligning desk provision with actual usage of desks
b) going further and increasing the opportunities to work productively outside the workplace where it is appropriate – ensuring that people are kitted out and trained to do so effectively.

It is not simply a question of saving space by reducing the number of desks, although sometimes it is perceived that way by employers in a cost-cutting hurry or employees resisting change. Good implementations redesign the working space to focus more on collaborative and specialist tasks.

Modern approaches to Smart Working environments are based on a number of principles:

- Spaces are shared, not individually ‘owned’ – including desks
- There are a range of ‘activity-based’ work settings, which people can use according to the task they are undertaking at the time – meeting rooms, short-use and unbookable meeting pods, informal breakout areas, cafés, quiet spaces for concentrated work, project rooms, etc
- There is a high premium on collaboration – but not necessarily in formal meeting rooms: breakout spaces, cafés, virtual interaction and hybrid office/virtual collaboration is increasingly adopted
- Space taken by storage is minimised as paper is driven down
- People are encouraged to work in a range of settings beyond the office as well to maximise their productive time and improve service delivery.

At the same time, office designers have been introducing a wide range of less formal furniture both to improve the office environment and move office layouts away from the ‘tyranny of the desk’. New technologies – as we’ll see in the next section – are moving us further and further away from the necessity of the individual desk.
This new form of working, where employees are gaining increased mobility and also increased freedom to choose where (and sometimes when) they work is predicated on developing more trust-based relationships within teams and with managers. This is not without its challenges, of course. But the trend is away from ‘command and control’ management and towards treating employees as mature adults who are empowered to exercise considerable autonomy in managing their own workstyle.

Our case studies illustrate this kind of approach. There are, of course, still organisations that remain rigid and regimented, and exercise strong control over the how their employees work. However, these traditional ways of working are more expensive and lock in a great deal of waste (wasted space, unnecessary travel etc).

We are in an age of transition where the legacy of past ‘Industrial Age’ practices is still strong while at the same time leading organisations are modernising very fast – and new possibilities are evolving all the time.

There are many case studies that include the property impacts of Smart Working (See e.g. Lake, 2013, HM Government 2013, Maitland and Thompson 2014). By consolidating into fewer offices, organisations can earn capital receipts, get out of expensive leases and underperforming properties and make annual savings on running costs. Total office costs per head are reduced, and costs of internal moves and restructuring can be reduced to minimal levels.

This is having significant impacts on the property market. While demand remains high in prime areas in major cities, the general picture in the developed economies is one of a shrinking office market. There is little demand for older office premises, which are going through a period similar to that experienced by industrial premises during a time of deindustrialisation.

 Former offices are in some cases becoming homes, or being regenerated as mixed-use areas, incorporating a mix of homes, offices, retail and leisure. For the most part, the thinking in designing such redevelopments is based on 20th century assumptions about town planning, and is not informed by the transformative changes occurring in the world of work.

Most studies of the future of work tend to focus primarily on the future of the office. But while offices are undergoing profound changes, there is a wider context of changes to other workplaces – factories, retail premises, warehouses, distribution centres and health and education facilities.

With Smart Working, automation and the impact of the Internet on retail and distribution, we are seeing 3 key trends affecting the relationship between employment, travel and the use of space:

- **Office spaces are being used more intensively** – by sharing space and removing the 1:1 employee-to-desk relationship, many more people can be based in and use the office
- **Manufacturing and distribution spaces achieve higher throughput with fewer people** – they are less intensively occupied by people
- **Retails spaces are seeing a huge drop in demand** with the rise of Internet commerce, as the sector experiences a period of dramatic change and many new challenges.

All these changes have an impact on both how space is used, and how people interact with the spaces, in terms of both physical travel and online interaction with the activities in those spaces.

This has major implications for planning policies, both for the designation of land for different uses, and for transport planning.
Smarter Working at Plantronics

Plantronics, the global market leader in advanced headsets and unified communications, has been rolling out a comprehensive and integrated Smarter Working programme for its staff across the globe. This has involved changes to ‘bricks, bytes and behaviour’ – that is, to buildings, technologies and the way people work.

As it has developed Smarter Working, Plantronics has reduced its UK floorspace from 47,000 square feet (4,400 m²) to 21,000 (2,000 m²). At its UK HQ in Royal Wootton Bassett, workers now have access to shared flexible spaces based around four kinds of work activity:

- **Concentration** – space to go for quiet work including ‘monks’ cells’ and ‘acoustic pods’
- **Collaboration** – meeting rooms and breakout areas; touchdown benches
- **Communication** – vibrant areas likely to have constant noise, e.g. contact centre and touch-down space for sales staff
- **Contemplation** – spaces designed for creativity, refuelling and relaxation.

Mobility both inside and outside the office is supported by an enterprise-wide unified communications solution. There are no desk phones – IP telephony means that laptops and headsets are used instead, so people can work in any setting. The unified communications system also means that headsets can be used that pick up both calls channelled through the computer and mobile phone calls via a single headset.

Extensive use is also made of audio, video and web conferencing, instant messaging and desktop-sharing. This gives a much more flexible approach to meetings, bringing together employees from the various global locations, in the field and from home, as well as with customers and key partners.

According to Paul Clark, General Manager UK and Ireland, ‘One of the most interesting changes that we’ve found with unified communications is the way that new networks set themselves up. People work closely with the people they need to for success, rather than just with the teams they are historically associated with. The ability to build real-time teams, collaborate together and then fold down again creates a much faster response. And it’s all based on the UC platform’.

Another particular feature of the Plantronics implementation is the attention given to taking forward new behaviours and culture change. Training for flexible and virtual working is a key part of this. Customised online training for working in distributed teams, both for managers and their teams, was developed by US company e-work.com. And perhaps uniquely, all employees took part in ‘speech impact training’ (often the preserve of call centre staff) to improve ‘voice presence’.

According to Norma Pearce, Head of HR at Plantronics EMEA, ‘It’s all about empowerment, allowing people to make choices and trusting them to make the best ones. In principle, we’re happy to let people organise work to fit in with their lives. At first, some managers need help with this. In part, it’s about being able to let go of things they’ve previously had closer control over. It’s about developing soft skills – and trust is a soft skill. The role of the manager becomes more one of coaching and mentoring’.

Coupled with this is greater transparency. Plantronics uses an online solution Success Factors for setting and managing team and individual goals. This is part of the approach of managing by results. Everyone’s goals are visible online, and their progress towards them. This also feeds into appraisals, professional development and pay reviews.

‘For us, the whole idea behind Smarter Working,’ says Paul Clark, ‘is that it makes good business sense and good people sense’.
Better ways of working at Vodafone

Vodafone is rolling out a programme of ‘Better Ways of Working’ across their global estate. This has involved consolidating offices, transforming these into flexible working environments, enabling high levels of remote access and virtual collaboration, and achieving measurable benefits in performance and sustainability.

In the UK this translated into consolidating offices at their Newbury campus, shrinking their property as they grew in an example of ‘spaceless growth’. The need to consolidate was driven not only by financial good sense, but by a need to promote better collaboration between different functions within the organisation. The imperative for better collaboration underpins the approach to both physical spaces and the use of technologies to support flexible working.

The need for change was in part due to the market becoming much more competitive, and the need for the company to keep on its toes. And it was also about the need to attract and retain the best staff, including the upcoming Generation Y – people instinctively comfortable with the technologies the company was developing and selling.

‘This was a massive change,’ explains Neil Stride, Head of Enterprise Business Development. ‘We moved from personal to shared space, so now there is no personal space at all. There were pockets of shared desking before, but now this applies to everyone. The CEO does not have an office, but shares a desk like everyone else.’

Everyone has a ‘home zone’ – so post can reach them and IT can know where to find them. But having gone 100% laptop, staff can work anywhere on site or log in remotely from anywhere. From CEO to new graduates support tools are common: everyone has similar technology, which helps to reinforce a flat hierarchy.

Much of the focus of the design is on creating spaces for collaboration, with multiple styles of rooms to encourage different kinds of exchanges and conversations. All the old group directors’ offices were turned into meeting ‘lounges’, with sitting room-style furniture and fireplaces to encourage openness and sharing of ideas. Other meeting rooms are more functional to encourage speedy decision-making, and there are small ‘huddle rooms’ for people to pop into for up to twenty minutes. In each building there is an atrium that includes shops and facilities and a café where less formal and ad hoc meetings are held. The principle is that any meeting with less than six people in it should
convene in one of these areas, unless it is a particularly confidential one-to-one, for example.

Meeting room behaviours have significantly changed as well. Very little paper is distributed in meetings now, as people prefer to use tablets or laptops. The amount of meetings that include remote attendees has also increased massively, meaning that meeting hosts need to think more about how they actively engage the people not present in the room.

This approach and the design of the campus as a whole is intended to break down barriers and encourage serendipitous meetings, catching people as they walk past or having chance meetings on the walkways.

The importance of flexible working is recognised in terms of business continuity. Floods in 2007 put the campus out of action for three weeks, and staff were able to work remotely even though at that time it was not yet the regular way of working. The value of this was demonstrated again in 2011 when the company’s planning exercises were conducted on an entirely virtual basis due to snow.

There are independently measured numbers to illustrate the scale of the changes. Employee commuting has reduced substantially, leading to a net saving of 400 tonnes of CO₂ per year. And the use of conferencing technologies has led to a reduction of 12,000 tonnes of CO₂ in 2010/11 compared to 2006/7 from business mileage. This has led to cumulative savings of £40.7 million over five years. And, in conjunction with other measures of energy efficiency, CO₂ emissions from buildings have reduced by 12,000 tonnes over the same period, with savings of £4.4 million.

At the same time, the numbers working on campus has grown from 3.5k to 5k, in an example of ‘spaceless growth’. Making this work has involved a transformation of the working culture. Enabling people to work at different times and in different places involves developing a culture of trust.

‘What we’ve done here is create an environment for people to be brilliant, based on trust and management by results,’ says Neil Stride. ‘Having the leadership on board is essential. Otherwise you end up with pockets of pilots, each doing their own thing but unable to translate a consistent approach to the company as a whole.’

The approach has been extended to Vodafone’s contact centre operations at Stoke and Newark, to its HQ at Paddington and is being rolled out in its offices around the globe.
2.2 Working beyond the ‘workplace’

There is something archaic about hundreds of millions of workers travelling billions of miles every day in their daily commute to spend most of their time working with computers and telephones – activities that in principle can be done from anywhere. Yet that is what traditional forms of working have required. This is now changing.

In Section 1 we examined the growth of mobile working and homeworking, which are supported by new tools and techniques that enable people to work equally or more effectively in places other than the traditional workplace.

The locations at which people work can be divided into 4 areas:

- The organisation’s premises
- Third party business spaces – such as business centres, workhubs, clubs and the premises of partners or customers
- Public spaces – cafés, public transport, hotels, parks etc
- Personal spaces – home, garden, car.

As we saw in the last section, business premises increasingly have a range of activity-based settings. The mobility beyond the office is mirrored by the ability to be mobile in organisation’s workplace. In that sense, almost everyone is becoming – at least potentially – a mobile worker.

Figure 5 opposite highlights the main choices of work-spaces both within the organisational office and beyond.

There are still a variety of reasons why people continue to use organisational premises for working. Coming together to collaborate remains important. The emphasis in this is on social interaction (e.g. team-building, strengthening relationships, peer support etc), certain kinds of learning (but by no means all), brainstorming, complex group project work and taking business-critical decisions. Being physically co-located is no longer a requirement for most routine kinds of work involving working with computers and telephones.

Increasingly, organisations and their employees are challenging the assumptions around the necessity of being physically together in order to have meaningful face to face interaction. In geographically dispersed organisations or teams it is becoming commonplace to have virtual or hybrid meetings for even those more intensive tasks mentioned above.

The primacy of face-to-face interaction is evidently not felt so keenly by the new generations entering the workplace, who have grown up with mobile technologies and social media.

For organisations the key issue is to enable employees to work wherever and whenever is most effective to get the work done.

And where do people work when they have greater mobility?

The iPass Mobile Workforce Report 2013 asked just this question:
Managers in organisations sometimes have concerns about setting their teams free to work in places beyond the office. The main barriers to the implementation of Smart Working and the ability to work in more dispersed teams can be summarised as:

- The cultural challenges involved in managing in new ways – by outcome rather than presence
- Establishing a culture of trust
- Fears about maintaining team cohesion and identity
- Familiarity with and trust in the IT and communications that enable Smart Working
- Confidentiality and security

- Traditional mindsets that gravitate back to being territorial (my desk, my space) and having personal resources (my files), rather than sharing space and resources (‘we-space’, shared electronic data and systems)
- Fear of change.

