HOUSE OF COMMONS

Business, Innovation and Skills Committee

Oral evidence: The Digital Economy, HC 571-i

Tuesday 10 November 2015

Ordered by the House of Commons to be published on 10 November 2015.

Witnesses including written evidence where submitted:

At 9.30 am

- Mike Cherry, Policy Director, Federation of Small Businesses
- Rob Lamb, Cloud Business Director and Chief Technology Officer, EMC Corporation
- John Connolly, MD of the Centre for Digital Innovation, Humber LEP

At 10.30am

- Dr Maren Deepwell, Chief Executive, Association for Learning Technology
- Dean Cassar, Director of Operations, Tech Partnership
- Seetha Kumar, Chief Executive Officer, Creative Skillset

Watch the meeting

Members present: Mr Iain Wright (Chair), Richard Fuller, Peter Kyle, Amanda Milling, Amanda Solloway, Jo Stevens, Michelle Thomson, Craig Tracey, Chris White

Questions 1-66

Witnesses: **Mike Cherry**, Policy Director, Federation of Small Businesses, **Rob Lamb**, Cloud Business Director and Chief Technology Officer, EMC Corporation, and **John Connolly**, Managing Director, Centre for Digital Innovation, Humber LEP, gave evidence.

Q1 Chair: Good morning, gentlemen, and welcome to the Business, Innovation and Skills Select Committee. We are grateful that you have spared the time to give us evidence on our digital economy inquiry. Could I ask you to begin by introducing yourselves, and saying where you are from?

> ***John Connolly***: Thank you for inviting me. My name is John Connolly. I am the Managing Director of C4DI, which is the Centre for Digital Innovation, based up in Hull. We are a privately funded tech incubator; we help start-ups to grow and big businesses to innovate. I am also here as a member of our and the LEP's digital committee.

Rob Lamb: Thanks very much for the opportunity. I am Rob Lamb, Cloud Business Director and CTO for EMC Computer Systems in the UK and Ireland. We are a global technology company.

Mike Cherry: I am Mike Cherry, the Policy Director at the FSB.

Q2 Chair: It is good to have you before us again, Mike. Thank you for your time. This is an inquiry into the digital economy. It might be helpful if we could try to identify what the digital economy is. What is your understanding of, when we say "digital economy", what it means?

Mike Cherry: Clearly, the digital economy enables businesses to do business in a different way, using both broadband and mobile connectivity to grow their businesses, to engage with customers and employees, to interact with Government requirements online, and also to use the web as a means to reach export markets that they probably otherwise would not reach if they are at the smaller end of the small business community. There is a propensity to enable them to grow, if they are able to do that, and I think there is a benefit for all businesses, not just digital start-ups. Existing, traditional businesses are using the technology, and we have some statistics, which I will be able to give you later on in the discussion, to back all of that up.

Clearly, though, there are issues around that, and I am sure, again, during the discussion we can identify some of those. They are about satisfaction with the status quo, which is variable, awareness of the availability of broadband—I know that the remit of the Committee is not to look at availability, although that does impact on small businesses in particular—and quality of service issues, which do affect businesses, and often small businesses engage with the marketplace no differently from consumers.

Rob Lamb: Building on everything Mike said, with which I agree, we are now firmly in the information generation. This is not just about having a web presence and doing a few transactions online. Everything we do now is data driven. Everything we interact with probably has a sensor in it that can provide data, which can give businesses meaningful insight. What we are seeing happen now is that companies with no inventory and no premises but a novel business idea are able to use digital technologies to fundamentally impact business sectors. That is hugely disruptive. When I talk to our customers, CTOs and CIOs from the businesses we work with, they are all looking over their shoulders, afraid that there will be another Airbnb in their sector and they will be caught dealing with 20-year-old technology and business processes. This is a hugely opportune time, but also very disruptive.

John Connolly: We have a saying at the C4DI, which is that every business is digital, but most of them just have not realised it yet. We would say that absolutely every single business could grow. Up in the Humber, we are saying that, if we are serious about growing the Humber as part of the northern economy, it is all about harnessing technology and using it more effectively.

That is a great aspiration, but it is also grounded in evidence. Capgemini did a survey over two years to try to understand the difference between companies that used technology effectively and those that did not. They said that the digirati—companies with people who understood how to use technology—were 26% more profitable, drove 9% more revenue

from their physical assets and had 12% higher market valuations than their peers in the same industry. Comparing two similar businesses in traditional industry but applying technology to them, the one using technology more effectively flies. That is at the heart of what we are doing up in Humber.

Q3 Chair: Can I push you on that? I am very interested in the point that, as you said, digital and the information age are sweeping away large swathes of the traditional economy. Are there any characteristics of businesses that are able to adapt, and those that are not, that you could share with the Committee? Can you identify which firms are adaptable and which firms are not and therefore may be obsolete in the future?

John Connolly: The first thing is awareness, and we are seeing consistently across large businesses that there is, as Rob just said, nervousness about disruption. There is a concern that we are seeing these Airbnbs and these Ubers coming along. That is the start of it. We have a good example up in the Humber, where a big, traditional print company—it does not get much more traditional than print—looked at their business, at what was becoming a commoditised sector 20 years ago, and said, "We need to change. We need to pivot from what we are doing." It was that awareness that turned the business from a small printing company based up in Hull to a global brand-management company, distributing technology around the world. It is about clear leadership and people who understand there is a risk from disruption.

Rob Lamb: I would agree with John. It is absolutely about leadership. It is about having the skills in place, but not necessarily trying to boil the ocean and do everything at once. Start small. It is very hard to turn the ship, but we have a number of examples from customers of ours, with whom we work across all sectors. We do an awful lot of work with the financial services industry, and one bank in particular realised that a digital presence was not just about their consumer portal or the app that their customers experienced. In order to deliver that customer-centric capability, they needed to radically transform all their IT processes and overhaul an infrastructure estate that, in a lot of cases, was over 20 years old. You cannot do that overnight. It is absolutely a journey. Those are the sorts of examples that show that any business can transform and become digital, but it takes leadership.

Mike Cherry: It is very clear that there is a digital skills gap. The three key things I would like to highlight as the ways businesses can benefit from being online are business reassurance, optimisation and transformation. For some businesses, the key benefit is simply having a new and reliable way to connect with customers, suppliers and employees. For others, it is the time and cost savings that an internet connection can bring to business operations. For those that are most advanced and have the right skillsets, being online provides a springboard to do new and different things in ways that help businesses to expand.

You can look at some of the other reports that have come out. For instance, we have the information that Booz & Co found that, if small businesses maximise their use of digital services, the economic growth could increase by something like £18 billion. That is a huge growth number. It is achievable by all, but, as I say, there are some issues around the status quo, quality of service, certainly infrastructure availability—and we welcome the Prime Minister's announcement over the weekend, although we still need to see the detail behind

that—and also the digital skills agenda and making sure that those more traditional businesses get the right support to enable them to adapt and utilise what all other small businesses are beginning to do. It is absolutely fundamental to this.

Q4 Chair: You included that £18.8 billion in your submission. Also in your submission, there was a statistic that shocked me, frankly, which was that only 51% of small businesses are using the internet to sell goods and services. To me, that seemed an incredibly low percentage. Is it a low percentage? Why is it the case that it is only half of businesses?

Mike Cherry: Let me reiterate some of the other percentages and statistics around our submission, if I may. 94% of businesses recognise that it is critical to their business. 94% of those who have access to it use it to engage with customers. 94%, again, use it for doing online banking. As you rightly point out, 51% are online for goods and services, with a further 15% planning to do that in the near future. 84%, which is a very interesting and welcome statistic, are using it to enable home working. 62% are using it for social media and 55% are using it for cloud computing.

Part of the problem around this is that awareness is only 36% of the availability of broadband in their area, so there is a mismatch between what the official statistics are telling us and what businesses are telling us that they are aware of in their area. There are some issues around information as to availability. There needs to be a lot more transparency around that. If you come back to it, for those businesses who are not digital savvy or do not have the skillsets in-house, there is such a plethora of providers out there that they do not know whom to trust or turn to. They do not have the skillset.

They get, as with other areas of utilities, so many calls from people offering, quite frankly, something that the businessperson or individual really does not understand, because they often buy it in the same way that you or I do, as consumers. Trying to get that understanding through to the business and show how other businesses have used it to enable them to grow better is part of the key area that we feel needs to be delivered on.

Q5 Chair: Is that a job for Government? In your submission, Mike, you proposed that some sort of independent advisory body, along the lines of Business Banking Insight, should be produced. Could BIS's proposed Small Business Commissioner do this as part of its remit?

