



Select Committee on Science and Technology

Corrected oral evidence: Contribution of innovation Catapults to delivering the R&D Roadmap

Tuesday 12 January 2021

9.40 am

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Members present: Lord Patel (The Chair); Baroness Blackwood of North Oxford; Lord Browne of Ladyton; Baroness Hilton of Eggardon; Lord Hollick; Lord Kakkar; Lord Mair; Baroness Manningham-Buller; Viscount Ridley; Baroness Rock; Baroness Sheehan; Baroness Walmsley; Baroness Young of Old Scone.

Evidence Session No. 6

Virtual Proceeding

Questions 44 - 46

Witnesses

Professor Juergen Maier CBE, Former CEO of Siemens UK, Chair of Digital Catapult, Co-Chair of Made Smarter, Board Member of Greater Manchester LEP, and Board Member, Northern Powerhouse Partnership.

USE OF THE TRANSCRIPT

This is a corrected transcript of evidence taken in public and webcast on www.parliamentlive.tv.

Examination of witness

Professor Juergen Maier.

The Chair: Good morning, all, and happy new year to you. Good morning to you, Professor Maier, and thank you very much for coming to help us today. You are our star performer today, because I know you are going to rush off. We have about 20 minutes with you on your own, I gather. Thank you for helping. This is not a review of Catapults. This is to learn about what their role might be after the Roadmap, so we are looking forward to hearing from you, with your experience.

Q44 **Lord Mair:** Good morning. Thank you for joining us. To what extent have you or the businesses that you work with or represent engaged with the Catapults? We know that you are chair of the Digital Catapult, but, more widely, how have you been engaged with the Catapults?

Professor Juergen Maier: Good morning to all of you. Indeed, I have. My journey with the Catapult goes back quite a long way. I sat on the original ministerial advisory group under Peter Mandelson, where lots of the ideas for the Catapults were first thought about. I sat on the board of the High Value Manufacturing Catapult in the early days, so it was the first board, as we brought the High Value Manufacturing Catapult together. I was a non-executive in BIS, as it was at the time, under Vince Cable, when most of the investments in the Catapult happened.

I was the chief executive of Siemens in the UK, which engaged in many projects in Catapults, mainly the High Value Manufacturing Catapult but also a bit in the Offshore Renewable Energy Catapult and the Digital Catapult. As of late, I chair the Digital Catapult, as you already know. I also co-chair, alongside the Business Minister—that was Nadhim Zahawi, and we need to work out where that is transitioning to next—the UK's Made Smarter initiative, which is supporting fourth industrial revolution technologies into UK manufacturing. That engages a lot with both the Digital Catapult and the High Value Manufacturing Catapult.

Lord Mair: You will know that our primary interest in this inquiry is to understand more about how the Catapults can attract private sector investment in R&D. Can you say a bit more about that and to what extent the private sector is aware of the Catapults?

Professor Juergen Maier: There are two questions there. One is awareness and one is what encourages companies to engage and invest in R&D. In terms of awareness, this is a journey. Even two or three years ago, the awareness was still relatively low. Especially in the last two or three years, as often happens the awareness has increased. My evidence is that, now, in the Digital Catapult, we do not have to explain to many of the new people we engage with who we are. People are coming to us knowing about the Catapult movement. Speaking for the high-value manufacturing sector from my Made Smarter experience, that is definitely the case.

If you are a medium-sized manufacturer, you are aware of what the Catapult is. You might not be aware of what everyone does, what the

seven HVM Catapults are, where you should go and where you should be signposted to. The main issue is probably still in the S, the very small companies, where the awareness is a little more patchy.

In terms of companies engaging and investing, I see this as very simple. Here, I will use my experience at Siemens as a typical British global company, which is very strong in the UK but also present globally, but it would be the same for a British-headquartered company such as Rolls-Royce. Every one of those companies is living in a global ecosystem, so they have a choice of where they want to do their research, innovation and development.

If I can speak from my experience at Siemens, but it will be similar for many companies, there are a number of things you would look at. First, am I engaging in best in class? Is what is happening here world beating or at least getting close to world beating, whether that is in new battery technology, artificial intelligence or whatever area it is? Around that, you are looking for the skills that are available. The UK, through the Catapults and our research sector, does pretty well in that area generally, if I look at it through a Siemens lens.