There are solutions to these issues which are being applied by organisations at the leading edge of change. The barriers are mostly behavioural and cultural, rather than technical. Resistance to change is often less to do with outright opposition, and more to do with a lack of awareness about the possibilities.
Global Smart Working at Credit Suisse

Credit Suisse has been rolling out Smart Working environments in its offices worldwide. Offices in Zurich, Singapore, London and Luxembourg – and coming soon, New York and Wrocław – have been transformed with desk-sharing, activity-based working areas and support for greater mobility and flexibility. In a sector noted for more traditional ways of working, Credit Suisse has taken a large step forward into the world of “smart” working.

The programme of change began in 2010, and involved extensive consultation with staff, gathering evidence about the ways the offices were being used through focus groups, and extensive research into the possibilities offered by new working practices. Employees’ views were sought about what they wanted from their future work space. 8,500 staff responded to a workplace survey (out of 14,000 in scope in the projects so far), so staff have played a significant part in helping to design their own Smart Working environments.

The offices have been redesigned on the basis of no one having an allocated desk. Instead, people work in a range of shared activity-based work settings. These are designed around the ‘3 Cs’ – spaces for concentration, collaboration and confidentiality.

Some areas are designated Quiet Zones, where people can sit for 2-3 hours to work on a task requiring high concentration. There are enclosed “Work/Meets” and Phone Booths for confidential discussions, phone calls or teleconferences.

Then there are a range of formal and informal collaboration spaces. In the Project Areas there are large whiteboards, a large screen on the wall to project presentations, and like other meeting rooms, video conferencing facilities for remote participation in meetings.

There are numerous spaces for informal meetings. In the Canary Wharf office in London, two large breakout areas, called City and Wharf (referring to the splendid views from the windows), provide a café/lounge environment. The look and feel of one is more like a coffee shop, the other like an airline lounge. Instinctively people tend to use the coffee shop lounge more for less formal and louder meetings, the other for more intensive collaborative work. Work behaviour is subtly influenced by the design.

Further informal meeting settings are closer to where teams sit, but are not allocated to particular teams.

The main desking area is all open plan. None of the individual work spaces are assigned or bookable, and there are no preferential arrangements based on status. A clear desk policy applies throughout the offices.

To aid teammates in sitting with each other, teams are assigned to Home Zone areas. Teams tend to anchor themselves in the Home Zones throughout the day, but staff may choose to move around and work in any zone appropriate to their work throughout the day. There are touch-down desks, and attractive areas with planting called ‘Business Gardens’ where people can sit to work as an alternative to the main desk areas.
The Singapore office has a vast floor area, the base for 1350 people on one floor and 450 on the floor above. In this large floor plate project, IT have introduced a wayfinding system based on people’s login, so people can find a colleague or find an empty workplace at which to work. They also have a more specific approach to identifying team areas with a ‘team totem,’ a kind of rallying point for the team with printer, lockers and team storage.

The Singapore office has also moved ahead with thin client technology, which helps from the mobility perspective. ‘Bring your own device’ is also being used, with people able to connect to the Credit Suisse network from their own device.

There’s also been cultural support for changing the way people work through a comprehensive Smart Working change management approach. In every rollout, there are sessions with line managers to help them better manage by output rather than by presence, focus group session with teams to develop space sharing protocols, online trainings developed internally, and training for Change Agents from each impacted department who serve as liaisons between the project team and all end users. There have been interesting and unexpected impacts from the transition, according to Per Hansen, the Global Lead for Credit Suisse’s Smart Working Program.

‘We’ve found that breaking the link between the individual and the desk has had a greater effect than we anticipated. We deliberately did not talk much about home working and remote working. But once the link with personalised territory is broken, people become much more open to working anywhere. Our post occupancy evaluation results also show that Smart Working has been well received from an engagement and productivity perspective in staff at all levels, even senior managers who previously had devoted private offices.’

Future evolution in years to come will probably include more off-site working, though the need for confidentiality in financial services puts natural limits on this.

‘The challenge is to create an office that people will want to come to,’ says Per. ‘People throughout the company are coming to see what we have done. They are no longer questioning it, but asking when they can have it. They get excited when they see what it’s all about.’

2.3 The emerging workhub / coworking sector

‘Workhubs’ or ‘coworking spaces’ are a new form of workspace that is becoming increasingly common across the world, particularly in the USA, UK and Europe. They offer a different kind of workspace to traditional single occupancy units and managed workspaces.

Essentially they offer an ‘office-when-needed’, with members paying to use them when they want to rather than a more rigid system of occupying their own premises or of hiring serviced offices.

In 2010 the present authors conducted a study into the phenomenon for the UK Government’s Department for Communities and Local Government (Dwelly & Lake 2010). Following this at a conference in the City of London, the Workhubs Network was launched to support the growing number of independent workhub operators. The website workhubs.com also operates as a ‘find your nearest workhub’ search site for people wanting to use such a facility.

For readers of this report, case studies on the early pioneering workhubs can be read separately in the 2010 report. Here we offer an update and a brief summary of how this new workspace sector is evolving.

When workhubs.com was first set up four years ago there were perhaps less than 20 such facilities known to the Workhubs Network. At the time of writing there are now more than 150 workhubs in the UK, with many more in the pipeline. Some notable recent additions include:

- Club Workspace – a new chain of five London workhubs run by Workspace Group plc, with a further six already being set up
- The Toffee Factory – large workhub in Newcastle run by same group managing spaces in Leeds and Sheffield
- Central Working – new chain premises combining workhub and café facilities with plans expand, centres at Bloomsbury and Shoreditch
- Devon Workhubs Network – a chain of county council supported workhubs run independently in six towns in Devon
- Smart working centres in Northumberland – a chain of workhubs in market towns such as Wooler, Berwick and Hexham near the Scottish borders
- @work hubs at Euston London
Part 1 The emerging world of work

- Google Campus – near Old Street station, London’s ‘silicon roundabout’ has a workhub space
- The Workbox, Penzance – a workhub with views over Mounts Bay in Cornwall supported by the UK Government’s Regional Growth Fund.

There are many more.

The impact of these workhubs on their users and local economies is not by and large measured by those who run them – although this is surprising as such information would presumably help them demonstrate the value of membership to new customers and to potential funders in the public sector.

Notably, when pioneering workhub Digital Peninsula Network in Cornwall was first funded by European funding, it was required to measure the GDP and turnover impact on its members. As long ago as 2005 this small town workhub grew from 12 to 290 members and tracked in a survey of 35 members of these a shared turnover (where members collaborated) of £1.23 million with £510,000 directly subcontracted from member to member.

Internationally the biggest chain of affiliated workhubs are known as the Impact Hub Group. Workhubs in 46 cities all over the world have signed up for this brand, formerly simply known as The Hub. So there is, for example, an Impact Hub Milan, an Impact Hub San Francisco, an Impact Hub Tel Aviv and so on.

Sometimes the word ‘coworking’ is specifically used to put an emphasis on people working together who might normally be working separately. This may be reflected in the design, for example using large worktops to get people working closer together. The idea is to harness the collaborative power of both employees and freelancers and to help them avoid isolation.

Workhubs Network, in researching this new sector, has found examples of spaces that have set out to restrict their membership running into trouble, e.g. one workhub which set out to be a coworking space for environmentally conscious or green micros failed to attract sufficient membership to be viable.

Whether identifying themselves as workhubs, hubs, coworking spaces or something else entirely, the sector is growing at a very high pace. According to Whiteboard, the European entrepreneurship magazine, ‘coworking spaces are sizzling hot: in the last year, the number in the world outright doubled, from 1,320 in February 2012 to 2,421.’

The USA has the largest number of coworking spaces, 781 at the time of the survey. Europe has just over a thousand with the largest numbers being in Germany (230), Spain (199) and Great Britain (154). There are 129 in Japan. London has the largest concentration of any city, with 81. Comparing continents, the European numbers continue to grow more steadily compared to North Americans.

This growth is also mirrored by the evolution of the business model of more established providers of flexible space such as Regus, who are providing drop-in space in business lounges to supplement their serviced office provision. And there are new services such as Neardesk (www.neardesk.com), which provides a single service to find spaces to work in workhubs, and Worksnug (www.worksnug.com), which helps people to find a wide range of ‘third spaces’ to work, including workhubs as well as cafés and other public places.

In the USA coworking spaces are now commonplace in many cities. As in the UK, the sector remains dominated by independently owned venues. Some are targeted more at particular groups (typically creatives, the environmentally-conscious or community activists). But there is a genuine mix, with each space’s identity defined more by its owners/managers and their preferred customers than by a franchise.

Paragraph in New York is an example of a space dedicated to writers. Thinkspace in Seattle is mainly used by the city’s high-tech entrepreneurs and is close to the Microsoft headquarters. The Hera Hub in San Diego is a women-only workspace.

As with UK workhubs, names are often deliberately unlike what an office block or centre would traditionally use. So for example New Work City in New York, Strongbox West in Atlanta, Klever Dog in LA and Independents Hall in Philadelphia (in the building where the Declaration of Independence itself was debated and signed).

Typically membership costs start at around $30 per day, with monthly memberships between $200 and $500 per month.

In early 2013, there were more than 1,200 coworking spaces in Europe. Some interesting examples include MOB (Makers of Barcelona), Deskowitz in Amsterdam, Reaktor in Warsaw and Betahaus in Berlin. In less than five years, the total number outstripped the number of incubator and innovation centres in the continent.

Continued on p32
The Workbox has been a catalyst for regeneration and economic development in Penzance

The Workbox, Penzance

The Workbox is one of the UK’s newest Workhubs, opening in May 2013. It is partially funded by the UK Government’s Regional Growth Fund, which supports new jobs in the private sector, including self-employed start-ups. Penzance is a national hotspot for homeworking businesses, with over one-in-five people working this way in many parts of the town and even higher levels outside in surrounding rural villages.

It offers a 250m² space occupying most of the fourth floor of a tower block (the only one in the town) with panoramic views over Mounts Bay (including St Michael’s Mount). Its rates vary from £35pcm for limited use to £75pcm for unlimited use and £120pcm for reserved workspace.

There are also four rentable offices of 12m², video conferencing facilities, a boardroom and full screen white wall for presentations, film loops and events. The space is managed by a community interest company dedicated to assisting people who want to work for themselves. There are 45 members so far with a target of over 100.

Members vary across sectors ranging from specialist technology companies to deep sea wreck software engineers, marketing and translation freelancers, book-keepers, landscape gardeners and start up social enterprises working on food and education projects. See www.theworkbox.com

Since the Workbox opened, the host building’s fortunes as a workspace have been transformed. Previously the local tax office Penlowarth House, it is now being rebranded as PZ360 (see www.pz-360.com). The marketing for this relaunch is being handled by one of the Workbox’s members, a good example of how collaboration is taking place inside the workhub.

On its first and second floors of PZ360 is international currency trading company TorFX (who moved half their 80 strong workforce from an outlying industrial estate into the building to take an extra floor after The Workbox opened). On the fifth floor are new tenants Red Commerce, specialists in global ICT recruitment. And occupying the smaller space adjacent to The Workbox are Microcomms Ltd, telecom specialist with clients across the UK and abroad.

As a result of Microcomms moving in to be next to the Workbox, there will be a dedicated HD Vidyo video conference facility installed – the best of its kind in West Cornwall. This will provide an income stream for the Workbox (through organisational use) but also support collaboration among micros in Cornwall and help members communicate with clients. There is also a plan to install a Wi-Fi mast on the roof of the building enabling people on the streets/beaches in the Bay to access free Wi-Fi after registering Facebook likes and twitter follows for the Workbox. This will be a useful tool for marketing.

The Workbox has acted as a catalyst for wider town centre regeneration by consolidating a cluster of over 150 well-paid private sector jobs in the heart of a town that has faced challenges from declining retail and empty shops.
NextSpace

NextSpace is a fast growing chain of coworking spaces in the USA. With the first NextSpace opening in Santa Cruz, California, in 2008, they now have 6 locations in the San Francisco Bay area and have spread to Los Angeles and Chicago, with more on the way. The plan is to open 100 NextSpace locations by the end of the decade.

According to Co-founder and CEO Jeremy Neuner, it’s about more than opening workspaces. NextSpace’s mission ‘is to ignite the (r)evolution of work by creating a unique combination of workspace + community.’ And the vision is to take this to every market in the world.