Mike Cherry: No. I think the Small Business Commissioner is a completely different arena. That is more around late payment, as you know. What we have managed to achieve with Business Banking Insight is a web-based portal that clearly shows how 5,000 of your peers rate relevant providers in the financial sector, be that high street banks or alternate providers of finance to businesses. You are able to see how others rated it and to segregate that into micro, small and medium-sized businesses that have benefited or otherwise from those providers. There could be something very clearly done along the same lines to enable businesses to have a better idea of who is out there providing what, how their peers have rated them and the benefits that they have seen from being able to do that. Again, segregating it into the micro and the small, as against the small and medium, is an important thing that needs to be looked at.

Q6 Chris White: I have a couple of questions on the back of that. I was going to ask you about the 49% who are not digital savvy, which was the phrase you used. The first part of the question is: what is the rate of change that you see? Do you see that growing rapidly or

is it the hard-to-fix box? The second thing, which is really why I wanted to come in now, is following on from the Chairman's line of questioning about whether there should be a commission or an independent body. What do you see as the FSB's role in delivering some of these services, providing the advice and an approved-suppliers list, being the safe place to go for businesses that are clearly a little concerned and anxious about this whole new world?

Mike Cherry: I can take that in three parts. The first is the hard-to-fix box. As I say, from our recent survey, which was done last December, just over half are online, with a further 15% saying that they are planning to go online with their goods or services. That is encouraging. I do not have previous surveys on which to be able to give you that statistical trend as to how the growth has occurred. But I do come back to the issues around more transparency; contracts and ability to change them; the ability to know that, when the provider advertises the speeds you are supposed to be able to get, they should be advertising the minimum speeds that you could get as against the maximum speeds. We also need to concentrate not just on download but also on upload speeds. We need more transparency around contracts.

As far as the FSB is concerned, we are not a delivery body. We are a lobbying organisation that provides benefits and advice to our members. There is a huge piece of working going on now—and we recognised this some time back, but as with any other organisation it takes time to change—where the FSB will be able to offer far greater advice and information to our members than we have been able to do in the past.

Q7 Craig Tracey: I am particularly interested in data and how it is used. I notice that, starting with you, Rob, in your written submission you said, "Data is widely regarded as the key raw material which will power growth and innovation in the digital economy." What kind of data are you talking about and how do you get it?

Rob Lamb: It is everything, as I mentioned in the introduction. You have a phone or an iPad in your pocket. All of those have sensors in, which enable, for example, the likes of Uber and Airbnb to take where you are and use that information, if you are looking for a car or a hotel, to broker that service request with a driver or a hotel. Everything that we are doing now is generating data, and probably the big change is that it is no longer structured data in databases. It is now unstructured; it is small bits of data; it is video; it is medical images. Everything we do is generating data.

Q8 Craig Tracey: Off the back of that, then, how do we provide transparency to consumers about how data is collected? Is legislation the way forward?

Rob Lamb: That is a significant challenge at the moment. We need some standards around the use of data. It may not need to be regulation, but this has certainly been the year of cyberattacks, breaches and data thefts, as we have all seen in the media. Government have to introduce a framework for data analytics so that, if people are compliant with that framework, then consumers can trust that their data is being stored, managed and, of course, deleted at the appropriate time in the way we would all expect.

Q9 Craig Tracey: Mike, given that transparency issue about how data is collected, presumably that will be a big challenge for small businesses, particularly to understand what they should and should not be doing.

Mike Cherry: It is, and, coming back to Chris' point, the FSB was one of the first organisations to issue our 10 top tips on cybersecurity, so at least our members and small businesses could see how the basic principles of being able to protect yourself by keeping antivirus software up to date and other bits and pieces around cybersecurity could be done quite simply, almost as much, of course, within your own business.

One of our concerns at the moment is some of the legislation that is on the books and being discussed over in Europe around the data protection issues. We have real concerns that the scope of that has been extended too widely for small businesses and that the requirement that has come back onto the agenda around small businesses being required to have a data protection officer, with all the costs and everything around that, is not going to be achievable in the way it is set out in the proposals under the proposed directive at the moment. There are some real concerns about that and the implications that would have on small businesses.

We all have a role to play in making business much more aware of the fundamentals and the simple things that they can do. As with some of the cyberattacks and data protection issues that Rob rightly says we have all seen in the media this year, raising that awareness and getting more information out to businesses so that they can take those simple steps is absolutely a key priority. We will be playing our part in that.

Q10 Craig Tracey: Starting with you, John, is it realistic or possible to be transparent as we currently think of with data? As it is used in many different ways—big data sets, etc—is the current model unfeasible and outdated?

John Connolly: The challenge is that things just move so quickly. Whether you are in a traditional business, trying to understand the implications of data and data security, or you are in a small start-up, trying to understand European legislation around all of that, digital understanding is a key part of it, and it is a key theme running through most of the questions that were asked as part of the preparation for this. Picking up from Mike's earlier point, clusters are key to this. These natural clusters that form around areas where you have experts in different sorts of fields can help address some of these sorts of questions.

In the Humber, we opened an innovation centre two and a half years ago, which has grown to about 200 members. There were three questions that people came to ask us. The first was: can you help us grow our start-up? We expected that, but the next two questions are key to how we solve some of this digital understanding stuff. The first question was small, independent developers saying, "We lie in bed awake at night, trying to think up the next Uber or Airbnb. We have all the skills and the expertise to run a technology start-up. We just cannot think of the ideas." These were experts in a particular field. At the same time, we had big business locally saying, "You have a building full of very bright people who can solve technology problems, who understand data, the challenges and the ways you can disrupt traditional businesses doing it. Is there a way we can work together?"

Creating those organisations or helping to support the ones that already exist that bridge the link between big traditional industry and small experts can help with those things. That can help solve some of those transparency issues around data and can help increase understanding around that.

Rob Lamb: I would agree with John. There is a lack of understanding of what digital means and the skillsets. You have pockets of subject matter experts, if you like, looking for a problem to solve. Somehow, we need to bring the two communities together: the problem-solvers and the problems. The cluster approach is a very sound one, because you then get shared learnings. I also think businesses need to be more open when they do suffer a cyberattack. They need to share with other businesses their experience, so that everybody can take the key learnings from that, because the pace of change is so rapid that you are reacting all the time. It is only from that shared learning that you can get on the front foot.

Mike Cherry: When you are looking at data, particularly around cloud computing, there is some uncertainty around the security aspects. There is a lack of transparency around contracts. There are concerns around who owns the data, where it sits, how that all works. It comes back to this understanding. We do see that the growth hubs and the LEPs possibly have a signposting role to play here, which would link in with what both Rob and John have been saying.

Q11 Chair: I am very interested in your comments, John, about this cluster and how you have "techies", for want of a better term, sat. Have you effectively been able to marry those people interested in tech start-ups with traditional businesses that are looking to adapt? Is that working well? Is there anything we can learn, in terms of that model, that can be applied elsewhere, across the country?

John Connolly: Absolutely there is. A good example is a company based on the south bank of the Humber. They are one of the leading white label coffee roasters. You have probably never heard of them, but you will have drunk their coffee. They roast coffee for all sorts of big organisations. They know and understand coffee, and they know how to sell enormous amounts of coffee to a very small number of people. They are seeing all these online, trendy new technology start-ups coming along and selling coffee online, and thinking, "Is our business model going to be disrupted by this? What do we do? How do we tackle this? What do we do with all these small coffee start-ups coming along with massive company valuations? What do we do about that?"

They came to the C4DI and asked those questions, and we put together a team of people to help them. They built a new business as part of their umbrella organisation, which was essentially a new start-up, trading coffee online. They have now gone from selling enormous amounts of coffee to a very small number of people, to selling enormous amounts of coffee to an enormous amount of people. It is about that learning. It is very difficult to find all the skills that that organisation needed to solve their particular problems under one traditional technology company. The benefit of a cluster is that you get the shared learning and the ability to tap into pools of different sorts of experts.

The 200 members of C4DI started life five or six years ago from an organically growing technology community, which has about 800 members. These clusters exist in Hull, Manchester, Leeds, Sheffield and all around the country. As well as growing and supporting these clusters—the one in Hull is completely privately funded—it is also supporting the organisations like Tech North, which is a fantastic organisation trying to link up these clusters, so you not only get a shared benefit and competitive collaboration regionally; you get it across regions as well.

Q12 Chris White: This is a question to Rob. You just mentioned how important it is for a business that has suffered from a cyberattack to share that information. Do you think that is likely? Do you think that happens at the moment?