The second area you would look at is scale. Is this scaled to a level where it is going to be very significant and there is going to be plenty of research and innovation money? The UK scores pretty badly on that. We generally do not scale our activities well enough. An example is 5G, which the Digital Catapult and a number of the Catapults are interested in. We are doing great work. We have test beds in Brighton, and we are just about to establish one in the West Midlands, but they are not scaled. You might have some of the best here, but companies like Siemens might say, "This is not quite scaled enough. I'll just do it somewhere else".

The issue of scale is quite significant, and I am sure we will come back to that as we talk about what we should be doing with the Catapults.

Q45 Lord Hollick: Professor Maier, from the perspective of industry, to what extent are the Catapults an important part of the innovation landscape in the UK, and why? Picking up on Lord Mair's last point, to what extent do changes need to be made to improve their efficiency in what they are offering to industry?

Professor Juergen Maier: They are critical, which is why Siemens and many of my colleagues at other Great British engineering companies were so passionate about them; it was because we were never good enough at the translational end of the research—in other words, creating the innovation, getting higher up the technology readiness levels, which you will all be familiar with, and turning the research into commercial product that is made and exported from the UK. The Catapults are a key part of creating the ecosystem for that to happen.

As a matter of fact, I am convinced that the UK will struggle to meet its 2.4% overall private sector and government target of research and development, unless we scale the Catapults more. Especially in this time of recovering from Covid, although it was already true before, companies such as Siemens are putting a bit less of their core research money into

blue sky research and more of it into innovation and commercialising product. Therefore, in the research and innovation ecosystem, you have to follow the money. The money will be more on the innovation side, because more people are thinking about getting their products to market more quickly, et cetera.

In terms of improving, the key thing we need to do is to recognise the Catapults as a key and strategic part of the UK's research and innovation ecosystem. At the moment, while there is a lot more support and the Catapults are growing in recognition, they are still seen as a second-class citizen compared to the research councils. By the way, I am a great supporter of British universities, as Baroness Young knows, but this needs to cover the whole ecosystem of research and innovation.

Lord Hollick: What can be done to achieve the scale that you think is essential for success?

Professor Juergen Maier: There are two activities there. First, strategically, we need to get better at defining the UK's industrial strategy. That is probably not part of this inquiry, but it is important. As a country, we need to decide which of these areas we are going to focus on and be world beating on. Is that the new hydrogen economy, artificial intelligence or 5G? Which of these areas will it be? We then need to make sure that the money we are putting in to stimulate those is at better scale and competes on the scale that we are seeing in other regions.

As a quick example, take the electric car revolution and look at the money going into the whole cycle of electric cars, but particularly the drivetrain, batteries and data systems. You will find that Germany and France are investing many more billions in the research and innovation ecosystem. In France, it is £7 billion. In Germany, it is more than that. In the UK, it is quite scattered and nowhere near that scale.

Lord Hollick: How should we go about deciding which of the opportunities to pursue in the depth and scale that you think is appropriate?

Professor Juergen Maier: There are two approaches there. The good news is that we have established them, so at least we have processes for them now, which we did not have 10 years ago. There is a process for creating the national industrial strategy, which of course needs to be a collaboration between government, the UK's key industrialists and technology companies, for the sectors I am representing here, and a decision needs to be made.

We make this harder than it should be. It is often caught up in the ideology of free market versus intervention. The truth is that we intervene all the time anyway and, in post-Covid times, we are intervening more than ever. The fact is that we are investing massively in our UK economy and supporting UK business, so we might as well target that in the appropriate areas, and decisions need to be made. Some of the decisions to be made are quite obvious—on the hydrogen economy, the future of electric cars, 5G and artificial intelligence.

The second area is turning those into local industrial strategies. In the end, you need to grow these industries in local regions, so that the new industries and jobs, and the prosperity, can be created there. We have the processes; we just do not fully believe in them.

Q46 Baroness Young of Old Scone: You have talked about scale being a real barrier to Catapults' ability to help achieve that 2.4% target. Are there other barriers? Some of the witnesses and the evidence we have had talked about the absence of enough long-term vision to be able to give security. Explore for us some of the other barriers and perhaps who should be doing what about them.