There’s a strong economic development imperative behind the vision, as well as sound business sense. Before starting NextSpace, Jeremy was the economic development manager for the City of Santa Cruz. His co-founders Ryan Coonerty – a former mayor of Santa Cruz – and Caleb Baskin had previously started a non-profit to get young Santa Cruzans involved in civic life.

The combination of workspace, enterprise, and community define the ethos of NextSpace. ‘We really started NextSpace as a way to do economic development better,’ says Jeremy. ‘We knew we weren’t going to be able to find a whole range of incentives to get big companies to set up in Santa Cruz. But what we do have a whole lot of people who are driving over the hill to the rest of the Bay area or telecommuting to companies there, and freelancers, independent consultants, and small entrepreneurs plying their skills around the country and sometimes around the world. So we were looking for something to do to bring these people together. Instead of trying to attract one two hundred-person companies, why can’t we do that with 200 one-person or 100 two-person companies?’

There is no public funding for NextSpace – it’s a privately held for-profit business. And it took off at a challenging time, just at the time Lehman Brothers collapsed. It’s also instructive that an enterprise delivering a physical product – workspace – found investors to support it in an area renowned for the development of electronic products and services. Like the new technologies, the coworking concept is rooted in a vision of the emerging world of work and new, dynamic forms of business relationships.

‘We soon realised that this phenomenon we found in Santa Cruz is global in scale. That we’re at the beginning of a once-in-a-century fundamental shift in how, where and why people work,’ says Jeremy.

‘Here we are in the global hub of software and social media innovation and we’re doing a brick and mortar sort of thing. A lot of our investors have made their money in software and technology where the sky’s the limit in terms of potential rewards. Technology is evolving really fast but one of the things we’ve discovered is that people don’t evolve nearly as fast.'
Social networking is here to stay, but people continue to be hungry for real human community in this hyperconnected age.

The NextSpace approach is that you’re not renting a desk, you’re buying membership of a community. This is not just a ‘touchy-feely’ concept: people are finding there are tangible professional outcomes. This works on a continuum from people talking around the water cooler, to sharing ideas, to joining forces to work together, to finding investors and founding new companies. ‘We create the petri dish for the cool stuff to grow,’ says Jeremy.

NextSpace staff have a facilitating role in making introductions and putting people together, dealing with questions such as “Do you know somebody who can …?” They also run networking events, lunchtime talks, product showcases and facilitate online information exchange. The culture provides permission to interact, in a way that would be problematic in a coffee shop.

There are three levels of membership at NextSpace: Café membership, Workstation membership, which provides a desk, and Office membership, providing a small office. Everyone uses the communal facilities, and all levels of membership get 24/7 access to their ‘home’ base, and a free day pass at other locations and an hour in a conference room at any NextSpace. ‘Galactic’ membership provides a pass to all locations.

There are corporate members, such as a number of people who work for Plantronics. As well as the advantages of avoiding the commute, the engineers who work there have found it valuable to interact with the kinds of people who are their customers and get feedback on design and usability of products. And there are people from other large companies who pay their own membership, who find it more productive to work in a coworking location than to work either at home or in the corporate office.

Plantronics is one of a growing number of companies that are rationalising and repurposing their real estate, and trust their staff to work where it works best. Coworking spaces are now one of the options they look at.

‘In the corporate world there’s been a big trend towards the consumerisation of IT, and what we’re seeing now is the consumerisation of workspace,’ says Jeremy. ‘People are making their own workspace choices and the smart companies will help facilitate those choices, or have an approved list of choices where you can work. So what you might call a company’s ‘approved workplace ecosystem’ might include home, a corporate campus, a client space, co-working spaces like us, and you choose where you need to be today to be at your productive, creative, innovative best.

‘I can see companies starting to say, We will no longer provision workspace for you on the wholesale level buy leasing a giant corporate campus – you will access workspace on the retail level at a time and a place and with a vibe and an infrastructure that you need.’
There is an interesting relationship between workhubs and working from home. Workhubs do not aim to stop their users working from home. Rather, they enable them to do so more effectively. This makes workhubs very different from serviced office and innovation centre environments which (in the traditional business growth model) are a step up and away from homeworking towards staff-and-office-based growth.

Workhubs can make homeworking staff and businesses more effective by offering:

- a social alternative to daily isolation
- a professional place to meet clients
- a professional business address
- face-to-face collaboration/networking
- shared and therefore cheaper high-end equipment and fast broadband.

By plugging these services into the gaps in the homeworking model, homeworkers can get the best of both worlds and do so cheaply. The contrast to paying for and travelling daily to an isolated small office is stark, and this is the essence of their attraction.

What does the future hold for workhubs?

If current trends continue and the predictions made by authors of this report prove well-founded, what might the future hold for the workhub model?

- A large and recognised workhub sector is likely to be established with most cities and market towns having a facility that offers such services – potentially a number of competing offerings
- The growth in the use of the home as a main place of work, already typical for the self-employed, will become typical for many types of employee too. It is possibly to envisage around a third of the whole workforce being home-based
- Many large employers will have downsized their office portfolio to offer workhub and event space for their staff rather than traditional desk and office based workspace
- A growing number of large employers will have moved further, forming partnerships with other employers to share the costs of workhubs
- Some employers will have gone the whole way towards treating their staff as self-managing in workspace terms, with an allowance to enable them to source their own workhub facilities to complement homeworking
- Some cities and towns will have workhubs that service a large number of employers
- Workhubs whose target market is the self-employed micro will continue to be one step ahead of those who seek contracts with large employers. Some will be differentiating themselves from the employee-serving model, to retain the entrepreneurial energy and atmosphere of freelance workhubs
- Workhub passport type services will be widely available, enabling users to visit facilities in different towns and cities while on the move, even if these are run by a different company (a bit like the way you can get cash from a different bank’s cashpoint machines using your card)

“The trends have reached a tipping point where many of the old associations between place, product and work no longer apply”
• There is potential for workhubs to help add demand for services to high streets that have lost much of their retail. Workhub users will still need lunch, cafes, haircuts and other services that are hard to buy online.

• In rural areas, disused churches, pubs, libraries, schools and post offices will have been converted into workhub use – potentially with non-work community uses in the evenings and on weekends. This trend is already under way today (see for example The Old Church School in Frome, Somerset).

2.4 Virtualising work, dematerialising products

The other key trends that are having a major spatial impact on working practices are the virtualisation of work and the dematerialisation of products and processes. Some of the technologies involved in these trends will be examined in the next two sections, here the aim is to describe these trends and look at their impacts on where people work, and the changes associated with that.

In some ways these are not new trends. But the increasing sophistication of Internet technologies and communications has accelerated these trends to a tipping point where many of the old associations between place, product and work no longer apply.

To take a simple example: insurance services used to connect with customers primarily by means of extensive networks of local branches and mobile staff who travelled to see customers...
Part 1 The emerging world of work

Home-based working in a Chinese company

CTrip is a comparatively rare example of a Chinese company making extensive use of home-based working. The company is China’s largest travel agency, with 16,000 employees. Senior managers were attracted by the idea of introducing homeworking for staff at their Shanghai call centre, due to concerns about spiralling property costs and high turnover rates of staff. Employees faced lengthy and frustrating commute journeys.

During an initial pilot, 250 staff worked from home four days per week and worked in the office on the fifth. Productivity amongst homeworkers increased by 13%, with 9% derived from working more minutes per day – fewer interruptions and sick days – and 4% from dealing with more calls every day. Attrition also fell by 50% in the homeworking group compared to a control group in the office.

CTrip calculated that it saved $2000 per year per employee who worked from home, and rolled out the option to work from home to all employees in the hotel and airfares department. (Bloom et al, 2013)

Smart Working and development

While smart working practices have been gaining ground in the West, there are a number of factors working against greater flexibility in the emerging nations. In many countries, labour regulations, business culture and/or social traditions can rule out flexible working patterns. In urban areas homeworking may be restricted both by culture and the nature of the home, though traditional low skill homeworking remains common in poorer areas.

Fast-growing companies have tended to follow the western model of building or occupying large offices, with traditional desk layouts and private offices based on status. The office market is growing just as the office market in western countries is shrinking (DTZ, 2013). However, as property costs rise rapidly in the major cities, there are signs that this is beginning to change, as the CTrip experience shows.

In addition, tech-savvy young urban populations are quick to adapt to using mobile technologies for work, and mobile infrastructure is often developed with more ubiquitous coverage than in the West.

in their homes. This has been almost entirely replaced by online and telephony-based services. Many other financial services are migrating in this direction. For many people, their main ways to interface with their bank are through a cash machine and online banking. It is so familiar that it may seem almost trivial to note.

However, it has had a profound impact on where and when people undertake activities. It is also part of a much larger transition in the banking sector brought about by moves to electronic processes.

As noted above in the section on mobile working, some itinerant jobs have been eliminated altogether while others have been transformed by the ability to access and input information from any location. Large organisations have however been somewhat slower to change the way people work back at the office. All electronic processes, electronic service delivery and electronic or telephony-based customer services mean that in principle staff can be located anywhere. While some services may be outsourced, e.g. to call centres and data processing centres overseas, the full potential impacts on how offices are used and where employees are located has yet to be realised in most business and public sector organisations.

One area where the dematerialisation of processes is making an impact is in the health sector. Having medical images in electronic rather than physical format gives medical practitioners and technicians the ability to share vital information between sites. This can lead, for example to specialists analysing medical images working on a home-based basis. (www.cbsnews.com/news/when-the-workplace-is-your-home/)

In our case study of Wertachkliniken in Germany, doctors combine this capability with remote meetings technology to work effectively between sites to provide specialist services.
3 Emerging technologies for work and their impact

In this section we will be examining first the technologies that are currently changing the nature of work, and then looking ahead to the kinds of technologies that we expect to be making an impact over the next decade, further transforming the way we work.

3.1 End user devices and applications

People adopting Smart Working now will for the most part be using portable devices and applications to support this kind of work such as:

- Laptop rather than desktop computers, to support greater mobility of work both within and away from the office
- ‘Thin client’ technology that allows users to log into their desktop at any terminal, and can be replicated with a thin client application operating from a laptop or home computer
- Tablets – increasingly being used to support working away from the office. We can expect their functionality as business tools to continue to develop
- Smartphones
- Headsets – for improved ergonomics and acoustics, and for integration with the various telecommunications systems used
- VOIP (voice over IP) telephony to enable employees to log in at any desk in an office, and where enabled to use outside the office too
- Unified Communications, bringing together voice, video, messaging and presence management into an integrated offering
- Conferencing technologies – audio, video and web conferencing to promote more effective collaboration
- Remote access technologies that allow employees to access their corporate networks, including legacy applications, securely from home and on the move
- Online collaboration technologies that let dispersed teams work together on “live” documents
- Electronic document management and records systems that replace paper processes and can be accessed from anywhere
- Enterprise social media, which is used to keep teams in touch, share knowledge and promote collaboration.

These tools and applications are evolving constantly, and this technology evolution increasingly supports simpler and more seamless working wherever people are located. Increasingly they also reduce the costs of working by reducing the physical resource needed to support day-to-day working.

However, the technologies on their own don’t change the way people work. Organisations need to adopt a strategic approach to bringing about the cultural and behavioural changes in the workplace to make a difference, as our case studies show. Old ways of working with new tools won’t deliver significant benefits.

3.2 Infrastructure

Apart from the wired infrastructure in offices, Smart Working involves the use of:

- Wi-Fi networks in offices and other locations (public areas, cafes, home, trains, etc.)
- 3G or 4G networks using a ‘dongle’ or mobile Wi-Fi device
- Public broadband networks
- Public fixed and mobile telephony networks.

The availability of these networks is vitally important for the success of Smart Working. The ideal situation is one where a worker can seamlessly access all the information and systems needed from any location. In many parts of the world we are not quite at this stage yet.

There are large areas of the UK, for example, despite the maturity of the infrastructure, it is not possible to access fast broadband or a (stable) mobile phone system. Often a journey between cities will involve periodic loss of connection.

The result of this can be a degraded remote working experience, and the productivity benefits can be eroded despite the best efforts of organisation and employee.

3.3 Cloud computing

One of the most significant trends in corporate technology is towards “cloud computing”. The ‘cloud’ is basically the Internet, and cloud computing means that organisations do not need to host their own IT, but will be able to outsource it (or parts of it) to a third-party provider. Software and applications are provided as a service rather than installed on client computers. This enables greater adaptability and agility as technologies evolve or circumstances change. As well as software as a service (SaaS) cloud providers offer infrastructure as a service (IaaS) and platform as a service (PaaS).
Just as we saw trends towards the ‘office as needed’, cloud services essentially provide IT as needed.