Rob Lamb: It happens a little bit, but it is often informally. From some of the conversations I have had with senior people in the financial services sector, they seldom talk to their peers until they have had a major incident. Then it is almost a reactive "look out for this", but by then it can almost be too late. You need a structured feedback and sharing mechanism in the event of some of these cyberattacks, so that people can take all the learnings rather than just trying to react to what they are seeing happening in front of them.

Mike Cherry: Sharing is great, but for small businesses in particular it is knowing not only the simple steps to take, but also, if they do suffer a problem or an attack, whom to report it to. Where do you go to? As for any issue of crime against business, these attacks have significant impact, particularly on small businesses, and, if they know whom to report it to, it can be collated and hopefully the resource can be put in behind it. There is a further issue there, as we know, that the enforcement agencies are absolutely swamped by all of this, so it is unlikely that a small business will get the response it expects. Still, making people aware of the need to report it is absolutely critical here.

Q13 Chris White: Do you see your members becoming increasingly concerned by this threat?

Mike Cherry: Yes, I do. That becomes apparent, and it comes back to the statistics on the lack of use of the digital economy and some of the issues that they see around loss of data and attacks. We have already seen members fairly recently who have had blackmail demands against them because they have had their data locked out through hacking into their computer systems or whatever. Again, knowing whom to report that to, how to respond to it, how to get the information out to the wider small business community is part of our role, and we need to give that information to people so that they understand how they can also do it. Again, if you are trying to get more people to take it up, as with everything, if you can show how a particular business has benefited from being able to do X, Y, Z, then other businesses are much more likely to take it on.

On the clusters, it comes back to the skillset that is lacking in many of our traditional businesses. It is how you get that skillset into the education system, how you get it into current management and how you help businesses to use more of the digital economy to grow their businesses.

Q14 Jo Stevens: We are quite interested in what the major barriers are to UK businesses succeeding in the digital economy. All of you have probably hinted at or touched on some of those barriers already, but I just wanted to ask if you could each give us a couple of examples of what you think the major barriers are.

John Connolly: Digital understanding, as we have talked about a bit already, is absolutely key to that. Whether that is the big data threats or the small ones, digital understanding is key to that. Fibre connectivity is another key part of that. We are incredibly fortunate in Hull. 120 years ago, the entire country was run by lots of discrete telecoms companies,

and, over time, they all merged into BT, with the exception of Hull. Hull has its own special, fantastic telecoms company.

Chair: And white telephone boxes, I seem to recall.

John Connolly: And white telephone boxes as well, absolutely. That means that everything, from the data leaving the data centre right through to the cable you plug into the back of your computer, is run by one business, and they have taken a particularly innovative approach to rolling out fibre. The traditional approach is to roll fibre out to the cabinet, the big green box at the side of the road, and run copper to a business or consumer premises. KC does fibre directly to the premises, and that is key. It is future-proof and it is fantastic. A third of all fibre to the premises in the UK is in Hull, which gives businesses based there a tremendous competitive advantage.

We are very fortunate that we have amazing connectivity, but lots of other areas and lots of areas around Europe are learning from the innovative and particular approach KC is taking to rolling out broadband and using that to learn, in other countries and other parts of the country, how to roll out fibre to the premises, which is extraordinarily expensive, in effective ways. So other parts of the country can learn from what has happened in Hull with KC.

Rob Lamb: I would agree with everything John has said. I would put it in three simple buckets: it is the infrastructure, it is the skills; and it is the trust. The infrastructure is critical for adoption, but a lot of organisations do not know where to start, particularly around the use of data analytics. We did a survey last year, the Big Data League, and found that over 50% of organisations just did not know where to start. That skillset to understand how to marry the data with a problem, how to use data science to look at business problems in a completely different way, is missing.

Then, obviously, there is the trust element, as Mike pointed out. Small businesses and consumers are concerned about data privacy and their data. There is a lack of clarity. The recent announcement of the revocation of safe harbour has concerned people. "Where is my data? What is happening to my data?" Until we can give some of that reassurance and education, certainly small businesses and consumers will continue to be wary of leveraging the digital economy.

Q15 Jo Stevens: How do you think we do that, in order to regain people's trust or build on the little bits of trust that they have? Whom do you see delivering that? Who has a role in that?

Rob Lamb: Everybody has a role in it. You cannot just say it is Government's responsibility or it is the business's responsibility. Everybody has a role in it, but Government needs to lead from the front, lead by example and make better use of data in the public sector, for example, but also create that environment of trust and have that code that people can follow for the use of their data, to give consumers, in particular, assurance that their data is safe and secure.

Mike Cherry: It comes back to understanding and skills, but we are also picking up that it is quality of service and how the providers at the moment respond when you have an issue with that provision. We need to see far more transparency around the contracts and who is responsible when something does go down. You may have a very well known provider

providing the infrastructure; you may be getting the service from a different provider. The two often do not resolve any problem that you have, and all you want as a small business is for the problem to be solved so you can get back online and do whatever it is you are doing.

There are some very clear service issues that we are now beginning to pick up, which are on the provision of the infrastructure and the issues around that when a small business, as I say, literally just wants to be able to get on and do its business. It is about making people more confident. Businesses are able to use this; some are achieving really good growth; some are able to take on more people; but you always get that one problem. Where a business has a problem, that becomes a perception in the broader, wider marketplace. Overcoming some of these issues is absolutely key. It is around communication and how to best use what is there.

Q16 Jo Stevens: I have one follow up for each of you. You have talked a bit about local conditions and smaller businesses. Where should the responsibility for local support lie, in your view?

Mike Cherry: I have mentioned the growth hubs and the LEPs. Providers also have a greater role in making small businesses much more aware of the availability of the infrastructure once it is there. It really is everybody, as Rob has said, getting behind this. Government are beginning to show a lead on this. We need to see the delivery behind that. As I said earlier, it is good to see the announcement by the Prime Minister that we are going to have universal service, 10 megabits per second, we expect, by 2020 now.

We have lagged far too far behind, and yet we are one of the most innovative users of the digital economy in the western hemisphere. The UK is streets ahead of many of our competitors, both in Europe and other parts of the world. Having the provision—and it comes back, I know, to the availability of the infrastructure—is absolutely key to enabling more businesses to make better use of it.

Q17 Jo Stevens: Rob or John, do you have any comments on that?

John Connolly: Where local organisations can help is looking at what is already happening, particularly, again, around clusters. There are privately run and privately funded clusters, all around the country, and we are looking at those and thinking, "They are doing great things. With more public support, they could do that more quickly." They should get behind those initiatives.

Q18 Amanda Milling: Just to build on the barriers and the role of different organisations, one thing I would be interested to get more understanding of—which has kind of been touched upon—is the role of Government in addressing these barriers and helping businesses embrace the digital economy going forwards.

John Connolly: One thing we have noticed is that, in the last six months in our region, particularly in Hull, 1,000 businesses signed up for the Superconnected Cities scheme. This is the third fastest take-up in the country. Extending that and helping businesses take advantage of it would be a key thing in terms of the connectivity barrier. As to the barriers in terms of helping businesses innovate and understand and use technology more effectively, it is about supporting clusters, but it is also about perhaps some sort of credit

system, whereby you have local industry that can spend money in some sort of matched way within those clusters. That would be another good way of doing it.

Rob Lamb: John's point on clusters is absolutely valid. Government have a responsibility to encourage the creation of more cluster models, and, from the Government's perspective, they have a key role in leading and driving the adoption of some of these emerging technologies. The public sector is lagging behind in a lot of these areas. Only when that leadership is in place and there is some willingness within public sector organisations to move at pace and be more agile around the creative use of technologies will you start to be leading by example.

Q19 Amanda Milling: Can you give us some examples?

Rob Lamb: We have made a number of investments in Ireland, with the Cork Internet eXchange, Vodafone and the Irish Government in a skills partnership, and the Internet of Things to enable hospitals and emergency medical services to simulate and develop interoperability standards. That kind of innovation really needs to be replicated, picked up and driven to bring standards and the adoption of new technologies. The NHS in Scotland has used big data with one of our partners, Aridhia, to explore a new diabetes treatment regime, and that has saved a significant amount of money for NHS Scotland but has also reduced the number of amputations that diabetes patients have had to undergo. The capability is absolutely there.

Mike Cherry: We see Government as taking a greater role in driving this forward, and part of that comes around understanding and helping people to understand the benefits that come from this. Also, if you look at how small businesses have been left to lag behind the residential, there has been clear market failure as far as we are concerned. You may recall our report last year around infrastructure being a key part and needing to be the fourth utility. When we had the report out last year, there was the Ofcom Infrastructure Report, which clearly showed residential availability at 75% and small business availability at 56%. Tie that into business awareness at 36% and you can see some very clear gaps in the marketplace that are just not being serviced at the moment.