Professor Juergen Maier: There are two other barriers. The next one that I would have gone to, exactly as you have just said, is long-termism and strategic approach. I have talked a bit about that already in comparing the UK's investment in electric cars to other nations'.

A real own goal has been having our spending review cut to just one year rather than the full three years. We understand that we are in a pandemic and things are very difficult, but competing Governments around the world, despite that—actually, I would say because of that—are giving these activities more long-term vision, such as the £750 billion structural fund in the EU and the German £150 billion structural fund. This gives a very strong signal to large investors such as Siemens, but also to British companies like Rolls-Royce, as I have mentioned, to follow the money. At this time, that is particularly critical. That long-termism and very strategic approach, especially in times of crisis, is critical.

The third barrier is the one of engagement of small to medium-sized enterprises and technology start-up companies. The Digital Catapult is a bit of an outlier in this, inasmuch it by definition engages tech start-up companies into our innovation ecosystem. I joined the Digital Catapult, because I felt that that was an area we needed to pursue and push more in the UK.

As for engaging more small to medium-sized activities, we need more activities like the Made Smarter programme. I am not totally impartial on that, because I have led that programme from the start. However, I lead it and believe in it, because it is the creation of an ecosystem of large and small companies working together to resolve joint challenges, for example using 5G in factory or creative environments. We need to create more of those engagement programmes that bring together large and small, along with research institutions and the Catapults, and we need to scale them. Made Smarter, while a good programme, lacks scale because we are not quite sure whether we want to scale these things. We are a little half baked, quite frankly, between free market and intervention.

Baroness Young of Old Scone: There has been additional investment in the R&D area. Is this something that government needs to grasp? Is it UKRI? Is it Innovate UK? Can the Catapults themselves do anything different? If you had birthday and Christmas rolled into one, what is the one thing that would make a breakthrough, and who would do it?

Professor Juergen Maier: The additional funding that you talk about has been predominantly on the R, which is very welcome. That is the right thing to do and, quite frankly, it needs to be matched with a more ambitious I. It is interesting. I am very involved in both the research side and the innovation side. It is always more difficult to argue for the scale of money in the innovation ecosystem.

Of course, the Catapults can do more. They are doing their best, but this is a bit of a chicken and egg, because you need to scale to get there, but on the other hand you need to show your success before you can scale. The Catapults can show the impact created, for example through the 5G programme, where the Digital Catapult has created testbeds, and show where small companies are engaging and, through that, creating commercial enterprise and jobs. The more the Catapults can show those sorts of initiatives, the more it encourages policymakers and decision-makers to invest.

Baroness Young of Old Scone: Is there sufficient vision within UKRI and Innovate UK to take that forward?

Professor Juergen Maier: There are two things. One is the national industrial strategy ambition; I have already talked about that. That needs to be stronger and needs to embrace innovation more. Specifically for UKRI, it is not a secret that there have been some changes in leadership, particularly on the innovation side. On Innovate UK, it is important that we create stronger leadership. As I am sure you are aware, it is currently between interim CEO and new CEO, so there has been a lack of continuity and bold leadership to push the innovation agenda. We need to address that, yes.

Baroness Young of Old Scone: There was concern a while ago that Innovate UK would be lured back into being a funding arm for university research rather than firmly based in the business sector. Do you think that is still a risk or has that gone?

Professor Juergen Maier: I honestly do not know where those conversations have gone, but I agree with your sentiment that this requires very strong industrial leadership. It requires a partnership, but industry needs to show very strong leadership for that.

The Chair: Professor Maier, thank you very much indeed for finding time. I know you have a busy day today. I gather you have two special events today. The first one, of course, is meeting us. That is very special. But, secondly, and probably more importantly, it is your 40th birthday today. Many congratulations to you. Happy birthday and thank you for joining us on your birthday.

Professor Juergen Maier: That is very kind of you. It is not my 40th birthday. It is my birthday, so thank you very much. The most important event is definitely talking to all of you today, because this is a very important topic.

The Chair: You had to say that, of course. Thank you very much.

Professor Juergen Maier: Thank you. It has been my pleasure.