With everything accessed over the Internet, there is no need for any permanent local storage or applications on any device people may be using.

It is only a few years since cloud computing was a novelty, with many debates about what it involved and its viability for business. Now it is an accepted part of the IT landscape. Organisations have turned to cloud computing primarily because it reduces IT costs, improves efficiency and improves IT adaptability to new circumstances and fast moving markets.

Those are the immediate benefits. However, cloud services also enable more effective collaboration over distance, and a range of more strategic advantages. According to research by the World Economic Forum, cloud computing has “the potential to benefit organisations, industries and entire economies by:

- Dramatically accelerating the way companies create new products and services, in part through enabling product development professionals around the world to collaborate more effectively and access more powerful and economical computer resources
- Increasing the ability of organizations to mine their data for important trend information, such as customers’ changing needs and competitors moves in the marketplace
- Leveling the playing field between large and small companies by giving companies of all sizes access to information technology that previously was affordable for only the largest of companies
- Helping emerging economies leapfrog to higher levels of technological development by providing more immediate and affordable access to next-generation applications, tools, and infrastructure.” (WEF, 2011)

The ability for small companies and start-ups to innovate and provide services from an enterprise level IT platform and use ready-made applications is fuelling new businesses and wealth creation – but not the same kind of jobs that we have seen created in earlier periods of technology change.

3.4 Video communications and collaboration technologies

The increasing portability of devices is increasingly associated with the mobility of new forms of communication such as video communications. While there is still a market for top end video communications in room-based systems such as telepresence, the real growth in the market is in video applications in laptops, tablets and smartphones.

According to a recent study, software-based desktop video conferencing client licenses are expected to almost double between 2013 and 2017, reaching 47.7 million client licenses sold. The vast majority of these will not be standalone desktop video applications, but video incorporated into web conferencing and unified communications solutions (Frost & Sullivan 2013).

According to Bernardo de Albergaria, Vice President and General Manager of Markets and Products at Citrix:

‘The most important thing is, tools have to be built around people in order for them to work and be adopted, so our idea at Citrix is to always think of the user experience first. We think video collaboration will be as ubiquitous as the phone and email are now in ten years, and these technologies will be as relevant to enterprise companies as they will be to start-ups. Beyond that, current collaboration tools are too siloed and one-dimensional. Citrix is moving toward an integrated set of collaboration tools that work together seamlessly to make collaboration easier and more efficient.’

We can see the growth of the trend towards ubiquitous video in consumer applications that add video functionality to smartphones, as well as well-established applications for video calls on computers. This kind of ease of use and affordability is now being coupled with other tools for secure collaboration, real time sharing of business applications and the ability to extend meetings with ease to other participants as needed.

One of the interesting trends is that whereas 20 years ago videophones were thought to be part of the kit of the future on the office desk, now many leading companies such as Plantronics and Vodafone no longer have phones on their desk at all. With unified communications calls are routed either to a mobile phone or via a laptop and headset.
Alongside this increased portability of routine video collaboration, new forms of more immersive collaboration have been developing with high definition telepresence and, though still in their infancy, 3D imaging and ‘holopresence’. Over the next decade we can probably expect these new technologies to mature to the point where they are used in companies much as room-based videoconferencing systems are used now. Beyond that, these capabilities may migrate to portable and wearable devices also.

These more sophisticated forms of virtual presence overcome some of the perceived barriers of the kinds of conferencing used today, where some people may initially feel a loss of emotional nuance, body language and social cues when they take part in remote meetings.

### 3.5 New screen and surface technologies

The keyboard and mouse have been a feature of personal computing since they first began to make an impact in business and consumer markets. Various alternatives to the mouse have been incorporated into laptops, such as track pads, but worked on the same principle of having a pointing device operated by hand that was separate from the screen.

The days of the mouse appear to be numbered. The touchscreen technologies included with smartphones and tablets are just the beginning of much more sophisticated screen and surface technologies that respond not only to touch but to gestures and awareness of motion – using sensing technologies similar to those used every day by people playing interactive games similar to those used every day by people playing interactive games similar to those used every day by people playing interactive games similar to those used every day by people playing interactive games similar to those used every day by people playing interactive games similar to those used every day by people playing interactive games similar to those used every day by people playing interactive games similar to those used every day by people playing interactive games similar to those used every day by people playing interactive games similar to those used every day by people playing interactive games similar to those used every day by people playing interactive games similar to those used every day by people playing interactive games similar to.

Offices and homes of the future will have screens and interactive surfaces of many shapes and sizes. This creates the possibility for new and more immersive forms of interaction and presentation, both for business and leisure. Just as video-conferencing has been coming out of special suites and onto the computer desktop, so will telepresence come out of purpose-built rooms to a wall or partition near you. Such screens will also be used to share documentation and presentations, becoming multi-user smartboards with simultaneous users based anywhere in the world.

One consequence of this is that the phrase ‘face to face’ will gradually lose the implied connotations of physical presence.

There are two further spatial consequences of this for the world of work:

- The need for physical co-location even for quite complex and socially oriented tasks will continue to diminish
- Office layouts will become increasingly less oriented towards desk work.
The declining importance of the desk is associated with the demise of the tools that reside on it – the keyboard and the mouse. For those of us who are heavy duty writers it is hard to imagine a world without the keyboard. Already smartphones and tablets incorporate soft keyboards into touchscreens, but they are not so practical for intensive input work, and create ergonomic problems if used intensively. We can expect solutions for this to improve over the next few years. However, the development of artificial intelligence that handles voice recognition more intelligently than current applications is only a few years away. The keyboard, after around a century of being pivotal for processing words into paper and online processes, will begin to lose its central place in the world of work.

This will have an impact in offices, where desks and tables to put keyboards on are becoming less necessary. Without a keyboard and mouse, and technologies ever more portable, we are probably approaching if not the ‘death of the desk’, then at least the end of its dominance in office design.

Yet almost invariably, when Smart Working is introduced into organisations, there are people fighting tooth and claw to retain as many desks as possible. It is essential to move on from 20th century notions of the workplace if the full benefits of the new waves of technology are to be achieved.

3.6 The impacts of artificial intelligence and robots on work and the workplace

Robots in workplaces are most often associated with carrying out automated tasks in manufacturing and warehousing, or carrying out tasks in difficult or extreme environments. The International Federation of Robotics (IFR) calculates that there are between 1 and 1.3 million robots deployed worldwide. The automotive industry has at least 415,000 robots.

In April 2012 Foxconn, the Taiwanese company that makes mobile phone devices and games consoles, announced it would deploy a million robots over three years, replacing human labour and improving reliability. By the end of the year it had 10,000 robots deployed according to Xinhua news agency. Google is reported to be working with Foxconn in this space, and has purchased several robotics companies to support its moves into the world of real world bots to supplement its leading position with bots in the virtual world.

While there is concern that robots replace human jobs – and this is what they are often intended to do on the production line or in the warehouse – the IFR has data showing that the robotics industry is a net creator of jobs across the world. These jobs are involved in manufacturing robots, systems integrators and in-house technicians. A car plant with 500 robots is likely to need 50
technicians to oversee and maintain their operations. Robots outside the automotive industries are generally in smaller plants and have twice that ratio of technician to robot. (IFR, 2013)

And the example of Google shows that software robots can be part of platforms that support enterprise and a wide range of economic activities, as well as challenging traditional industries.

There are gains and losses here – it’s all about how we respond to the changing landscape.

Our concern here is primarily with the changing nature of work. The key feature of the changes are how hands-on and lower skilled roles are replaced by various forms of knowledge work, or work that has a high knowledge component. This kind of work is often more footloose.

Mining, for example, is a field that is undergoing big changes with the use of robots and remote-controlled equipment. Again there is a move towards knowledge work. According to Geoff Bull, Director Workplace Policy, The Australian Mines and Metals Association (AMMA), in a recent report by Citrix:

“In one sense the average mine worker will soon be a clerical worker, far removed from the strong physical image that we have in our mind’s eye. Those workers, whether engineers or geologists or clerks or truck drivers, will increasingly be female as the influx of women graduates in mining professions continues to break down one of the last bastions of male dominance.” (Citrix, 2012)

As tools for remote collaboration develop and improve, this kind of work can be carried out in locations far from areas being explored or mined. Certainly data from these activities is often carried out far from operational sites.

Robots are one particular use of artificial intelligence. But not all ‘robots’ take a physical form. Intelligent software can automate a wide range of functions in analysing and processing data, and is starting replace many of the intensive clerical office functions of the past. This takes us back to the phenomenon of the ‘hollowing out’ of the workforce, with the decline of both hands-on roles in manufacturing and lower skill roles in administration.

But it also has implications for the kinds of skills needed for the future workforce. A report by the Chartered Management Institute looking to the future of management in 2018 foresaw a time when many if not most of the routine work of managers in supervising work and monitoring performance could be performed by intelligent software agents. The skills that managers would need would then be more about being creative, strategic and also emotionally intelligent in order to be able to get the best from a high skilled and more autonomous workforce (CM1, 2008).

Again, there are a range of impacts for the future of the workplace as well as the future of work, reinforcing the concept of the workplace as being more distributed, designed for collaboration and remote interaction, and less a factory for processing information.

Back in 1964, at the opening of the World Fair, Isaac Asimov wrote an article looking 50 years ahead to 2014. Amongst other predictions he wrote: ‘The world of A.D. 2014 will have few routine jobs that cannot be done better by some machine than by any human being. Mankind will therefore have become largely a race of machine tenders… The lucky few who can be involved in creative work of any sort will be the true elite of mankind, for they alone will do more than serve a machine.’ (Asimov 1964)

We know that today’s world hasn’t actually turned out this way. However, some elements of this scenario are indeed starting to take shape. Routine jobs are being replaced by machines on an ever increasing basis. Jobs for new kinds of ‘machine tenders’ are being created in this process of change.

But it is not a zero sum game where robots simply replace most labour. There are new opportunities to be creative both in terms of technology innovation and in using the new technologies for other creative and enterprising purposes, and of delivering important public and personal services. In other words, if we get it right, the process can be one of liberation. Not to a life of leisure, as mid-20th century prophets predicted, but to a world where there are more opportunities for more fulfilling work, away from the factory-style norms we have become accustomed to.

One interesting area where robots or robotic aids are expected to be increasingly deployed is in the field of rehabilitation. The rehabilitation robot market, at $43.3 million in 2014, is expected grow dramatically to reach $1.8 billion by 2020 (Wintergreen Research, 2014). Rehabilitation robots, that actively help and support patients with injuries or other physical dysfunction, are part of this market, which also includes active prosthetics and
Part 1 The emerging world of work

Exoskeletons. People involved in hands-on therapies in the growing personal care industries will increasingly be working in conjunction with not only these robotic tools but with experts — who could be located anywhere — to programme, maintain and upgrade them, carry out diagnoses and devise bespoke solutions.

The locational impacts of all these new technologies will be very complex. The high levels of knowledge work involved enable much of the work involved to be footloose. Physical robots are often produced to work in specific locations such as factories, but relatively few of the humans supporting them need to be co-located. Robots themselves need not have much of their intelligence held locally, as long as they have access to the information and processing power they need over an Internet connection. So the work done by ‘things’ is becoming just as decentralised and flexible as that done by humans — potentially more so.

There may be other locational impacts too, perhaps reversing trends we’ve seen in recent decades. Commentators speak of tasks that were previously outsourced overseas being ‘robosourced’ back to their home territories. As one of the chief advantages of outsourcing offshore has been cheaper labour costs, the falling costs of robots can bring increasingly fast returns on investment. The impact though will be that although manufacturing may return to countries with higher labour costs, it won’t bring with it many manufacturing jobs, as the work is done by robots. It would, however, stimulate the creation of jobs in related technical fields.

Other new technologies like 3D printing will also have impacts on the location of work, potentially decentralising production away from large factories to a range of smaller locations in some instances, with the associated managerial and knowledge work in principle being located anywhere.

3.7 Ubiquitous computing

The number of connected devices is growing every day. These are not just devices used by people to do work or interact with each other. Increasingly computing intelligence and connectivity is embedded in the objects around us. It has been calculated that by 2020 there will be 50 billion devices connected to the Internet (Hansen 2012).