We see Government clearly leading on this. We welcome the ongoing initiatives, and, as I said a moment ago, we do strongly welcome the announcement that there will be a USO of 10 megabits per second by 2020. We still need to see the detail of how that is going to be delivered on the ground. In the interim, the providers will have to get their act together to be able to deliver on that, but also helping businesses to become more aware of what it can do for them is paramount to this, alongside the skills agenda, which needs to be delivered in part by Government.

Q20 Amanda Milling: As a further point on that, I am interested to understand why it is the Government that should be leading this, rather than the market.

Mike Cherry: There is a clear market failure in provision of the infrastructure. It has been left to market forces, which have not delivered for small businesses.

Q21 Amanda Milling: In terms of this awareness and understanding piece as well, I suppose I worry whether businesses will listen to Government. Will that information actually get to them?

Mike Cherry: It very much depends. As with any bit of information, it is not just a one-hit wonder, and that does the job. It does not. It is clear understanding and delivery of the communication over time, because, as with other areas, whether it be access to finance, whether it be Government support initiatives—which are far too many and varied across the patch even now—the long-term support that is available for a small business when it needs it, and not based around either pot-sensitive or time-sensitive initiatives, is absolutely critical if we are to achieve what we need to do to remain a competitive economy in the global marketplace.

Q22 Amanda Solloway: I am going to follow on that question, but I will just put a different question first, if I may, to you, Mike. When you were talking about the data that was collated in terms of, for example, 51% who use digital, what is that data based on? Is it just your membership?

Mike Cherry: That is a survey of our members, which we carried out in December 2014.

Q23 Amanda Solloway: Was it a posted survey or an online survey?

Mike Cherry: That would have been an online survey, so clearly there is a gap there in reaching out to those members who are not online.

Amanda Solloway: Absolutely.

Mike Cherry: We accept that. We do try and factor that in to the survey data that we are able to present.

Q24 Amanda Solloway: That in itself poses a question. If, as an example, it is an online survey, then it has to be 100% using the internet, yet your data was 51%. There is an inaccuracy there, because, by default, if they are doing the survey, they are using the internet. Is that what you are saying?

Mike Cherry: No. It depends how they use the internet. What we said was that 51% use it for online ecommerce goods and services; 94% use it for banking and customers, so there is a difference there in the statistics, if that makes sense.

Q25 Amanda Solloway: The way data is interpreted and how you use it is always complicated, isn't it?

Mike Cherry: There are statistics and damned statistics.

Q26 Amanda Solloway: Exactly. I am concerned, because the FSB is a membership-based group, about the group that probably does not sit within your membership. How did you manage to reflect that, in terms of the survey, or is it not reflected at all?

Mike Cherry: Sorry, could you just clarify that for me please?

Amanda Solloway: The FSB is membership-based and you went to your membership in terms of the survey. I am just interested in whether that is a true reflection of SMEs throughout the country, or whether it is just a reflection of the FSB membership.

Mike Cherry: We would be very clear that we feel our membership reflects the small business community across the whole of the country. The survey is done by an independent partner, Verve, and they weigh the responses in relation to the wider membership of the FSB.

Q27 Amanda Solloway: I have one other question following up what Amanda was talking about. I guess it is to everybody, really. I am concerned that it is quite easy to say, as an example, we need long-term solutions and we should have some Government intervention. Actually, I just wonder about the reality of what would help small businesses to engage with the digital economy from your point of view, not getting the Government involved.

Mike Cherry: As I said, it is trying to highlight the benefits that it can bring to a business in exactly the same way as on exporting, for instance. If you can highlight to small businesses how a small business has been able to export market or use the digital economy to enhance and grow their business, then that surely is part of the role that Government can play.

Q28 Amanda Solloway: Highlight how?

Mike Cherry: If you are a business and I am a business, if I can see how you have been able to benefit from the digital economy by doing whatever it is you do online, then surely that is something that I would like to know about so that I can mirror it in how I develop and grow my own business.

Q29 Amanda Solloway: Just to follow that on, are you saying that I look at one of my fellow small businesses, the person in the shop or the business next to me, or are you saying that an intervention should be done?

Mike Cherry: The intervention surely is to help provide the infrastructure that is necessary for those small businesses to get online, to be able to do that and to grow their businesses in the same way.

Rob Lamb: It is a combination. We have touched on having the infrastructure, as Mike said. When I use the word "skills", that is not only technical skills; that is also education. Government could, as Mike has suggested, evangelise about the benefits and the new business models that are available for small businesses, and demonstrate with examples how they can benefit. I do not necessarily think it is a case of mandating things or forcing training, but education would certainly be useful.

Q30 Amanda Solloway: It is a challenge, isn't it, to engage small businesses who possibly are not in a membership or do not have access or somebody next to them? John, do you have any further comments?

John Connolly: One of the challenges is that those businesses do not realise there are skills on their doorstep to solve some of those problems. That is the reason that Tech North, an initiative from Tech City, is there: to try and promote all the exciting things that

are happening up in the north and all the exciting businesses that are there to help those organisations. I would say, in terms of things you can do, continue to support Tech North and continue to invest in that, and, similarly, look at all those initiatives that are happening in clusters around the country and back those to help them happen more quickly.

Q31 Craig Tracey: You mentioned the trust issue. I recently met with a US cybersecurity company, and it is interesting that they were saying there is a worldwide benchmarking company looking to bring in a benchmarking standard in the US for the digital economy. I am wondering whether the panel think that is a viable alternative to Government intervention.

Mike Cherry: I forget the name of it, but there is already something that the Government have now put in place that you can sign up to. The danger is, if that becomes a mandated requirement without small businesses being able to actually make it happen within their own businesses—and that comes under a raft of issues, which could be around finance, skillsets and other areas—we would be slightly wary about that. It comes back to raising the awareness factor on how small businesses can take the minimal steps to do these things. In certain sectors, there is a valid argument for some sort of accreditation, perhaps, if that is required in the supply chains, but you are getting into a very difficult area there, where many small businesses may not be able to deal with that.

Q32 Craig Tracey: When I am thinking from the small business angle, I am thinking particularly that it would give small businesses the trust to engage more quickly with the digital economy if there was a benchmarking, a kite mark or something similar. Do you not think that that would help your members?

Mike Cherry: It depends how it is brought in; it depends what the requirements are; and it depends on the cost and the administrative burden, as ever.

Q33 Craig Tracey: I am not thinking for them in particular; I am thinking for them utilising other people's products. If they saw a kite mark on another product, it might give them that confidence to use it and maybe engage more quickly, because, as you say, technology moves on so quickly. You get used to one thing and then it has moved on again.

Mike Cherry: Possibly. It depends on how it was brought in and what the requirements were. We already see a proliferation of ISO requirements, be that on the basic ISO 9000 standard or now into the other ISO standards. We need to be wary that we are imposing too much onto small businesses. At the same time, we need to make sure that small businesses who are in larger supply chains do not themselves enable that supply chain to become vulnerable to attacks.

Rob Lamb: There could be value in a kite mark or some sort of code. Certainly, if I was a small business, or starting a business, I would not look to buy any infrastructure or IT for myself; I would look to consume it. Having a degree of trust in the organisation I was consuming it from, therefore having a British standard or a kite mark, would at least give you a degree of confidence going in. One of the concerns I would have with it is the pace of change. How would you keep it up to date? You would no sooner get it implemented than there would be a real risk of the world having moved on.

John Connolly: There is a possibility for it. I would perhaps look at it like going to a restaurant, which has a cleanliness and hygiene rating on it. You are not going to have food poisoning going there, but that does not mean you are going to get a great meal. Those personal recommendations from somebody to say, "Actually, this business is really good, because they have done this for me and helped my business grow in this way" are the things to tease out.

That is, again, the role of clusters: trying to tease out the honest brokers within those clusters, which are not particularly interested in selling a service. They just sit in the middle. They are interested in big business innovating and small start-ups, helping meet those needs. There are certain sorts of traits you can see with suppliers, particular ways they work, particular technologies they adopt. People will know if they would recommend the company. It is teasing out those people who can recommend it, and they exist in clusters.

Q34 Chair: How important is access to finance and the understanding of finance markets in Britain to allowing firms to adapt?

Mike Cherry: I would say that it has quite a key role to play in this, because, as we all know, although your computers have become a lot cheaper than they ever were, there is still a cost attached to them; there is still a skillset needed to enhance what you may have in your infrastructure and your software programs. Access to finance does play a critical role in some small businesses in particular. It remains a key problem, as you know, and we are still showing that many small businesses are not getting the finance that they need.

Q35 Chair: Forgive me for interrupting, Mike. When you have come before us before, you have told us that access to finance remains a major problem. With regards, in particular, to allowing firms to adapt to a digital age and information age, do banks, lenders and people within that finance ecosystem understand the digital economy? Are they allowing firms to borrow on that basis?

Mike Cherry: Let me rephrase that. I am not aware that prospective lenders lend on this type of equipment as they do against capital, plant and machinery.

Rob Lamb: There are two challenges with financing the digital economy. As Mike has said, capital purchases, if you are going to buy the equipment yourself, are by their nature expensive, so you tend to amortise them over a long time. Inevitably, by the time you have finished the depreciation, the equipment is out of date and the world has moved on. For start-ups, capital purchase just is not the way to go. They need opex, so that they can consume these as services, but actually it may need to be a risk-based funding model for those guys, possibly taking a portion of the business, rather than a loan repayment-type funding model, because, again, a small start-up may not initially be generating the income that would allow it to repay.

Q36 Chair: Does Britain's finance ecosystem understand the needs of modern start-ups, and is it able to provide operating expenditure accordingly?

Rob Lamb: John is probably better placed to comment on it, but I certainly see embryonic signs that the financial services industry is starting to understand it. They have a lot of catching up themselves to do in terms of what digital means, but that is starting.

Q37 Chair: John, I deliberately came to you last because I was really struck by your submission, where you said access to finance is not an issue for digital businesses in Humber. I was surprised by that.

John Connolly: That may have been a typo. I would back up what Rob said in terms of start-ups. Access to finance is a real challenge for start-ups based in the north of England. For growth investment to scale up early-stage start-up companies, London is where it is at, but 75% of the growing technology companies do not exist in London. If you are an early-stage tech company based up in the north of England, it is incredibly difficult to try and access private investment to grow.

Q38 Chair: If you are an early-stage tech start-up, wanting to scale up, in the north of England, in order to provide that level of scale, do you have to move to London?

John Connolly: Historically, that is the way it has been, for a number of reasons. First, there is just not the money available to invest in the north of England. Secondly, the money that is there to invest is not technology friendly. It is not based around companies looking for enormous growth. It is delivered in an environment where financial services and professional services do not understand technology start-ups. That is why Tech North is absolutely fantastic. It is a great initiative that is shining a light on the high-growth technology start-ups in the north of England to say, "There are these amazing start-ups. They can be invested in", and to try to attract investment up towards the north of England, working in partnership with London.

Q39 Michelle Thomson: Obviously, with your kind of remit, you are looking at the north of England. You can hear probably from my accent that I am from what we like to think of as the true north: Scotland. I do not know if you have any experience to comment on that directly, in terms of the gap in provisioning of financing for the digital economy. Do you have any experience of that? Do you see the comments that you make about the north of England applying equally well in Scotland?

John Connolly: I cannot tell from your accent whereabouts in Scotland you are from, but the success story of what is happening in Edinburgh is extraordinary. There is a technology cluster up there, run by a guy called Jamie Coleman, which has a tremendous partnership with the university and with start-ups. When we were looking at setting things up on the digital agenda locally, we visited lots of places around the country and the stuff happening in Edinburgh really stood out in terms of their focus, quality of leadership and just being able to attract investment into those start-ups. Go and visit. They are a really tremendous example of what is happening.

Q40 Michelle Thomson: I am from there. Therefore, the next question is: what is it that they are doing differently, in terms both of process and appetite? What is it you observe from that?

John Connolly: First, they are a slightly more mature region. What they have in Edinburgh is tech companies that have existed for 10 to 20 years, and entrepreneurs have exited those and come back to mentor and help early-stage technology start-ups.

Michelle Thomson: Like Paul Atkinson from Par.

John Connolly: Exactly, those sorts of things. Specifically on the Humber, we do not have that. Our tradition is that we have very large technology companies that have grown through revenue investment. There is no experience of investing money into those start-ups, which take 10 to 20 years to get to that point, and only then are you getting those entrepreneurs coming back and helping start-ups. The churn, turnover and deal flow that exists up in Edinburgh is just the mark of a much more mature market. We are a little behind in Humber in terms of that, but we want to catch up.

Q41 Chair: Rob, this is a very quick question to you. You have alluded to this in some of your remarks. We have been looking at, as part of our first inquiry, the Government's Productivity Plan. Do Government do enough to harness big data and analytics in order to ensure that we have got increased and improved productivity?

Rob Lamb: The honest answer is no. I do not believe Government does that.

Q42 Chair: What do Government need to do in order to push our productivity up with regards to the use of big data?

Rob Lamb: One question I have is whether, in the digital economy, traditional measures of productivity are still correct. There ought to be a piece of work to look at that, because, when you are moving into a model where somebody with no inventory at all can now drive a huge digital business, traditional measures of productivity may no longer be appropriate. Government can look at all the datasets across the public sector, with a view to making them more open and making them available to businesses through open APIs, so other businesses can consume public datasets, to drive new business models and new ideas. The very siloed stovepipe model that exists today needs to be broken down.

Q43 Chair: Gentlemen, thank you very much for your submissions. I am going to end on two very unfair questions to you, if I may. I just need a couple of numbers from you, really. My first question is: out of 10, how well do you think Britain's businesses as a whole are adapting to the challenges of a digital economy? My second question is: out of 10, how would you rate Government in allowing and helping businesses to adapt? Mike, I will start with you for those two numbers. It is very unfair, I know.

Mike Cherry: Eight and six.

Rob Lamb: I would have said six and five.

John Connolly: I would have gone with six as well, but I will go slightly higher. The work of Tech City and Tech North puts it up at eight or nine. It is fantastic.

Chair: Thank you very much. You reminded me very much of the judges on *Strictly Come Dancing*, but thank you for that. I will not ask who is who. We really appreciate your time and your evidence to us. Thank you very much indeed.

Witnesses: **Dr Maren Deepwell**, Chief Executive, Association for Learning Technology, **Dean Cassar**, Director of Resources, Tech Partnership, and **Seetha Kumar**, Chief Executive Officer, Creative Skillset, gave evidence.

Q44 Chair: Good morning and thank you very much for attending. We are really grateful for your time. Could I ask you to start by introducing yourselves and stating which organisation you are from?

Seetha Kumar: My name is Seetha Kumar and I am one month in as CEO of Creative Skillset, which, as you know, is the industry body that covers the creative industry, which is going through phenomenal change, in a good way. My background is industry. I worked in television production, making programmes largely for the BBC. I worked across high definition, digital, education and publishing, working for the public, private and now the third sector.

Dean Cassar: My name is Dean Cassar and I am here on behalf of the Tech Partnership. The Tech Partnership is a network of employers with representation of, in the tech sector itself, both large and SMEs, as well as IT professionals such as the CIO community across all sectors. That network of employers comes together to work in collaboration with other stakeholders to address the skills issues such as skills gaps and skills shortages that exist in the digital economy.

Dr Deepwell: My name is Maren Deepwell. I am the Chief Executive of the Association for Learning Technology. We are an independent charity and a professional body. We work across all of education and skills. I am here today representing our membership of close to 2,000 organisations and individuals, including schools, colleges and some tech companies as well.

Q45 Chair: Thank you again. We want to focus on skills with regards to your evidence. How pressing are the skill shortages that we in this country face when it comes to the digital economy?

Seetha Kumar: I am going to talk more from my experience as a practitioner. It is pressing, mainly because it is the 21st century and industry is fast changing. It is going through phenomenal change, with learning as you are doing. You need to be responsive, agile and quick, which requires not just thinking through what you do on the job, but also CPD. On a bigger scale, one needs to think across the whole value chain, and also across age and phase of learning. We almost need to have fresh thinking in how we learn and what we learn.

Dean Cassar: It is obviously very pressing because of the fast paced nature of the economy. We are finding that, in terms of the issues employers are experiencing, some are in need now as there are noticeable skill gaps and employers are recognising that their productivity is being affected by the fact that they do not have the skills or cannot find the skills in the market. It is affecting their growth; it is affecting their competitiveness, both in the UK and globally. They see that that needs to be addressed to help them be effective and productive in this economy.