The trend for devices to be smaller and smaller continues to the point where hardware is replaced by software, and we find ourselves living and working in the context of ubiquitous computing and in environments where ‘ambient computing’ is aware of our activities and can support what we intend to do in an interactive way.

Going into an office, the environment identifies who we are and the work we have been doing. It may ask us questions about the work we intend to do, and bring it up on a screen ready to continue where we left off. Our portable devices connect with the intelligent systems around us, and information can be slid easily from device to screen or surface as needed. Calls are routed through these intelligent systems, and colleagues can be brought together into meetings without having to travel.

With these kinds of systems and people communicating with computing systems by voice and gesture, there are new challenges for the design of workplaces. Perhaps they will become more like ancient or medieval libraries, where people tended to read aloud — a hum of people talking but engaged in personal work. More likely, such work will be carried out in other places where people can focus without disturbing others, whether from home or in an appropriate and acoustically treated activity-based work setting. Noise cancelling headsets would seem to be an essential piece of kit for this kind of work. And we can expect other kinds of wearable technologies such as glasses that can enable us to blend real and virtual environments — augmented reality — and devices embedded in clothing.

All these things are here already. The next few years will see increases in sophistication and scale, which will impact on how we work and live.
In the following sections we examine the impacts of this changing world of work on business and society over the next decade – and how we might best harness the potential benefits and overcome barriers that might stand in the way of achieving them.

4 Impacts for business

The future for business is to be ever more agile and flexible, based on the analysis of trends in the first part of this report.

Large organisations that adopt Smart Working now are demonstrating that they can operate more effectively and at reduced cost by operating out of reduced office space and using technologies that support mobility.

However, we see that many organisations that are preparing to modernise are not yet recognising the pace of change and the opportunities on offer. Many organisations are currently preparing to implement forms of smart or agile working that were leading edge about 10 years ago. A key obstacle is traditional mindsets around the need to work in an office, at a desk and in meeting rooms, for most of the time and that extensive mobility is really something for field workers rather than office workers.

It is important to challenge assumptions that are made on the lines of ‘this kind of job can’t be done flexibly’, and look at the tasks involved and to see how new approaches to flexibility and process improvement can increase effectiveness.

The Smart Working Maturity Model below highlights typical stages on the journey towards Smart Working, and the factors that need to be in place to progress.

Organisations that are looking to move forward from traditional working practices need to be ambitious and develop a comprehensive strategy for ‘Smart Flexibility’. This means going beyond enabling flexible working based on approving individual requests from employees. And it means going beyond introducing limited desk-sharing and introducing technologies for mobility.

![Smart Working Maturity Model](Figure6.png)

**Figure 6: Smart Working Maturity Model**

Source: Lake, 2013
What organisations should do to reap the benefits

Maximising the potential benefits means having an integrated approach involving changes to property, processes, technology and work culture. It involves:

- A clear vision about the benefits to be achieved
- A Smart Working strategy endorsed from the top of the organisation
- Consolidating office space in smaller premises, and planning for ‘spaceless growth’
- Implementing Smart Working environments, based on space-sharing in a range of activity-based work settings
- Enabling staff to work beyond the office, wherever is most appropriate to get the work done
- Phasing out the desk-focused mindset, which focuses on desk ratios and personal or team ‘territory’
- Rolling out the communications, remote access and collaboration technologies to enable staff to work anywhere
- Working towards a paperless ‘e-culture’
- Developing a trust-based culture and management by results, not by presence
- Working more flexibly and effectively with contractors and the contingent workforce
- Having no distinction in status between staff who work on the premises and those who work in other places – the office does not set the default work culture
- Being open to the future changes highlighted in this report.

The benefits of embracing these new workplace trends are many, as our case studies indicate. These include:

- Reduced property costs
- Being more adaptable to change
- Reduced travel – both business travel and commuting by staff
- Improved collaboration
- Breaking down boundaries within the business
- Improved service delivery
- Improved business continuity
- Improved recruitment and retention
- Improved work-life balance for staff.

Most of these benefits are measurable, and organisations should set targets for improvements when moving to Smart Working.

The trends we have noted show the potential for organisations to reduce their core resource base while being adaptable to changing demands. Through cloud computing organisations can buy technologies as a service, expanding, contracting and changing as circumstances require rather than being locked into inflexible technologies and contracts. A similar approach can be taken to ‘Space as a service’, minimising the amount of property occupied on a permanent basis. As well as the more traditional providers of flexible officing, the new generation of workhubs / coworking spaces have sophisticated offerings to support greater mobility and remote working.

One underutilised benefit of Smart Working is the ability to recruit the best talent from anywhere, without requiring the recruit to uproot and move. This ability also enables more inclusive recruiting policies, enabling people who have mobility challenges owing to disability, caring responsibilities or living in areas with poor transport links to apply. Organisations need to ensure that openness to flexibility is included as part of job specifications.

Small businesses and start-ups have the option of embracing spaceless growth from the outset. We have seen the trend towards microbusinesses and in particular new enterprises being based at home. This does not mean working at home all the time – many of these kinds of enterprise use home as a base and travel to see clients and work at client sites.

Moving into premises separate from the home has often been seen as a sign of success for the young business. Now there is more reason ever to question whether it is a necessary step to take, in view of the cost burdens that will be taken. The costs of premises – rent, utilities, insurance, maintenance and business rates – often saddle a young business with fixed costs just at the time when it may need to invest money in developing the business.

The portability of devices, access to broadband or 3G and the ability to use workhubs and public spaces for meetings means for the entrepreneur and freelancer the office is wherever it needs to be.
Workplace Innovation at Philips

Philips, the Netherlands-based company specialising in healthcare, consumer lifestyle and lighting, is a global leader in innovation. And it is transforming the way its employees work through their Workplace Innovation (WPI) programme.

Since 2007, Philips has been introducing new ways of working and redesigning its workplaces across the world in line with their company mission “to make Philips a great place to work for people who share our passion”. The aim is to create “an empowering, innovative and collaborative way of working”.

“We’ve tried to create inspiring work environments,’ says Peter de Winter, Senior Program Director EMEA. ‘The aim is to promote collaboration and help people to work more productively. The markets in which we work are shifting very fast, so we need a flexible concept in the office so we can adapt quickly. We have hubs all over the world where people are inventing new products, and they have to collaborate with the people throughout the company who are marketing them and selling them. There are property savings but the case for change is not based on that. It’s about creating inspiring environments where people can be more productive, and have better collaboration and interaction. That’s important because innovation is our lifeblood. And innovation is based on three pillars – knowledge-sharing, communicating, and collaborating.’

The first WPI project was in New Delhi in 2009, and since then it has spread to 29 locations from Sao Paolo to Hong Kong and Stockholm to South Africa. The mix of work settings is similar in all locations, with desks in open spaces, touchdown spaces, focus rooms, meeting rooms and breakout areas, but the design in each case is done by local architects. Technologies for individuals and in the workplace are designed to maximise flexibility and support the increasing amount of working in virtual teams.

A key ingredient of the new way of working is having a trust-based culture. ‘Our approach is Work wherever, whenever: just deliver,’ says de Winter. ‘This means managers have to change to managing by output. So you have a lot of freedom. You can work from home, you can work from Starbucks or wherever – but you have to perform.’

This approach encourages employees to take ownership of their work, while at the same time supporting health and wellbeing through being able to manage a better work-life balance.

All the way through the change process, managers and employees are supported by a well-developed change management process that involves them in designing their new ways of working and also evaluates the impacts. The changes have high approval ratings, with 74% on average preferring the new working arrangements.

Future developments being examined are coworking and sharing offices with other companies. The main challenge now, according to Peter de Winter is in moving from implementation to sustaining and evolving the concept.

And in the Netherlands he sees the new ways of working taking hold in wider society, where some two million people work in these new ways. This is creating more mobility in Dutch society than ever before.
Nansledan live/work quarter Cornwall

The Duchy of Cornwall has for some time been planning its next model new community, following on from the internationally acclaimed Poundbury in Dorset. Nansledan will pioneer new sustainable development practices including a strong emphasis on flexible working and low carbon ways to use property (as well as low carbon development processes).

Nansledan will be an urban extension of Newquay in Cornwall. The community will consist of around 3,750 homes and associated infrastructure. There is already planning in place and work under way to develop a live/work business quarter with 40 units designed specifically for home-based businesses along with a community workhub.

Nansledan will not only have a designated live/work business quarter. It will be the first ‘live/work community’ in the UK. Ability to work from home in the residential properties is being factored into the design on a scale not hitherto seen in any major development. There will also be superfast connectivity with fibre to the premises (up to 100 mbps) making it easier for residents to work from home.

Live/work units

There will be a mix of sizes, broadly similar to residential properties with different numbers of bedrooms, but with ground floors dominated by or entirely made up of a single large workspace:

- 100 sq m to 250 sq m overall sizes (1,2,3 bed)
- 30 sq m to 50 sq m workspace sizes
- up to five working in these spaces (in larger units)
- units for sale to incorporate broadly 30% workspace (to be easy to mortgage)
- any units for rent including affordable rent can be 50:50, two storey

Economic impact of the live/work quarter

- Range of 1 to 5 workers per live/work unit
- An average of 2 per unit over whole live/work site
- 80 people working full-time equivalent in live/work units
- There will also be a good proportion of home-based workers in the residential properties at Nansledan. Using ONS data for the comparable wards nearby, a minimum 15% of those in work in the new homes will work at/from home.
What the future of work means for business, society and public policy

• Assuming around 2,750 economically active households (out of the 3,750 total new residential properties planned for new community), there will be a further 420 home-based jobs

• The community’s workhub will also attract at least 80 additional businesses as members in addition to those taking offices there

• Overall it is estimated that there will be around 400 flexible working jobs created in addition to any jobs created in commercial and retail spaces

The way that jobs are created and supported in the live/work quarter and via enhanced homeworking will not be measured by square metres of office space. This itself is an unusual approach for a master-planned mixed use community.

Distinct live/work architecture

The dedicated live/work units will be completely unlike residential units in their visual impact. They will have easily identifiable ground floor workspaces and different design to residential properties. To be eligible for (more affordable) residential mortgages, the workspace element proportion of each will be between 25% and 40%. Distinct layout features will include having workspace that is connected but separate – i.e. the workspace can also be easily accessed by the owner from the residential part it, and it can also be entered by staff/associates while the live/work owner is away without impacting on the residence.

Low carbon as a selling point

The carbon benefits of live/work use are not just about reduced commuting, but better/fuller/smarter use of single properties. There is reduced construction carbon and also lower fuel costs by encouraging people to use one, not two, buildings. This aspect of live/work will be used to enhance sales values.

Why here?

The project undertook a study of the local economic context at the planning stage, so it is designed to fit the changing economic context. The study found that Cornwall has the highest incidence of homeworking in the UK: one in four of the workforce. Since 2001 there has been a 4% decline in commuting employees in Cornwall, despite a growing workforce. In the same period the number of home-based businesses has grown 88%.

Cornwall’s workforce is showing a notable shift towards home-based self-employment. There are 40,000 of these. But this figure is an underestimate as it does not include company directors who work from home. It is impossible to get data on the number of these company directors. But it is likely that, including them in the number, there are now something like 50,000 home-based enterprises in Cornwall.

Q4 2001 to Q4 2010  % change in workforce

<table>
<thead>
<tr>
<th></th>
<th>Cornwall</th>
<th>UK</th>
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<tbody>
<tr>
<td>All workers</td>
<td>6.16%</td>
<td>4.82%</td>
</tr>
<tr>
<td>Commuting employees</td>
<td>-4.26%</td>
<td>1.96%</td>
</tr>
<tr>
<td>Self employed</td>
<td>31.82%</td>
<td>20.38%</td>
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<tr>
<td>Homworking</td>
<td>83.69%</td>
<td>21.44%</td>
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<tr>
<td>Home-based self employed</td>
<td>88.38%</td>
<td>23.89%</td>
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Cornwall workforce today (Q4 2010)

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>% of workforce</th>
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</thead>
<tbody>
<tr>
<td>All workers</td>
<td>239,361</td>
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<tr>
<td>Commuting employees</td>
<td>166,191</td>
<td>69.43%</td>
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<tr>
<td>Self employed</td>
<td>53,689</td>
<td>22.42%</td>
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<td>Homeworkers</td>
<td>60,354</td>
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<tr>
<td>Home-based self employed</td>
<td>40,853</td>
<td>17.07%</td>
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</table>

Source: ONS Labour Force Survey

Newquay live/work quarter FTE jobs estimate

<table>
<thead>
<tr>
<th></th>
<th>Number of FTE local jobs created</th>
<th>Number using workhub</th>
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</thead>
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<tr>
<td>Live/work units</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>Workhub members</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Workhub tenants</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Residential homeworkers</td>
<td>420</td>
<td>100</td>
</tr>
<tr>
<td>TOTAL (de-duplicated)</td>
<td>690</td>
<td>250</td>
</tr>
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</table>
5 Impacts for how we live

Living with blurred boundaries

Much of what we have seen in part 1 of this report involves the blurring of boundaries between work and other parts of life. Work can be at home – and more or less anywhere else.

However, most homes are not designed for working in. Most planning systems have regulations to separate residential uses from business uses. Many of these regulations go back to the Industrial Age when much work was noisy, dirty, dangerous, smelly or toxic. Yet most post-industrial forms of working do not have this kind of nuisance value or harm to local amenity.

Trends in planning and house building have advocated high density development for reasons of sustainability, to prevent urban sprawl and, it is hoped, reduce the need for car travel.

The problem with the trend to higher density is that the result has tended to be smaller homes, more densely clustered. This more or less designs out the ability to work in them. Similarly tiny gardens design out the possibility of growing produce or building a ‘garden office’. Much of the underlying thinking in planning and community development has remained based on old assumptions about the necessity to separate home from work.

So although the changing world of work increasingly enables people to work from home, they are forced to do so in spaces that are not optimised for the task. Occasional homeworking as an employee with a laptop may not be a challenge in this situation. But regular working at home, and especially running a business from home, really does require space that is fit for purpose.

In some ways, we may be moving slowly towards a ‘back to the future’ situation. 100 years ago the home was a natural place to work, and there were few or no planning controls to prevent turning the home into a centre of enterprise. We have been through a somewhat unnatural era of dividing the life of families into rigidly separated zones: a place to work, a place to eat and sleep, and a place to send the children to be educated. The future will see the erosion of these boundaries, and work becoming more organically intertwined with family life.

Community life

What are the impacts at community level? Community life suffers greatly from high levels of commuting which sees most adults leave the area for the working day, and spending their money elsewhere, near their workplace. Trends that see people work more in their homes or closer to where they live are starting to reverse this trend. Where local services remain, it can also repatriate some of their spending to the local community. Some studies have shown that people who work from home tend to become more involved in activities such as taking over escort duties, taking their children to school, and volunteering. (SUSTEL, 2005)

In some areas, workhubs have opened in buildings in need of regeneration, and occasionally in high street locations. This adds vitality to the community. The Workhubs study (Dwelly and Lake 2010) for the UK Department for Communities and Local Government noted a connection between the success of workhubs and ease of access by walking.

Including live/work premises in new settlements is not common. However new settlements in the UK such as Northstowe (an urban extension of Cambridge) and at Newquay on land owned by the Duchy of Cornwall (Prince Charles) are including live/work homes as part of the mix with the specific aim to promote a local and sustainable economy.

Our case study of the Nansledan live/work quarter looks at home homes designed for working and supporting workhub facilities can support and accelerate existing trends to home-based enterprise in the region.

Flexible working enables people to live better balanced lives. This may be through working from home 1 to 2 days per week, running a (part-time) business from home, or working part-time to allow more time to be spent at home.

There is a considerable amount of research that connects flexible working with improved health and wellbeing as well as satisfaction, particularly when the form of work involved allows the individual more choice and the ability to organise their own working time and/or location. (Moen et al, 2011; Joyce et al, 2010)

There can however be negative impacts too when work is perceived as ‘intruding’ into or disrupting home life. The emerging workplace and technology trends are going to lower the barriers between work life and the rest of life even further. It will become very easy for work to slide across the boundaries, as the technologies used in everyday life are the same as the ones you use for work. The wall in your kitchen may also act as the screen for an immersive business meeting. There are...
benefits to this, but also some risks if people feel under constant pressure. This is the kind of issue to be dealt with by training and team policies and protocols, rather than pulling up the drawbridge.

Flexible part-time working

In section 1 we looked at ‘the rise and rise of part-time working’. It is closely associated with increased female participation in the labour force, and aspirations for greater work-life balance. Increasingly it is also associated with phased retirement, and working beyond retirement at one of the age spectrum, and at the other end with working to support study.

At key phases of the life course – young adulthood, parenthood and later life – part-time working is highly valued as one of the best ways to integrate work into the rest of life. However, part-time working is often undervalued and underpaid. There are many people, especially highly qualified women who work on jobs below their capabilities because employers have a blind spot around part-time working. There is a need to promote higher quality part-time work – and in part, this is a question of employers being willing to allow high skill and senior roles to be undertaken on a flexible basis.

Part of the answer is to recognise and embrace the blurring boundaries of work, and to enable fluidity in working practices.

For example, a sticking point for employers may be that someone working part time two days per week will be unavailable for important meetings the rest of the week. This is because we tend to wrap up ‘flexible work’ in inflexible contracts and HR policies. But if a results-based approach to work is adopted, by combining different forms of flexibility a part-time worker, by arrangement, may be able to join meetings virtually when the occasion arises. The approach can be, ‘this is what we expect to be achieved in two days per week’, rather than ‘you will be here every Monday and Tuesday, 9-5’. In this sense the part-time worker operates more like a contractor or consultant.

This may not suit everyone, of course, or every kind of role. But for more knowledge-based work which is not immediately time-critical, it is a logical way forward. Availability is by arrangement, relationships are more trust-based, and management is by output rather than time.

The key area where this has an impact on our lives is in control. Working this way, people become more empowered to dovetail their working life with their other responsibilities and aspirations, playing a greater part in family and community life.

So as well as the spaces in which to work flexibly, we need also to look at the times and rhythms of working life as it interfaces with the other times and rhythms of life.

Being enterprising

But it is not only about employment. We have seen how the growth of self-employment, freelancing and enterprise are supported by new technologies and smarter, more flexible ways of working. It is likely that increasingly people will develop part-time home-based businesses. These can either start from skills developed in professional life, or from pastimes or hobbies that develop into saleable services or products.
The growth of part-time home-based business inevitably leads to the blurring of boundaries between home and work. With the home as a centre of domestic enterprise, paid work becomes a more normal part of family life, rather than something separate, that mysterious thing that mum and dad do that takes them away from the home and family every day.

But these interfaces between home, community and work will not function well if the spaces in which we live and work are not fit for purpose.

**Trends that should make us plan differently for the future**

When we put together the trends of:

- Growth of part-time working
- Grow of home-based working for employees
- Growth of home-based enterprise
- Growth of people having multiple sources of income
- Increased lifespans – including working beyond ‘retirement’
- Trends (in the western world, at least) to share caring responsibilities between parents
- The attractiveness to home-based workers of workhub/coworking facilities

…then we can see the need for thinking of how we plan for homes and communities.

In this context we need to think about how homes and communities should ideally evolve over the next 10 years.

At the top of the list needs to be **ubiquitous connection with superfast broadband**. Communications need to be optimised for people, wherever they live, and however they move, to be fully enabled to participate seamlessly in the world of work.

When people work from home, in the local area, or on the move, they need to be able to use whatever systems and communications technologies are necessary. As we have seen, the upcoming generations of communications technologies are likely to be far more bandwidth-hungry than those currently used. And work use of the bandwidth is likely to have to compete with an ever-increasing range of other non-work online activities.

**Homes need to have spaces in which to work, and/or to study.** This does not mean having an odd-shaped room on the second floor designated an ‘office’ or ‘study’ in the brochure. But an area in or attached to the home that can be used for professional work. **A proportion of homes should have larger spaces in which to run businesses,** and which allow access for colleagues and customers without coming through family areas.

As offices become more the focus of collaboration, and as computing interfaces gravitate towards voice and gesture, **we expect home to become more the workplace of choice for many tasks requiring high focus.** Working on the kitchen table or the corner of the living room will become increasingly a less viable option.

**Homes should be designed with the capacity to set up intelligent environments,** e.g. with smart surfaces that can be used for computing and communication, and that interface easily with mobile devices.

The impacts of more people working from home or being at home part of the time offers the prospect of being able to break away from the Industrial Age pattern of dormitory communities that are empty during the day as commuters go elsewhere to work.

But to create sustainable communities, people need to have services within walking and cycling distance. There are **opportunities here to develop new local businesses that support the local home-based and free agent workforce, and their family needs** – but the danger is the opportunities may be throttled by outdated planning laws based on the rigid separation of home and work.

The evolution of the nature of work and business also has an impact on the nature of the High Street. Planning laws have tended to restrict certain areas to retail uses only. As a result of out-of-town malls and online shopping, the local high street has suffered, with sometimes long stretches of shops boarded up.

**The future of the High Street may well be in places to meet – workhubs and cafés – and ‘shops’ as places to showcase products and services,** more than to buy them, supported by local markets of home and locally produced goods. **Live/work high streets may even be part of this future.** In many countries the structure of local taxes, rents and planning constraints does not support such an evolution. But with many more people able to work at or closer to home, there are opportunities for increased footfall in local areas that are currently stagnating. Planning for the future of work needs to be part of the local mix.
6 Impacts for how government works

Government organisations are some of the largest employers in any country. And many of them are starting to move towards Smart Working. Some, as in our case studies, have progressed quite far on the journey.

The United States federal government has promoted both teleworking and workplace flexibility over the past few years. Parts of the federal government have supported teleworking (or ‘telecommuting’) for more than a decade. Telecommuting centres were set up around Washington in the 1990s to relieve the long commute experienced by many federal workers.

In 2010 the Telework Enhancement Act required all parts of the federal government to set up and evaluate telework programmes. This enables employees who meet eligibility criteria to become teleworkers. The stated aims of the initiative are to improve performance and productivity, reduce costs, improve recruitment and retention and mitigate disruptions to business.

The 2013 Status of Telework in the Federal Government reported the progress to date. Out of 2.2 million employees, 1,020,034 (47%) were considered eligible to telework – an increase of 49% from 2011-2012. The number of employees actually teleworking in September 2012 was 209,192, just under 10% of Federal employees. Typically teleworkers were working 1 or 2 days per week out of the office. (OPM 2013).

The approach of having a telework programme on this model risks injecting inflexibilities into what should be a dynamic and flexible situation. Eligibility criteria based on roles tend to be a blunt instrument for getting smart about working practices. Employees are expected sign an agreement supporting a particular teleworking arrangement. These are relatively early days, but it does seem that some opportunities are being missed that could be attained with a less formal approach.

A report by Global Workplace Analytics using a version of their telework benefits calculator customised for government has identified a possible $12 billion saving for taxpayers based on data from the 2012 State of Telework report and conservative

UK Government Vision for Smart Working in the Civil Service

The way we work is changing – but not fast enough. In the current challenging climate, most companies and public sector organisations are looking closely at what they do and how they do it.

Now is the time to take steps not only to weather the current economic pressures, but also to plan for the longer term. Becoming more flexible and working smarter should be at the heart of transforming and streamlining our organisations.

This goal is at the heart of the Civil Service Reform Plan. So we are setting out the vision that by 2015 the Civil Service will be more efficient and a better place to work, where civil servants:

• Focus on outcomes not process
• Are empowered by technology
• Work flexibly and cost-effectively
• Collaborate more effectively with other teams in their own department and other departments
• Maximise productivity and innovation while reducing environmental impact.

We aim to ensure that, by end 2015, we will be well on the way to a Civil Service in which:

• Well-designed workplaces support how people work best, with location options such as shared hubs, hosted space, HQs and home
• Work is being done in a variety of appropriately designed shared settings within those workplaces, not just at a desk
• IT is usable, convenient and works just as well in and away from the office; and is comparable to the technology people use at home
• Connectivity to colleagues and to data can be provided from virtually anywhere
• Security and access arrangements make it easy and safe to work in a variety of settings
• Leaders embrace and exploit the flexibility, productivity and effectiveness offered by the changes to our workplaces.

Work in the 21st century is about what you do, not where you do it. Strategic use of new technologies enables much of the work we do to be carried out from many other locations as well as offices.


What the future of work means for business, society and public policy
Part 2 The impacts

assumptions about take-up. The lowest potential case identified savings of $6 billion, primarily from increased productivity and real estate savings. (Lister & Harnish, 2013)

The UK government is going down a different route in implementing Smart Working. The need to reform working practices and deliver more with reduced resource cost while delivering benefits for civil servants is embedded in government’s Civil Service Reform Plan. An integrated approach combining changes to property technology, processes, workstyles and culture comes under a programme called The Way We Work (or TW3), part of the Cabinet Office.