Dr Deepwell: I agree with what has been said. It can be useful, from our experience, to categorise the kinds of skills gaps there are in three different levels. The biggest gap is at the fundamental level, where digital skills and digital literacy are required across more and more professions. More of the workforce requires those skills. At another stage we are looking at individuals who, for example, in education would be at an implementation level, or in a small business at a managerial level, and need to be able to evaluate how

technology can be used in their particular context and can be operationalised to make efficient and effective decisions. Sometimes overlooked, in our experience, there is also a gap at senior level in making strategic decisions about technology, not just now but maybe into the future, and looking at what the vision really is for skills and in terms of employment and capabilities. Those three levels are all very urgent. In terms of size, respectively for their audiences, they are significant.

Q46 Chair: How do we compare to other nations? I was very interested in Tech Partnership's submission to us where there was a very vivid sentence that struck me enormously: "The UK is significantly behind global leaders in general business digitisation, and must urgently accelerate digitisation right across the economy". Where are we in the league of nations when it comes to this?

Dean Cassar: I do not know the answer to that, I am sorry. I can provide that after the event, but that is from a piece of research that the Tech Partnership has done.

Q47 Chair: I am not suggesting that your organisations will focus on international comparators, but from others' perspectives what is your sense about how Britain is doing when it comes to skills in the digital age?

Seetha Kumar: This is a reflection more than anything. I would say that there are certain areas where we are doing really well, in games, vis effects, etc. The big challenge is that we cannot be complacent. It is a very competitive market out there, and things are changing at the speed of light. We just need to move as fast as we can, and enable and empower the reskilling as well as the acquisition of skills in order to remain competitive.

Added to that is the inter-disciplinarity that this world requires. There was a time, when I started out, when you could do one thing and that was great. Now, more than ever, you need to do a fusion of things. You need to have business skills; you need to have tech skills; you need to be able to be creative; you need to be able to tell a story. There is a lot that is going on. For UK plc to remain competitive, you just need to keep pushing. What you did yesterday is not enough. Do you know what I mean? That is the point.

Q48 Chair: What can we learn? What are the shared characteristics of good firms that are doing that, that are empowering their staff, allowing them to retrain and reskill, and making sure that they can adapt in the modern age? Is there anything you can provide us, as the Committee, in order to say how this can be spread out further?

Seetha Kumar: The challenge, I would say, is that, if you are a large firm, there are things you may be able to do, but, if you are small, then you are so busy, you are time poor, you do not have the energy and your knowledge ends up being contained. This is where I would argue Government can be a very effective partner with industry, with industry in the driving seat, to figure out how you work with firms, understand what the skills needs are and make that possible and available. In today's world, it is modular and portable, and you need standards that can transfer across.

Q49 Chair: Is that not happening at the moment?

Seetha Kumar: It is really difficult. The new apprenticeship standards are a perfect example. Let us look at digital standards as well. There are quite a few, and one in particular that Creative Skillset was working with BIS to develop, and it took over a year. The point is that we need to be agile and quick. It is the 21st Century. They need to be future-proof and, more than that, they need to be portable across the UK.

Q50 Chris White: You talked a bit about business needing agility and flexibility. We all recognise now that there is a skills gap. What role do FE and HE have in filling that gap? Do you think there is an appetite there?

Seetha Kumar: There is a role, but it does need to be rethought, going back to first principles. I am a great believer in vocational and being a practitioner. Sometimes HE is very slow and quite stuck in the world of yesterday. It is not always; I do not want to make generalisations. There is quite a lot where industry needs to work with HE to see what can be transformed and what changes can be effected so that people are job ready. One of the things I would argue is: how do you make young kids, whose parents spend nine grand a year, come out of these colleges and ensure they are job ready and have all the soft skills, the participatory skills, as well as the skills that the job needs? Industry has a part to play, but it is a partnership.

Dr Deepwell: I would like to come in on that. For me, it relates also to some points previously raised about what we do well here in the UK. In relation to HE, there is clear evidence that we have some world-leading research in the UK, with examples like the UCL Institute of Education and the Open University. We lead in research into how to teach digitally, how to deliver at scale and how to meet some real, big challenges. Globally, the education market looks to research in the UK to adapt some ideas, and maybe we are not always the fastest to put our own ideas into practice.

Coming back to your question in terms of HE and FE, there is real appetite. There are some really successful initiatives, particularly in further education. There also needs to be a much stronger commitment to put digital at the heart of everything we do. We are currently looking at the area reviews, for example, and technology is mentioned there but it is often interpreted as yet another box to tick, yet another thing to do, rather than a solution to meet some of the bigger challenges we have. Technology and the digital skills gap is not so much a thing, in our experience, in and of itself, but it can really help address some of the bigger issues that the sector faces. In FE in particular, vocational educational and skills offer a real opportunity for us right now to act and make that happen.

Q51 Chris White: It does not sound as though it is happening. It sounds as though research is happening and it is an opportunity, but it is not embedded at all.

Dean Cassar: There is evidence that HE is a lot further down the line. The Tech Partnership, for example, has been working very closely with HE and, over the years, has created degrees that can then be offered by HE. Evidence has shown, for example, the split of gender is much higher; the levels of firsts and 2:1s are much higher; and the employability rates are much higher. That started about 11 years ago, and we have seen that trend of actual qualifications that are being driven and designed by employers specifically for the employability aspect. Those have been very successful.

Also, the Tech Partnership recently created a degree apprenticeship. That is incredible. It started less than a year ago as an initiative. The employers, working with HE, have designed a degree apprenticeship, fortunately with the backing of Government, which made the funding available for the apprenticeship. Within less than a year, we have had a cohort of 300 apprentices start this September on degree apprenticeships. That is all in the space of less than a year, and that is the collaboration.

Q52 Chris White: Where is that happening?

Dean Cassar: Nine universities are offering it. 50 employers have taken on degree apprenticeships, from SMEs recruiting one to large employers recruiting cohorts of 30 to 40. That is effective. The pledge at the beginning was only 150, and, through the process of working and seeing the quality of that qualification, they then increased their intake to over 300 in this year. That relationship with HE is definitely more established and working than with FE.

Q53 Chris White: Just going back a step further, what about our schools and curricula? Do you think there needs to be a shift in emphasis towards digital skills?

Dr Deepwell: One of the biggest challenges we have is teacher training. That applies in schools and FE. We are not doing enough in providers to give our workforce the skills to put these things effectively into the classroom in an agile manner. There have been a lot of revisions around the curriculum, particularly around computing, and there is real progress there, but there is a lot more we could do to give schools and colleges more independence and more opportunity to react to what schools need to teach their students before they go on.

Dean Cassar: I completely agree. The Tech Partnership works a lot in schools. The issues are twofold. One is inspiring young people and educating them as to what a career in technology and digital actually means, so that from a young age they aspire to want to go into that profession. Particularly, there is the whole gender issue. We know that girls from a very early age see technology, digital and engineering type careers as just not something they want to pursue, so it is about inspiring them. The Tech Partnership, for example, has created a girls' club, TechFuture Girls, and the material is designed by the employers. It involves real-life scenarios and real-life activities, designed with language that attracts girls to participate in those clubs. We have seen the propensity of those girls to then want to proceed into a career. That collaboration, from the employer's perspective, with the schools and helping them to run clubs like that has a big impact.

It is not just about the curriculum. The other thing is helping the teachers to have material that they can use within the classroom, as they teach a range of subjects, where fun, interesting digital examples can be created. Giving the teachers that sort of material to help them in their day-to-day job has a big impact on young people.

Q54 Chris White: That was a fantastic and really helpful answer. Just to say, as you were talking about women digital specialists, 16% is what you say in your evidence. Have you got any targets, perhaps 50%? How long will it take to get to that?

Dean Cassar: We had a 50:50 campaign at one stage and it was always the aspiration to bring everything up to parity. There are lots of reasons why that is not there, but it is

going up. It is a bit of a vicious circle. One of the things we provide is for young girls in schools to see good female role models working in the tech sector and in high powered, high profile roles that they can inspired by, but the problem is, because there is only 16% there to tap into in the first place, they are sometimes few and far between, so it is a slightly vicious circle. We need to look at other areas, such as the girls' clubs, and we need to look at language. Some employers will say to us that they have put a job advert out with a job description and had zero applications, but they have changed the job title, with exactly the same job description, and suddenly loads of girls applied. It is about sharing best practice in things like selective language.

Q55 Chair: Could you give us examples of that, where the job title has changed?
Dean Cassar: When you have things like "engineer" in the title, people think of software engineers, database engineers or some kind of digital role with the word "engineer" in it, and girls instantly just think, "That is an engineering role and I do not want to do it". When you talk about management skills in business, architects and that sort of language, that tends to appeal more to girls. That is just an example of how things like that can make a big difference to get the pipeline of people interested. Going back to the ITMB degree, at the moment about 33% of applicants are girls. Computer science degrees are even less than 16%. It is a massive shift. It is just to get the content right, and that has a big impact on girls.