Many departments and agencies have reduced the number of offices they occupy and introduced desk-sharing and activity-based work settings. Typically the sharing ratio is 8 desks per 10 people, though this varies between departments and teams. New technologies are being rolled out, with some departments using only laptops (no desktop PCs) and others moving to thin client technology.

Some organisations like Ofsted, the education inspectorate, have been primarily home-based for many years – all the inspectors and most support staff and managers work from home.

Some local authorities have progressed a long way into Smart Working, for example Fife Council and Aberdeenshire Council in Scotland; Islington, Southwark, Hertfordshire, Birmingham and Cornwall in England.

All report significant property savings. This is especially so with Birmingham, the largest local authority in Europe, which has reduced its administrative estate from 55 buildings to 8, while enabling 9,000 people to work from 6,500 workstations. The property rationalisation and introduction of Agile Working is reducing running costs from £19m per year to £11m, and delivering net savings of £100 million over the life of the project. Other benefits reported by local councils are increased mobility, increased productivity and significant travel savings. (Lake, 2013)

There is still much work to do – it is very much a multi-speed process. Even within a single organisation, different parts move at the same speed. However, the course is being set from the top with clear guidance that sets out a Vision for Smart Working, as in the box on previous page.

At the other end of the spectrum, another government promoting more flexible working for its own operations is Iran. In 2011 the government enacted a Telework Decree, which in some ways is modelled on the US Telework Enhancement Act. Savings, more effective government, travel reduction, opportunities for women and business continuity are among the benefits cited. The government there has many challenges in implementing this, including a less developed ICT infrastructure and a traditional working culture – though clearly there are forces aiming at modernisation. The programme was endorsed from the very top by former President Ahmadinejad. The government sector in Iran is very extensive, including many state-owned enterprises. In principle the decree applies to all of these.
New WINE in new bottles at Natural England

As the successor to three separate organisations when it was created in 2006, Natural England inherited 67 offices and traditional working practices. From 2009 the WINe – Working in Natural England – programme began to introduce Smart Working and office rationalisation.

WINe aimed to reduce the number of offices to 22 by 2014. Natural England now has 25 offices, and is on track to meet the target. This has generated £3.3 million of savings per year, and reduced office space from 45,000m² to 25,000m². Total savings by 2015 are set to be £4.56m and 21,000m² of space.

The Carbon Reduction Challenge set by government for the public has been a key driver. Natural England set an ambitious reduction target of 50% CO₂. Audited savings are 2650 tonnes of CO₂ – a 61% saving against a 2007 baseline.

Natural England is an outward looking organisation with a highly mobile workforce. Smart Working is the natural way to increase the effectiveness and productivity of the workforce, as well as delivering efficiency and environmental savings.

New workstyles have been introduced for the 2,500 staff, with flexible, multi-site and home-based workers. Around 20% of staff are contractually home-based. Staff with an office base operate on an 8:10 desk ratio, with every desk a flexible desk. Touchdown spaces are available for people coming to an office for short periods, plus a range of activity-based settings such as meeting pods and breakout areas. There are no private offices for management, with the CEO and Executive sitting in open plan.

Touchdown space is also negotiated with external partners such as local councils and wildlife trusts on a grace and favour basis. This helps to strengthen local ties. Staff can also touch down in other Defra family offices. The principle remains the same: touchdown is limited to occasional use, and is not an office base.

There has also been a major purge on paper, with an offsite archive service for closed files and a working guideline of one linear metre per person for team storage, with personal storage moving to lockers rather than pedestals. A single mail hub in Worcester takes care of post for home-based staff.

Remote meetings have become a normal feature of working life, with both teleconferencing and web conferencing.

According to Carole Joseph, Estates & Facilities Manager, ‘Changing the culture is one of the biggest challenges. There’s always a fear factor beforehand, because it’s unknown. Once people have been doing it for a while, it becomes the norm and everyone settles into a new routine.’

6.1 What next for government?

Government organisations across the world are at very different stages of development in terms of Smart Working. While the UK and the Netherlands are making significant progress and others are making progress in areas like teleworking and family-friendly policies for flexible working, the vast majority of government organisations across the world would probably find themselves on the left-hand side of the Smart Working Maturity Model in figure 6 on page 41.

There are enormous efficiencies and savings to be made by introducing Smart Working environments, technologies for mobility and home-based working.

Even where governments have extensively reduced the number of offices, there remains a very large amount of property in public ownership, though probably owned by different parts of the public sector. There is great scope for greater sharing of premises in the public sector, but usually occupation of a department’s or agency’s property is jealously guarded. The creation of shared facilities and touch-down spaces open to other agencies seems a logical next step. The barriers are mainly historic and cultural, rather than technical. Although there will be IT and security issues to deal with, there is no reason why they should be show-stoppers now, except in especially sensitive locations.

All the forthcoming workplace and technology developments we have identified will have an impact on government workplaces over the next 10 years. Lighter and more portable technologies, new screen and surface technologies, ever-improving communications and collaboration technologies, increased use of consumer technologies to keep up with the pace of change, innovations in workspace design and new concepts for activity-
based working, and new models for coworking – all these will challenge government organisations to modernise further and reap the benefits.

With the continuing demise of private offices and the approaching demise of the desk, the day of the ‘bureau-less bureaucrat’ may be dawning.

The nature of administration is also likely to be challenged by the advances outlined above in artificial intelligence and ubiquitous computing. In particular, the traditional image of the pen-pushing administrator shuffling paper around will become even more outdated as intelligent systems have the following impacts on the nature of government work:

• Taking over and managing process work end-to-end
• Analysing the ‘big data’ that government is constantly gathering, to feed into the evaluation of both national and government activity and the development of new policies and action.

The hollowing out of the labour market in the wider economy is likely to be reflected in the types of roles required in government. Fewer administrators, more highly skilled experts to interpret information and set direction, and more skilled technicians to programme and manage the intelligent systems or ‘robots’ that will be at the heart of how government works. At the same time, more resource can be released into front-line roles to work directly with citizens and other customers.

What government organisations need to do

In many ways, government and other public sector organisations share the same issues as other large employers. The approach for large organisations outlined in section 4 applies equally. However, the requirements and the culture of public service mean there are distinct public sector considerations involved.

Liberate employees to be more effective

The changes in the nature of work mean that employees can be untethered from offices, and spend more time directly interacting with citizens and with partners. The essential ingredients for this are to:

• Invest in equipping employees with the means to be more efficient and effective
• Reduce excess office space, reducing the focus on desk work in favour of spaces for collaboration and other activity-based settings
• Eliminate paper and the unwieldy processes associated with it
• Develop trust-based working relationships, based on managing by results
• Enable employees to have more initiative and autonomy, taking responsibility for organising their own work
• Aim to eliminate routine physical meetings, replacing them with online processes and online collaboration – saving physical face-to-face meetings for decision-making, innovation and team-building
Retrain process workers as front-line workers as their roles shrink.

Bring elected members into the 21st century

While many organisational working practices need to move forward from the 20th century, in many cases elected members at national, regional and local level have working practices rooted in even earlier centuries.

While it is attractive to some to be anchored to the physical location of government, the emphasis on physical co-location creates many inefficiencies. Legislators who spend all their time in the capital away from their constituencies no longer need to do so. The changing nature of work means that:

- Interaction with civil servants need not be face to face – elected representatives should rethink their roles as being a part of various overlapping virtual teams, according to their responsibilities
- Committee work and reviewing or preparing legislation and regulatory decisions should by default take part through modern conferencing and collaboration techniques, enabling virtual and hybrid virtual/physical meetings
- Travel for meetings can be radically reduced, and the need for second homes largely eliminated, leading to savings on expenses and improved work-life balance for legislators
- Elected representatives should be able to take part in votes and debates from remote locations as a matter of course
- The culture and etiquette of meetings and debates should provide equality for remote participants

In the main offices, teams are based in neighbourhood areas, and some teams have had the benefit of being brought together for the first time into a single base, while at the same time being able to operate at a wider range of remote locations around the county. Average desk utilisation has risen from 45% to 65%, as the shared desks are more intensively used and at County Hall in Truro nobody, including the Chief Executive, has their own office anymore.

‘This has involved a big transformation in the way we work at the Council,’ says Councillor Alex Folkes, Cabinet Member for Finance and Resources. ‘Part of the success is to do with staff familiarity: people getting comfortable with it as a natural way of working. But once they start working in the new ways, they don’t want to go back. We’ve done surveys before and after, to see how teams are using spaces and whether they are happy. 80% score the changes ‘good’ or ‘excellent’ around communication and the ability to work as a team.’

The Council is now pressing forward with the transformation, including sharing premises with partner agencies, and looking at how they can use the new ways of working to reduce travel further.

The telecommunications network around the county is good, and employees can work from almost anywhere. They’ve been provided with the technology to increase mobility, and technologies in the office support much more virtual interaction.

Cornwall Council

Cornwall Council is one of the UK’s newest local authorities. It was formed in 2009 by the merger of the old County Council and the six borough and district councils to make a single authority, covering a large and mostly rural area. The Council provides services for half a million residents and has an annual budget of £1 billion.

From the outset the new Council took the decision to introduce new ways of working. The challenge was in the need to consolidate resources in fewer centres while at the same time maintaining an effective presence throughout the whole county. The new approach to working was summed up in the tagline, “Moving from ‘work is where you go’ to ‘work is what you do’.”

The offices in Camborne and County Hall in Truro were refurbished to each accommodate around double the number of people, creating modern offices using the principles of smart working, with the range of activity-based work settings.

At the same time, hubs have been developed around the county where employees can touch down to work closer to the areas they serve. Reception has been opened at County Hall for the public to work in, with meeting rooms, a café and business hub. This blurring of the boundaries is a great example of how the new ways of working and new approaches to place can be used to bring government bodies and the people they serve closer together.

The telecom munications network around the county is good, and employees can work from almost anywhere. They’ve been provided with the technology to increase mobility, and technologies in the office support much more virtual interaction.

The Council is now pressing forward with the transformation, including sharing premises with partner agencies, and looking at how they can use the new ways of working to reduce travel further.
Part 2 The impacts

- Briefings, policy development and communications with officials should become paperless.

We would expect such an approach to produce a more inclusive environment for government, leading to more women and people from minorities seeking to be involved.

A new approach to reducing the costs of government

Government bodies and other public sector organisations should prioritise Smart Working in order to use resources more efficiently and effectively – in preference to reactive cuts to services and other traditional cost-cutting measures such as relocation and restructuring. Changes of location and organisational structure will have little impact if it means doing things in the old way, only in new places and with new job titles.

The increasingly footloose nature of work should mean that many government employees can work from anywhere. This means a new approach to relocation that focuses on work coming to people where they live, rather than moving whole departments to lower cost regions and uprooting employees – or more probably losing them from the organisation.

Over time a new approach to having employees working from anywhere means that the recruitment pool can be widened. Offices can be reduced in size, functioning primarily as meeting spaces for a geographically distributed workforce.

It also means reducing the resource base of government. Most government have accumulated large amounts of real estate, much more than is needed in the new world of work. Options for this are:

- Selling it where possible
- Getting out of expensive leases and properties that are no longer fit for purpose
- Where sale is not possible, repurposing buildings for homes or economic development purposes, including workhubs – where appropriate by community asset transfer
- Remodelling property and sharing it with other public sector agencies, on Smart Working principles.

We have seen the impacts on the workplace:

- Employees have more freedom to work in other places, as appropriate
- Employees have more autonomy to choose how and when they work, and the tools they work with
- Workplaces are used more intensively, but fewer are needed
- People are expected to travel less for routine work
- Workplaces are seen as places for interaction and collaboration…
- …but that interaction and collaboration can take place in a variety of other places too.

All of these have impacts beyond the workplace, and beyond the world of work. We now turn to look at those wider social and economic impacts.
7 Public policy responses

After looking at the impacts on government-as-organisation, we now turn our attention to how government as policy-maker can work to maximise the benefits that potentially stem from the future of work. We see the new approaches and actions that are needed as falling into 5 overlapping areas:

• Supporting the new work possibilities for businesses and other employing organisations
• Supporting new enterprises with new approaches to economic development
• Planning for future communities
• Reducing the need to travel and supporting sustainable workstyles
• Supporting balanced lives.

7.1 Supporting the new world of work – infrastructure

The new patterns of work and the possibilities for working anywhere supported by technology depend crucially on having not just adequate or good but having excellent communications infrastructure. This means having superfast broadband throughout the country and mobile data and voice connectivity wherever one is working – and always on, even when travelling. Apart from possibly South Korea, few countries can say they have such a degree of excellence in digital infrastructure as gives coverage wherever it is needed.

This may be expensive to provide, but it is not as expensive as building physical transport infrastructure such as motorways and high speed rail. Yet the business case is very strong for supporting the development of such ubiquitous high spec infrastructure. Such networks are the carriers of economic activity and innovation in a very direct and efficient way. For example, a transport network will carry people to a meeting. A digital network carries the meeting itself, saving time and money and liberating people to be more productive.

Many of the other recommendations below depend to a greater or lesser extent on the availability of such infrastructure.

Next generation applications are very likely to be bandwidth-hungry, using more in the way of immersive video, 3D imaging etc. This will be in addition to much higher levels of usage by the population as a whole for non-work purposes. These applications will be used not only for entertainment purposes, but also as everyday business tools. There needs to be a strategy for preparing to keep ahead of the demand, rather than playing catch-up.

The approach to broadband provision in policy is sometimes based on a view of people at home being for the most part passive consumers of content. Increasingly this is not the case, with people working from home, running businesses there and developing products for distribution online. Upload speeds are often much slower than download speeds. Upgrading this is often very expensive or such services are unavailable.

Excellent communications is not the only kind of infrastructure required. We need to think more strategically about developing and supporting an infrastructure of workplaces. Public authorities should actively support the ability to work in a much wider range of locations. The potential to work should be considered when developing any new public spaces, transport infrastructure and when designating spaces for new uses. This may be part of actions that public authorities take themselves, or requirements they place on developers, or facilities that are co-developed when new urban spaces are created or regenerated. This theme is taken up in the enterprise and planning sections below.

7.2 Supporting the new world of work – skills

Changes in the nature of technology are impacting on the types of jobs available. Public sector support would be well-directed towards supporting skills in the high tech engineering and technical roles to support the kinds of technology that will be taking over much process and production work.

Currently the evidence is that the amount of work in the fields of robotics and artificial intelligence outweighs the number of jobs being lost, though there is no guarantee that this will remain the case. As the impacts are increasingly felt in terms of process and admin roles being replaced by automated processes, there will be a need for retraining and reskilling in the growth areas of high level knowledge work, health, education, cultural and personal services – and in starting a business to support work in these fields.

People will also need more frequent skills training to keep abreast of the changes in the technologies used for work. The model of the majority of the population having a one-off spell in higher education after they leave school is looking increasingly
Part 2 The impacts

archaic. Access to high level training and education needs to be available throughout life, with the interface between higher and vocational education being easier to manage throughout one’s working life.

Increasingly, learning and training will not take place in conventional classroom settings but will include a mix of physical face-to-face, virtual face-to-face and self-managed online learning. Just as the boundaries of work and the rest of life are becoming blurred, so learning across boundaries will become a normal rather than exceptional way of gaining knowledge and skills. These methods of accessing and delivering learning need to be encouraged and supported, and can help to build the foundations where people feel comfortable and confident working with others over distance and with the collaborative technologies involved.

Management training and leadership development need to include essential skills for the emerging world of work, in particular how to manage, mentor and coach virtual and distributed teams, how to build a trust-based working culture and how to manage by results.

7.3 Supporting enterprise and economic development

The emerging world of work lends itself naturally to entrepreneurship, locally-based enterprise and ‘smart economic growth’.

New businesses can be home-based or occupy low cost premises in less favoured areas and not be disadvantaged by distance from markets – providing the infrastructure is available to work there. We noted the strong connection between self-employment and home-based working. Yet the home as a centre of enterprise is rarely mentioned in economic development policy. This needs to change. Actively supporting home-based enterprise would support the development of local economies, and should be made a central plank of policies for localism.

Regulations that prevent or unnecessarily limit modern forms of home-based working should be re-examined and removed if they are outdated, i.e. if they were originally intended to prevent the kind of industrial age working that is no longer common.

Public authorities should welcome and support the establishment of workhubs / coworking spaces as facilities that bolster the viability of local and especially home-based businesses. Central rather than peripheral locations in towns tend to work best for workhubs. In high street locations where retail is in decline, a workhub can be an attractor factor bringing people and their spending to the area.

Packages to help start-ups sometimes include support to move into business premises, often ones provided by government agencies. Support is given to business incubators and business parks, but rarely to home-based enterprises which are often under the government’s radar. A new approach is needed to how public authorities value microbusinesses. Indicators for policy success sometimes include numbers of employees taken on and size of business premises. The majority of micro-businesses now do not intend to move into their own business premises. Nor do they necessarily see expansion in terms of taking on the fixed costs of employees. They may remain solo freelancing enterprises, or work in regular partnership with others. This has economic value and needs to be nurtured and supported.

In areas once dependent on traditional forms of employment and the public sector, fostering home-based and local businesses and start-ups needs to be seen as a key way to support entrepreneurship and self-reliance. This requires a move away from policies and cultural attitudes that hope for employment to be delivered into the area through large-scale inward investment or public works, which will has already become increasingly rare.

In many regions there are problems with talented people leaving remote or disadvantaged rural areas, which subsequently go into decline. The changing nature of work offers a means by which people with skills and market access can (re)locate in these areas. In China people who go overseas to study or work and then return home are called ‘sea turtles’. Our case study of the Workbox in Penzance show that this can already happen where the facilities, infrastructure and a local entrepreneurial mindset support it.

However, there are often restrictive legacy policies from an earlier age that associate work in rural areas with noise, pollution, traffic and unsightly buildings. These need to be reviewed, and support should be given to new forms of work that support local wealth creation without developing ‘workplaces’ as traditionally conceived.
7.4 Planning for future communities

Planning regimes vary greatly between countries. However a common factor in planning regulations is usually the separation of homes and workplaces, coupled with strategic transport planning to support travel between home and work.

The new world of work blurs the boundaries between work and home, and between work and other ‘non-work’ spaces. Planning for future communities should recognise the importance of mobile and home-based work.

The **design of homes should include the potential to work effectively from home**, whether as an employee of a company or running a home-based business. A proportion of homes should be designed as live/work properties, where there is sufficient space to run a business and receive clients and/or employ a small number of staff.

When planning such live/work communities, developing cluster of businesses in the same sector may be appropriate (e.g. a cluster of creative businesses). However, in general different forms of business should not be arbitrarily excluded. For such communities a mix of live/work businesses and services can create a positive dynamic for collaboration and growth.

Home-based working is not all about working in high tech occupations. Many home-based businesses are involved in craft-based occupations, in food preparation, and in personal services providing healthcare and therapies. Technologies are needed to manage their businesses and to access markets. These kinds of businesses play an important role in communities, and struggle to cover the costs. Policy needs to recognise and support them, for example through grants and advice on how to use new technologies to extend the reach of their business operations.

**New employment-focused approaches to housing density need to be developed**, as current approaches to high density tend to be at odds with the changing nature of work. **Planning needs to take account of the home and, where applicable, the garden as spaces for economic activity and self-sufficiency.**

**Designation of land for employment needs to be rethought in the context of the changing nature of work.** Zoning for industrial or warehousing uses may create fewer local jobs than a community of live/work businesses. A modern office where Smart Working is embraced, on the other hand, will have much higher levels of utilisation, with a high throughput of people coming and going during the day. Co-locating this close to other services and transport centres will help to generate vitality in an area.

All this implies a new and **more flexible approach is needed to land use** and different types of employment.

7.5 Reducing the need to travel and supporting sustainable workstyles

Improving the environmental performance of buildings is a key element of environmental policy. However, building eco-offices and eco-homes is not sufficient to minimise the carbon footprint of work, if people are expected to travel on a daily basis between the two. A large part of an individual worker’s daily carbon footprint comes from transport energy.

Supporting the capacity to work from home and in local workhubs with good design and infrastructure will have travel reduction impacts.

‘Virtual mobility’ – travelling without moving to undertake remote activities – should be seen as an important travel demand tool. By eliminating journeys it has a positive impact on sustainability compared with policies that encourage people simply to shift their journeys to a different mode of transport such as bus, rail or car share.
Billions of $ are spent annually researching and subsidising public transport, and running programmes to try to persuade people to abandon cars in favour of public transport. The returns from this investment outside of large urban centres are small. In the UK, it is proposed to spend £42 billion ($71 billion) on building a high speed rail line from London to the north of England. This is a contentious issue, and one on which we do not take sides. The intention is to shorten journey times, create jobs and add capacity to the existing network. Regardless of the merits of this approach, it is worth noting that for a fraction of the cost, superfast broadband could be deployed throughout the whole nation, creating opportunities for enterprise and reducing the need to travel for millions of people.

Modest investment and awareness-raising programmes promoting remote working and conferencing technologies will achieve more in terms of travel reduction than any measures to shift people’s journeys from car to public transport. ‘Travelling by not moving’ needs to be a core element of any travel demand management policy, at all levels of government.

The sustainability impact of working locally is enhanced if there is adequate provision of other services locally. This tackles the issue of ‘latent demand’ when a person who does not travel in to work undertakes other journeys during the working day that might previously have been integrated into a work trip.

7.6 Supporting balanced lives and an inclusive workforce

The new smart and flexible workstyles help people in their aspirations to lead more balanced lives.

Legislation and policy initiatives in many countries support people in requesting flexible workstyles. The problem is that such policies are based on the idea of ‘flexibility as exceptional’. They are based on the idea of a traditional working norm, from which flexible working is a departure. Guidance around how employees should ‘make a case’ and how bosses should make a decision are infused with the notion that this exceptional way of working could be problematic and costly. Such an attitude is sometimes taken by employers’ organisations in opposing legislation.

The world of work has changed. The office or factory-based regular hours job-for-life is no longer the majority way of working, as we have seen in part 1 of this report.

So policy needs to move on beyond supporting a right to request (usually by mothers) for flexible workstyles, and instead address the benefits of ‘flexibility as normal’. Policy should encourage and expect employing organisations to embrace smart and flexible working – in the end this would reduce the number of requests, as changes to working pattern would either be unnecessary or easily accommodated in a ‘flexibility as normal’ workplace.

Policy should also move beyond eligibility tests – as the forthcoming UK legislation is doing – by making a right to request flexible working open to all, not only those with caring responsibilities.

Flexible working legislation to date provides some rights to those already in work. It has little or no benefit for those not in employment, or seeking alternative work that is more flexible. Governments should work with employers to find ways to support flexible work options for people not in work. For those with disabilities, long term conditions that limit the capacity to work, or without good transport connections where they live, as well those with caring responsibilities, the right to suggest flexible working options when applying for work without fear of being sidelined would have great benefits.

7.7 Taking policy changes forward

Beyond these specific recommendations for adapting public policy, what is most needed is a new awareness of the changing world of work. It’s work, but not as we know it. There is a need for policy makers to challenge old assumptions across the range of policies, and be ready to harness the benefits.

This will involve engaging with experts, stakeholders and policy makers at all levels to find the best ways forward across the range of policy areas. We look forward to new directions in policy that will help us make the most of the potential benefits on offer in the new world of work.

It’s time to embrace the future positively, rather than try to fit the new world of work into the structures of yesterday. If we do this, we can create the context for new work opportunities, new enterprise, and better, more fulfilling work in more balanced and sustainable lives.
Footnotes
2 Office for National Statistics, Labour Force Survey Q4 2012, a special analysis commissioned for this project.
3 http://www.tuc.org.uk/workplace/tuc-22338-f0.cfm
4 http://gulfnews.com/news/gulf/qatar/working-from-home-becoming-a-reality-for-qatari-women-1.611293
5 http://www.whiteboardmag.com
6 See http://www.duchyofcornwall.org/pdfs/2011/5044-build_code_Sustain-06-s.pdf, in particular section 2.6.5

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References

CIPD (2013) Zero Hours Contracts – Myth and Reality Chartered Institute for Personnel Development
DTZ (2013) Occupier Perspective Global Occupancy Costs - Offices 2013. DTZ Research
NEF (2010) 21 Hours New Economics Foundation
NEF (2013) Time On Our Side New Economics Foundation
Pew Research Center (2013a) Breadwinner Moms Pew Research Center
Pew Research Center (2013b) Modern Parenthood: Roles of Moms and Dads Converge as They Balance Work and Family Pew Research Center
SU STEL (2005) Is Teleworking Sustainable? An Analysis of its Economic, Environmental and Social Impacts Final report of the SU STEL (Sustainable Teleworking) project. European Commission
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