Seetha Kumar: Can I just add to all the points? I agree with my colleagues about what you could do in school. I just want to make two points. One is that digital is not just tech. We need to remember it encompasses quite a range of skills, including art, creativity and design. We need to have that integrated in school. What happens now is that things get segregated quite early on. The more inter-disciplinarity there is, the more opportunity there will be, even for girls and women.

The second point is around the how. We should ensure that we use methods of teaching that are imaginative, that are games-based, that are participatory, that are project work and that are learning by doing. That fuels the imagination, gives you confidence and enables you to stretch the boundaries. This world is about innovation all the time.

Dean Cassar: I agree.

Dr Deepwell: To give an example of where technology can make difference, there is a college in Hull where they used small video cameras to make videos of students using equipment in workshops. They used girls to demonstrate, for example, how to use equipment for a carpentry course. That course had real trouble attracting female students. Because the videos were openly available on YouTube, people could watch them, particularly prospective learners, on their mobile phones or at home. They saw girls and women in the situation, acting out the activities they would be doing. That had immediate impact. The next year, enrolment was up. I agree that there is a lot that we ought to do and address, but there are some very practical things happening on the ground now.

Our real problem is scaling that up. We have great pockets of innovation, great islands of great ideas that are really making an impact, but we are not very good at sharing them across the sector and scaling up. That is a key problem.

Q56 Chair: What are the means by which we can share good practice, then?

Dr Deepwell: Bodies such as the association that I represent very much facilitate knowledge exchange and collaboration. There is a real balance to be struck between helping individual providers remain competitive with each other and at the same time furthering collaboration. As we said before, materials that teachers can use can be a really good opportunity for sharing practice. For example, openly licensed resources that can be reused from one college or business to another are one way to facilitate that knowledge exchange. Special interest groups in education, for example, are another. Policy can also play a role in that. Using language that sounds like we are all familiar with technology and accept it as part of what we do can help frame the debate, and that is really helpful in encouraging organisations to exchange information.

Q57 Chair: Chris has opened up an important topic for this Committee, which is the adequacy of the education system to ensure we have the skills we need for our future economy. You have touched upon this already, but I would like to press you on it, if I may. How adequate is our education system, when it comes to providing those skills the modern economy will require?

Dean Cassar: That is a hard one to answer in the sense that what the schools are doing at the moment is teaching to a curriculum. As Seetha said, digital is not just technology on its own. Computer science GCSE and A-Level, for example, have a place, but they certainly do not equip people with the digital skills needed to go on, whether that is to a technology job or a role within a sector that has a digital aspect and component to it. That is the big question. It is not just about changing the curriculum; it is about intervention through education such that employers can actively intervene along the way to increase those skills.

Q58 Chair: I understand that. I understand that we cannot go down a line whereby we say, "Let us have GCSE computer science. Let us have a coding club. Job done." What are the specific things that we can put in place, though, in order to make sure that we are digital ready?

Dean Cassar: We feel that is an employer's role. Employers need to collaborate, which is why they come together. For example in the Tech Partnership specifically, they can make a difference in school. They go in, and there are mentors and there are ambassadors that go in. They run some of these girls' clubs and other activities.

For example, we have just launched a TechFuture Badge Academy, which is very topical at the moment. It is the idea of having digital badges. Employers create a piece of activity that the young person could do in any lesson at all, because it might be relevant, or at lunchtime or after school, but that badge demonstrates to employers that, as well as all the academic subjects, they have these practical digital skills that they have learned throughout the way. Just like the old Cubs and Scouts, instead of it being on their jumper, they have a portfolio of digital badges that have been accredited by employers so that, when they go for their job interview, they can demonstrate they have all these other skills as well as their academic background.

Q59 Chris White: I have a quick question. How effective do you feel informal education is, in terms of digital skills, social media, the ability to play games, the use of iPads etc? Is that having an impact?

Dean Cassar: Having an impact on what?

Chris White: The level of skills somebody would need to be employment ready.

Dr Deepwell: That leads on, for me, from the previous question. It does have an impact for those learners who have access and those who are already engaged. One of the key issues we have to address through more formal means—and employers and informal education certainly have a role—is all the up-skilling across the whole workforce. Badges, social and informal ways of learning are fantastic if you already have the skills to access, for example, open online courses like the MOOCs we heard so much about in the last few years, or if you can afford to buy the equipment and have access at home to do the learning on the side. If you are struggling, reskilling or changing careers and you are not in a place where you are motivated and engaged as a learner, and where you may not know where to start, that is where FE in particular, and HE and schools, all have a role to play.

Seetha Kumar: I agree with the two points my colleagues made, but, even for those who have access, just because you have access and know how to do, it does not automatically mean you have the skills to create. There is a role in terms of how you learn to create, explore and do all of that.

The second thing is that you have DFE, BIS and DCMS and it is almost like you need the three areas to come together, look and think, "What is the world we want, because this is a world that is shifting? What do we need to do?" Sometimes you have systems and processes in the school system that are fixed to a qualification. Here we are talking about skills, not just qualifications. How do we embed the skills and not just the qualification? The qualification is the degree you get, and, having worked in education, it is a slow process.

At the moment we are using social clubs and informal routes. Yes, that is good, and employers and industry do have roles to play. My argument would be that, if we want to remain competitive and want UK plc to be really dominant in the world, which I believe it has the ability to be, it needs to be embedded in the way we do and learn. It is the how and the what, and I think there is an opportunity.

Q60 Michelle Thomson: This is really just bottoming out something that has perhaps been alluded to, especially by yourself, Seetha. It almost strikes me that it is as though digital is the driver, rather than the recognition, that is an enabler for an awful lot of things. You bring out the point around creativity. Do you think that we would benefit from a fundamental shift in the way we consider technology?

I am drawing on my own experience. As someone who was involved in technology probably 25 years ago or so, as a female—and obviously there were not very many of us—I was often saying to the guys, "The point of it is to enable that." I found that I was isolated because they got very excited about the technology for the sake of it, and I would say, "No, the point is that we get this out the other end." I did not know at the time whether I just was

not very good at technology—I think time has proven that—or whether it was just the way I thought. I am interested in your views specifically, Seetha.

Seetha Kumar: I so agree with you. Again, as a woman, and as someone who first made programmes, I was always a bit terrified of technology until I was asked to lead high definition rollout for the BBC, which was something I knew nothing about. What excited me was the magic you could create, what you could do with *Planet Earth* or *Bleak House* and the fact that you could get massive close-ups. It was so powerful to the imagination. For me, then, it became like a staff or a stalwart, and it was a means to an end. If it is imbued in the way you do things, it opens so much. I totally agree with you. It is about making that part of your DNA, almost, and there is the opportunity to do that.

Dean Cassar: I completely agree. While there is always a place and a need for the skills to create and develop technology, digital skills are much wider than that. Employers are saying that a lot of the skills gaps that exist are not about people needing to understand how technology works; they are about understanding what it can do, what it can achieve and how to analyse it. The whole thing about big data, for example, is not how the data is collected; it is how you analyse it and how you use it to be most productive and effective. That is the skill that is missing. Across all of those areas, the usage, the innovation, the creativity, how it is used, how it is applied, what it can achieve, how it can drive your business are more important than anything else.

Dr Deepwell: I would just like to add to that. I completely agree. There are critical and evaluation skills that allow you not just to be a consumer or user of technology but to make and shape it. That is really key for the generation we are thinking about most here. That is where we really need to move up. We need to give young people in particular more control over utilising technological advances, rather than just passively consuming them.

Q61 Craig Tracey: We touched earlier on where we sit in terms of the digital economy. I was quite interested to read that Boston Consulting Group showed that the UK is the largest digital economy in the G20, and the internet contributes 10% to UK GDP. Given that, do you think there is a widening divide between businesses that understand the benefit of a digital economy and those that do not? Reversing what we were talking about with students, now we have generation Y, where people are going to start filtering into business who have grown up with technology all of their lives and potentially know more than the people employing them about the benefits of technology to their business. Is there an equal body of work in educating businesses on the benefits of the digital economy?

Dr Deepwell: You have asked a complex question.

Craig Tracey: Good.

Dr Deepwell: Some aspects of that I can give examples on. There is a lot of work needed for adult education in the digital area. For example, in libraries recently you had Get Online Week, which was for everybody who was not online yet. I visited a local library and saw people getting online for the first time, which was really inspirational. That will definitely filter through into the business world.

There is a real danger, in some ways, in assuming that a younger generation, because they grew up with technology, will know how to use it. We find in education in particular that a lot of younger students can use technology, but for example they do not know how to

best use it for learning or how to best use it for business. There is a set of critical and analytical skills, which we have clear evidence and guidelines on, that you can give younger people to help keep pace with technology as it changes, so that they can remain effective with what they use it for, rather than just being able to watch something on the internet, for example, but knowing how it functions. We are moving into that curve of needing to keep educating young people so they can make the best use of technology. That starts with school and goes on into further education, into universities and working with employers.

Dean Cassar: Yes, I agree. I heard one of the young generation say they were digitally born, in the sense that they feel that they are born in that sort of era. That does not necessarily mean they then can take that next step, which is to exploit the digital capacity and technology that exists from a business perspective, as opposed to gaming or usage. There will always be that gap.

We talked about digital skills being needed across the sector. Whether that is from digital literacy to very high-level competencies in the tech sector, there are digital skills needed for all jobs and all creations, including hybrid skills where their competencies for their own jobs will be enhanced by having levels of digital skills as well. That will exist. From the SME and entrepreneur market, it does not always mean that everyone has to have the digital skills. We see a lot of start-ups that have the creativity, the innovation and the business skills; they want to get their business out there, but they do not know how to create a website, to use social media to promote their business or to set up ecommerce.

Every entrepreneur does not need to have that. What they need is to know where to go to buy it, and to have the confidence that they are buying high-quality skills. That could be evidenced by high-quality qualifications or certificates in those areas. That is where the skills gaps are. It is not necessarily with the individuals themselves; it is having access to it to help their business.

Dr Deepwell: I would agree with that. If you are an entrepreneur who is very good creatively and digitally, it is good to be able to understand IP, business, etc. To your earlier point about educating business, I want to make two points. One is that, for every success you have in the digital world, whether it is a game or a vis effects company, you also have failures. The internet is a graveyard of failures; that is the truth. There is a lot to be learned from the failures, because navigating your way through how to make it successful is not easy. Understanding the consumer, the user experience and the latent need is not easy as well.

We need to celebrate—in a good way, if that makes sense—the risks that you take, because there is a lot you learn. The world is shifting. Let me give you one example. There was Blockbuster, which today does not exist, but now you have Amazon opening a store. What does that mean? There is a lot to extrapolate and learn, and yet you cannot just take an example and have a cookie-cutter approach. It does not work like that.

Q62 Amanda Milling: This goes back to Chris's earlier question about the education system. You have talked about the skills developed from school to HE and FE. I suppose I am concerned that we stop there. I am just wondering what happens to develop those skills over time, because one thing about anything digital and technological is that it moves at such

a pace. How do we keep those skills up to date and evolve them? That is a question for the three of you.

Dr Deepwell: I will start, and I will give you a concrete example. We look after that problem for teachers and learning providers, people who work in education. They always need to be a step ahead in order to then pass that knowledge on. For example, a peer-based accreditation scheme that we run for teachers is based on the assumption that there is no one else better placed to assess you than a peer who has been continuously developing as well. Earlier, Dean mentioned badges as an informal way of providing accreditation and recognition. At the moment, there are not very many options for informal accreditation such as open badges to be formally recognised in terms of CPD for the workforce.

One of the issues is that we are used to very stable frameworks against which we can evaluate over time. The issue we have with technology is that that stable framework becomes out of date as soon as you publish it. In our experience, a peer-based approach provides a robust enough framework to provide valuable CPD that employers can then give recognition for.

Dean Cassar: I agree. The employers of the Tech Partnership would say that what is really important to them is to have industry standards, industry-accredited qualifications and industry-accredited CPD courses. That gives employers the confidence that what they are buying is actually relevant, because it has been designed by employers similar to them, and it is of a high quality, again because their peers have accredited it.

There is something about the confidence in that, but I do think the biggest gap is in CPD. We can all work together in terms of education, and we can take it right up to that entry level, which is really important because to get the right skills into the profession at the beginning is absolutely critical. That can be done through education and through apprenticeships. Hence the Trailblazers are a great opportunity for employers to come and design those apprenticeships. Beyond that, it is typically being left to the employers to go around, to try to find training that sort of meets their needs and to buy it themselves. That is the bit that is very hard, because it suddenly becomes either very specific—it might be cybersecurity—or it is very general and about where you can go to get good quality.

There is an element of flexibility within some of the options. Apprenticeships, for example, have been seen as an entry level, and they are good-quality qualifications, but there is not any reason why you cannot expand that out to things like returners who have had a career break, and the sector has just moved on and there are new skills available. Traditionally, that was not a route because it was seen as being for 16 to 18 year-olds and, if you already had qualifications to that level, then you were not allowed onto an apprenticeship. If you can open the flexibility and say, throughout the employment, those skills are still relevant at different stages of your career, then that can help as well.

Q63 Amanda Milling: Just on one of those points, I suppose my concern is that this evolves over time. You talk about the employer almost instigating the need for top-up training. It is the point at which they realise they need it which worries me. They could end up so far behind the curve. What can be done? I do not know whether there is an answer.

Dean Cassar: It is very hard. Clearly, the larger organisations will have their own training needs analysis and will try and see where the skills gaps are. Sometimes it is so harsh that

they lose out. Companies can bid for pieces of work and lose that work because they do not have the relevant skills and cannot demonstrate the skills. You are right: by then, it can be a little bit too late. From a productivity point of view, they have missed out because someone has been ahead of the curve, has recognised the gaps and recognised the skills needed going forward and has addressed those. It has been very individual in that area. It is a problem, though, I agree.

Seetha Kumar: I agree with the point about industry standards and about it being individual, because the creative industries are largely freelance. I also agree with the point about short, modular courses that are provided so people can consistently reskill themselves. The point I wanted to make in addition is that, particularly with the new apprenticeship levy and apprentices coming in, CPD should not be ignored, and nor should the big mass of people working in the industry right now who have lots of knowledge and skills, have a lot to contribute, have a hinterland of experience and need to have the opportunity to reskill. Also, the UK should leverage what they have, because that can only enable productivity and remaining competitive. That is just a more general point in terms of policy that we should factor in as things change.

Q64 Chair: In Tech Partnership's submission, the first recommended action is: "Focus on skills of strategic importance to the nation". Who decides what is strategically important?

Dean Cassar: In our view, employers will decide on what strategic skills they need to operate within the economy.

Q65 Chair: Government does not have to get involved in that regard, then, does it?

Dean Cassar: Employers will know what they need. Government can get involved, and the Tech Partnership does not work in isolation. The Tech Partnership will collaborate with the Government. There are lots of initiatives, like the degree apprenticeship, which was started from the Lord Young report and that initiative. What Government can do is to help the employers where they have evidence to support as well, because they are only limited in terms of what they can see. If there is any broader evidence from some of the organisations that we saw earlier, then that can feed in to it.

For example, BIS identified this idea of online capability of SMEs or new start-ups, and they asked the Tech Partnership to design a digital business certificate, which goes back to my point that not everyone needs it but someone needs to have those skills, which are online capability, social media etc. The Government are giving the impetus, which is great, to say, "Let us kick start it. Let us get the employers to create the content of it. We will allow some funding to get it going". Part of this work is to create material that the FE colleges can use, so that they can deliver it going forward, and then the private sector will pay for it, knowing that it is a good-quality programme. Then you get that filtering through to the economy.

Q66 Chair: Has that worked well? You would apply that model elsewhere to look at skills shortages of strategic importance.

Dean Cassar: Yes, exactly. As Seetha said, that is a short module training programme that gives someone the necessary skills so they can not necessarily be the entrepreneur but

can help entrepreneurs with their business and productivity, through their online presence, their online capability, their social media campaign and ecommerce. They can go into the market with almost the old CORGI registered idea that someone knows, "If you have the certificate, then you are of high quality and we can buy those services". Part of it was also creating the material and online learning modules so the FE colleges then do not need to start from scratch; they can all share that as well.

It has been interesting to see, going back to Chris's point regarding flexibility, that, in that first pilot, it is not just young people; it is returners that are coming back; it is slightly older people who are thinking, "Actually, my skills are now out of date and this would be a really good opportunity". As long as both the Government and employers recognise that these qualifications need to be very flexible and do not try to pigeonhole them into certain ages and types—you have women returning after a break with their family, etc—these are really good certificates that get them back on to the job market.

Chair: If there are no further questions, I would like to thank you for your time. The Committee is really grateful that you have given up your time and provided us with your experience and knowledge. Thank you very much.